MINUTES OF THE BOARD OF SUPERVISORS
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

23.1
(MT 28546)

10:00 a.m. being the time set for public hearing on the recommendation from Transportation and Land Management Agency/Planning regarding the Public Hearing for the General Plan Amendment No. 230008 (Gpa230008), Change of Zone No. 2300030 (CZ2300030), and Plot Plan No. 230048 (PPT230048) – Adopt an Mitigated Negative Declaration (SCH No. 2025050128) under CEQA, Applicant: Thrifty Oil, Co. c/o Stephane Wandel – Engineer/ Representative: The Orden Company c/o Jaime Jones – First Supervisorial District – North Perris Zoning Area – Mead Valley Area Plan – Rural Community- Very Low Density Residential (RC-VLDR) – Location: North of Water Ave., south of Placentia Ave., west of Harvill Ave., and east of Tobacco Rd. – 9.62 Gross Acres – Zoning: Rural Residential- one acre minimum (R-R-1) - Request: General Plan Amendment No. 230008 proposes to change the General Plan Foundation Component from Rural Community (RC) to Community Development (CD), and the General Plan land use designation from Very Low Density Residential (VLDR) to Business Park (BP). Change of Zone No. 2300030 proposes to change the zone from Rural Residential (R-R-1) to Industrial Park (I-P). Plot Plan No. 230048 proposes to construct a 185,912 square foot warehouse with 9,000 square feet of office space, including 23 loading dock doors, 126 parking spaces, and 33 truck trailer spaces on approximately 9.62 gross acres - APNs 317-260-017, 317-260-018- District 1.

On motion of Supervisor Medina, seconded by Supervisor Gutierrez and duly carried by unanimous vote, IT WAS ORDERED that the above matter is continued off calendar.

Roll Call:

Ayes:	Medina, Spiegel, Washington, Perez and Gutierrez
Nays:	None
Absent:	None

I hereby certify that the foregoing is a full true, and correct copy of an order made and entered on August 26, 2025, of Supervisors Minutes.

WITNESS my hand and the seal of the Board of Supervisors
Dated: August 26, 2025
Kimberly A. Rector, Clerk of the Board of Supervisors, in
(seal) and for the County of Riverside, State of California.

By: _____ Deputy

AGENDA NO.
23.1

xc: Planning, COB

SUBMITTAL TO THE BOARD OF SUPERVISORS
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

ITEM: 23.1
(ID # 28546)
MEETING DATE:
Tuesday, August 26, 2025

FROM : TLMA-PLANNING

SUBJECT: TRANSPORTATION AND LAND MANAGEMENT AGENCY/PLANNING: GENERAL PLAN AMENDMENT NO. 230008 (GPA230008), CHANGE OF ZONE NO. 2300030 (CZ2300030), and PLOT PLAN NO. 230048 (PPT230048) – Adopt an Mitigated Negative Declaration (SCH No. 2025050128) under CEQA, Applicant: Thrifty Oil, Co. c/o Stephane Wandel – Engineer/ Representative: The Orden Company c/o Jaime Jones – First Supervisorial District – North Perris Zoning Area – Mead Valley Area Plan – Rural Community- Very Low Density Residential (RC-VLDR) – Location: North of Water Ave., south of Placentia Ave., west of Harvill Ave., and east of Tobacco Rd. – 9.62 Gross Acres – Zoning: Rural Residential- one acre minimum (R-R-1) - REQUEST: General Plan Amendment No. 230008 proposes to change the General Plan Foundation Component from Rural Community (RC) to Community Development (CD), and the General Plan land use designation from Very Low Density Residential (VLDR) to Business Park (BP). Change of Zone No. 2300030 proposes to change the zone from Rural Residential (R-R-1) to Industrial Park (I-P). Plot Plan No. 230048 proposes to construct a 185,912 square foot warehouse with 9,000 square feet of office space, including 23 loading dock doors, 126 parking spaces, and 33 truck trailer spaces on approximately 9.62 gross acres - APNs 317-260-017, 317-260-018- District 1. [Applicant Fees 100%] (CONTINUE THE ITEM OFF CALENDAR)

RECOMMENDED MOTION:

That the Board of Supervisors take the following actions:

1. **CONTINUE** the item off calendar.

ACTION:Policy

MINUTES OF THE BOARD OF SUPERVISORS

FINANCIAL DATA	Current Fiscal Year:	Next Fiscal Year:	Total Cost:	Ongoing Cost
COST	$ 0	$ 0	$ 0	$ 0
NET COUNTY COST	$ 0	$ 0	$ 0	$ 0
SOURCE OF FUNDS: Applicant Fees 100 %			**Budget Adjustment:**	**N/A**
			For Fiscal Year:	25/26

C.E.O. RECOMMENDATION: Approve

BACKGROUND:

Project Timeline

Application Submittal:

On December 07, 2023, the applicant Thrifty Oil, Co. submitted an application to initiate a Foundation Component General Plan Amendment to change the land use designation for two lots from Rural Community - Very Low Density Residential (RC-VLDR) to Community Development - Business Park (CD-BP) along with a Change of Zone (CZ230030) and Plot Plan (PPT230048) applications. On November 05, 2025, the Board of Supervisors voted in favor to proceed with an implementing project.

The proposed Project consists of the following:

- General Plan Amendment No. 230008 (GPA230008) is a proposal to change the General Plan Foundation Component and Land Use designation for two lots from Rural Community-Very Low Density Residential (RC-VLDR) to Community Development – Business Park (CD-BP).

- Change of Zone No. 2300030 (CZ230030) is a proposal to change the zoning classification for two lots from and Rural Residential (R-R-1) to Industrial Park (I-P).

- Plot Plan No. 230048 (PPT230048) proposes to construct a 185,912 square foot (SF) concrete tilt up, non-refrigerated warehouse on 9.62 acres of vacant land designated as APN:317 260 017 and 317 260 018. The proposed Project would include one 176,912 SF warehouse with 23 dock doors and two 4,500 SF office spaces with mezzanines for a total square footage of 185,912 SF, with related landscaping, drainage basin, and parking. The Project site will be accessed via a shared driveway on Tobacco Avenue, will include 33 truck trailer parking spaces, and 126 parking spaces. The Project also includes dedication of approximately 0.90 acres for public right of way improvements to be built along Tobacco Road and Placentia Avenue, including a "multipurpose trail," and off-site utility improvements.

Planning Commission Hearing:

On June 25, 2025, the Planning Commission (Commission) voted four (in favor) (with zero opposed) to approve the Planning staff's recommended motion to the Board of Supervisors for consideration of GPA230008, CZ230030, and PPT230048.

California Environmental Quality Act (CEQA) Impact on Residents and Businesses

An Initial Study (IS) and Mitigated Negative Declaration (MND) have been prepared for this project in accordance with the California Environmental Quality Act (CEQA). The Initial Study identified potentially significant impacts for the following environmental factors analyzed: Biological Resources, Cultural Resources, Paleontological and Tribal Cultural Resources. However, with the incorporation of mitigation measures the impacts were reduced to less than significant. Based on the Initial Study's conclusions, the County of Riverside determined that an MND is appropriate for the proposed Project pursuant to CEQA Guidelines. The IS/MND represent the independent judgment of Riverside County. The documents were circulated for public review on May 1, 2025, per the State CEQA Guidelines Section 15105. The public review period ended on May 21, 2025.

Public Opposition and Response/ Mitigation

Two comment letters, two requests for technical data, one phone call and one letter of support were received during the public review timeframe. On May 12, 2025, a technical data request was received from the Golden State Environmental Justice Alliance (GSJEA). Subsequently, on May 19, 2025, correspondence was received from Blum, Collins & Ho, LLP a law firm on behalf of the Golden State Environmental Justice Alliance (GSEJA). The comment letter requested an EIR be prepared for the project site to evaluate the project as part of a larger development area. On May 13, 2025, a technical data request was received from South Coast Air Quality Management District (SCAQMD). Additionally, on May 21, 2025, a letter was received on behalf of the Center for Community Action and Environmental Justice (CCAEJ). The comment letter expressed concerns about the change of zone requested as part of application. Specifically, the change of zone from Rural Residential (R-R) to Industrial Park (I-P), stating this would create "a substantial shift in land uses," and depart from the Mead Valley Area Plan. One letter was received in support of the Project, and one phone call received requesting more information about the tentative hearing dates. Each commenter was provided with responses, which were included with the Draft-Final MND.

Impact on Residents and Businesses

All potential project impacts have been studied under CEQA and noticed to the public pursuant to the requirements of the County.

Additional Fiscal Information:

All fees are paid by the applicant; there is no General Fund obligation.

ATTACHMENTS:

A. Planning Commission Report of Actions for 6.25.2025 (Item# 3.2_PPT230048)
B. Planning Commission Staff Report
C. PPT230048-Exhibit A-Planning Commission Resolution No. 2025-003
D. PPT230048-Exhibit B-GIS Exhibits
E. PPT230048-Exhibit C-Project Exhibits
F. PPT230048-Exhibit D- Change of Zone Exhibit
G. PPT230048-Exhibit E-Draft Mitigated Negative Declaration
H. PPT230048-Exhibit F-AND & Conditions of Approval
I. PPT230048-Exhibit G- Environmental Justice Checklist
J. PPT230048-Exhibit H- Public Correspondence
K. PPT230048-Exhibit I- ALUC Approval Letter
L. PPT230048-Exhibit M-Mailing Labels and Radius Map

RIVERSIDE COUNTY
PLANNING DEPARTMENT

REPORT OF ACTIONS
RIVERSIDE COUNTY PLANNING COMMISSION – JUNE 25, 2025
COUNTY ADMINISTRATIVE CENTER
1st Floor, Board Chambers, 4080 Lemon Street, Riverside, CA 92501

1st District	2nd District	3rd District	4th District	5th District
Mussa Khiar	Marissa Gruytch	Shellie Clack	Bill Sanchez	Romelio Ruiz
Vice- Chair				Chair

CALL TO ORDER: 9:00 a.m.
OATH OF OFFICE
ROLL CALL: Members Present: Khiar, Gruytch, Clack, Sanchez
Members Absent: Ruiz

1.0 CONSENT CALENDAR

1.1 **GENERAL VACATION SU619020** – Applicant: Transportation and Land Management Agency (TLMA) – Representative: State of California – Fifth Supervisorial District – Edgemont-Sunnymead District– Reche Canyon/Badlands Area Plan – Community Development: Public Facilities (CD:PF) – Location: north of State Route 60, south of San Timoteo Canyon, east of Highland Boulevard, and west of Oak Valley Parkway – Zoning: Controlled Development (W-2) & Controlled Development – 20 Acre Minimum (W-2-20) – REQUEST: A recommendation by the Planning Commission to the Transportation Department, in accordance with County of Riverside policies and procedures, to continue processing SU619020 for the Conditional General Vacation of Ironwood Avenue is at the request of the County of Riverside, to vacate and terminate maintenance of various roads within the Badlands Sanitary Landfill property – APNs: 413-140-033, 413-140-030, 413-140-034, 413-140-036 and 413-140-024– Project Planner: Steven Chaffin at 951-304-5838 or email at SChaffin@RIVCO.ORG.

Planning Commission Action:
Public Hearing: Closed

Motioned by Commissioner Gruytch, 2nd by Commissioner Sanchez

By vote of 4-0, Ruiz absent, the Planning Commission took the following actions:

RECOMMENDED the Transportation Department process SU619020 for the Conditional General Vacation.

2.0 PUBLIC HEARINGS CONTINUED

NONE

3.0 PUBLIC HEARINGS – NEW

3.1 **CHANGE OF ZONE NO. 2400058** – Applicant: Shakil Patel – Engineer/Representative: Shakil Patel – First Supervisorial District – Not within an Area Plan – Community Development – Commercial Office: (CD: CO) – Location: north of Gless Ranch Road, south of Van Buren Boulevard, east of Barton Street, and west of Coyote Bush Road – 1.14 Gross Acres – Existing Zoning: Commercial Office (C-O) – Proposed Zoning: Scenic Highway Commercial (C-P-S) – REQUEST: Change of Zone No. 2400058 is a proposal to change the subject site from Commercial-Office Zone (C-O) to Scenic Highway Commercial (C-P-S) to allow for a wider range of both retail and office uses to be proposed on site. A commercial building is presently under construction on the site under building permit number BNR2300041, which is associated with the

Planning Commission Action:
Public Hearing: Closed

Motioned by Commissioner Gruytch, 2nd by Commissioner Clack

By vote of 4-0, Ruiz absent, the Planning Commission recommends that the Board of Supervisors take the following actions:

FIND No New Environmental Document is Required; and,

TENTATIVELY APPROVE Change of Zone No. 2400058.

approved entitlement project Plot Plan No. 25382 (PP25382), PP25382S03, and EA42600 for a proposed commercial office center – Nothing Further Required under CEQA - APN: 294-030-047 – Related Cases: PP25382S03 and PPA240094 - Project Planner: Christian Lua at 951-955-0972 or email at clua@rivco.org.

3.2 **GENERAL PLAN AMENDMENT NO. 230008 (GPA230008), CHANGE OF ZONE NO. 2300030 (CZ2300030), and PLOT PLAN NO. 230048 (PPT230048)** – Adopt an MND (SCH No. 2025050128) under CEQA, Applicant: Thrifty Oil, Co. c/o Stephane Wandel – Engineer/ Representative: The Orden Company c/o Jaime Jones – First Supervisorial District – North Perris Zoning Area – Mead Valley Area Plan – Rural Community- Very Low Density Residential (RC-VLDR) – Location: North of Water Ave., south of Placentia Ave., west of Harvill Ave., and east of Tobacco Rd. – 9.62 Gross Acres – Zoning: Rural Residential- one acre minimum (R-R-1) - REQUEST: General Plan Amendment No. 230008 proposes to change the General Plan Foundation Component from Rural Community (RC) to Community Development (CD), and the General Plan land use designation from Very Low Density Residential (VLDR) to Business Park (BP). Change of Zone No. 2300030 proposes to change the zone from Rural Residential (R-R-1) to Industrial Park (I-P). Plot Plan No. 230048 proposes to construct a 185,912 square foot warehouse with 9,000 square feet of office space, including 23 loading dock doors, 126 parking spaces, and 33 truck trailer spaces on approximately 9.62 gross acres- APNs 317-260-017, 317-260-018- Project Planner: Krista Mason at 951-955-1722 or email at kmason@rivco.org.

Planning Commission Action:
Public Hearing: Closed

Motioned by Commissioner Sanchez, 2nd by Commissioner Gruytch,

By vote of 4-0, Ruiz absent, the Planning Commission took the following actions:

ADOPTED Planning Commission Resolution 2025-003; and,

Recommends that the Board of Supervisors take the following actions:

TENTATIVELY APPROVE General Plan Amendment No. 230008; and,

TENTATIVELY APPROVE Change of Zone No. 2300030; and,

APPROVE Plot Plan No. 230048, Subject to Conditions of Approval, and Advisory Notification Document.

4.0 GENERAL PLAN AMENDMENT INITIATION PROCEEDINGS

4.1 **INITIATION OF FOUNDATION COMPONENT GENERAL PLAN AMENDMENT NO. 240019 (GPA240019) – REQUEST:** The applicant requests that the County of Riverside consider whether to recommend the initiation of GPA240019 to change the General Plan Foundation Component of one (1) parcel from Open Space: Rural (OS: RUR) to Rural Community: Low Density Residential (RC: LDR), to allow for submittal of an application for mixed-use with a small eco-tourist or glamping resort on a portion of the site. Additional development applications and review by the County to confirm that the overall project complies with applicable standards, policies, findings, and other requirements will be required if the proposed GPA240019 is initiated by the Board of Supervisors. – Fourth Supervisorial District – Pass & Desert District – Western Coachella Valley Area Plan – Applicant: Scott Taschner – Engineer / Representative: SRK Architects c/o Brian Kite – Existing Zoning: W-2 (Controlled Development Areas) – Existing Land Use: Open Space: Rural (OS: RUR) – Location: 0.5

Planning Commission Action:
Public Hearing: Closed

CONTINUED off Calendar

miles north of Mission Lakes Boulevard and 0.9 miles east of Annandale Avenue – APN(s): 638-070-001 – 161.76 Gross Acres – Planning Contact: Elizabeth Mora-Rodriguez at emorarodriguez@rivco.org or 951-955-3024.

4.2 **INITIATION OF FOUNDATION COMPONENT GENERAL PLAN AMENDMENT NO. 240039 (GPA240039)** – REQUEST: The applicant requests that the County of Riverside consider whether to recommend the initiation of GPA240039 to change the General Plan Foundation Component for 3 of 6 parcels from Rural: Rural Mountainous (R: RM) & Rural: Rural Residential (R: RR) to Community Development: Commercial Retail (CD: CR) to allow for submittal of an application for the development of local & regional retail & service uses, such as a service station & lodging for three (3) of the six (6) parcels; & change the Temecula Valley Wine Country Policy Area for 3 of 6 parcels from Equestrian District to Winery District to allow for the submittal of an application for the development of a resort, spa, winery, vineyard, & similar types of uses. Additional development applications & review by the County to confirm that the overall project complies with applicable standards, policies, findings, & other requirements will be required if the proposed GPA240039 is initiated by the Board of Supervisors. – Third Supervisorial District – Rancho California Area – Southwest Area Plan – Applicant: Ken Smith – Existing Zoning: R-R (Rural Residential) & WC-E (Wine Country – Equestrian) – Existing Land Use: Rural: Rural Mountainous (R: RM) & Rural: Rural Residential (R: RR) – Location: Three (3) of the six (6) parcels are located south of De Portola Road, north of State Highway 79/Temecula Parkway, east of Los Caballos Road, & west of Anza Road. Three (3) of the six (6) parcels are located south of State Highway 79/Temecula Parkway, north of Monte Verde Road, east of Woodchuck Road, & west of Los Caballos Road – APN(s): 927-180-002, -030, & -031; & 927-580-003, -004, & -005 – 178 Gross Acres – Contact: Elizabeth Mora-Rodriguez at emorarodriguez@rivco.org or (951) 955-3024. – THE APPLICANT HAS WITHDRAWN THEIR APPLICATION. NO ACTION IS REQUIRED AT THIS TIME.

Planning Commission Action:
Public Hearing: Closed

APPLICATION WITHDRAWN by Applicant

5.0 WORKSHOPS

NONE

6.0 PUBLIC COMMENTS

PUBLIC COMMENTS RECEIVED

7.0 DIRECTOR'S REPORT

NONE

8.0 COMMISSIONER'S COMMENTS

NONE

ADJOURNMENT: 9:51 A.M.

COUNTY OF RIVERSIDE
PLANNING DEPARTMENT
STAFF REPORT

Agenda Item No.
MEETING DATE:
Wednesday, June 25, 2025

SUBJECT:

PROPOSED PROJECT

John Hildebrand, Planning Director 6/18/2025

PROJECT DESCRIPTION AND LOCATION

“multipurpose trail,” and off

PROJECT RECOMMENDATION

STAFF RECOMMENDATIONS:

THAT THE PLANNING COMMISSION TAKE THE FOLLOWING ACTIONS:

ADOPT PLANNING COMMISSION RESOLUTION NO. 2025-003

THAT THE PLANNING COMMISSION RECOMMEND THE BOARD OF SUPERVISORS TAKE THE FOLLOWING ACTIONS:

ADOPT MITIGATED NEGATIVE DECLARATION

TENTATIVELY APPROVE GENERAL PLAN AMENDMENT NO. 230008

TENTATIVELY APPROVE CHANGE OF ZONE NO. 2300030 (CZ2300030)

APPROVE PLOT PLAN NO. 230048 (PPT230048)

PROJECT DATA

Land Use and Zoning:

Project Details:

Item	*Value*	*Min./Max. Development Standard*

Parking:

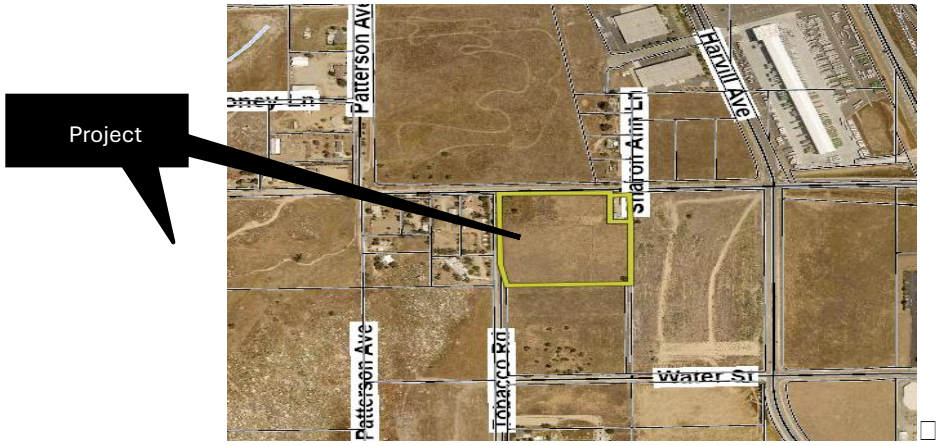
Type of Use	*Building Area (in SF)*	*Parking Ratio*	*Spaces Required*	*Spaces Provided*
TOTAL:			**125**	**126**

Located Within:

City's Sphere of Influence:	
Community Service Area ("CSA"):	

[illegible]	[illegible]
[illegible]	[illegible]
M[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Stephens Kangaroo Rat ("SKR") Fee Area: [illegible]	[illegible]
Airport Influence Area ("AIA"): [illegible]	[illegible]

PROJECT LOCATION MAP



[illegible]

PROJECT BACKGROUND AND ANALYSIS

Background:

[illegible]

access and circulation have been reviewed by the County's Transportation Department and

Pursuant to the County's adopted General Plan, with additional guidelines from the Mead Valley

LU 30.1 *Accommodate the continuation of existing development of new industrial, manufacturing, research and development, and professional offices in areas appropriately designated by General Plan land use maps.*

LU 30.4 *Concentrate industrial and business park uses in proximity to transportation and utilities, and along transit corridors.*

The proposed Project's location is in close proximity to transit with access to existing utilities.

MVAP 6.1 *In conjunction with the first warehousing/distribution building proposed for the industrial area located along Interstate 215 (including land designated Light Industrial, Business Park, and Light Industrial with a Community Center Overlay) whereby the cumulative square footage of warehousing/distribution space in the area would exceed 200,000 square feet, an Environmental Impact Report (EIR) shall be prepared that assesses the potential impacts of the project. The EIR would be required to address air quality, including a health risk assessment of diesel particulates and impacts to sensitive receptors, truck traffic and noise, and the cumulative impacts of reasonably foreseeable warehouse development in the area.*

(MND) was deemed appropriate for the Project's scope of work and analyzed several topic

MVAP 6.2 *A minimum 50 foot setback shall be required for any new industrial project on properties zoned I-P, if that property abuts a property that is zoned for residential, agricultural, or commercial uses. A minimum of 20 feet of the setback shall be landscaped, unless a tree screen is approved, in which case the setback area may be used for automobile parking, driveways or landscaping. Block walls or other fencing may be required.*

MVAP 11.1 *Maintain and improve the trails and bikeways system to reflect Figure 9, Trails and Bikeway System, and as discussed in the Non-motorized Transportation section of the General Plan Circulation Element.*

MVAP 17.6 *Protect sensitive biological resources in Mead Valley Area Plan through adherence to policies found in the Multiple Species Habitat Conservation Plans, Environmentally Sensitive Lands, Wetlands, and Floodplain and Riparian Area Management sections of the General Plan Multipurpose Open Space Element.*

Project's landscaping plan complies with County Landscaping Ordinance.

The current zoning classification for the project site's two lots is Rural Residential one
allow the proposed use, including "warehousing and distribution, including mini warehouses,"
Specific findings detailing Project compliance are listed under "Development Standards Findings."

The Project site is identified as an "EJ Community" pursuant to the Healthy Communities
"Civic Engagement, Health Risk Reduction, Public Facilities and Other" and propose any of

- [illegible] length of the Project site's Placentia Avenue frontage, extending segments to be [illegible]

ENVIRONMENTAL REVIEW / ENVIRONMENTAL FINDINGS

[illegible] significant. Based on the Initial Study's conclusions, the County of Riverside determined that an [illegible] would create "a substantial shift in land uses," and depart from the Mead Valley Area Plan. One [illegible] provided "detailed information in the letter to support the claim." [illegible] Final MND. The document is attached as Exhibit "C," with the supporting Technical Appendices available online via the Planning Department's website at: [illegible]

FINDINGS AND CONCLUSIONS

In order for the County to approve a proposed project, the following findings are required to be made:

Land Use Findings:

and housing in closer proximity to one another." As the proposed Project includes industrial

the "Riverside County Wellness Village" which has a zoning of Manufacturing

the project's applicability and consistency with the Environmental Justice policies within the

curb, gutter and sidewalk, landscaping, streetlights, a "multi-use trail," and monetary

Entitlement Findings:

General Plan Amendment Findings (GPA230008):

a. *The proposed FC-GPA addresses a new circumstance:*

directly to the County's economic base and that would improve the ratio of jobs

site) to expand the County's permanent local employment base in conformance with

b. Riverside County Vision Statement Element of the Riverside General Plan:

Statement provides a more detailed listing of both the County's values as well as specific

c. Internal Consistency within the surrounding area:

Riverside County "Wellness Village," zoned Manufacturing

the subject property with connectivity to existing projects in the area, including a "multi purpose trail".

Change of Zone Findings (CZ2300030):

Change of Zone No. 2300030 is a proposal to change the project site's Zoning Classification

1. *The subject Project is consistent with and does not involve a change in or conflict with the Riverside County Vision*

2. *Any General Planning Principle set forth in General Plan Appendix B*

2. *The proposed change would not be detrimental to the health, safety or general welfare of the community, as the proposed change* landscaping, and streetlights, a "multi-use trail," and monetary contribution to continue trail

3. *The change of zone is not likely to cause substantial environmental damage or substantially and avoidably injure fish or wildlife or their habitat,* intensive use, and the Project's landscaping plan

The proposed project is compatible with surrounding land uses, as the surrounding land uses consist of Industrial Park, and the Riverside County "Wellness Village," zoned Manufacturing

2

Plot Plan Findings (PPT230048):

safety, and general welfare. As detailed in the Project's Initial Study/Mitigated Negative Health Risk Assessment which determined that impacts from the Project's emissions on the

Tobacco Road and one driveway from Placentia Avenue. The Project's conceptual grading

Development Standards Findings:

Development standards for the Project's proposed Industrial Park (I

- *The minimum lot size shall be 20,000 square feet with a minimum average lot width of 100 feet.*

The maximum height of all structures, including buildings, shall be 35 feet at the yard setback line. Any portion of a structure that exceeds 35 feet in height shall be set back from each yard setback line not less than two feet for each one foot in height that is in excess of 35 feet. All buildings and structures shall not exceed 50 feet in height, unless a height up to 75 feet for buildings, or 105 feet for other structures is specifically permitted under the provisions of Section 18.34. of this ordinance.

A minimum 15 percent of the site shall be landscaped, and automatic irrigation shall be installed.

D *A minimum 25-foot setback shall be required on any street. A minimum ten-foot strip adjacent to the street line shall be appropriately landscaped and maintained, except for designated pedestrian and vehicular accessways. The remainder of the setback may be used for off-street automobile parking, driveways or landscaping.*

The minimum side-yard setback shall equal not less than ten feet for the two side lot areas combined.

The minimum rear yard setback shall be 15 feet.

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□□□ *All new utilities shall be underground.*

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intensive use, and the Project's landscaping plan complies with County Ordinance No. 859.3, "Water Efficient Landscape Requirements".

Area ("AIA") boundary and is therefore subject to the Airport Land Use Commission ("ALUC") review. The Project was reviewed by ALUC for compliance with standards that the Project was "consistent" with all applicable requirements and provided conditions of

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5. The Project site is located within Zone "B" of the Palomar Observatory Zone and proposes enumerated in Ordinance No's. 655 and 915.

6. The project site is located within the Fee Assessment Area of the Stephen's Kangaroo Rat Habitat Conservation Plan ("SKRHCP"). Per County Ordinance No. 663 and the SKRHCP, implementation of the SKRHCP as all core reserves required for permanent Stephen's

Fire Findings:

Pursuant to County records, the Project site is located within a designated "Very High" Fire Project has been reviewed by the County's Fire Department and as proposed, been found to

Conclusion:

PUBLIC HEARING NOTIFICATION AND COMMUNITY OUTREACH

ATTACHMENTS

Planning Commission **County of Riverside**

RESOLUTION 2025-003

RECOMMENDING ADOPTION OF

GENERAL PLAN AMENDMENT NO. 230008

WHEREAS, pursuant to the provisions of Government Code Section(s) 65350/65450 et seq., a public hearing was held before the Riverside County Planning Commission in Riverside, California on June 25, 2025, to consider the above-referenced matter; and,

WHEREAS, all the procedures of the California Environmental Quality Act and the Riverside County Additional Procedures to Implement the California Environmental Quality Act have been satisfied and the environmental document prepared or relied on is sufficiently detailed so that all the potentially significant effects of the project on the environment and measures necessary to avoid or substantially lessen such effects have been evaluated in accordance with the above-referenced Act and Procedures; and,

WHEREAS, new conditions or circumstances disclosed during the review process justify modifying the General Plan, the modifications do not conflict with the overall Riverside County Vision, and the amendment would not create an internal inconsistency among the elements of the General Plan; and,

WHEREAS, the matter was discussed fully with testimony and documentation presented by the public and affected government agencies; now, therefore,

BE IT RESOLVED, FOUND, DETERMINED, AND ORDERED by the Planning Commission of the County of Riverside, in regular session assembled on June 25, 2025, that it has reviewed and considered the environmental document prepared or relied on and recommends the following based on the staff report and the findings and conclusions stated therein:

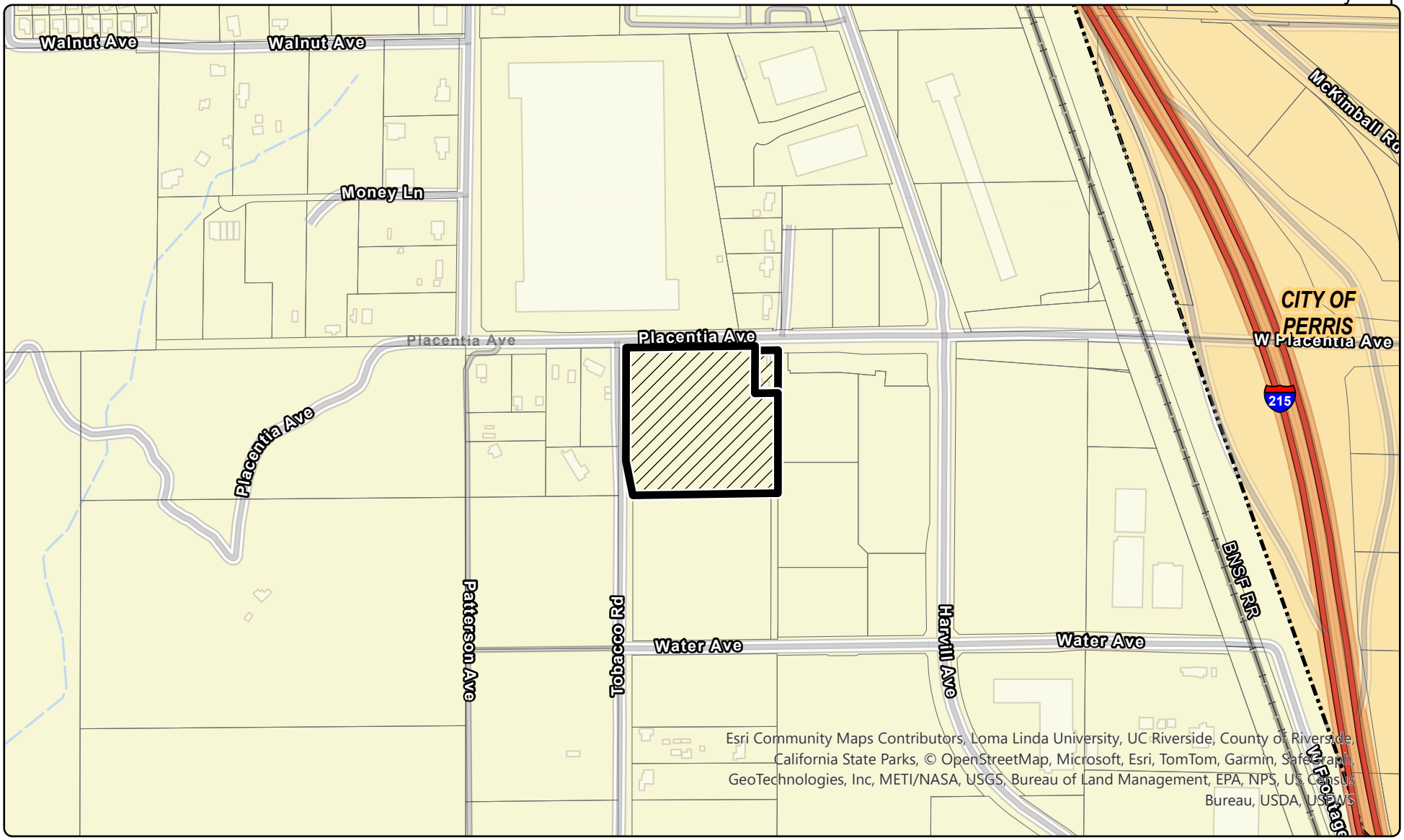
1. ADOPTION of the MITIGATED NEGATIVE DECLARATION; and

2. ADOPTION of GENERAL PLAN AMENDMENT NO. 230008

RIVERSIDE COUNTY PLANNING DEPARTMENT
PPT230048 / GPA230008 / CZ2300030
VICINITY/POLICY AREAS

Supervisor: Medina
District 1

Date Drawn: 6/11/2025
Vicinity Map



Zoning Area: NORTH PERRIS

Author: PetePang

N

0 1,250 2,500
Feet

DISCLAIMER: On October 7, 2003, the County of Riverside adopted a new General Plan providing new land use designations for unincorporated Riverside County parcels. The new General Plan may contain different type of land use than is provided for under existing zoning. For further information, please contact the Riverside County Planning Department offices in Riverside at (951)955-3200 (Western County) or in Palm Desert at (760)863-8277 (Eastern County) or Website http://planning.rctlma.org

RIVERSIDE COUNTY PLANNING DEPARTMENT

PPT230048 / GPA230008 / CZ2300030

Supervisor: Medina
District 1

LAND USE

Date Drawn: 6/11/2025
Exhibit 1



Zoning Area: NORTH PERRIS

Author: PetePang

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N

0 150 300 600
Feet

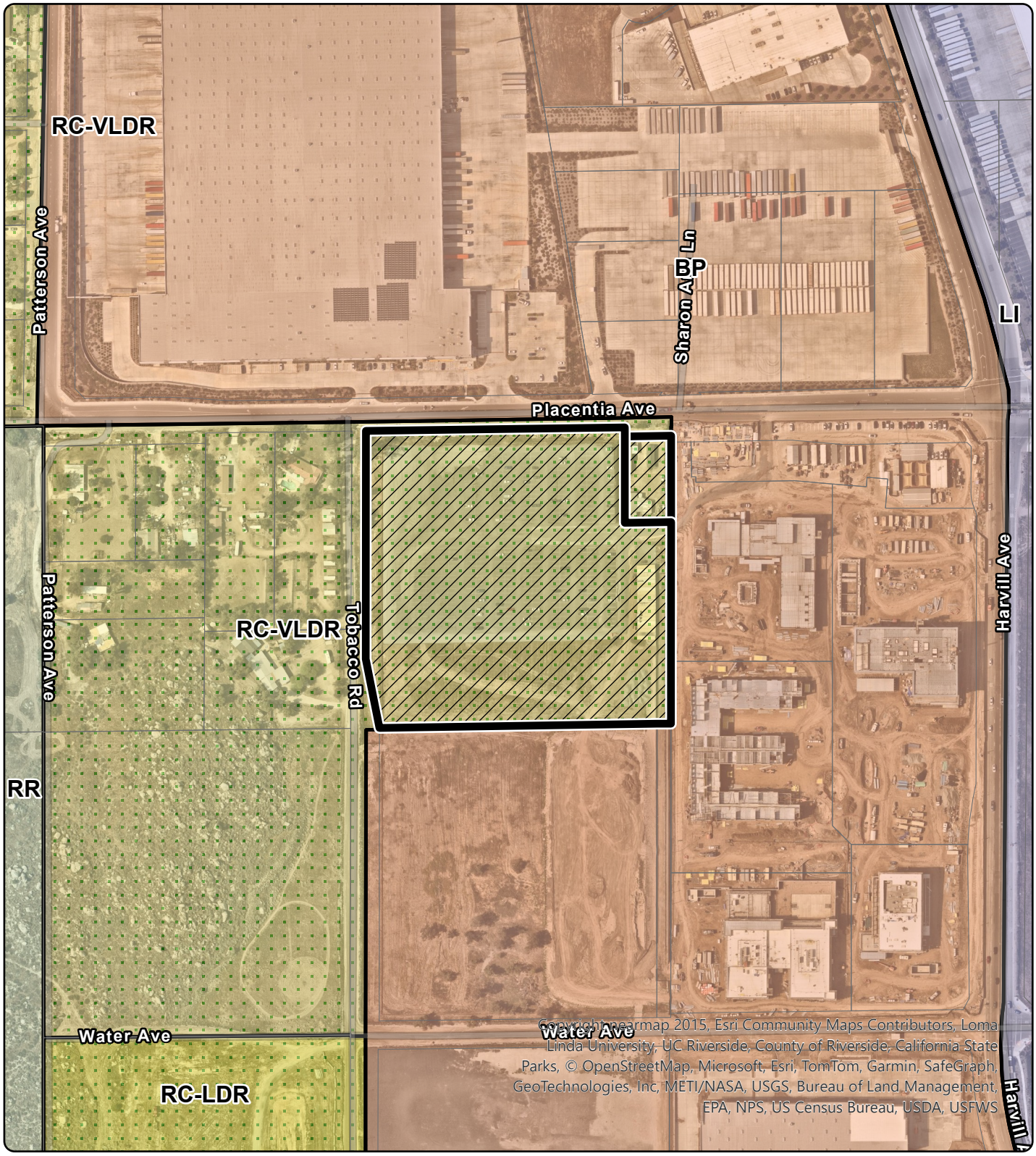
RIVERSIDE COUNTY PLANNING DEPARTMENT

PPT230048 / GPA230008 / CZ2300030

EXISTING GENERAL PLAN

Supervisor: Medina
District 1

Date Drawn: 6/11/2025
Exhibit 5



Zoning Area: NORTH PERRIS

Author: PetePang

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N

0 170 340 510 680
Feet

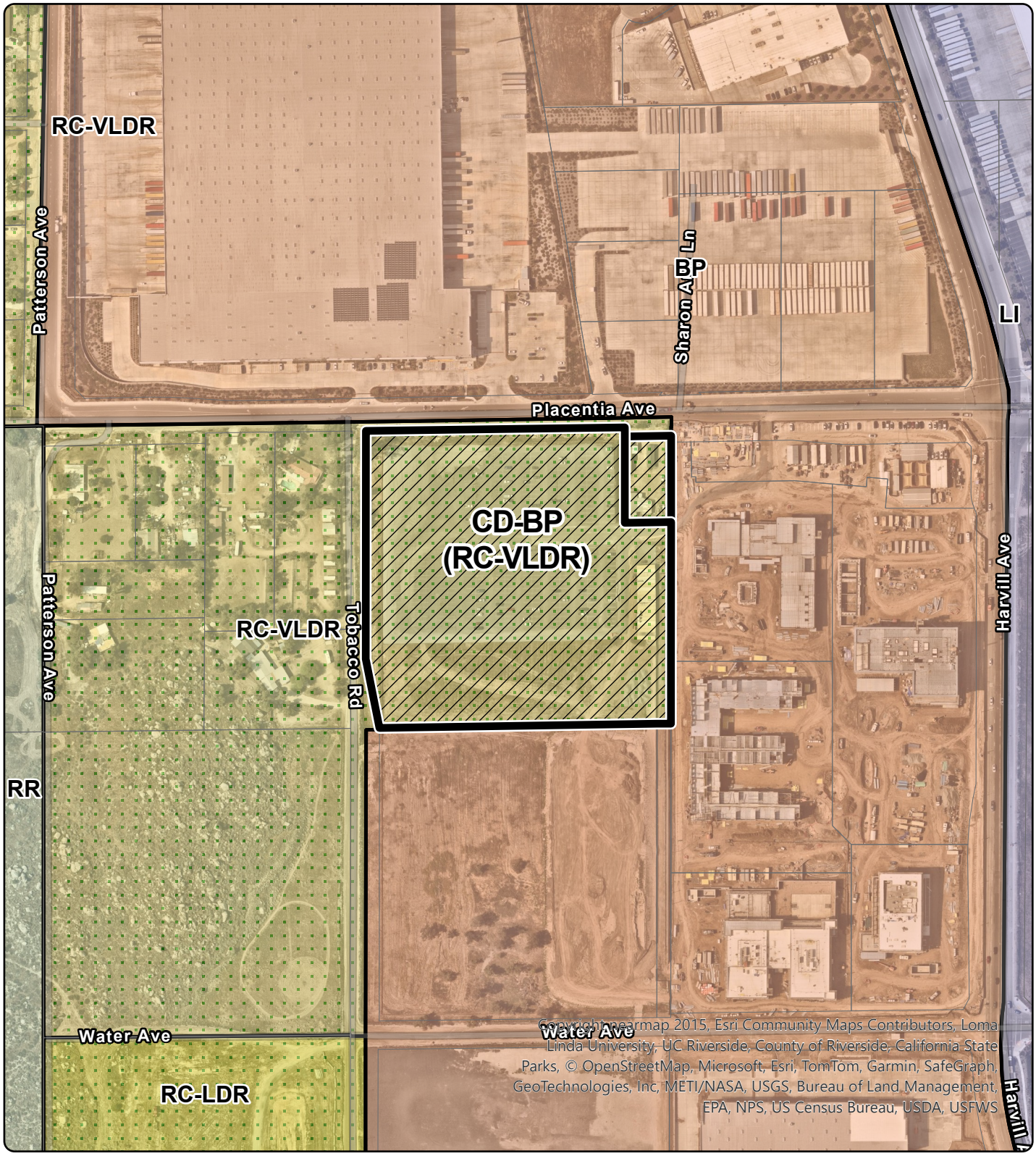
RIVERSIDE COUNTY PLANNING DEPARTMENT

PPT230048 / GPA230008 / CZ2300030

PROPOSED GENERAL PLAN

Supervisor: Medina
District 1

Date Drawn: 6/11/2025
Exhibit 6



Zoning Area: NORTH PERRIS

Author: PetePang

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N

0 170 340 510 680
Feet

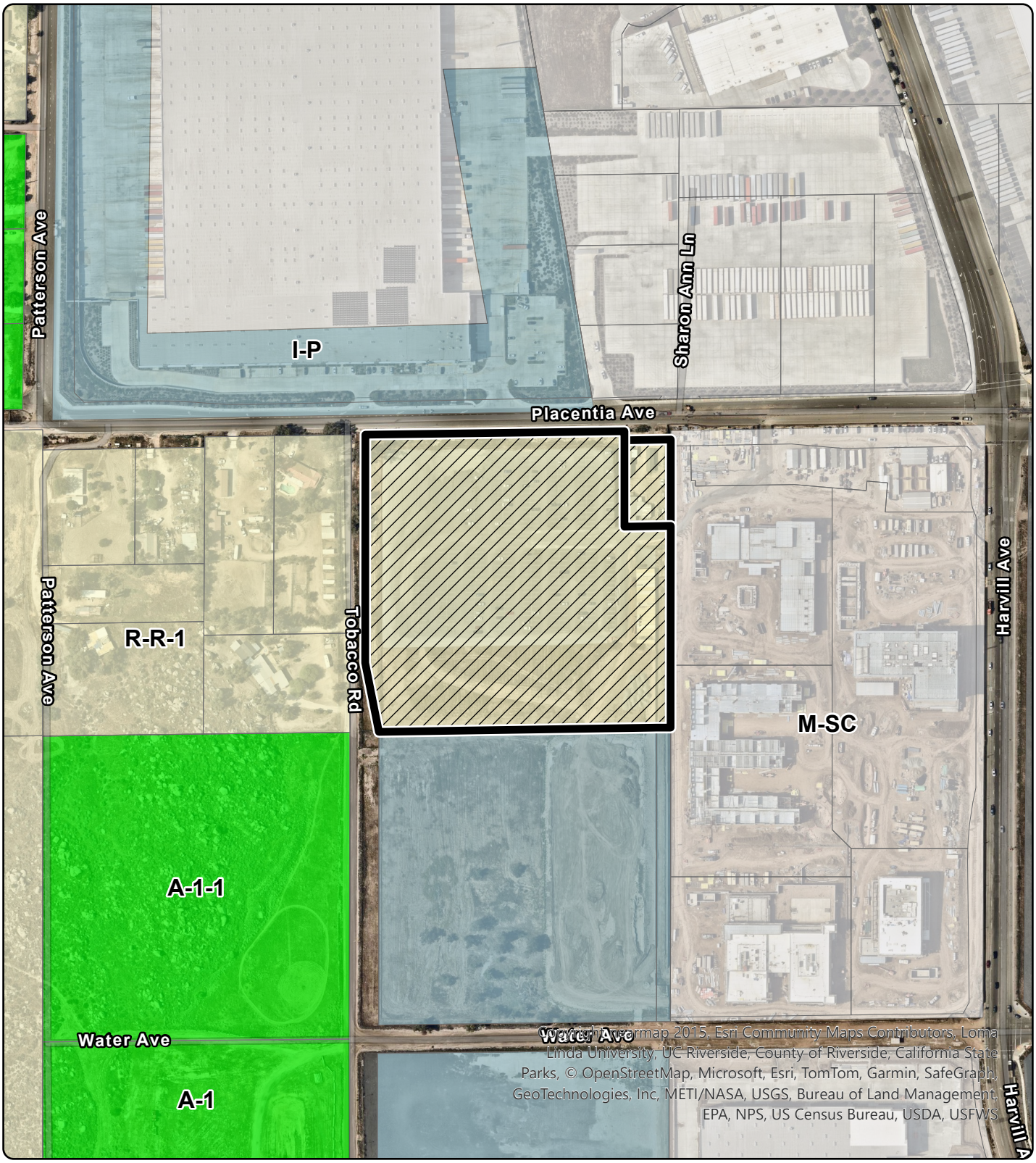
RIVERSIDE COUNTY PLANNING DEPARTMENT

PPT230048 / GPA230008 / CZ2300030

Supervisor: Medina
District 1

EXISTING ZONING

Date Drawn: 6/11/2025
Exhibit 2



Zoning Area: NORTH PERRIS

Author: PetePang

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N

0 150 300 600
Feet

RIVERSIDE COUNTY PLANNING DEPARTMENT

PPT230048 / GPA230008 / CZ2300030

Supervisor: Medina
District 1

PROPOSED ZONING

Date Drawn: 6/11/2025
Exhibit 3



Zoning Area: NORTH PERRIS

Author: PetePang

N

0 150 300 600
Feet

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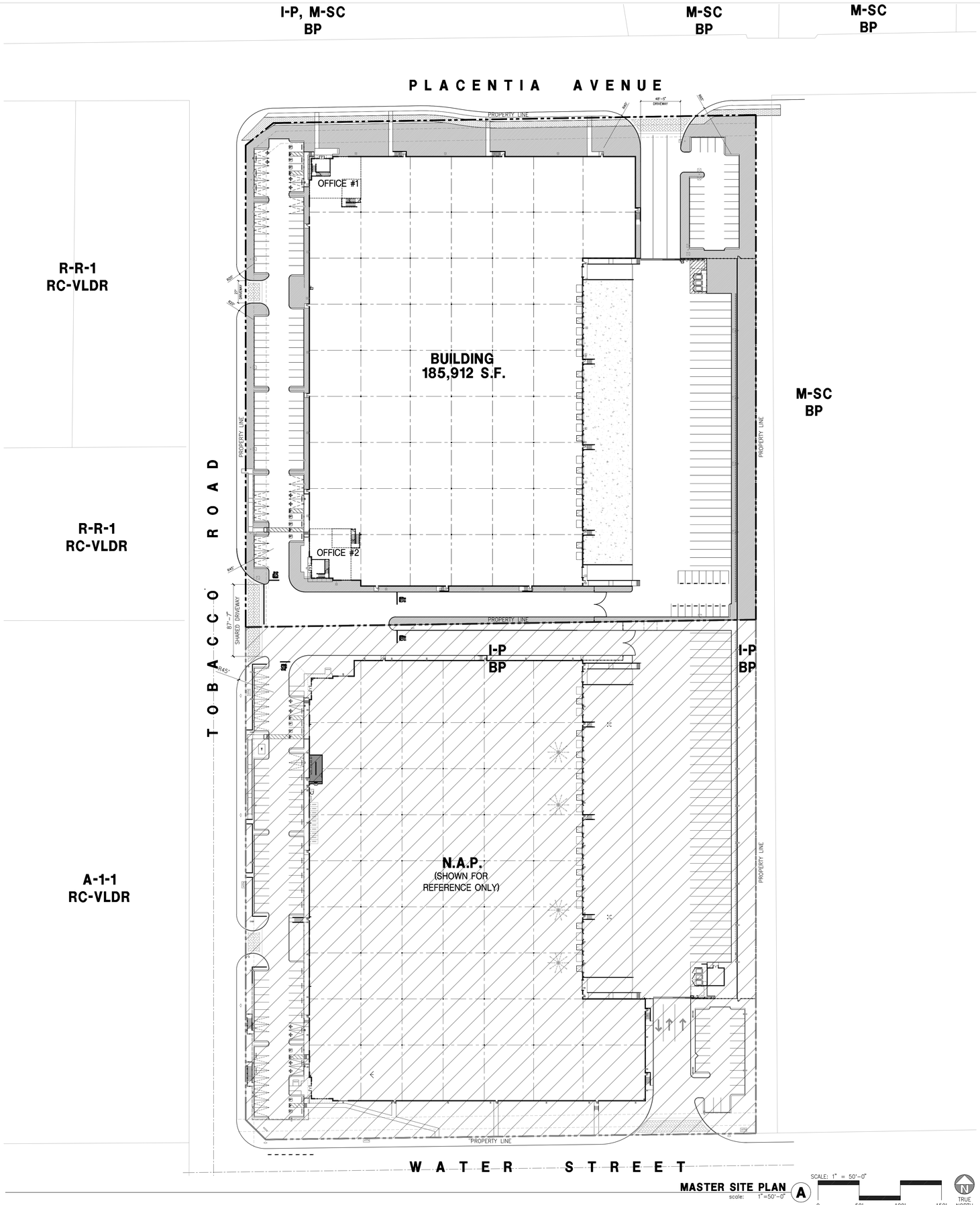


MASTER SITE PLAN (A) scale: 1"=50'-0"

SCALE: 1" = 50'-0"

0 50' 100' 150'

TRUE NORTH

PROJECT INFORMATION

Owner / Applicant

THRIFTY OIL CO.
13116 IMPERIAL HIGHWAY
SANTA FE SPRINGS CA 90670
TEL: 562-921-3581
ATTN: STEPHANE WANDEL

Applicant Representative

HPA, INC.
18831 BARDEEN AVE. STE 100
IRVINE, CA 92612
PHONE:
CONTACT: JOSEPH KIM

Project Address

T.B.D.

Zoning

CURRENT: R-R
PROPOSED: I-P

APN

317-260-017
317-260-018

Project Description

SPECULATIVE 185,912 SF WAREHOUSE BUILDING
INCLUDING 9,000 SF SUPPORT OFFICE

Construction Type

CONCRETE TILT-UP BUILDING

BUILDING OCCUPANCY:	MAIN: S-1/B (FUTURE)
CONSTRUCTION TYPE:	III-B
NUMBER OF STORIES:	1 + MEZZANINE
AUTOMATIC FIRE SPRINKLER	YES (ESFR)
ALLOWABLE HEIGHT	75' (CBC 504.3)

Code Analysis

2022 CALIFORNIA BUILDING CODE
2022 CALIFORNIA MECHANICAL CODE
2022 CALIFORNIA ELECTRICAL CODE
2022 CALIFORNIA PLUMBING CODE
2022 CALIFORNIA FIRE CODE
2022 CALIFORNIA ENERGY CODE
2022 CALIFORNIA GREEN BUILDING STANDARDS CODE

LEGAL DESCRIPTION

APN #317-260-017, RIVERSIDE, CA

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE UNINCORPORATED AREA OF RIVERSIDE, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

LOT 3 OF OAKES AND SAWYERS SUBDIVISION, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 1, PAGE 5 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THE NORTH 230.00 FEET OF THE EAST 100.00 FEET, SAID 230.00 FEET BEING MEASURED ON THE CENTER LINE OF PLACENTIA STREET;

ALSO EXCEPT THAT PORTION DESCRIBED IN DEED TO THE COUNTY OF RIVERSIDE, RECORDED FEBRUARY 5, 1962 AS INSTRUMENT NO. 11202 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID LOT 3;
THENCE NORTH 00°30'04" WEST ALONG THE WEST LINE OF SAID LOT, A DISTANCE OF 150.00 FEET; THENCE 11°50'30" EAST, A DISTANCE OF 152.54 FEET TO THE SOUTH LINE OF SAID LOT; THENCE SOUTH 88°39'22" WEST, ALONG SAID SOUTH LINE, A DISTANCE OF 30.00 FEET TO THE POINT OF BEGINNING.

EXCEPTING THEREFROM ANY MOBILE HOME LOCATED OR PLACED THERON.

APN #317-260-018, RIVERSIDE, CA

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE UNINCORPORATED AREA OF RIVERSIDE, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

THE NORTH 230.00 FEET (MEASURED FROM THE CENTER LINE PLACENTIA STREET) OF THE EAST 100.00 FEET OF LOT 3 OAKES AND SAWYER'S SUBDIVISION, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 1, PAGE 5 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPTING THEREFROM, THAT PORTION CONVEYED TO THE COUNTY OF RIVERSIDE BY DEED RECORDED DECEMBER 6, 1974 AS INSTRUMENT NO. 155641, OF OFFICIAL RECORDS.

AREA JUSTIFICATION :

SECTION 507
UNLIMITED AREA BUILDINGS

507.2.1 REDUCED OPEN SPACE
THE PUBLIC WAYS OR YARDS OF 60 FEET (18 288 MM) IN WIDTH REQUIRED IN SECTIONS 507.3, 507.4, 507.5, 507.6 AND 507.12 SHALL BE PERMITTED TO BE REDUCED TO NOT LESS THAN 40 FEET (12 192 MM) IN WIDTH PROVIDED ALL OF THE FOLLOWING REQUIREMENTS ARE MET:

1. THE REDUCED WIDTH SHALL NOT BE ALLOWED FOR MORE THAN 75 PERCENT OF THE PERIMETER OF THE BUILDING.
2. THE EXTERIOR WALLS FACING THE REDUCED WIDTH SHALL HAVE A FIRE-RESISTANCE RATING OF NOT LESS THAN 3 HOURS.
3. OPENINGS IN THE EXTERIOR WALLS FACING THE REDUCED WIDTH SHALL HAVE OPENING PROTECTIVES WITH A FIRE PROTECTION RATING OF NOT LESS THAN 3 HOURS.

507.4 SPRINKLERED, ONE STORY
THE AREA OF A GROUP B, F, M OR S BUILDING NO MORE THAN ONE STORY ABOVE GRADE PLANE OF ANY CONSTRUCTION TYPE, SHALL NOT BE LIMITED WHERE THE BUILDING IS PROVIDED WITH AN AUTOMATIC SPRINKLER SYSTEM THROUGHOUT IN ACCORDANCE WITH SECTION 903.3.1.1 AND IS SURROUNDED AND ADJOINED BY PUBLIC WAYS OR YARDS NOT LESS THAN 60 FEET IN WIDTH

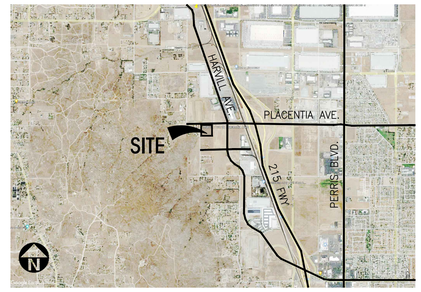
UTILITY PURVEYORS

WATER: EASTERN MUNICIPAL WATER DISTRICT
SEWER: EASTERN MUNICIPAL WATER DISTRICT
ELECTRIC: SOUTHERN CALIFORNIA EDISON
GAS: SOUTHERN CALIFORNIA GAS COMPANY
CABLE: CHARTER
TELE: FRONTIER
WASTE: WASTE MANAGEMENT

SCHOOL DISTRICT

VAL VERDE UNIFIED

VICINITY MAP



PROJECT DATA

SITE AREA			
Gross Land Area	In acres	9.619	ac
Gross Land Area	In s.f.	419,004	s.f.
Area Dedication	In acres	0.943	ac
Area Dedication	In s.f.	41,077	s.f.
Net Land Area	In acres	8.714	ac
Net Land Area	In s.f.	379,575	s.f.
BUILDING AREA			
Building footprint (not including 2nd fl)		181,412	s.f.
Office #1			
Office - 1st floor		2,250	s.f.
Office - 2nd floor		2,250	s.f.
Office #2			
Office - 1st floor		2,250	s.f.
Office - 2nd floor		2,250	s.f.
Warehouse		176,912	s.f.
TOTAL		**185,912**	s.f.
FLOOR AREA RATIO (Gross)		0.44	
LOT COVERAGE (Gross)		47.8%	
CLEAR HEIGHT		36'	
AUTO PARKING REQUIRED			
Office:	1/250 s.f.	36	stalls
Whse:	1/2000 s.f.	89	stalls
TOTAL		125	stalls
AUTO PARKING PROVIDED			
Standard (9' x 18')		79	stalls
Compact (8.5'x16')		15	stalls
Accessible (9' x 18')		5	stalls
Van Accessible (12' x 18')		1	stalls
EVCS (9' x 18')		4	stalls
EVCS ADA (9' x 18')		1	stalls
EVCS van ADA (12' x 18')		1	stalls
EV Capable		20	stalls
Total		**126**	stalls
TRAILER PARKING PROVIDED			
Trailer (10' x 53')		33	stalls
ZONING ORDINANCE FOR CITY			
Zoning Designation - I-P			
General Plan Land Use Designation: Business Park (BP)			
MAXIMUM BUILDING HEIGHT ALLOWED			
Height - 35' (1' additional height every 2' additional set back)			
MAXIMUM FLOOR AREA RATIO			
FAR - 0.25-0.60			
LANDSCAPE REQUIREMENT			
Percentage - 15 %		56,936	s.f.
LANDSCAPE PROVIDED			
In percentage -		16.0%	
In s.f. -		60,911	s.f.
SETBACKS			
Building	Parking/Landscape		
Front -25', 50' if abuts R zone	10'		
Side - 10' two side lot areas combined	0		
Rear - 15'	0		

CASE: PPT230048
EXHIBIT: A- Site Plan
DATE: 6/25/2025
PLANNER: KMason

☐ Meeting ☐ Comment Agenda ☑ Final

CAUTION : IF THIS SHEET IS NOT A 30" X 42" IT IS A REDUCED PRINT

HPA architecture

hpa, inc.
18831 bardeen avenue - ste. #100 irvine, ca 92612
tel: 949•863•1770
fax: 949•863•0851
email: hpa@hparchs.com

Owner:

THRIFTY OIL CO.

13116 Imperial Highway
Santa Fe Springs CA 90670
tel: 562-921-3581

Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

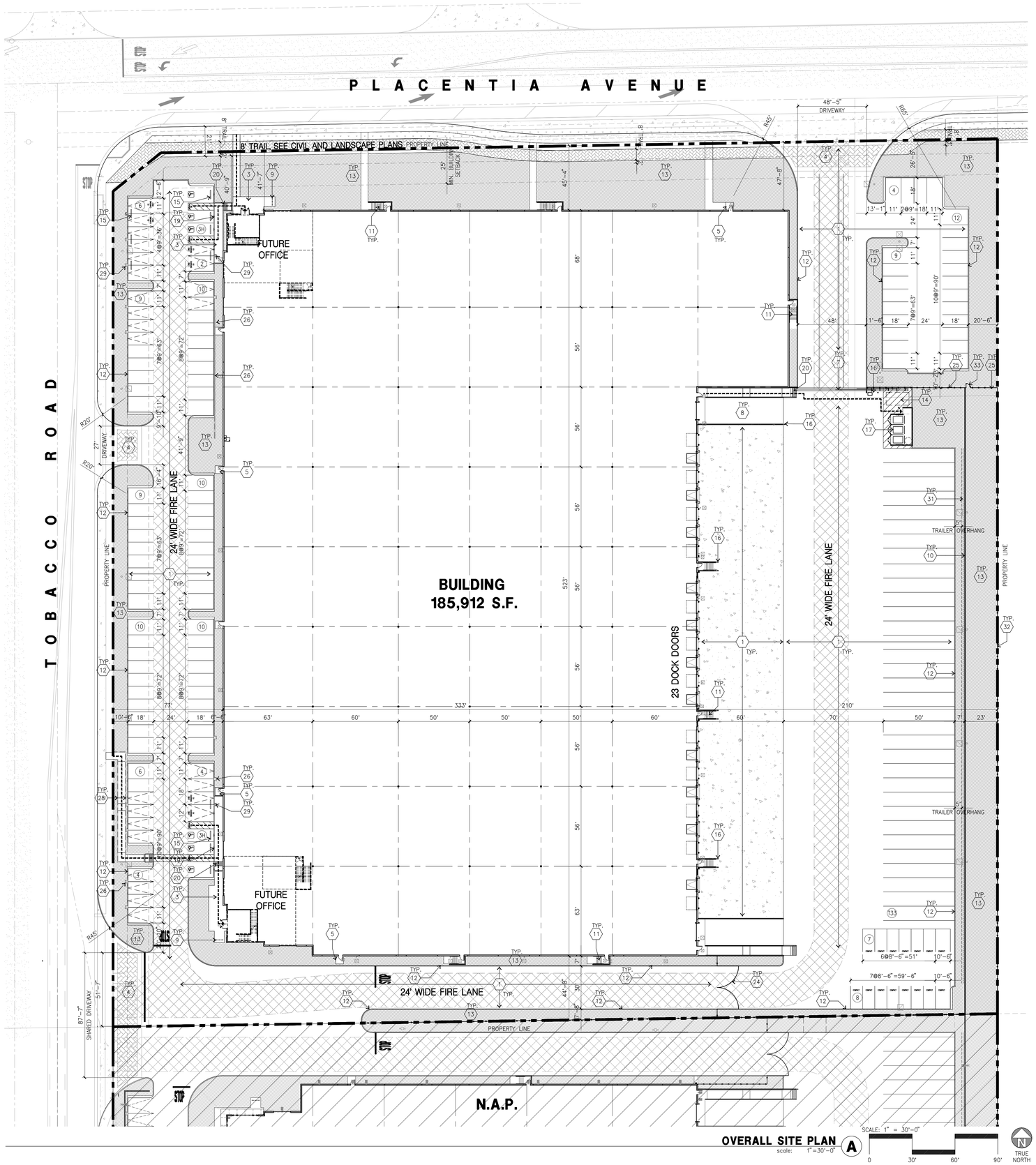
Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: MASTER SITE PLAN

Project Number:	22484
Drawn by:	JK
Date:	
Revision:	
DAC 5TH SUBMITTAL	01/13/25

Sheet:

DAB-A1.0



OVERALL SITE PLAN A
scale: 1"=30'-0"

SCALE: 1" = 30'-0"
0 30' 60' 90'
TRUE NORTH

SITE PLAN KEYNOTES

1. PAVEMENT PER CIVIL. SEE CIVIL PLANS
2. NOT USED
3. CONCRETE WALKWAY, MEDIUM BROOM FINISH
4. DRIVEWAY APRONS TO BE CONSTRUCTED. SEE LANDSCAPE DRAWINGS.
5. 5'-6"X4" THICK CONCRETE EXTERIOR LANDING PAD TYP. AT ALL EXTERIOR MAN DOORS TO LANDSCAPED AREAS. FINISH TO BE MEDIUM BROOM FINISH. PROVIDE WALK TO PUBLIC WAY OR DRIVE WAY AS REQ. BY CITY INSPECTOR.
6. APPROXIMATE LOCATION OF TRANSFORMER. CONTRACTOR TO VERIFY WITH S.C.E.,
7. PROVIDE 8' HIGH METAL SLIDING GATES W/ KNOX-BOX PER FIRE DEPARTMENT STANDARDS PER DRIVEWAY.
8. CONCRETE RAMP W/ 42" HIGH CONCRETE WALL.
9. EXTERIOR BIKE RACK TYPICAL.
10. 12' HIGH CONCRETE TILT-UP SCREEN WALL.
11. EXTERIOR CONCRETE STAIR.
12. CONCRETE CURB. SEE CIVIL DRAWINGS.
13. LANDSCAPE. ALL LANDSCAPE AREAS INDICATED BY SHADING.
14. FUTURE GUARD SHACK. PROVIDE CONDUIT.
15. PRE-CAST CONCRETE WHEEL STOP.
16. CONCRETE FILLED GUARD POST "6 DIA. U.N.O. 42" H,
17. TRASH ENCLOSURE PER COUNTY STANDARD.
18. ACCESSIBLE ENTRY SIGN.
19. ACCESSIBLE PARKING STALL SIGN.
20. TRUNCATED DOME.
21. APPROXIMATE LOCATION OF FIRE HYDRANT.
22. WALL MOUNTED LIGHTING FIXTURE.
23. SITE LIGHT POLE W/ CONCRETE BASE.
24. 8' HIGH METAL SWING GATE W/ KNOX-BOX PER FIRE DEPARTMENT STANDARDS PER DRIVEWAY.
25. 8' HIGH METAL FENCE.
26. 2'X2' CONCRETE PAD FOR FUTURE EV CHARGER. PROVIDE CONDUIT.
27. ROOF DRAIN THRU CURB.
28. RETAINING WALL. SEE CIVIL DRAWINGS.
29. 2'X2' CONCRETE PAD WITH EV CHARGER INSTALLED.
30. NOT USED.
31. CONDUIT FOR FUTURE TRUCK EV CHARGERS
32. RETAINING WALL AND GUARDRAIL TO BE CONSTRUCTED BY EAST DEVELOPEMENT. SEE DETAIL BELOW FOR REFERENCE.
33. 3'W X 8'H MAN GATE FOR MAINTENANCE ACCESS.

SITE PLAN GENERAL NOTES

1. THE SITE PLAN BASED ON THE SOILS REPORT PREPARED BY: TBD
2. IF SOILS ARE EXPANSIVE IN NATURE, USE STEEL REINFORCING FOR ALL SITE CONCRETE.
3. ALL DIMENSIONS ARE TO THE FACE OF CONCRETE WALL, FACE OF CONCRETE CURB OR GRID LINE U.N.O.
4. SEE "C" PLANS FOR ALL CONCRETE CURBS, GUTTERS AND SWALES.
5. THE ENTIRE PROJECT SHALL BE PERMANENTLY MAINTAINED WITH AN AUTOMATIC IRRIGATION SYSTEM.
6. SEE "C" DRAWINGS FOR POINT OF CONNECTIONS TO OFF-SITE UTILITIES. CONTRACTOR SHALL VERIFY ACTUAL UTILITY LOCATIONS.
7. PROVIDE POSITIVE DRAINAGE AWAY FROM BLDG. SEE "C" DRAWINGS.
8. CONTRACTOR TO REFER TO "C" DRAWINGS FOR ALL HORIZONTAL CONTROL DIMENSIONS. SITE PLANS ARE FOR GUIDANCE AND STARTING LAYOUT POINTS.
9. SEE "C"DRAWINGS FOR FINISH GRADE ELEVATIONS.
10. CONCRETE SIDEWALKS TO BE A MINIMUM OF 4" THICK W/ TOOLED JOINTS AT 6' O.C. EXPANSION/CONSTRUCTION JOINTS SHALL BE A MAXIMUM 12' EA. WAY. EXPANSION JOINTS TO HAVE COMPRESSIVE EXPANSION FILLER MATERIAL OF 1/4". FINISH TO BE A MEDIUM BROOM FINISH U.N.O.
11. PAINT CURBS AND PROVIDE SIGNS TO INFORM OF FIRE LANES AS REQUIRED BY FIRE DEPARTMENT.
12. CONSTRUCTION DOCUMENTS PERTAINING TO THE LANDSCAPE AND IRRIGATION OF THE ENTIRE PROJECT SITE SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT AND APPROVED BY PUBLIC FACILITIES DEVELOPMENT PRIOR TO ISSUANCE OF BUILDING PERMITS.
13. PRIOR TO FINAL CITY INSPECTION, THE LANDSCAPE ARCHITECT SHALL SUBMIT A CERTIFICATE OF COMPLETION TO PUBLIC FACILITIES DEVELOPMENT.
14. ALL LANDSCAPE AND IRRIGATION DESIGNS SHALL MEET CURRENT CITY STANDARDS AS LISTED IN GUIDELINES OR AS OBTAINED FROM PUBLIC FACILITIES DEVELOPMENT.
15. ALL VERTICAL MOUNTING POLES OF CHAIN LINK FENCING SHALL BE CAPPED.
16. LANDSCAPED AREAS SHALL BE DELINEATED WITH A MINIMUM SIX INCHES (6") HIGH CURB.
17. PROVIDE PHOTOVOLTAIC PANELS AS REQUIRED BY APPLICABLE CODES.

SITE LEGEND

- PAVING. SEE "C" DRWGS.
- STANDARD PARKING STALL (9' X 18')
- ACCESSIBLE PARKING STALL (9' X 18') W/ 5' ACCESSIBLE AISLE
- VAN ACCESSIBLE PARKING STALL (12' X 18') W/ 5' ACCESSIBLE AISLE
- STANDARD ACCESSIBLE EVCS WITH ISA SIGN AND MARKING "EV CHARGING ONLY", 9'X18' +5' W/ ACCESSIBLE AISLE
- VAN ACCESSIBLE EVCS WITH ISA SIGN AND MARKING "EV CHARGING ONLY", 12'X18'+5' W/ ACCESSIBLE AISLE
- STANDARD EVCS SIZE, 9'X18'
- EV CAPABLE SPACE WITHOUT EVSE SIZE 9'X18'
- LANDSCAPED AREA
- 26' WIDE FIRE LANE
- TRAIL
- PROPERTY LINE
- ACCESSIBLE PATH OF TRAVEL 4' MIN. WIDE, 1:20 MAX. SLOPE & 2% MAX. CROSS SLOPE EXCEPT FOR PARKING ACCESS AISLES AND DOOR LANDINGS WHERE THE MAX SLOPE IS 2% IN ALL DIRECTIONS AND UNLESS NOTED OTHERWISE.
- LIGHTING FIXTURE
- EV CHARGER
- EV CHARGER FOR FUTURE

HPA architecture

hpa, inc.
18831 bardeen avenue - ste. #100 irvine, ca 92612
tel: 949•863•1770
fax: 949•863•0851
email: hpa@hparchs.com

Owner:

THRIFTY OIL CO.

13116 Imperial Highway
Santa Fe Springs CA 90670
tel: 562-921-3581

Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: OVERALL SITE PLAN

Project Number:	22484
Drawn by:	JK
Date:	
Revision:	
DAC 5TH SUBMITTAL	01/13/25

Sheet:

DAB-A1.1

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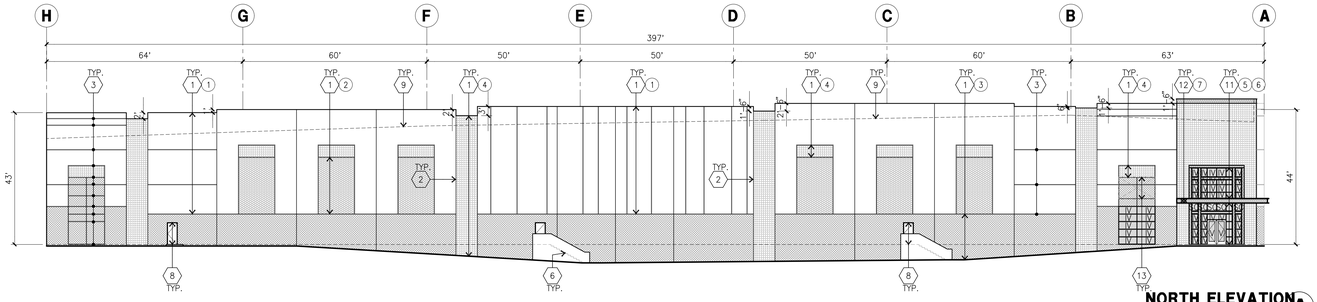
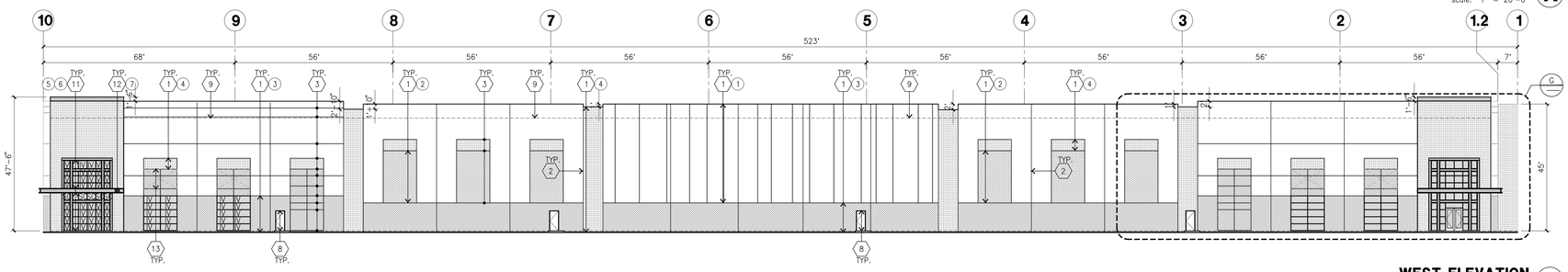
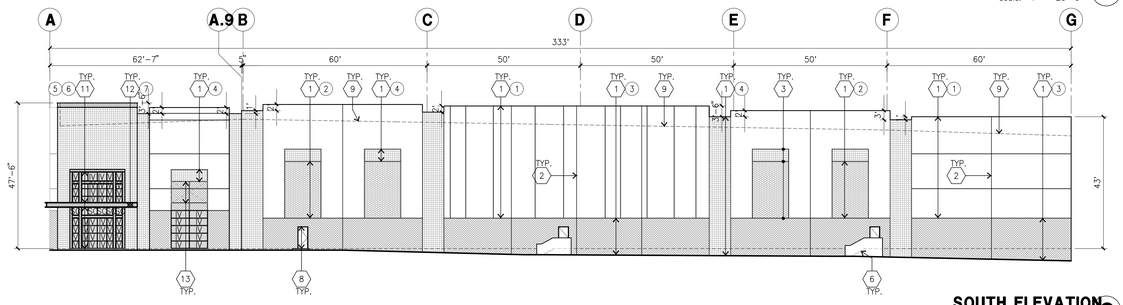


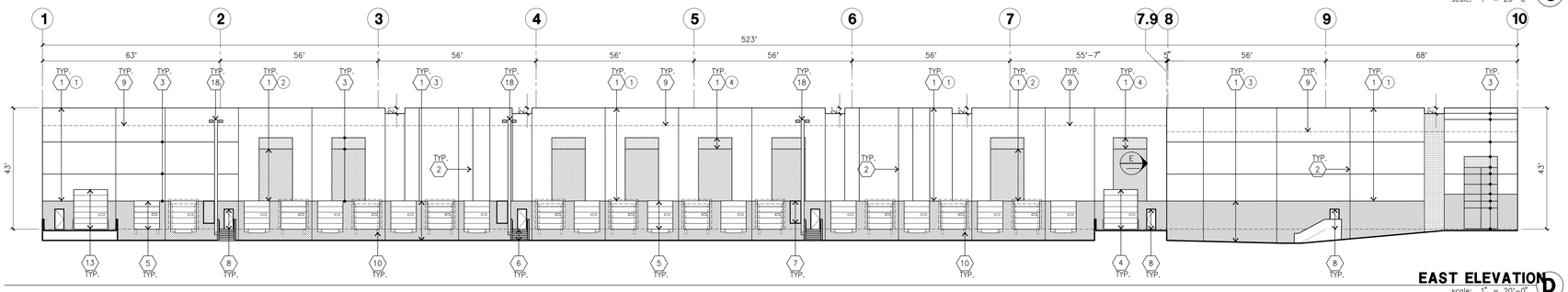
NORTH ELEVATION A
scale: 1" = 20'-0"



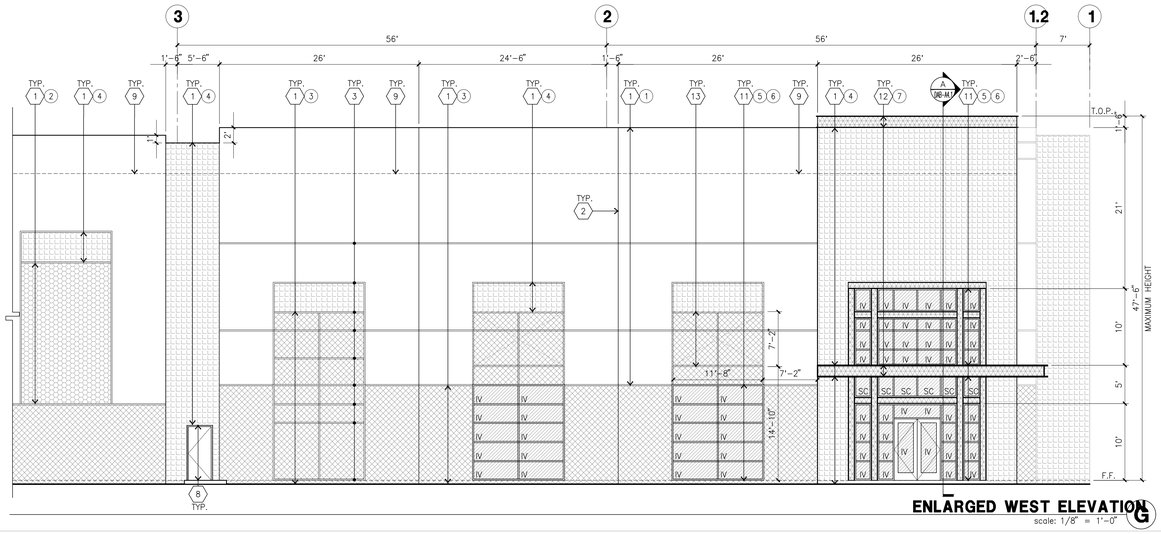
WEST ELEVATION B
scale: 1" = 20'-0"



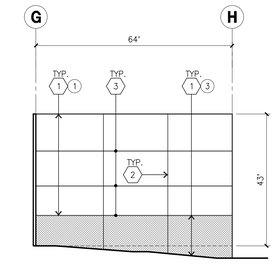
SOUTH ELEVATION C
scale: 1" = 20'-0"



EAST ELEVATION D
scale: 1" = 20'-0"



ENLARGED WEST ELEVATION G
scale: 1/8" = 1'-0"



NORTHEAST ELEVATION E
scale: 1" = 20'-0"

ELEVATION KEYNOTES

1. CONCRETE TILT-UP PANEL.
2. PANEL JOINT.
3. PANEL REVEAL. ALL REVEALS TO HAVE A MAX. OF 3/8" CHAMFER. REVEAL COLOR TO MATCH ADJACENT BUILDING FIELD COLOR, U.N.O.
4. 12' X 14' OVERHEAD DOOR @ DRIVE THRU. PROVIDE COMPLETE WEATHER-STRIPPING PROTECTION ALL AROUND.
5. 9' X 10' OVERHEAD DOOR @ DRIVE THRU. PROVIDE COMPLETE WEATHER-STRIPPING PROTECTION ALL AROUND.
6. CONCRETE STAIR, LANDING AND GUARDRAIL W/ METAL PIPE HANDRAIL. PROVIDE NON SKID NOSING TO MEET ADA REQUIREMENTS. PROVIDE CONTRASTING COLORED 3" WIDE WARNING STRIPE INTEGRAL TO CONCRETE AT TOP LANDING AND BOTTOM TREAD PER ADA REQUIREMENTS.
7. 4' X 8' METAL LOUVER OPENING FOR VENTILATION. PAINT TO MATCH BUILDING COLOR.
8. HOLLOW METAL DOORS. PROVIDE COMPLETE WEATHER STRIPING ALL AROUND DOOR.
9. ROOF LINE BEYOND.
10. DOCK DOOR BUMPER TYPICAL.
11. ALUMINUM STOREFRONT FRAMING WITH TEMPERED GLAZING AT ALL DOORS, SIDELITES ADJACENT TO DOORS AND GLAZING WITH BOTTOMS LESS THAN 18" ABOVE FINISH FLOOR ELEVATION.
12. METAL CANOPY.
13. KNOCK-OUT PANEL.
14. INTERIOR ROOF DRAIN W/ 2 OVERFLOW SCUPPERS.
15. CONC. FILLED GUARD POST. 6" DIA. U.N.O., 42"H.
16. EXTERIOR LIGHTING FIXTURE.
17. APPROXIMATE LOCATION OF ADDRESS ON WALL.
18. EXTERIOR DOWN SPOUTS W/ 2 OVERFLOW SCUPPERS.

ELEVATION GENERAL NOTES

1. ALL PAINT COLOR CHANGES TO OCCUR AT INSIDE CORNERS UNLESS NOTED OTHERWISE.
2. ALL PAINT FINISHES ARE TO BE FLAT UNLESS NOTED OTHERWISE.
3. T.O.P. EL.= TOP OF PARAPET ELEVATION.
4. F.F. = FINISH FLOOR ELEVATION.
5. STOREFRONT CONSTRUCTION: GLASS, METAL ATTACHMENTS AND LINTELS SHALL BE DESIGNED TO RESIST — MPH. EXPOSURE "C" WINDS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO INSTALLATION.
6. CONTRACTOR SHALL FULLY PAINT ONE CONCRETE PANEL W/ SELECTED COLORS. ARCHITECT AND OWNER SHALL APPROVE PRIOR TO PAINTING REMAINDER OF BUILDING.
7. BACK SIDE OF PARAPETS TO HAVE SMOOTH FINISH AND BE PAINTED WITH ELASTOMERIC PAINT.
8. FOR SPANDREL GLAZING, ALLOW SPACE BEHIND SPANDREL TO BREATH. PROVIDE 1" DIAMETER HOLES AT CONCRETE WALL.
9. USE ADHESIVE BACK WOOD STRIPS FOR ALL REVEAL FORMS.
10. THE FIRST COAT OF PAINT TO BE ROLLED-ON AND THE SECOND COAT TO BE SPRAYED-ON
11. ALL ROLL-UP DOORS AND SERVICE DOORS TO BE PAINTED TO MATCH BUILDING COLOR.

ELEVATION COLOR LEGEND/SCHED.

1. PAINT. COLOR : SW 6070 HERON PLUME (259-C1)
2. PAINT. COLOR : SW 7051 ANALYTICAL GRAY (246-C2)
3. PAINT. COLOR : SW 7640 FAWN BRINDLE (247-C5)
4. PAINT. COLOR : SW 7075 WEB GRAY (235-C6)
5. MULLIONS COLOR : BLACK MULLION
6. GLAZING COLOR : BLUE GLAZING
7. METAL CANOPY: BLACK I-BEAM

GLAZING LEGEND

NOTE: ALL EXTERIOR AND INTERIOR GLAZING SHALL BE TEMPERED.

IV — INSULATED VISION GLASS

SC — SPANDREL GLASS WITH CONCRETE BEHIND

V — SINGLE LITE VISION GLASS

IV : INSULATED VISION GLASS
1/4" **VISTACOOL PACIFICA** + 1/4" **SOLARBAN 60** CLEAR
1" INSULATED GLASS UNIT WITH 1/2" AIRSPACE AND 1/4" LITES
U: **0.27** SHGC: **0.21** VLT: **26%**
MINIMUM VT TO BE 0.42 PER 2016 CEC TABLE 140.3-B

SC : SPANDREL WITH CONCRETE BEHIND
1/4" **VISTACOOL PACIFICA** WITH **HARMONY BLUE** OPACICOAT PAINTED ON REFLECTIVE. INSTALLED ON CONCRETE.

V : VISION GLASS
1/4" **VISTACOOL PACIFICA**

MULLIONS : **BLACK ANODIZED.**

CASE: PPT230048
EXHIBIT: B-Elevations
DATE: 6/25/2025
PLANNER: KMason
☐ Meeting ☐ Comment Agenda ☑ Final

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Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: ELEVATIONS

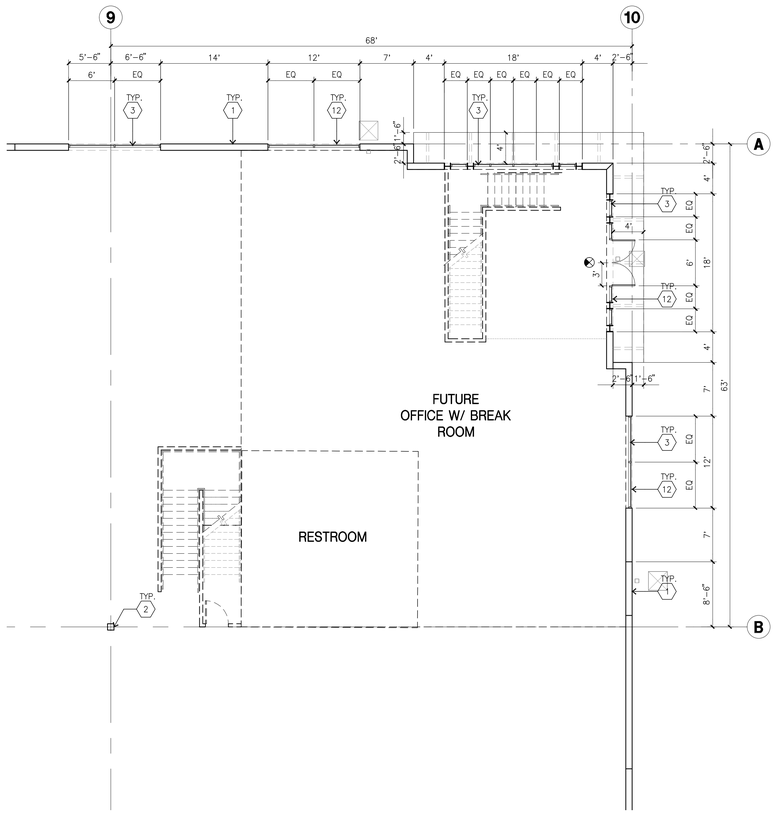
Project Number:	22484
Drawn by:	JK
Date:	
Revision:	
DAC 5TH SUBMITTAL	01/13/25

Sheet:

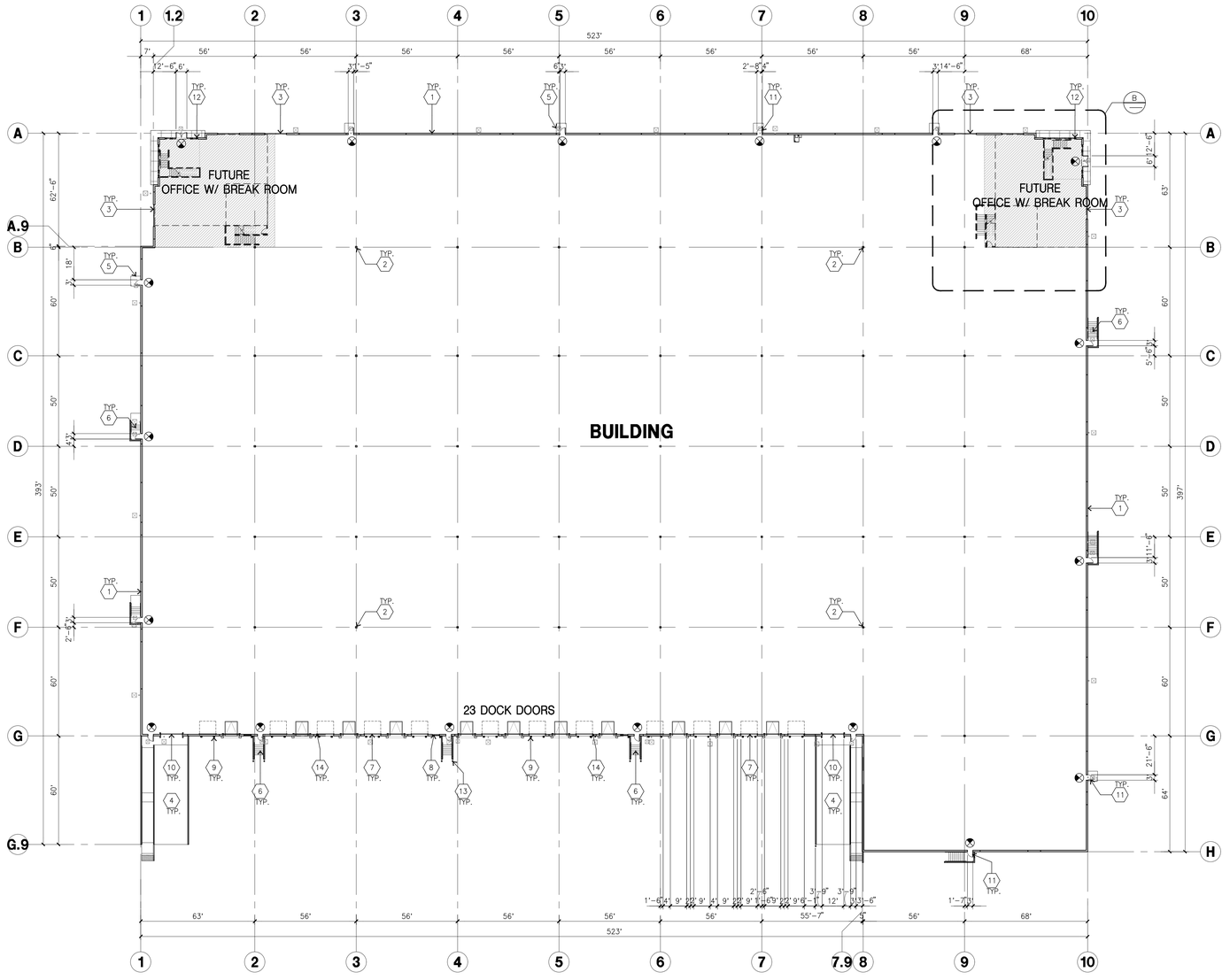
DAB-A3.1

CASE: PPT230048
EXHIBIT: C-Floor Plans
DATE: 6/25/2025
PLANNER: KMason

☐ Meeting ☐ Comment Agenda ☑ Final



ENLARGED FLOOR PLAN B
scale: 1/8" = 1'-0"
SCALE: 1/8" = 1'-0"
0 8' 16' 24'
TRUE NORTH



OVERALL FLOOR PLAN A
scale: 1"=30'-0"
SCALE: 1" = 30'-0"
0 30' 60' 90'
TRUE NORTH

FLOOR PLAN KEYNOTES

1. CONCRETE TILT-UP PANEL.
2. STRUCTURAL STEEL COLUMN.
3. TYPICAL STOREFRONT SYSTEM WITH GLAZING. SEE OFFICE BLOW-UP AND ELEVATIONS FOR SIZE, COLOR AND LOCATIONS.
4. CONCRETE RAMP W/ 42"HIGH CONC TILT-UP GUARD WALL OR BUILDING WALL ON BOTH SIDE OF RAMP.
5. 5'-6"X5'-6"X4" THICK CONCRETE EXTERIOR LANDING PAD TYP. AT ALL EXTERIOR MAN DOORS TO LANDSCAPED AREAS. FINISH TO BE MEDIUM BROOM FINISH. PROVIDE WALK TO PUBLIC WAY OR DRIVE WAY AS REQ. BY CITY INSPECTOR.
6. EXTERIOR CONCRETE STAIR W/ 42"HIGH CONC TILT-UP GUARD WALL OR BUILDING WALL.
7. 9' X 10' TRUCK DOOR, SECTIONAL O'H., STANDARD GRADE.
8. 4' X 8' LOUVERED OPENING FOR VENTILATION.
9. DOCK DOOR BUMPER TYPICAL.
10. 12' X 14' DRIVE THRU. SECTIONAL O.H., STANDARD GRADE.
11. 3' X 7' HOLLOW METAL EXTERIOR MAN DOOR.
12. SOFFIT LINE ABOVE
13. CONC. FILLED GUARD POST. 6" DIA. U.N.O.. 42"H.
14. Z GUARD
15. EXTERIOR LIGHTING FIXTURE.

FLOOR PLAN GENERAL NOTES

A. THIS BUILDING IS DESIGNED FOR HIGH PILE STORAGE WITH FIRE ACCESS MAN DOORS APPROX. 100' MAXIMUM. A SEPARATE PERMIT WILL BE REQUIRED FOR ANY RACKING/CONVEYER SYSTEMS.
B. FIRE HOSE LOCATIONS SHALL BE APPROVED PER FIRE DEPARTMENT.
C. THE BUILDING FLOOR SLAB IS SLOPED, SEE "C" DRAWINGS FOR FINISH SURFACE ELEVATIONS.
D. PROVIDE 6" DIA. CONCRETE BOLLARD AT ALL FIRE RISER AND UNPROTECTED INTERIOR ROOF DRAIN.
E. WAREHOUSE INTERIOR CONCRETE WALLS ARE PAINTED WHITE. COLUMNS ARE TO RECEIVE PRIMER ONLY. ALL GYP. BD. WALLS IN WAREHOUSE TO RECEIVE 1 COAT OF WHITE TO COVER.
F. SLOPE POUR STRIP 1/2" TO EXTERIOR AT ALL MANDOOR EXITS.
G. ALL DIMENSIONS ARE TO THE FACE OF CONCRETE PANEL WALL, GRIDLINE, OR FACE OF STUD U.N.O.
H. SEE CIVIL DRAWINGS FOR POINT OF CONNECTIONS TO OFF-SITE UTILITIES. CONTRACTOR TO VERIFY ACTUAL UTILITY LOCATIONS. PLUMBING/ELECTRICAL COORDINATION.
I. FOR DOOR TYPES AND SIZES, SEE DETAIL SHEET AD.4. NOTE: ALL DOORS PER DOOR SCHEDULE ARE FINISH OPENINGS.
J. CONTRACTOR TO PROTECT AND KEEP THE FLOOR SLAB CLEAN. ALL EQUIPMENT TO BE DIAPERED INCLUDING CARS AND TRUCKS.
K. ALL EXIT MAN DOORS IN WAREHOUSE TO HAVE ILLUMINATED EXIT SIGN. HARDWARE.
L. HIGHLY FLAMMABLE AND COMBUSTIBLE MATERIAL SHALL NOT BE USED OR STORED IN THIS BUILDING.
M. EACH EXTERIOR EXIT DOOR SHALL BE IDENTIFIED BY A TACTILE EXIT SIGN WITH THE WORDS "EXIT". THE MOUNTING HEIGHT FOR SUCH SIGNAGE SHALL BE 60" FROM FINISH FLOOR LEVEL TO THE CENTER OF THE SIGN.
N. NON-ACCESSIBLE DOOR. PROVIDE WARNING SIGN LOCATED IN THE INTERIOR SIDE PER CBC 1133B.1.1.1
O. ALL ROOF MOUNTED MATERIALS SHALL BE FULLY SCREENED FROM PUBLIC VIEW.

FLOOR SLAB & POUR STRIPS REQ.

THESE NOTES ARE VERY MIN. REQUIREMENT.

1. FLOOR COMPACTION - 95%
2. TRENCH COMPACTION - 90%
3. BUILDING FLOOR SLAB:
4. CONTRACTOR TO BUILD FOR CLASS V FLOOR PER A.C.I. 302-1R-96
5. CONCRETE SLAB TO HAVE STEEL FLOAT HARD TROWEL BURNISHED FINISH.
6. CONTRACTOR TO CURE SLAB TO BE WET CURING USING BURLINE FOR 7 DAYS MIN.
7. ALL EQUIPMENT & MOVING VEHICLES SHALL BE DIAPERED.
8. NO CRANES, CONCRETE TRUCKS, OR ANYTHING HEAVIER WILL BE PLACED ON THE SLAB.
9. SLAB TO BE FF50 FL35 MEASURED WITHIN 24 HOURS.
10. NO FLY ASH IN THE CONCRETE
11. WHERE INDICATED, PROVIDE VAPOR BARRIER (15MIL STEGO OR EQUAL) UNDER THE CONCRETE SLAB. PROVIDE SAND PER SOILS ENGINEER OR MANUFACTURER'S RECOMMENDATION.

CONCRETE SLAB IN FUTURE OFFICE AREAS, WHERE SAND OVER VIQUEEN ARE REQUIRED, SHALL BE NATURALLY HYDRATED WITHOUT USE OF BURLENE, CURING COMPOUND, OR RELEASE AGENTS.
CONTROL/CONSTRUCTION JOINTS SHALL NOT BE FILLED WITH MM-80 JOINT FILLER IN FUTURE OFFICE AREAS.
12. SEAL CONCRETE SLAB W/ "LIPIDOLITH SEALER

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Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: OVERALL FLOOR PLAN

Project Number: 22484
Drawn by: JK
Date:
Revision:
DAC 5TH SUBMITTAL 01/13/25

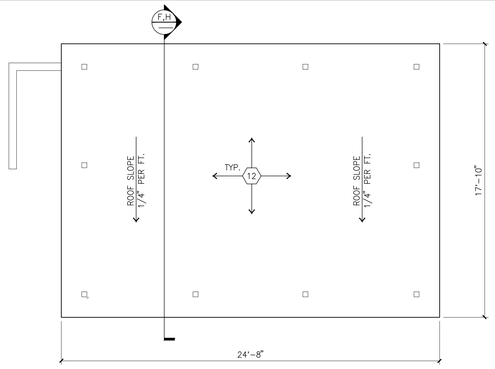
Sheet:
DAB-A2.1

CASE: PPT230048
EXHIBIT: D-Details
DATE: 6/25/25
PLANNER: KMason

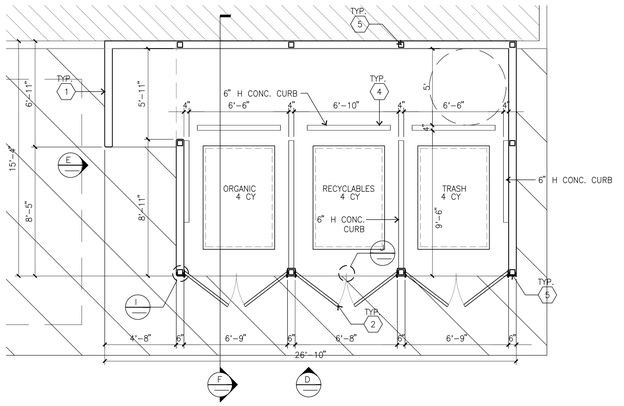
☐ Meeting ☐ Comment Agenda ☑ Final

KEYNOTES - TRASH ENCLOSURE

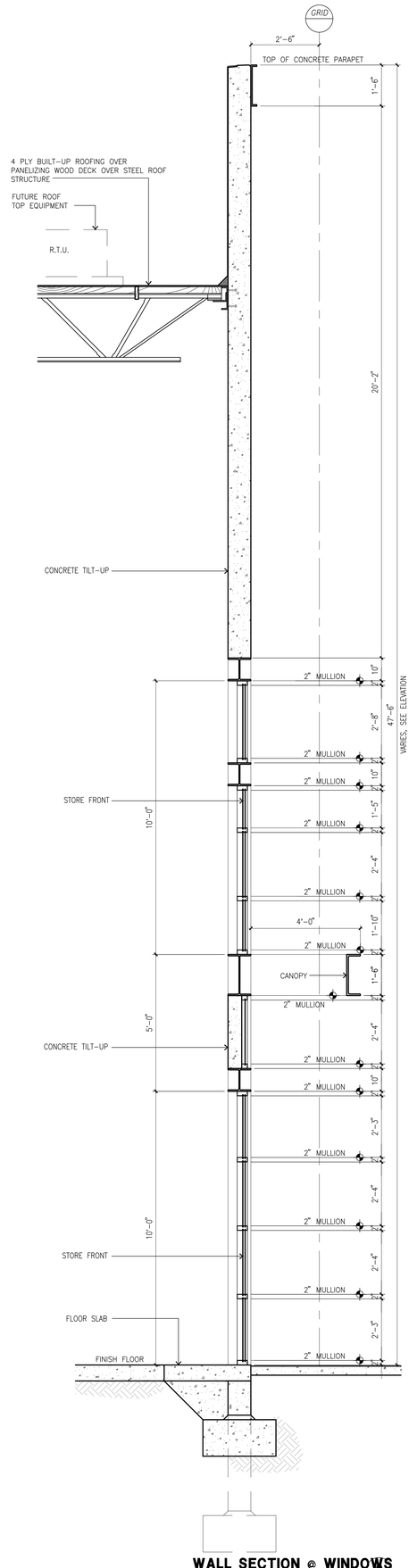
1. CONCRETE TILT-UP WALL. EXTERIOR COLOR AND FINISH TO MATCH BUILDING
2. DOUBLE SWING METAL GATES.
3. NOT USED.
4. 4"W X 6"H WHEEL STOPS WITH 1" BEVEL TOP CUTS, SHALL BE FROM RECYCLED MATERIALS. SECURED TO SLAB W/ 1/2" DIA. ANCHOR BLOTS @ 36" O.C. MIN. TYPICAL
5. STEEL TUBE FRAME PER "S" DRAWINGS.
6. 18 GA. X 1 1/2" DEEP G.I. STEEL DECKING WELDED TO STEEL FRAME AND 1 1/2" X 1 1/2" X 1/4" STEEL ANGLE CROSS BRACE.
7. FINISH SURFACE.
8. STEEL CANE BOLT W/ SLEEVE, LOCATED ON OUTSIDE OF ONE GATE. (TYPICAL EA. SIDE)
9. HEAVY DUTY STEEL HINGE. (TYPICAL EA. GATE)
10. HEAVY DUTY SLIDE BOLT. (TYPICAL EA. GATE)
11. METAL FASCIA
12. STANDING SEAM METAL ROOF
13. GUTTER



TRASH ENCLOSURE ROOF PLAN C
scale: 1/4"=1'-0"
SCALE: 1/4" = 1'-0" (0, 4', 8', 12')
TRUE NORTH



TRASH ENCLOSURE PLAN B
scale: 1/4"=1'-0"
SCALE: 1/4" = 1'-0" (0, 4', 8', 12')
TRUE NORTH



WALL SECTION @ WINDOWS A
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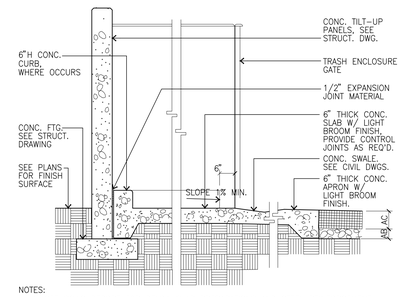
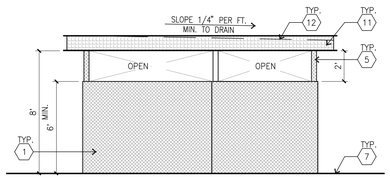
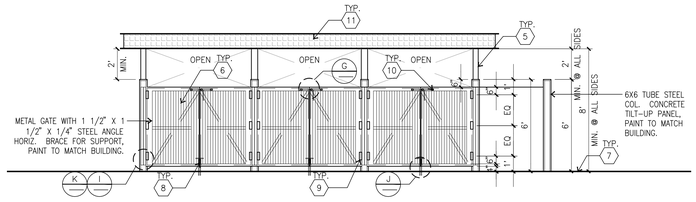


NOTES:
1. SEE SOILS REPORT FOR BELOW SLAB PREPARATIONS AND STEEL REINFORCEMENT RECOMMENDATIONS.

TRASH ENCLOSURE SECTION F
scale: 1/4"=1'-0"



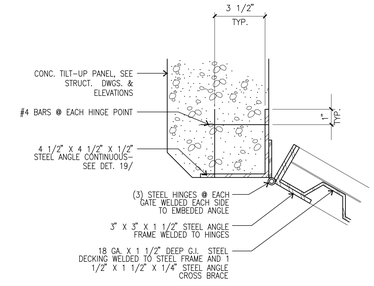
TRASH ENCLOSURE SIDE ELEVATION E
scale: 1/4"=1'-0"



TRASH ENCLOSURE GATE ELEVATION D
scale: 1/4"=1'-0"

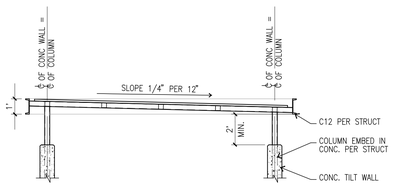
ELEVATION COLOR LEGEND/SCHED.

1. PAINT. COLOR : SW 7640 FAWN BRINDLE (247-C5)
2. PAINT. COLOR : SW 7075 WEB GRAY (235-C6)

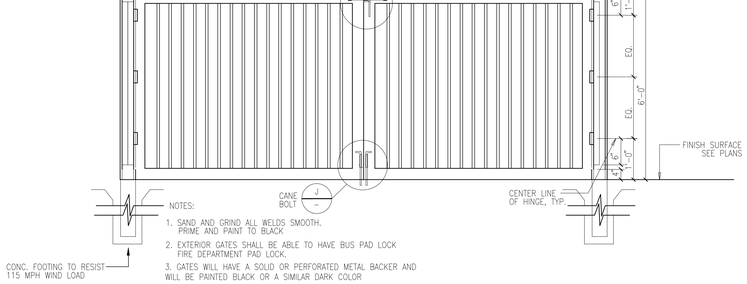


NOTES:
1. PAINT ALL METAL TO MATCH ENCLOSURE PER SPECIFICATIONS. UNLESS OTHERWISE NOTED ON ELEVATIONS

TRASH ENCLOSURE GATE AND HINGE I
scale: 3" = 1'-0"

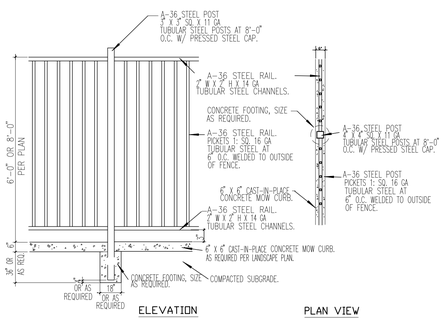


TRASH ENCLOSURE CANOPY DETAIL H
scale: 1/4"=1'-0"



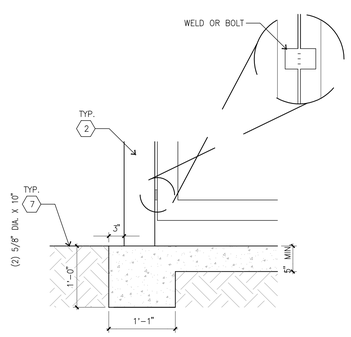
NOTES:
1. SAND AND GRIND ALL WELDS SMOOTH. PRIME AND PAINT TO BLACK
2. EXTERIOR GATES SHALL BE ABLE TO HAVE BUS PAD LOCK FIRE DEPARTMENT PAD LOCK.
3. GATES WILL HAVE A SOLID OR PERFORATED METAL BACKER AND WILL BE PAINTED BLACK OR A SIMILAR DARK COLOR

METAL SWING GATE G
scale: 1/2"=1'-0"

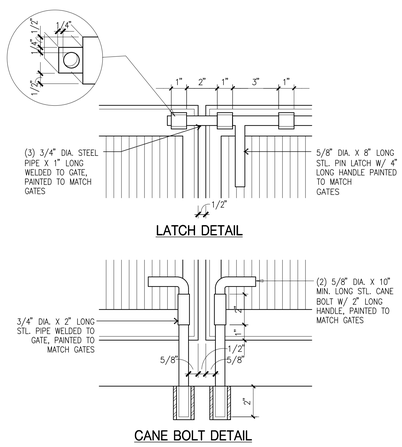


NOTES:
1. ALL TERMINAL POSTS TO BE 3"W X 3"D X 11GA STEEL TUBES W/ PRESSED STEEL CAP.
2. ALL FENCE COMPONENTS TO BE PRIMED AND POWDER COATED TO MATCH BLDG.
3. CONCRETE MOW CURB IS REQUIRED WHEN FENCE IS ADJACENT TO TURF AREAS ONLY. ALL OTHER PLANTER AREAS ADJACENT TO FENCE WILL NOT HAVE MOW CURB.
4. SAND AND GRIND ALL WELDS SMOOTH.

METAL FENCE L
scale: N.T.S



WALL FOOTING K
scale: N.T.S



TRASH ENCLOSURE GATE LATCHES J
scale: 3" = 1'-0"

LEGEND

- BROWN = BUILDING & SAFETY GRADING DIVISION COMMENTS
- PURPLE = PLANNING DEPARTMENT COMMENTS
- GREEN = ENVIRONMENTAL PROGRAMS DEPARTMENT COMMENTS
- LIGHT ORANGE = TRANSPORTATION DEPARTMENT COMMENTS
- BLUE = FLOOD CONTROL DISTRICT COMMENTS
- LIGHT GREEN = REGIONAL PARKS & OPEN SPACE DISTRICT COMMENTS
- RED = FIRE DEPARTMENT COMMENTS
- YELLOW = ENVIRONMENTAL HEALTH DEPARTMENT COMMENTS
- LIGHT BLUE = BUILDING & SAFETY PLAN CHECK COMMENTS
- ORANGE = WASTE MANAGEMENT DEPARTMENT COMMENTS

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tel: 562-921-3581

Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

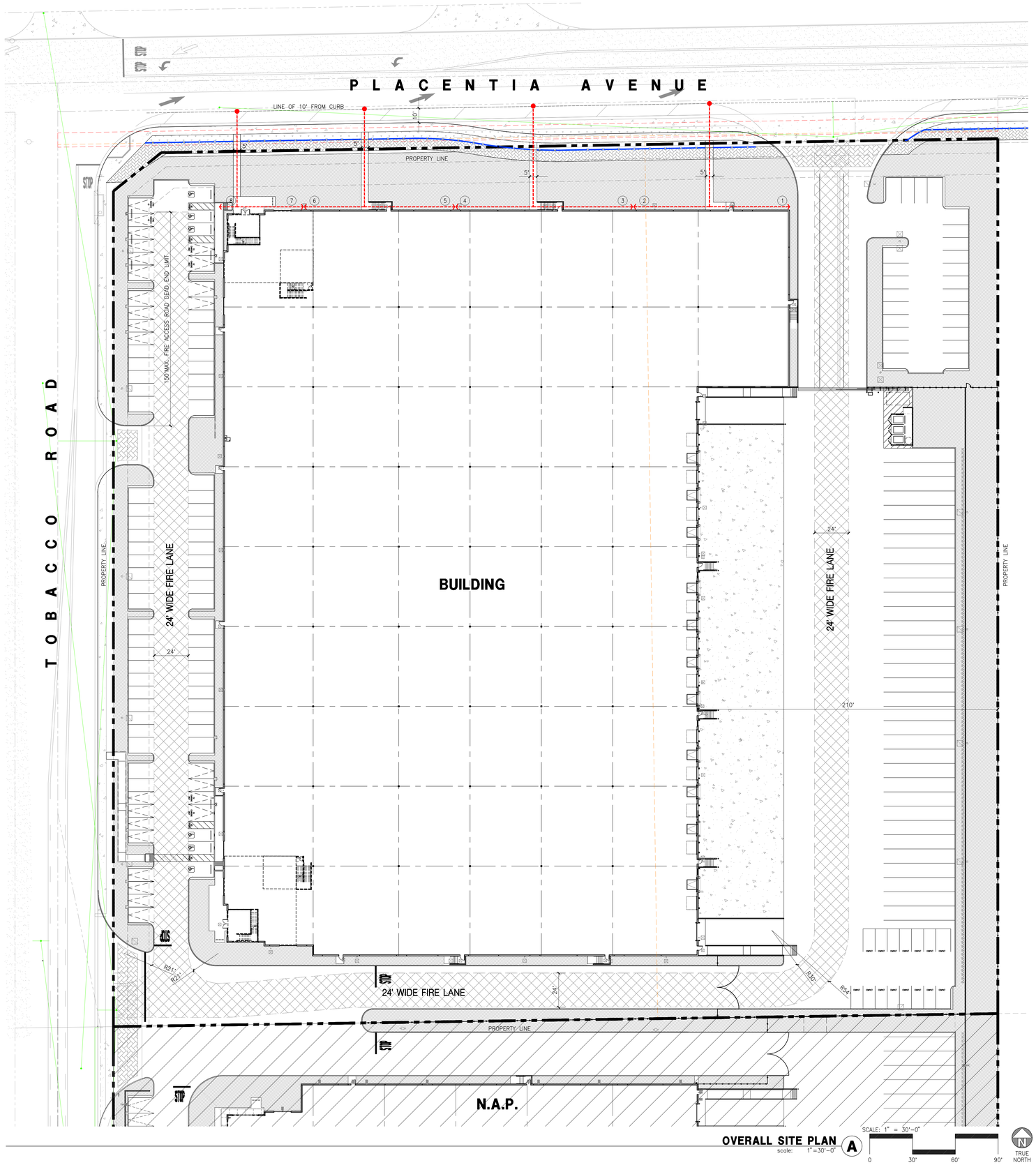
Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: DETAILS

Project Number: 22484
Drawn by: JK
Date:
Revision:
DAC 5TH SUBMITTAL 01/13/25

Sheet:

DAB-A4.2



OVERALL SITE PLAN A
scale: 1"=30'-0"

SCALE: 1" = 30'-0"
0 30' 60' 90'
TRUE NORTH

FIRE HOSE PULL LENGTH

1	129'
2	126'
3	140'
4	126'
5	132'
6	110'
7	114'
8	79'

XX SEGMENT ID

ONE HOSE PULL SEGMENT

TRAIL FENCE

CASE: PPT230048
EXHIBIT: F-Fire Access
DATE: 6/25/2025
PLANNER: KMason

☐ Meeting ☐ Comment Agenda ☑ Final

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Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: FIRE ACCESS PLAN

Project Number:	22484
Drawn by:	JK
Date:	
Revision:	
DAC 5TH SUBMITTAL	01/13/25

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OWNER: CHANDLERS SUB REVISED

APN: 317-240-021
OWNER: CHANDLERS SUB REVISED

16+63.70
1553.21 FS
℄ PER IP 200047

1/2-STREET IMPROVEMENTS
WIDEN 17' W/6" C&G PER
RECORD STD. 94 (15' EX.)
AC PER IP200047 SPP DELTA 3

JOIN EX. 36" RCP LATERAL H-10.1
PER RCFCD & WCD PLAN DWG.
NO. 4-1173 & INSTALL NEW SDMH NO. 2

3' TRAIL EASEMENT

LIMIT OF TRAIL EASEMENT

UNDER SIDEWALK DRAIN 3" MIN.

INFILTRATION BASIN

24" CMP RISER

18" RCP S.D.

6" RCP S.D.

24" RCP S.D.

9 RISERS @ 0.49'=4.48'

13 RISERS @ 0.49'=6.38'

12 RISERS @ 0.48'=5.78'

5 RISERS @ 0.47'=2.75'

3 RISERS @ 0.44'=1.32'

OFFICE

8.0% RAMP

3.0% RAMP

ADA P.O.T.

PROP. RETAINING WALL
HEIGHT VARIES 4' MAX. TO 6" MIN.

PROP. RETAINING WALL
HEIGHT VARIES 4' MAX. TO 6" MIN.

APN:317-260-017

FF=50.50 TO 48.55
PAD=49.75 TO 47.80
S=0.50%
SLOPING FF/PAD

APN:317-260-018

APN: 317-260-034
OWNER: CITY OF RIVERSIDE
PERRIS-COUNTY PARCEL

APN: 317-260-004
OWNER: SERRANO SILVANO

APN: 317-260-005
OWNER: OAKS AND SAWERS SUB

APN: 317-260-016
OWNER: THRIFTY OIL COMPANIES
PERRIS -SOUTH PARCEL

TOBACCO ROAD

EX. EDGE OF PAVEMENT
EX. FENCE
PROP. AC DIKE
EX. P.P. TO BE UNDERGROUNDED
PROP. CATCH BASIN
EX. R/W
EX. EDGE OF PAVEMENT
EX. FENCE
EX. P.P. TO BE UNDERGROUNDED
PROP. AC DWY
EX. P.P. TO BE UNDERGROUNDED
EX. STREET IMPROVEMENTS PLUS 18' OF AC WIDENING PER PPT 220047
PROP. AC DWY
EX. R/W

PLOT PLAN :
COUNTY OF RIVERSIDE
CASE NO: 230048

SECTION A-A
NTS

PROP. TRUCK YARD PARKING
2-FT. BENCH
23'±
PROP. 6" C&G
PROP. 12' HIGH PERIMETER CONC. TILT UP WALL 5' MIN. TO DAYLIGHT
PROP. RIP RAP & GALVANIZED SCUPPER SLEEVE*
PROP. FILL SLOPE
PROP. CMU WALL & W.I. FENCE*
*SEE WELLNESS CENTER (IP240026) FOR IMPROVEMENTS ALONG EASTERN ℄
F.M.#0541-001-2596-1

SECTION B-B
NTS

W'LY R/W
C.L. TOBACCO RD.
E'LY R/W
26'
33'
15'
24'
9'
3'
7'
6'
5'
EXISTING AC PAVING
PROP. REDWOOD HEADER 2.0%
PROP. TOBACCO RD. STREET IMPROVEMENTS 2.0%
S/W 1.5%
L.A.
INTERIM CONDITION 8' GRADED SHOULDER & SWALE
PROP. 3:1 MAX.

SECTION C-C
NTS

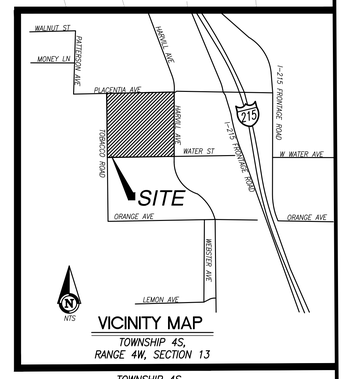
S'LY R/W
N'LY R/W
38.50' to 44.50' BLDG. LNDSCP SETBACK
53'
50'
EX. ½ ST. R/W
MODIFIED COR STD 405
21'
32'
32'
18'
3' BUFFER
8'
DG TRAIL
5'
LNDSCP
6'
S/W
PROP. C/G
PCC HEADER
PROP. SPLIT RAIL PVC FENCE
PLACENTIA AVE

EXCEPTIONS: APN 317-260-017

1. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: CALIFORNIA ELECTRIC POWER COMPANY, A CORPORATION
PURPOSE: POLE LINES, CONDUITS OR UNDERGROUND FACILITIES
RECORDING DATE: NOVEMBER 24, 1944
RECORDING NO: IN BOOK 648, PAGE 500 OF OFFICIAL RECORDS
AFFECTS: SAID LAND MORE PARTICULARLY DESCRIBED THEREIN (NOTE: EASEMENT WIDTH NOT SPECIFIED IN SAID DOCUMENT, RECOMMEND CHECK WITH TITLE COMPANY FOR EASEMENT TO BE QUITCLAIMED OR REMOVED : WILLIAM BROOKS)
4. EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO, AS GRANTED IN A DOCUMENT:
GRANTED TO: CALIFORNIA WATER AND TELEPHONE COMPANY, A CORPORATION
PURPOSE: POLE LINES, CONDUITS OR UNDERGROUND FACILITIES
RECORDING DATE: SEPTEMBER 18, 1961
RECORDING NO: AS INSTRUMENT NO. 79974 OF OFFICIAL RECORDS
AFFECTS: SAID LAND MORE PARTICULARLY DESCRIBED THEREIN (NOTE: WITHIN ULTIMATE 50' R/W DEDICATION OF PLACENTIA AVE.) WILLIAM BROOKS

UTILITY PURVEYORS

WATER:	EASTERN MUNICIPAL WATER DISTRICT
SEWER:	EASTERN MUNICIPAL WATER DISTRICT
ELECTRIC:	SOUTHERN CALIFORNIA EDISON
GAS:	SOUTHERN CALIFORNIA GAS COMPANY
CABLE:	CHARTER
TELE:	FRONTIER
WATSE:	WASTE MANAGEMENT



VICINITY MAP
TOWNSHIP 4S,
RANGE 4W, SECTION 13

TOWNSHIP 4S,
RANGE 4W, SECTION 13

APPROXIMATE GROSS LAND AREA:	APPROXIMATE NET LAND AREA:
APN: 317-260-017-9.19 AC APN: 317-260-018-0.429 AC	APN: 317-260-017-8.27 AC APN: 317-260-018-0.406 AC

DEDICATION DATA

PARCEL	GROSS ACREAGE	DEDICATED ACREAGE	NET ACREAGE
017	9.19 ACRES	0.92 ACRES	8.27 ACRES
018	0.429 ACRES	0.023 ACRES	0.406 ACRES
TOTAL GROSS ACREAGE = 9.61		TOTAL DEDICATION ACREAGE = 0.943	TOTAL NET ACREAGE = 8.68

TOTAL OFFSITE STREET IMPROVEMENTS (IMPACT AREA) = 0.433 ACRES

LEGEND

- PROPOSED ASPHALT CONCRETE & BASE (STREET WIDENING)
- EX. ASPHALT CONCRETE & BASE (PER PPT220047)
- PROPOSED PCC SIDEWALK / CURB & GUTTER
- EXISTING D.G. MULTIPURPOSE TRAIL
- EXISTING LANDSCAPE BUFFER
- PROPOSED LANDSCAPING
- EX. ASPHALT CONCRETE

CB	CATCH BASIN	-S-	SEWER
FH	FIRE HYDRANT	-OH-	OVERHEAD ELECTRICAL
SMH	SEWER MANHOLE	-W-	WATER
SDMH	STORM DRAIN MANHOLE	590	EXISTING GROUND CONTOUR
WV	WATER VALVE		CENTERLINE
	EXISTING TREE		R/W LINE
-X-	CHAINLINK FENCE		BOUNDARY
-COM-	COMMUNICATIONS		RETAINING WALL

ABBREVIATIONS

AC	ASPHALT CONCRETE	N	NORTH
℄	CENTERLINE	OH-C	OVERHEAD CONDUIT
C&G	CURB & GUTTER	PCC	PORTLAND CEMENT CONCRETE
COMM.	COMMUNICATION	℘	PROPERTY LINE
CONC.	CONCRETE	PROP.	PROPOSED
DIA.	DIAMETER	R	RANGE
DWG.	DRAWING	RCFC&WCD	RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
E	EAST	R.W.	RETAINING WALL
EXIST.	EXISTING	R/W	RIGHT-OF-WAY
F.F.	FINISHED FLOOR	S	SOUTH
F.G.	FINISHED GRADE	SCE	SOUTHERN CALIFORNIA EDISON
F.H.	FIRE HYDRANT	SD	STORM DRAIN
F.L.	FLOW LINE	SS	SANITARY SEWER
F.S.	FINISHED SURFACE	FW	FIRE WATER
G.B.	GRADE BREAK	T	TOWNSHIP
G.N.V.	GROUND NOT VISIBLE	TC	TOP OF CURB
H	HEIGHT	T.O.C.	THRIFTY OIL COMPANY
L.A.	LANDSCAPE AREA/LANDSCAPE ARCH.	TE	TRASH ENCLOSURE

EARTHWORK QUANTITIES
CUT = 3,500 CU. YD.
FILL = 65,525 CU. YD.
NET RAW IMPORT = 62,025 CU. YD.

SCALE 1" = 30'

CASE: PPT230048
EXHIBIT: G-Grading
DATE: 6/25/2025
PLANNER: KMason
☐ Meeting ☐ Comment Agenda ☑ Final

DAC 5TH SUBMITTAL: PPT 230048

PREPARED BY:
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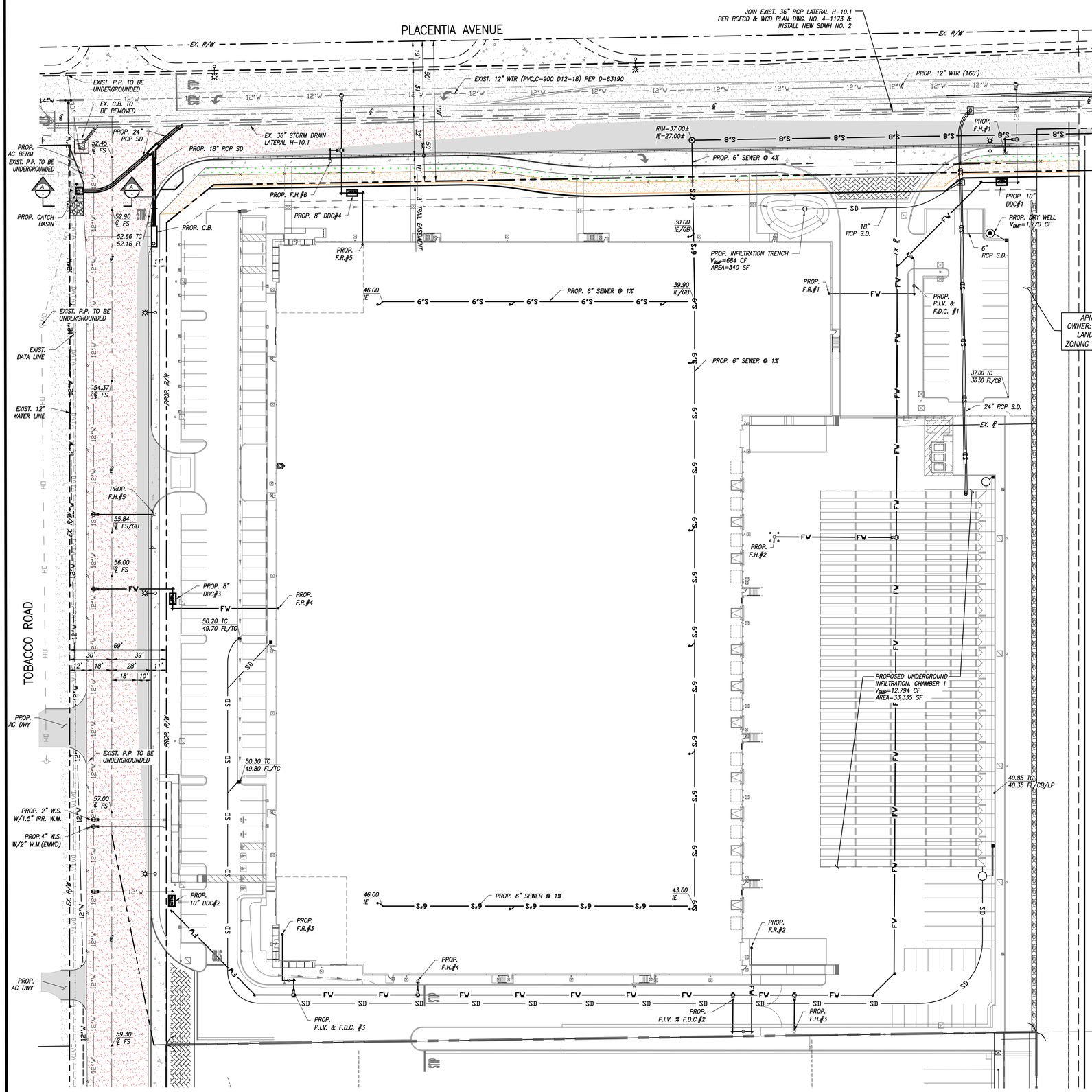
REGISTERED PROFESSIONAL ENGINEER
WILLIAM D. BROOKS
No.C53114
Exp. 6/30/25
CIVIL
STATE OF CALIFORNIA

THE ORDEN COMPANY - PERRIS NORTH SITE
CONCEPTUAL GRADING PLAN
INDUSTRIAL BLDG. SCHEME 10
APN'S 317-260-017 AND 317-260-018

SHEET 1 OF 4

G:\ORDEN\PERRIS NORTH\CAD\GP\317-GDP-01 SCHEME 10.DWG 5/1/25

PLOT PLAN : COUNTY OF RIVERSIDE CASE NO: 230048



UTILITY PURVEYORS

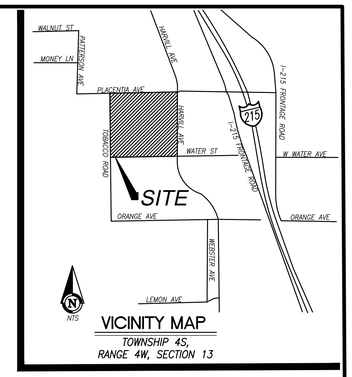
WATER:	EASTERN MUNICIPAL WATER DISTRICT
SEWER:	EASTERN MUNICIPAL WATER DISTRICT
ELECTRIC:	SOUTHERN CALIFORNIA EDISON
GAS:	SOUTHERN CALIFORNIA GAS COMPANY
CABLE:	CHARTER
TELE:	FRONTIER
WATSE:	WASTE MANAGEMENT

FIRE FLOW DEMAND
4,000 GPM FOR 4 HOURS (ESTIMATE)

DOMESTIC WATER DEMAND
102 GPM PEAK EST.

IRRIGATION DEMAND
42 GPM PEAK EST.

SANITARY SEWER
33 GPM PEAK EST.



VICINITY MAP
TOWNSHIP 4S, RANGE 4W, SECTION 13

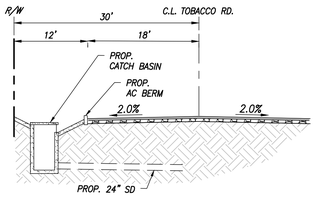
LEGEND

- PROPOSED ASPHALT CONCRETE & BASE (STREET WIDENING)
- EX. ASPHALT CONCRETE & BASE
- PROPOSED PCC SIDEWALK / CURB & GUTTER
- EXISTING D.G. MULTIPUPROSE TRAIL
- EXISTING LANDSCAPE BUFFER
- EX. ASPHALT CONCRETE

CB	CATCH BASIN
FH	FIRE HYDRANT
SMH	SEWER MANHOLE
SDMH	STORM DRAIN MANHOLE
WV	WATER VALVE
	EXISTING TREE
-X-	CHAINLINK FENCE
-COM-	COMMUNICATIONS
-S-	SEWER
-OH-	OVERHEAD ELECTRICAL
-W-	WATER
590	EXISTING GROUND CONTOUR
	CENTERLINE
	R/W LINE
	BOUNDARY
	RETAINING WALL

ABBREVIATIONS

AC	ASPHALT CONCRETE	N	NORTH
℄	CENTERLINE	OH-C	OVERHEAD CONDUIT
C&G	CURB & GUTTER	PCC	PORTLAND CEMENT CONCRETE
COMM.	COMMUNICATION	ℙ	PROPERTY LINE
CONC.	CONCRETE	PROP.	PROPOSED
DIA.	DIAMETER	R	RANGE
DWG.	DRAWING	RCFC&WCD	RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
E	EAST		
EXIST.	EXISTING	R.W.	RETAINING WALL
F.F.	FINISHED FLOOR	R/W	RIGHT-OF-WAY
F.G.	FINISHED GRADE	S	SOUTH
F.H.	FIRE HYDRANT	SCE	SOUTHERN CALIFORNIA EDISON
F.L.	FLOW LINE	SD	STORM DRAIN
F.S.	FINISHED SURFACE	SS	SANITARY SEWER
FW	FIRE WATER	T	TOWNSHIP
G.B.	GRADE BREAK	TC	TOP OF CURB
G.N.V.	GROUND NOT VISIBLE	T.O.C.	THRIFTY OIL COMPANY
H	HEIGHT	TE	TRASH ENCLOSURE
L.A.	LANDSCAPE AREA/LANDSCAPE ARCH.		



SECTION A-A
NTS

DAC 5TH SUBMITTAL: PPT 230048

SCALE 1" = 30'

PREPARED BY:
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REGISTERED PROFESSIONAL ENGINEER — WILLIAM D. BROOKS — Exp. 6/30/25 — CIVIL — STATE OF CALIFORNIA

THE ORDEN COMPANY - PERRIS NORTH SITE
ONSITE COMPOSITE UTILITY PLAN
INDUSTRIAL BLDG. SCHEME 10
APN'S 317-260-017 AND 317-260-018

SHEET 2 OF 4

G:\ENGPROJECTS\ORDEN CO_PERRIS NORTH\CAD\DP2317-DDP-02-COMPOSITE UTILITIES 1.DWG

PLOT PLAN : COUNTY OF RIVERSIDE CASE NO: 230048

PLACENTIA AVENUE

DEDICATED BY OTHERS

PROP. AC BERM

EXIST. P.P. TO BE UNDERGROUNDED

PROP. CATCH BASIN

PROP. 6' S/W

PROP. 6' S/W

PROP. R/W

8' TRAIL W/ 2' BUFFER

6' SIDEWALK BY WELLNESS CENTER & PPT #230047

8' TRAIL W/ 2' BUFFER BY WELLNESS CENTER & PPT #230047

8' MULTIPURPOSE TRAIL W/ 2' BUFFER

PROP. 8" VCP SEWER CONNECTION TO TEMP. CLEANOUT (D-73240)

PROP. R/W

1/2-STREET IMPROVEMENTS WIDEN 17-FEET W. 6-INCH C & G PER RCRD STD. 94 (15-FEET EXIST.) PAVEMENT PER IP200047 SPP DELTA 3

APN: 317-260-018
OWNER: PRIVATE RESIDENCE
LAND USE : RC-VLDR
ZONING : R-R-1, CZ #6312

APN: 317-260-017
OWNER: THRIFTY OIL COMPANY
PERRIS - NORTH PARCEL
LAND USE : RC-VLDR
ZONING : R-R-1, CZ #6312

PROPOSED UNDERGROUND STORM DRAIN CHAMBER

PROP. 8" VCP SEWER PER RUHS WELLNESS CENTER (D-73240)

TRAIL & STREET IMPROVEMENTS BY THE WELLNESS CENTER & PPT#230047

1/2-STREET IMPROVEMENTS PLUS 18' OF AC WIDENING PER RCRD STD. 111

PROP. AC DWY

EXIST. P.P. TO BE UNDERGROUNDED

APN: 317-260-005
OWNER: SERRANO SILVANO
LAND USE : RC-VLDR
ZONING : R-R-1, CZ #6312

PROP. AC DWY

15' DEDICATION FOR TRAIL SYSTEM

PROPOSED STORM DRAIN LATERAL H-10, R.C.F.C. & W.C.D. MDP - (L=1384± L.F.)

APN: 317-260-034
OWNER: COUNTY OF RIVERSIDE
PERRIS-COUNTY PARCEL
LAND USE : BP
ZONING : M-SC

TOBACCO ROAD

HARVILL AVENUE

APN: 317-260-014
OWNER: ESQUIRE JEAN PIERRE
LAND USE : RC-VLDR
ZONING : A-1-1, CZ #6312

APN: 317-260-016
OWNER: THRIFTY OIL COMPANY
PERRIS -SOUTH PARCEL
LAND USE : BP
ZONING : I-P, CZ NUMBER 5676

PPT#220047

PROPOSED UNDERGROUND STORM DRAIN CHAMBER

APN: 317-260-015
OWNER: THRIFTY OIL COMPANY
PERRIS-SOUTH PARCEL (VACATED R/W)
LAND USE : BP
ZONING : I-P, CZ NUMBER 5676

TRAIL & STREET IMPROVEMENTS BY THE WELLNESS CENTER & PPT#230047

PROP. 6' S/W

PROPOSED 36" STORM DRAIN (L=665± L.F.) R.C.D.F.C. & W.C.D. LATERAL H-10 MDP SD)

PROPOSED 8" SEWER LINE (L=1245± L.F.) TO HARVILL AVE. TIE-IN (EMWD SEWER)

PROP. 6' S/W

℄ TOBACCO ROAD ESTABLISHED AT RECORD ANGLE TO WATER ROAD PER R1

EMERGENCY PCC DROP INLET PER RCFC/WCD STD. CB110

PROPOSED CONCRETE DROP INLET PER RCFC/WCD STD. CB110 W=12', A=4', V =7', H=1.5' (SEE SECTION ON SHEET 3) Q100=134.4 CFS, Q10=88.0 CFS OFF-SITE DRAINAGE STUDY TO BE SUBMITTED FOR REVIEW

GRADED RIP-RAP LINED SWALE UPSTREAM OF DROP INLETS PER RIV. COUNTY STD. NO. 314

1/2-STREET IMPROVEMENTS PLUS 18' OF AC WIDENING PER RCRD STD. 111

WATER STREET

JOIN EXIST. 36" RCP MANHOLE STUB-OUT (PER PPT220002) & PROP. STREET IMP. PER PP

PROPOSED 8" VCP SEWER LINE (L=1245±) PER EMWD STDS.

EXIST. 8" VCP SEWER STUB-OUT JOIN LOCATION

APN: 317-270-002
OWNER: SSR INV CO
LAND USE : BP
ZONING : I-P, CZ #7830

APN: 317-270-015
OWNER: BCIF HARVILL BUSINESS CENTER LP
LAND USE : BP
ZONING : M-SC

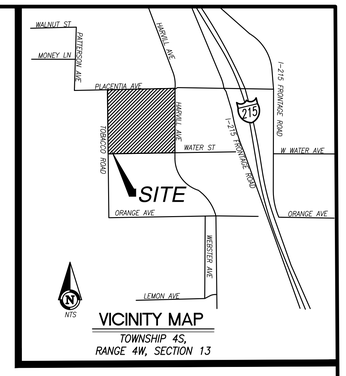
SCALE 1" = 60'

LAND AREA DEDICATION SUMMARY			
PARCEL	GROSS ACREAGE	DEDICATED ACREAGE	NET ACREAGE
017	9.19 ACRES	0.92 ACRES	8.27 ACRES
018	0.429 ACRES	0.023 ACRES	0.406 ACRES
TOTAL GROSS ACREAGE = 9.61		TOTAL DEDICATION ACREAGE = 0.943	TOTAL NET ACREAGE = 8.68

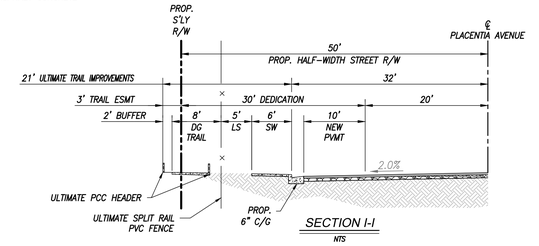
TOTAL OFFSITE STREET IMPROVEMENTS (IMPACT AREA) = 0.433 ACRES

LEGEND

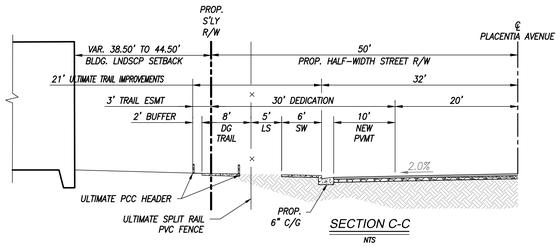
- PROPOSED ASPHALT CONCRETE & BASE (STREET WIDENING)
- EX. ASPHALT CONCRETE & BASE
- PROPOSED PCC SIDEWALK / CURB & GUTTER
- EXISTING D.G. MULTIPURPOSE TRAIL
- EXISTING LANDSCAPE BUFFER
- EX. ASPHALT CONCRETE



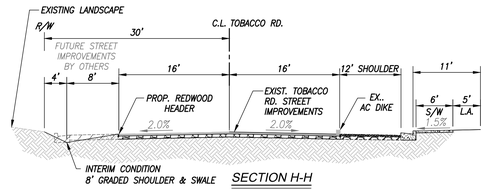
VICINITY MAP
TOWNSHIP 4S, RANGE 4W, SECTION 13



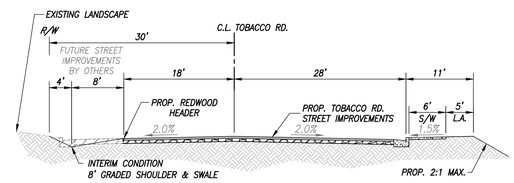
SECTION I-I
NTS



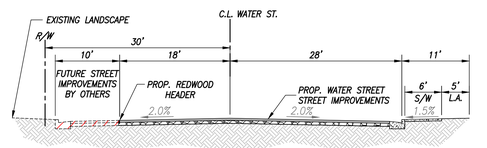
SECTION C-C
NTS



SECTION H-H
NTS



SECTION F-F (IMPROVEMENTS PER PPT 220047)
NTS



SECTION G-G (IMPROVEMENTS PER PPT220047)
NTS

TOBACCO ROAD & PLACENTIA AVENUE IMPROVEMENTS
SEE SHEET NO. 4 FOR TRUCK TURNING MOVEMENTS

SAC 5TH SUBMITTAL: PPT 230048

PREPARED BY:
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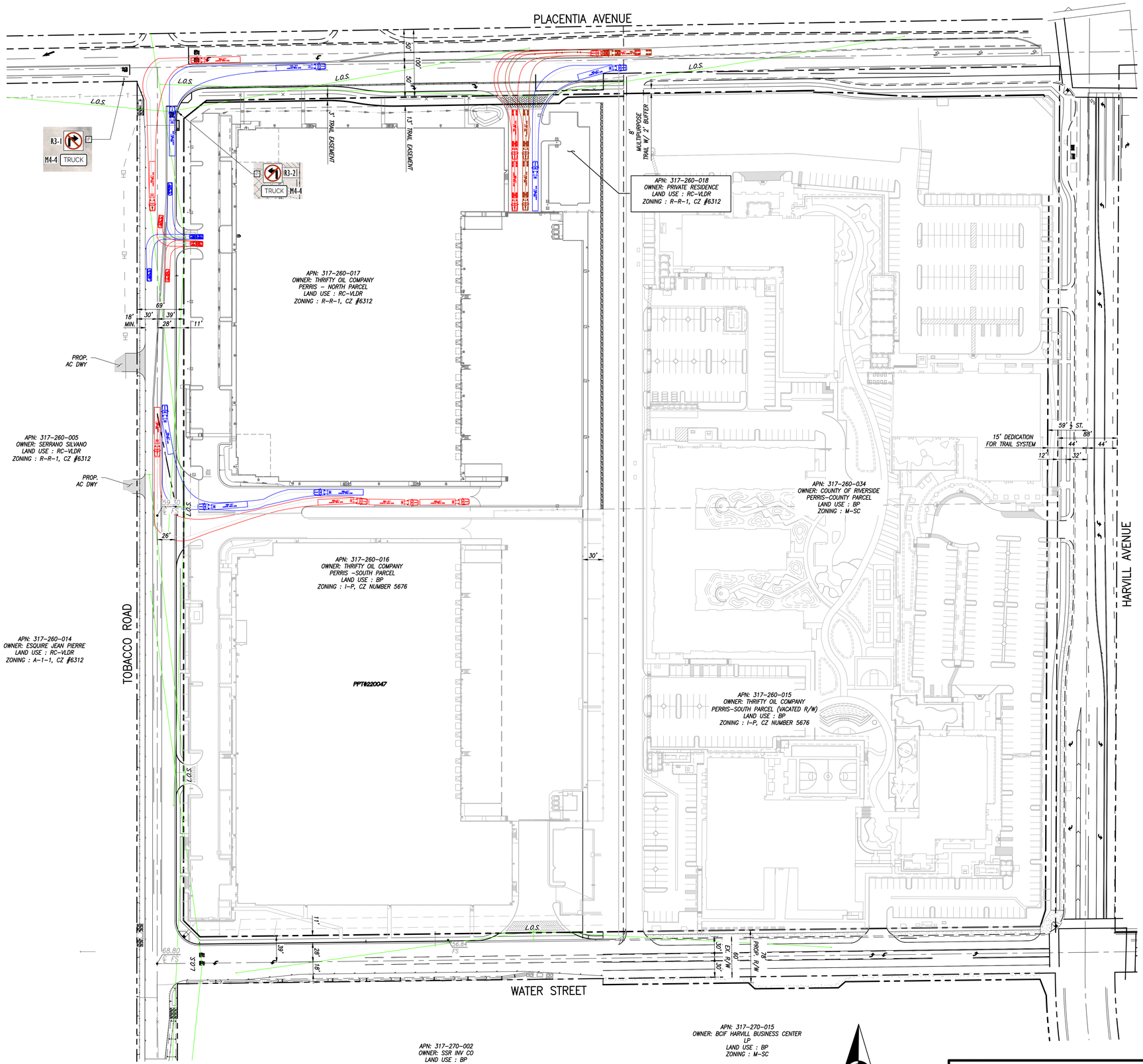
REGISTERED PROFESSIONAL ENGINEER — CLINTON D. BROOKS — No. 56616 — Exp. 6/30/25 — CIVIL — STATE OF CALIFORNIA

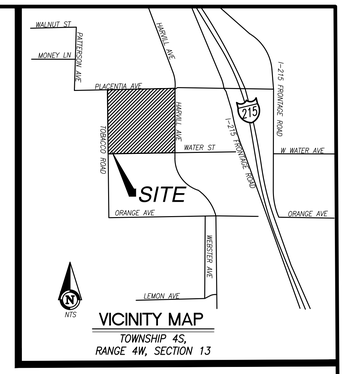
THE ORDEN COMPANY - PERRIS NORTH SITE
OFF-SITE IMPROVEMENT EXHIBIT
INDUSTRIAL BLDG. SCHEME 10
APN'S 317-260-017 AND 317-260-018

SHEET 3 OF 4

\\PROJECTS\ORDEN COMPANY_PERRIS NORTH\CAD\CUP\317-CUP-03-OFFSITE IMPROVEMENTS.DWG 5/1/23

PLOT PLAN : COUNTY OF RIVERSIDE CASE NO: 230048





VICINITY MAP
TOWNSHIP 4S,
RANGE 4W, SECTION 13

SCALE 1" = 60'

DAC 5TH SUBMITTAL: PPT 230048

PREPARED BY:

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REGISTERED PROFESSIONAL ENGINEER WILLIAM D. BROOKS No.C53114 Exp. 6/30/25 CIVIL STATE OF CALIFORNIA

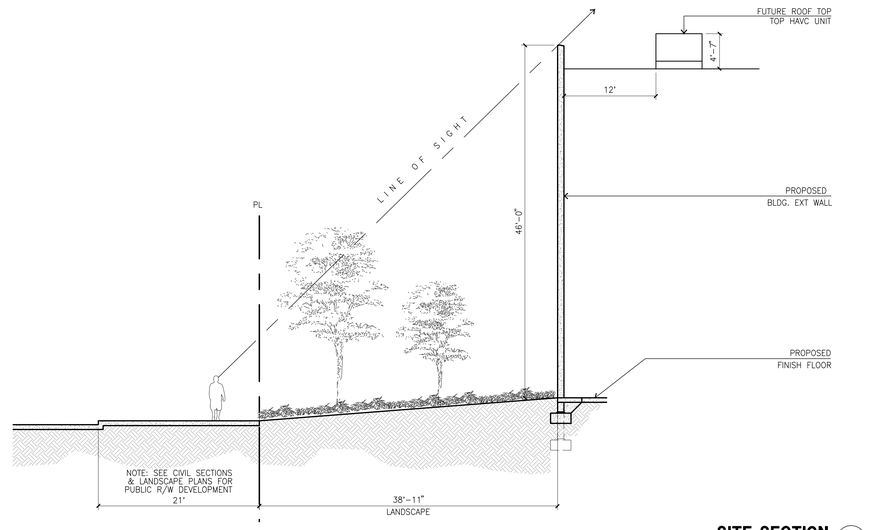
THE ORDEN COMPANY - PERRIS NORTH SITE
OFFSITE TRUCK TURNING MOVEMENTS
INDUSTRIAL BLDG. SCHEME 10
APN'S 317-260-017 AND 317-260-018

SHEET 4 OF 4

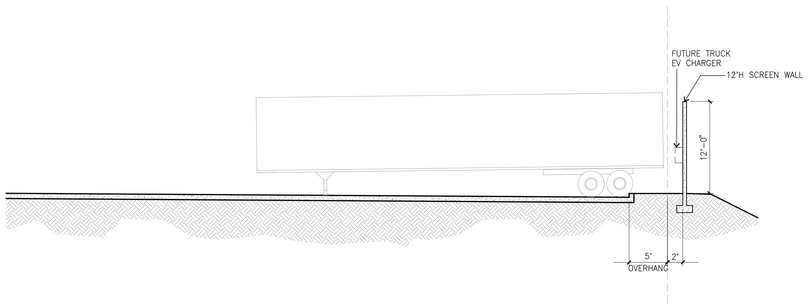
C:\BCROPROJECTS\C_AB_1\13-2177 ORDEN COMPANY_PERRIS NORTH\CAD\CGP\2177-CGP-04-TRUCK TURNING TEMPLATE.DWG 1/31/25

CASE: PPT230048
EXHIBIT: H- Line of Sig
DATE: 6/25/2025
PLANNER: KMason

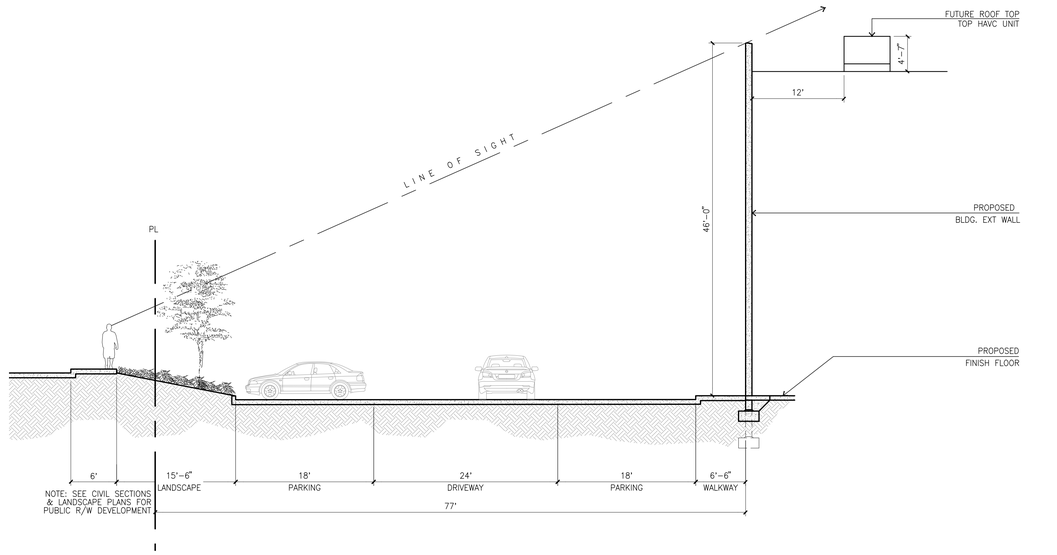
☐ Meeting ☐ Comment Agenda ☑ Final



SITE SECTION A
scale: 1/8" = 1'-0"

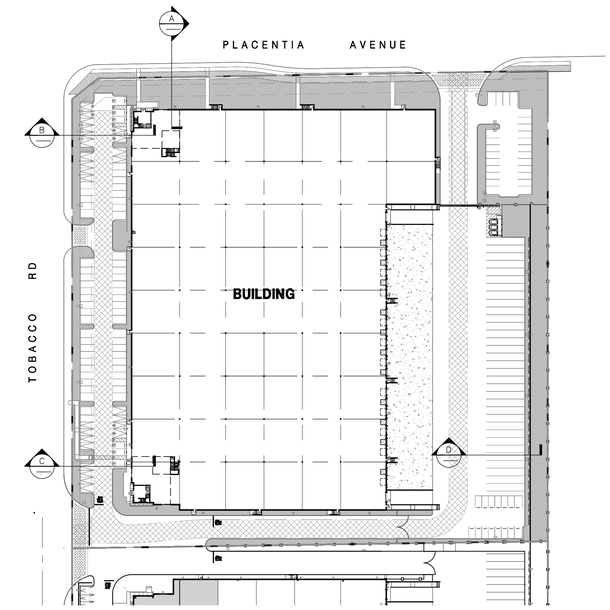


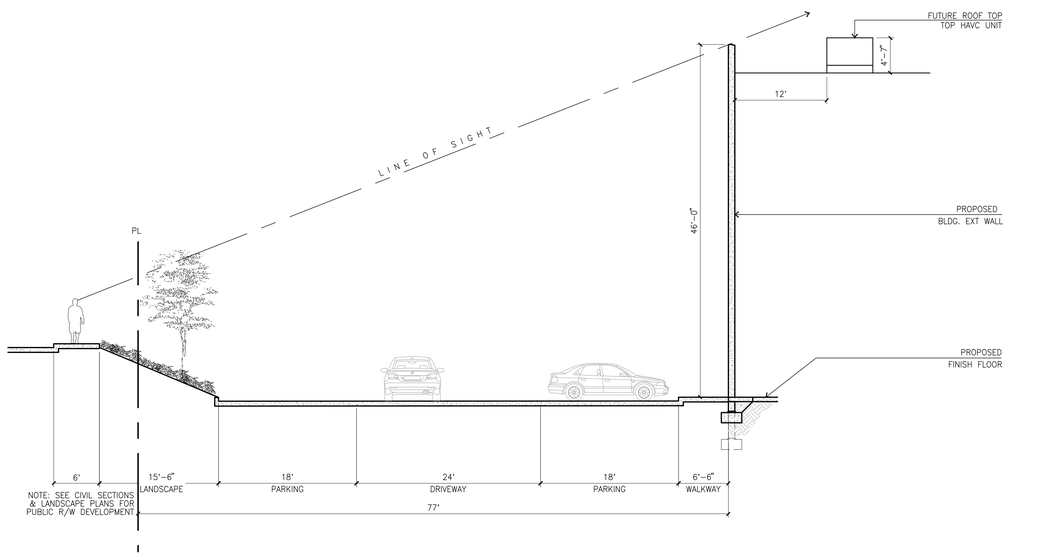
SITE SECTION @ OVERHANG D
scale: 1/8" = 1'-0"



SITE SECTION B
scale: 1/8" = 1'-0"

KEYMAP





SITE SECTION C
scale: 1/8" = 1'-0"

CAUTION : IF THIS SHEET IS NOT A 30" X 42" IT IS A REDUCED PRINT

HPA architecture

hpa, inc.
18831 bardeen avenue - ste.
#100 irvine, ca
92612
tel: 949•863•1770
fax: 949•863•0851
email: hpa@hparchs.com

Owner:

THRIFTY OIL CO.

13116 Imperial Highway
Santa Fe Springs CA 90670
tel: 562-921-3581

Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: SITE SECTIONS

Project Number:	22484
Drawn by:	JK
Date:	

Revision:

DAC 5TH SUBMITTAL	01/13/25

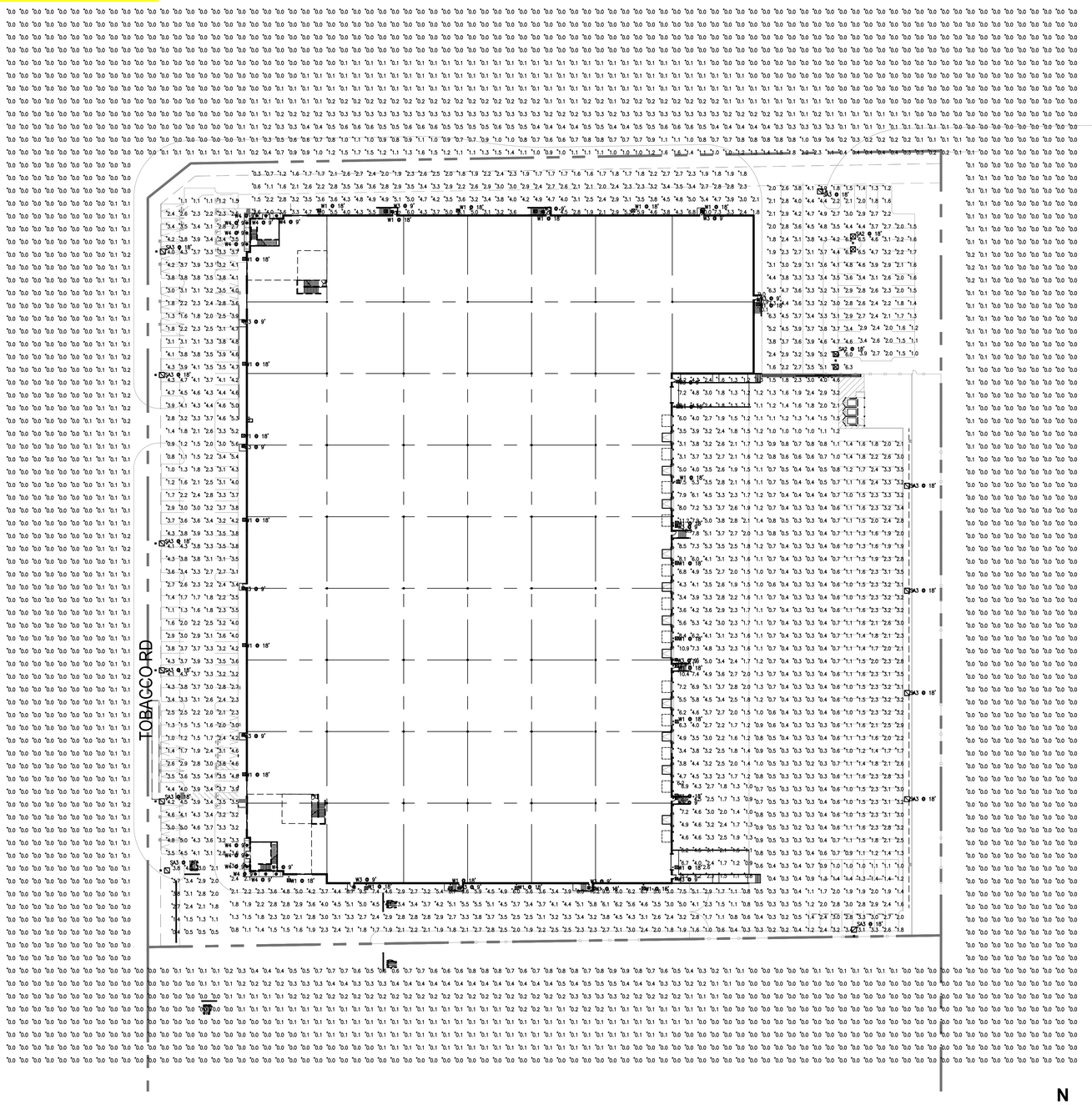
Sheet:

DAB-A4.1

CASE: PPT230048
EXHIBIT: P-Photometric
DATE: 6/25/2025
PLANNER: KMason

☐ Meeting ☐ Comment Agenda ☑ Final

PLACENTIA AVENUE



ELECTRICAL SITE PHOTOMETRIC PLAN

SCALE: 1"=40'-0"

1

N

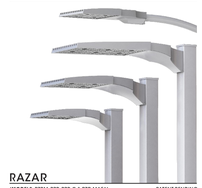
SOLID STATE AREA LIGHTING

RAZAR SERIES-LED

S P E C I F I C A T I O N S

PROJECT NAME:

PROJECT TYPE:



OPTICAL HOUSING
Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly with integral cooling fins. The Optical Panel mounting surface is milled flat (surface variance +/- .002") to facilitate thermal transfer of heat to housing and cooling fins. Solid barrier wall separates optical and electrical compartments. The optical and electrical compartments are integrated to create one assembly. Minimum wall thickness is .188".

ELECTRICAL HOUSING w/ INTEGRATED ARM
Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly with integral cooling ribs surrounding the electrical compartment and a flat surface on the top of the arm to accommodate a photocell receptacle. Solid barrier wall separates optical and electrical compartments. The electrical compartment and electrical compartment with the integrated support arm combine to create one assembly. Minimum wall thickness is .188". Cast and hinged driver assembly cover is integrated with wiring compartment cover.

PLED® OPTICS
Emitters (LED's) are arrayed on a metal core PCB panel with each emitter located on a copper thermal transfer post and enclosed by an LED refractor. LED optics completely seal each individual emitter to meet an IP66 rating. In asymmetric distributions, a micro-refractor inside the refractor re-directs the house side emitter output towards the street side and functions as a house side shielding element. Refractors are injection molded H12 acrylic. Each LED refractor is sealed to the PCB over an emitter and all refractors are retained by an aluminum frame. Any one Panel, or group of Panels in a luminaire, have the same optical pattern. LED refractors produce standard site/area distributions. Panels are field replaceable and field rotatable in 90° increments.

LED DRIVER(S)
Constant current electronic with a power factor of > 90 and a minimum operating temperature of -40°F/-40°C. Driver(s) is/are UL and cUL recognized and mounted directly against the Electrical Housing to facilitate thermal transfer, held down by universal clamps to facilitate easy removal. In-line terminal blocks facilitate wiring of (2) 18 AWG conductors for power and control input. (120-277V, 50/60Hz or 347V-480V, 50/60Hz.) 0-10V dimmable driver is standard. Driver has a minimum of 2.5KV internal surge protection. Luminaire supplied with 20KV surge protector for field accessible installation.)

LED EMITTERS
High output LED's are utilized with drive currents ranging from 350mA to 1050mA. 70CRI Minimum. LED's are available in standard Neutral White (4000K), or optional Cool White (5000K) or Warm White (3000K). Consult Factory for other LED options.

AMBER LED's
PCA (Phosphor Converted Amber) LED's utilize phosphors to create color output similar to LPS lamps and have a slight output in the blue spectral bandwidth. **TRA** (True Amber) LED's utilize material that emits light in the amber spectral bandwidth only without the use of phosphors.

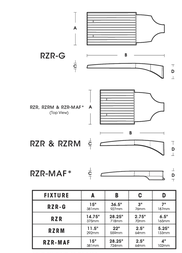
FINISH
Electrostatically applied TGIC Polyester Powder Coat on substrate prepared with 20 PSI power wash at 140°F. Four step media blast and iron phosphate pretreatment for protection and paint adhesion. 400°F bake for maximum hardness and durability.

MAST ARM FITTER/ELECTRICAL HOUSING
Replaces standard Electrical Housing. Fits standard 2 3/8" O.D. horizontal tenon. Two (2) straps with two (2) bolts each encircle the lower half of the tenon. Upper half of the tenon rests on self-centering steps that position the angle of the luminaire at 0°, +1.5°, +1.5 or +3° up from the horizontal. All hardware is stainless steel.

RAZAR

(MODELS- RZRM, RZR, RZR-G & RZR-MAF*)

PATENT PENDING



FIXTURE	A	B	C	D
RZR-G	18" (457mm)	36.5" (927mm)	9" (229mm)	7" (178mm)
RZR	14.75" (375mm)	28.25" (718mm)	2.75" (70mm)	6.5" (165mm)
RZRM	11.5" (292mm)	22" (559mm)	2.5" (64mm)	6.25" (159mm)
RZR-MAF	19" (483mm)	28.25" (718mm)	2.5" (64mm)	6" (152mm)

*DLC PENDING AS OF 7/17

2018358

U.S. Architectural Lighting

660 West Avenue O, Palmdale, CA 93551
Phone (661) 263-2000 Fax (661) 263-2001
www.usalfg.com

U.S. ARCHITECTURAL LIGHTING

SOLID STATE AREA LIGHTING

RAZAR WALLMOUNT-LED

S P E C I F I C A T I O N S

PROJECT NAME:

PROJECT TYPE:

OPTICAL HOUSING
Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly with integral cooling fins. The Optical Panel mounting surface is milled flat (surface variance +/- .003") to facilitate thermal transfer of heat to housing and cooling fins. The Optical Housing bolts to the Electrical Housing forming a unified assembly. The minimum wall thickness is .188".

ELECTRICAL HOUSING
Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly. Minimum wall thickness is .188". Fixture Mounting Plate offsets to mounting surface over a recessed j-box. Electrical Housing anchors on the top edge of the Mounting Plate and stainless steel recessed socket head screws tighten the Electrical Housing to the Mounting Plate from the bottom.

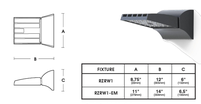
PLED® OPTICAL MODULES
Emitters (LED's) are arrayed on a metal core PCB panel with each emitter located on a copper thermal transfer pad and enclosed by an LED refractor. LED optics completely seal each individual emitter to meet an IP66 rating. The asymmetric distributions, have a micro-refractor inside the refractor which re-directs the house side emitter output towards the street side and functions as a house side shielding element. Refractors are injection molded H12 acrylic. Each LED refractor is sealed to the PCB over an emitter and all refractors are retained by an aluminum frame. Any one Panel, or group of Panels in a luminaire, have the same optical pattern. LED refractors produce type II, III, and type IV site/area distributions as well as other specialty asymmetric distributions. Panels are field replaceable and field rotatable in 90° increments.

LED DRIVER(S)
Constant current electronic with a power factor of > 90 and a minimum operating temperature of -40°F/-40°C. Driver(s) is/are UL and cUL recognized and mounted directly against the Electrical Housing to facilitate thermal transfer, held down by universal clamps to facilitate easy removal. In-line terminal blocks facilitate wiring of (2) 18 AWG conductors for power and control input. Drivers accept an input of 120-277V, 50/60Hz or 347V-480V, 50,60Hz. (0 - 10V dimmable driver is standard. Driver has a minimum of 3KV internal surge protection. Luminaire supplied with 20KV surge protector for field accessible installation.)

LED EMITTERS
High output LED's are utilized with drive currents ranging from 350mA to 1050mA. 70CRI Minimum. LED's are available in standard Neutral White (4000K), or optional Cool White (5000K) or Warm White (3000K). Consult Factory for other LED options.

AMBER LED's
PCA (Phosphor Converted Amber) LED's utilize phosphors to create color output similar to LPS lamps and have a slight output in the blue spectral bandwidth. **TRA** (True Amber) LED's utilize material that emits light in the amber spectral bandwidth only without the use of phosphors.

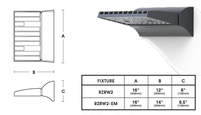
FINISH
Electrostatically applied TGIC Polyester Powder Coat on substrate prepared with 20 PSI power wash at 140°F. Four step media blast and iron phosphate pretreatment for protection and paint adhesion. 400°F bake for maximum hardness and durability.



FIXTURE	A	B	C
RZRW1	8.75" (222mm)	13" (330mm)	6" (152mm)
RZRW1-EM	11" (279mm)	18" (457mm)	8.5" (216mm)

RZR-WM1

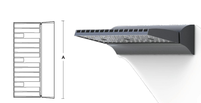
PATENT PENDING



FIXTURE	A	B	C
RZRW2	18" (457mm)	13" (330mm)	6" (152mm)
RZRW2-EM	18" (457mm)	18" (457mm)	8.5" (216mm)

RZR-WM2

PATENT PENDING



FIXTURE	A	B	C
RZRW3	23" (584mm)	13" (330mm)	6" (152mm)
RZRW3-EM	23" (584mm)	18" (457mm)	8.5" (216mm)

RZR-WM3

PATENT PENDING

2019093

U.S. Architectural Lighting

660 West Avenue O, Palmdale, CA 93551
Phone (661) 263-2000 Fax (661) 263-2001
www.usalfg.com

U.S. ARCHITECTURAL LIGHTING

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
☒ ▫	W3	19	U.S. ARCHITECTURAL LIGHTING	RZR-WM1-PLED-III-W-20LED-350mA-27K EM1 WALL MT AT 9 FT AFG MMS11 BUG RATING B1 UO G1	CAST BLACK PAINTED FINNED METAL HOUSING.	20 WHITE LIGHT EMITTING DIODES (LEDS), BASE UP.	20	RZR-WM1-PLED-III-W-20LED-350mA-40K.ies	151	0.9	21.4
◪ ▫	SA3	12	U.S. ARCHITECTURAL LIGHTING	RZR-M-PLED-IV-FT-48LED-1050mA-27K-HS MSF311MM511 POLE MT AT 18 FT AFG BUG RATING B1 UO G3	CAST BLACK PAINTED FINNED METAL HOUSING.	48 WHITE LIGHT EMITTING DIODES (LEDS), BASE UP.	48	RZRM-PLED-IV-FT-48LED-1050mA-27K-HS.ies	256	0.9	159.6
☒ ▫	W1	29	U.S. ARCHITECTURAL LIGHTING	RZR-WM2-PLED-IV-FT-40LED-1050mA-27K MM511 MSF 311 WALL MT AT 18 FT AFG BUG RARING B2 UO G3	CAST BLACK PAINTED FINNED METAL HOUSING.	40 WHITE LIGHT EMITTING DIODES (LEDS), BASE UP.	40	RZR-WM2-PLED-IV-FT-40LED-1050mA-27K.ies	326	0.9	128.2
☒ ▪ ☒	SA2	2	U.S. ARCHITECTURAL LIGHTING	RZR-M-PLED-VSQ-W-48LED-1050mA-27K MM511 MSF311 POLE MT AT 18 FT AFG 15.5 FT POLE 30 IN BASE BUG RATING B5 U0 G3	CAST BLACK PAINTED FINNED METAL HOUSING.	48 WHITE LIGHT EMITTING DIODES (LEDS), BASE UP.	48	RZR-PLED-VSQ-W-48LED-1050mA-27K.ies	358	0.9	319.2
	W4	12	U.S. ARCHITECTURAL LIGHTING	LC6SLEM 27K 6LCSL 14 L EM	6 INCH LBR DOWNLIGHT 1400LM 2700K		1		1641	0.9	18

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	2.5 fc	16.7 fc	0.0 fc	N/A	N/A
Calc Zone #2	+	0.1 fc	9.6 fc	0.0 fc	N/A	N/A
Calc Zone #3	+	3.2 fc	10.0 fc	0.3 fc	33.3:1	10.7:1
Calc Zone #4	+	2.1 fc	3.9 fc	1.0 fc	3.9:1	2.1:1
Calc Zone #6	+	10.0 fc	10.0 fc	10.0 fc	1.0:1	1.0:1
Calc Zone #6	+	10.2 fc	10.2 fc	10.2 fc	1.0:1	1.0:1
Calc Zone #7	+	10.0 fc	10.9 fc	9.0 fc	1.2:1	1.1:1
Calc Zone #8	+	10.9 fc	10.9 fc	10.9 fc	1.0:1	1.0:1
Calc Zone #9	+	11.5 fc	12.9 fc	10.1 fc	1.3:1	1.1:1
Calc Zone #10	+	6.2 fc	6.2 fc	6.2 fc	1.0:1	1.0:1
Calc Zone #11	+	2.6 fc	2.6 fc	2.6 fc	1.0:1	1.0:1
Calc Zone #14	+	3.0 fc	8.9 fc	0.8 fc	11.1:1	3.8:1

LEGEND

BROWN = BUILDING & SAFETY GRADING DIVISION COMMENTS
PURPLE = PLANNING DEPARTMENT COMMENTS
GREEN = ENVIRONMENTAL PROGRAMS DEPARTMENT COMMENTS
LIGHT ORANGE = TRANSPORTATION DEPARTMENT COMMENTS
BLUE = FLOOD CONTROL DISTRICT COMMENTS
LIGHT GREEN = REGIONAL PARKS & OPEN SPACE DISTRICT COMMENTS
RED = FIRE DEPARTMENT COMMENTS
YELLOW = ENVIRONMENTAL HEALTH DEPARTMENT COMMENTS
LIGHT BLUE = BUILDING & SAFETY PLAN CHECK COMMENTS
ORANGE = WASTE MANAGEMENT DEPARTMENT COMMENTS

RPM Engineers, Inc.
102 DISCOVERY
Irvine, CA. 92618
Tel: 949-580-0514
Fax: 949-460-1454
Contact: David Du
e-mail: davidd@rpmpe.com

REGISTERED PROFESSIONAL ENGINEER
LAN V. NGUYEN
No. E15596
Exp.12-31-2025
ELECTRICAL
STATE OF CALIFORNIA

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HPA architecture
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18831 bardeen avenue - ste. #100 irvine, ca 92612
tel: 949•863•1770
fax: 949•863•0851
email: hpa@hparchs.com

Owner:

THRIFTY OIL CO.

13116 Imperial Highway
Santa Fe Springs CA 90670
tel: 562-921-3581

Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	-
Fire Protection:	-
Soils Engineer:	-

Title:

SITE PHOTOMETRIC PLAN

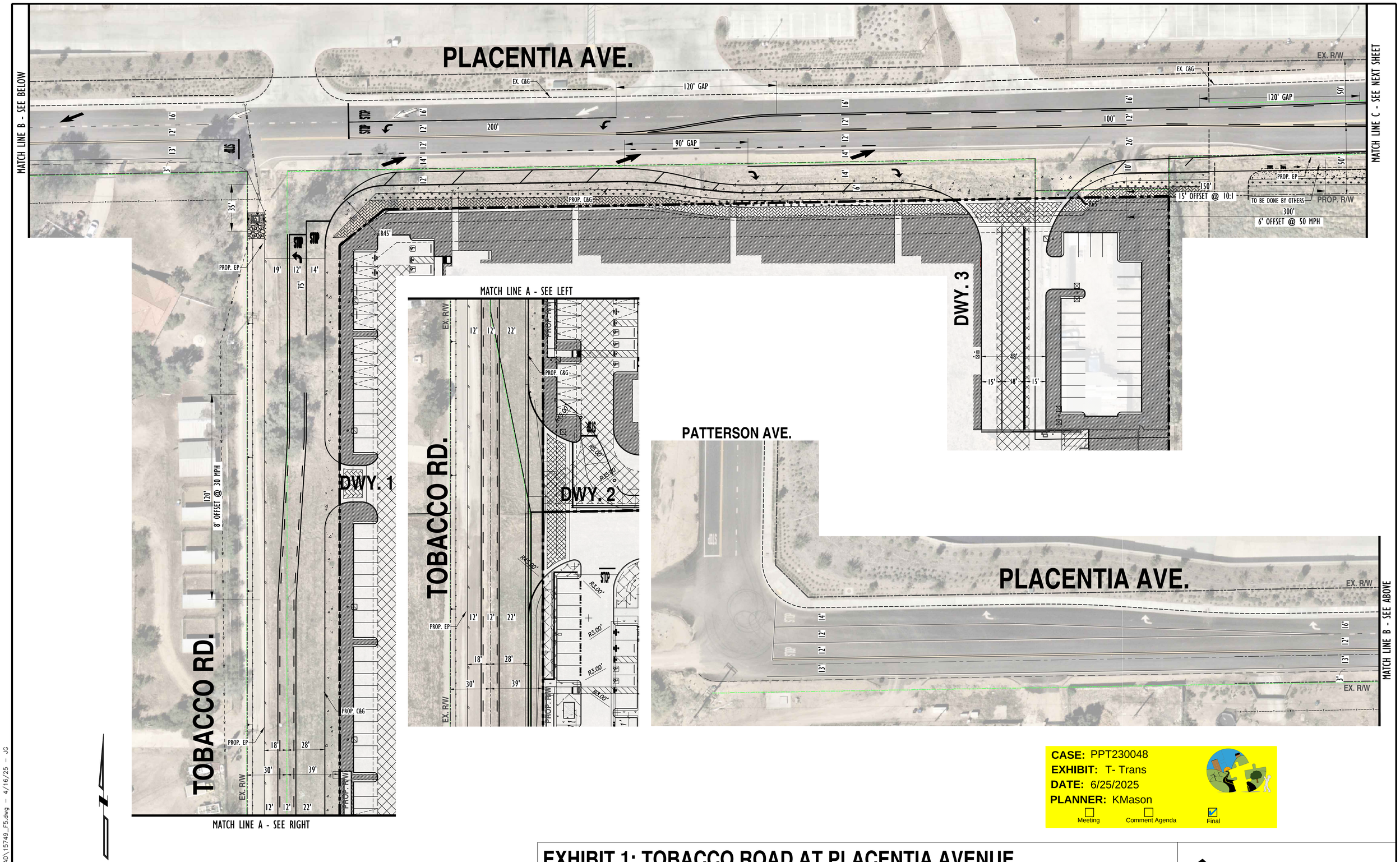
Project Number: 22484
Drawn by: J.K.
Date:
Revision:

DAC 5TH SUBMITTAL 01/13/25

Sheet:

FC-1.0

RPM#23-001W1 01/17/2025



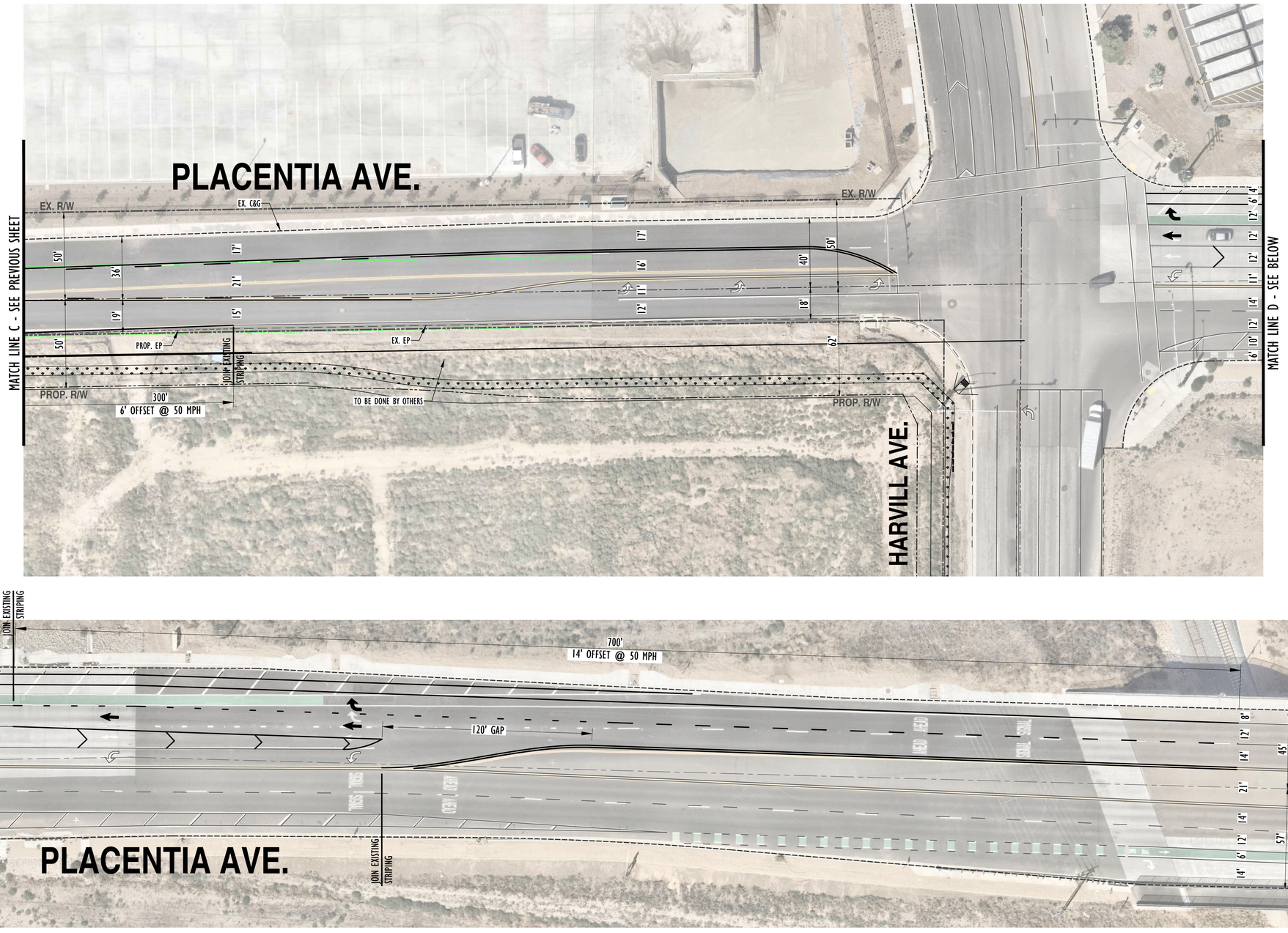
CASE: PPT230048
EXHIBIT: T- Trans
DATE: 6/25/2025
PLANNER: KMason

☐ Meeting ☐ Comment Agenda ☑ Final

EXHIBIT 1: TOBACCO ROAD AT PLACENTIA AVENUE OPENING DAY CONCEPT STRIPING IMPROVEMENTS

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

15749 – ACAD\15749_F5.dwg – 4/16/25 – JG



SCALE: 1" = 30' (ON 24" x 36" SHEET)

0 15 30 60 90 120

EXHIBIT 1: TOBACCO ROAD AT PLACENTIA AVENUE OPENING DAY CONCEPT STRIPING IMPROVEMENTS

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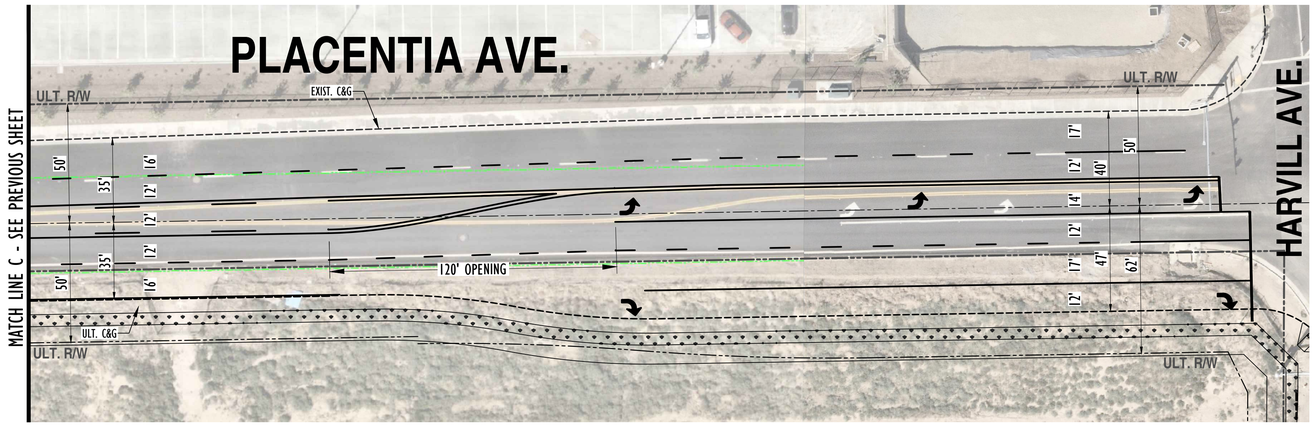
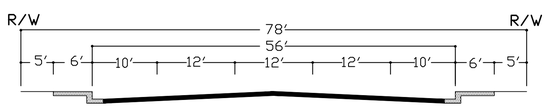
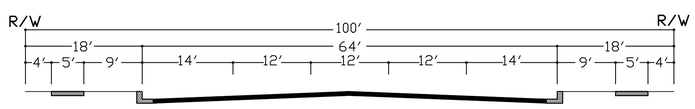




INDUSTRIAL COLLECTOR
TOBACCO RD.



SECONDARY HIGHWAY
PLACENTIA AVE.

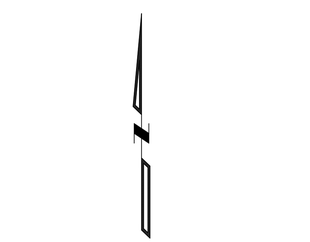


EXHIBIT 2: TOBACCO ROAD AT PLACENTIA AVENUE
ULTIMATE CONCEPT STRIPING IMPROVEMENTS

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

15749 - ACAD\15749_F5.dwg - 4/16/25 - JG

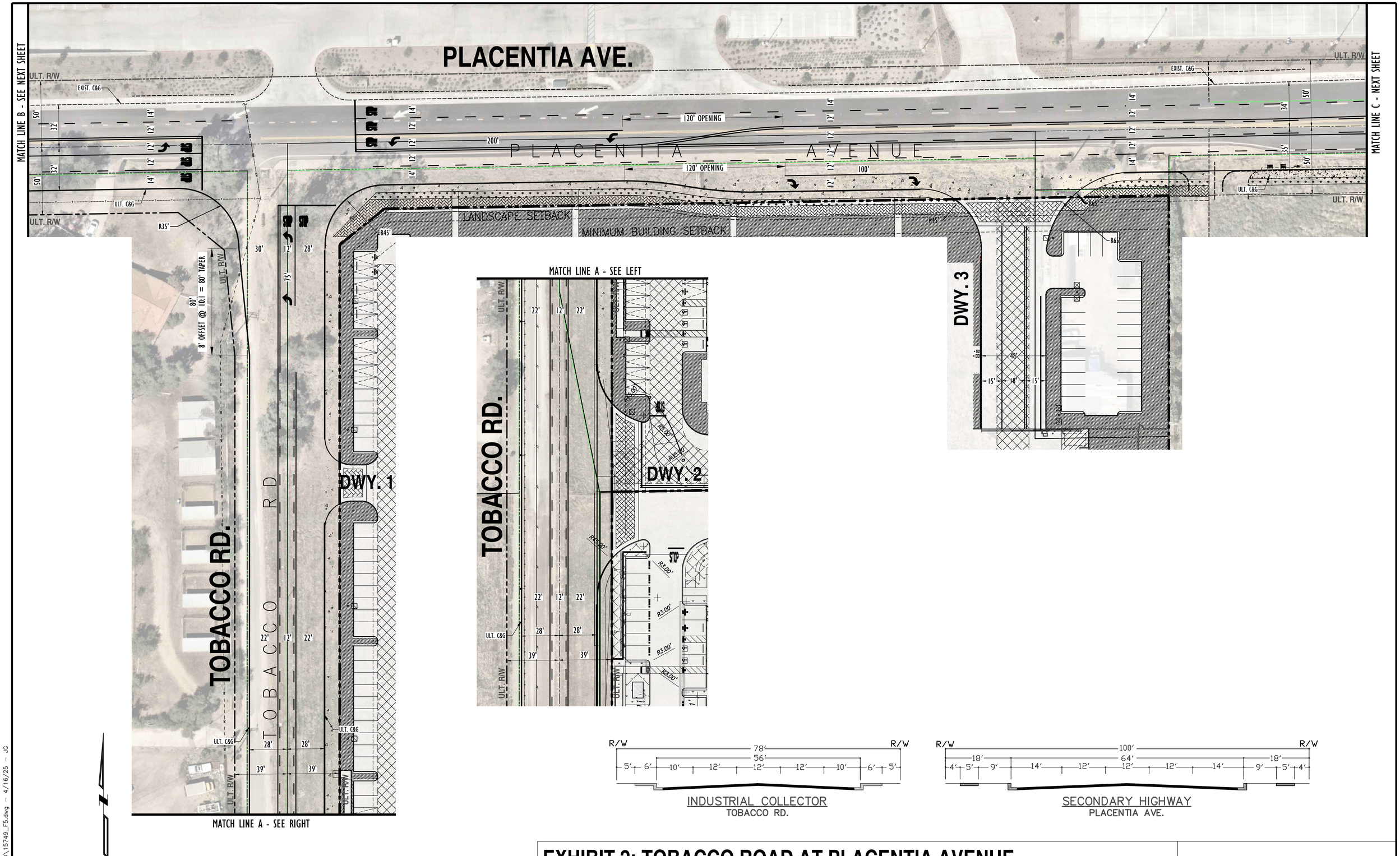


EXHIBIT 2: TOBACCO ROAD AT PLACENTIA AVENUE ULTIMATE CONCEPT STRIPING IMPROVEMENTS

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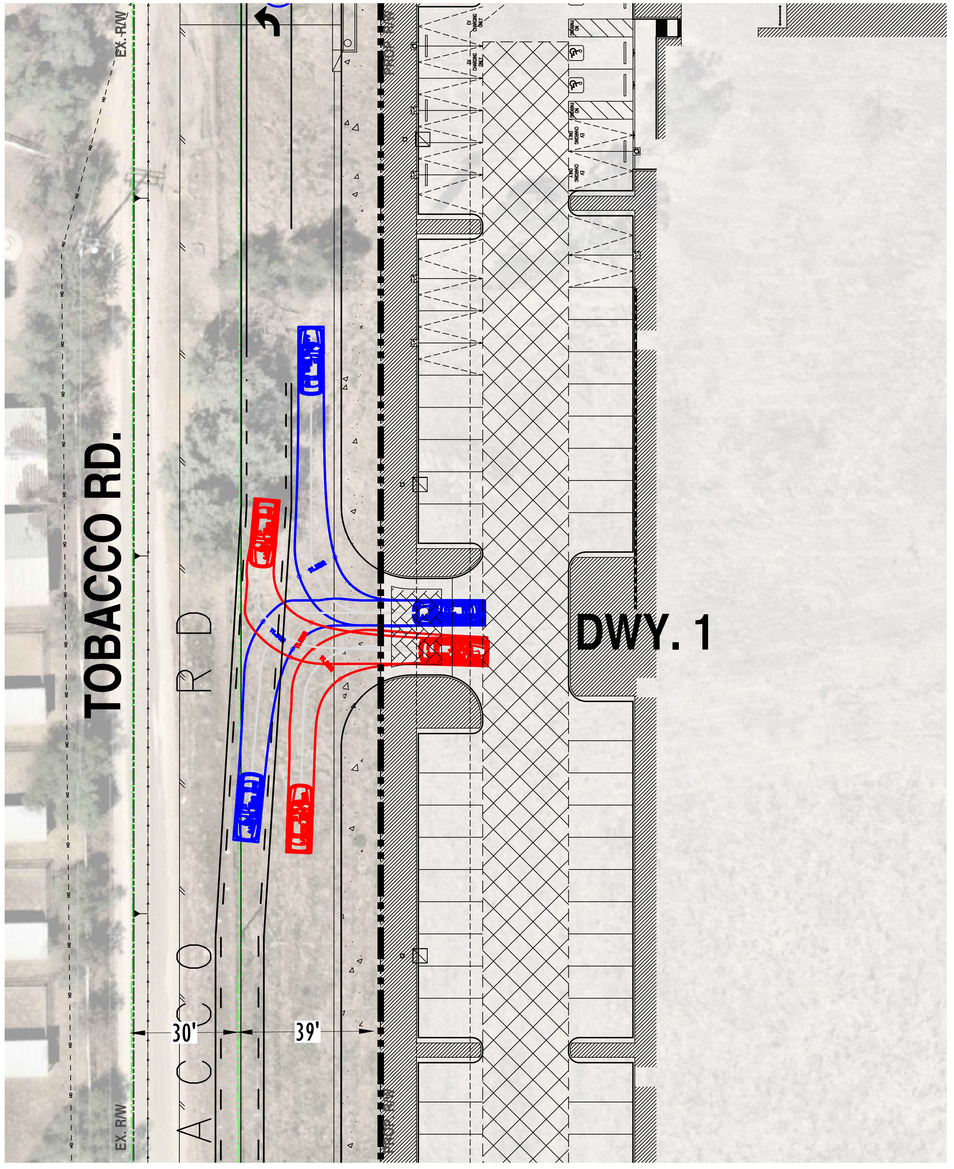

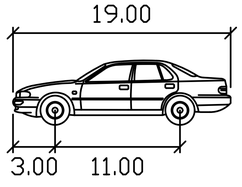

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Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6

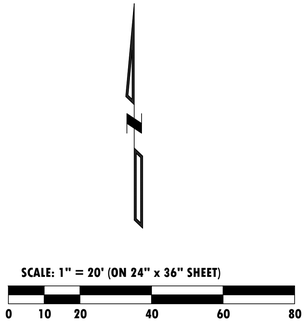
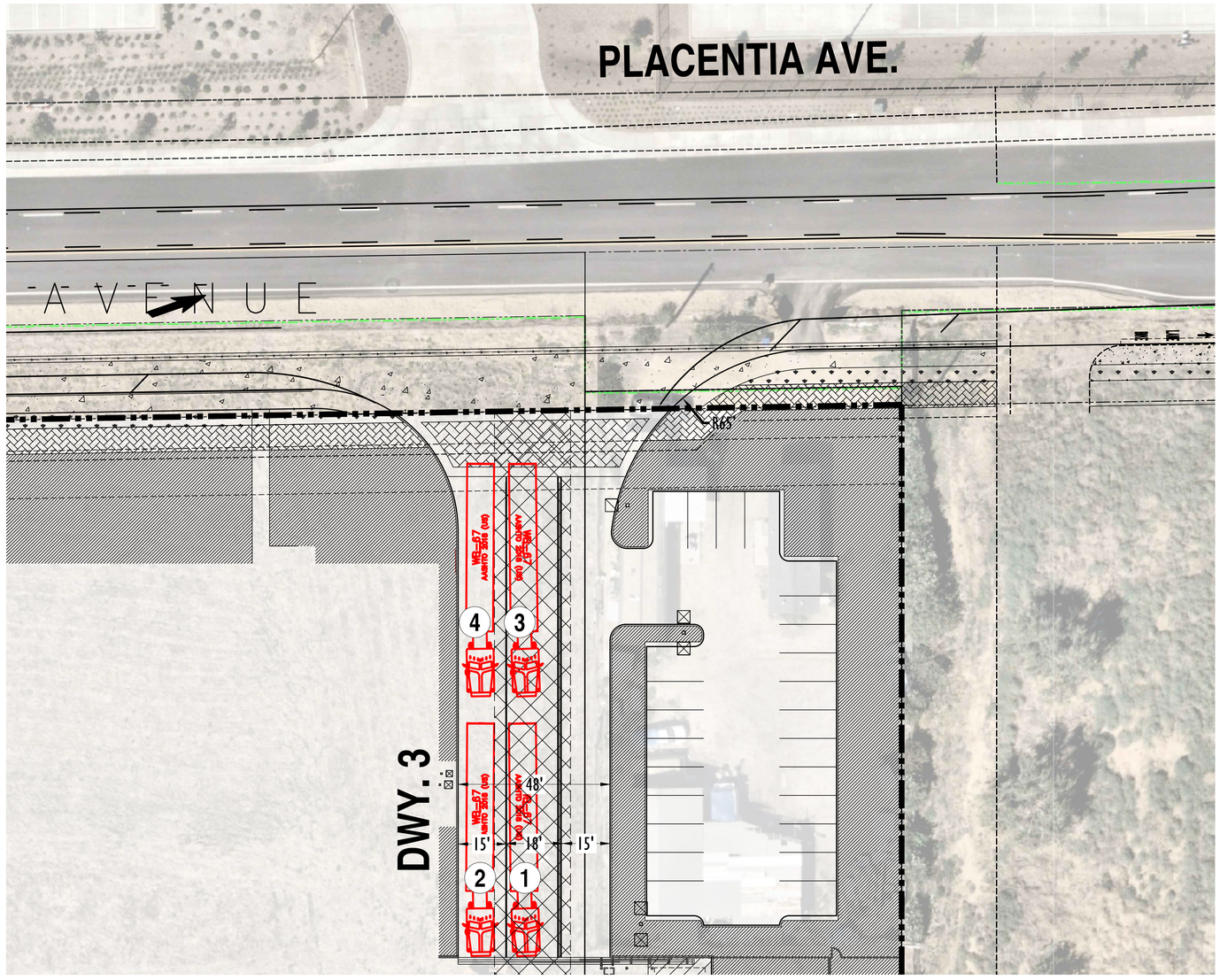


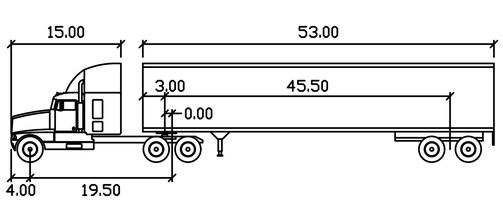
EXHIBIT 5: PASSENGER CAR TURNING TEMPLATE
OPENING DAY TOBACCO ROAD AT PROJECT DRIVEWAY 1

URBAN CROSSROADS

WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

15749 - ACAD\15749_F5.dwg - 4/16/25 - JG





WB-67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

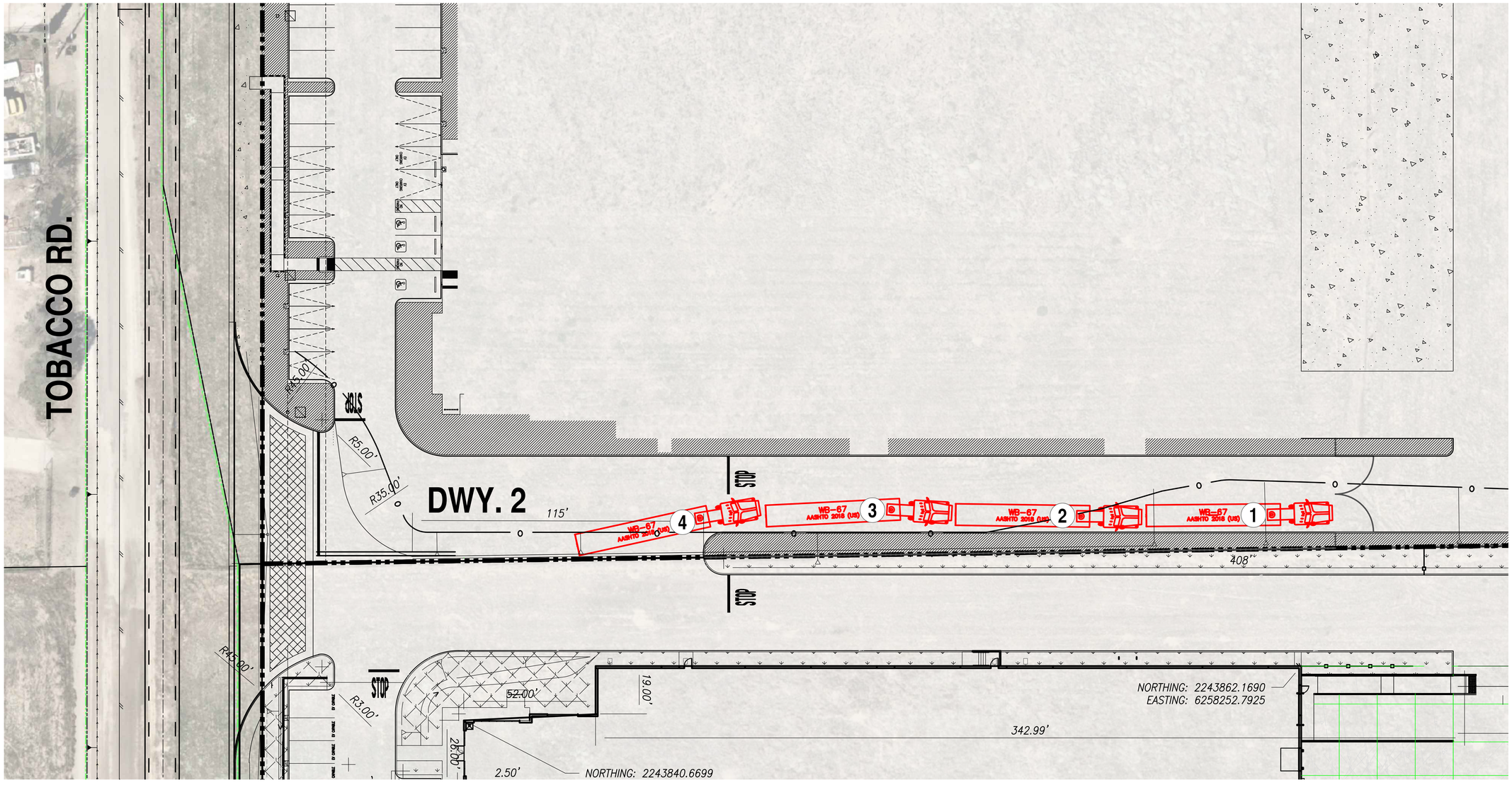
0 10 20 40 60 80

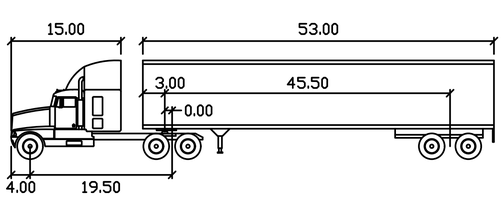
EXHIBIT 4: WB-67 TRUCK STACKING
PLACENTIA AVENUE AT PROJECT DRIVEWAY 3

URBAN CROSSROADS

WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

15749 - ACAD\15749_F5.dwg - 4/16/25 - JG





WB-67

	feet		
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.50	Steering Angle	28.4
Tractor Track	8.00	Articulating Angle	75.0
Trailer Track	8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 3: WB-67 TRUCK STACKING
TOBACCO ROAD AT PROJECT DRIVEWAY 2

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

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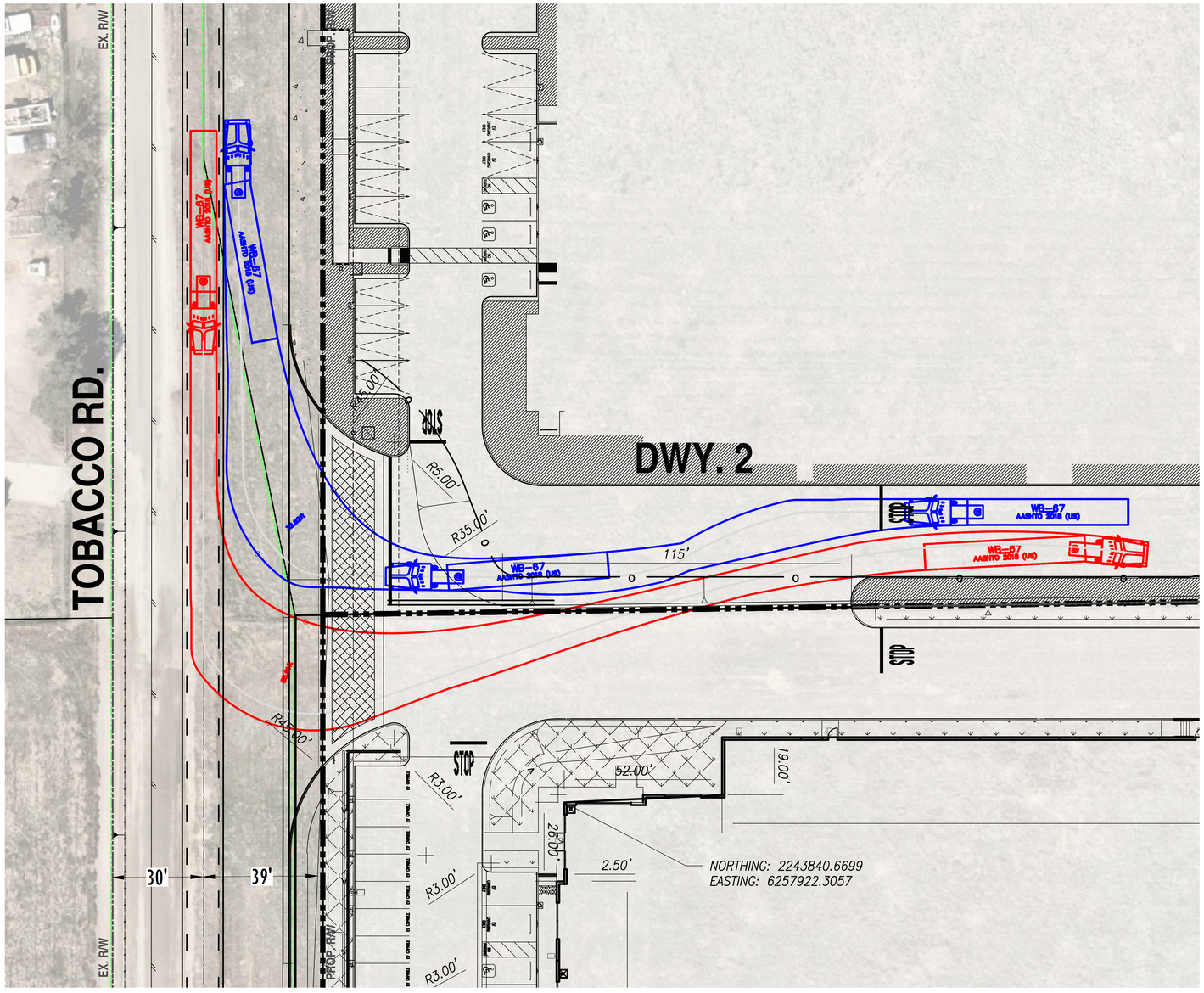
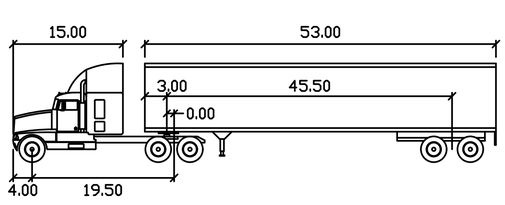




WB-67

SCALE: 1" = 20' (ON 24" x 36" SHEET)

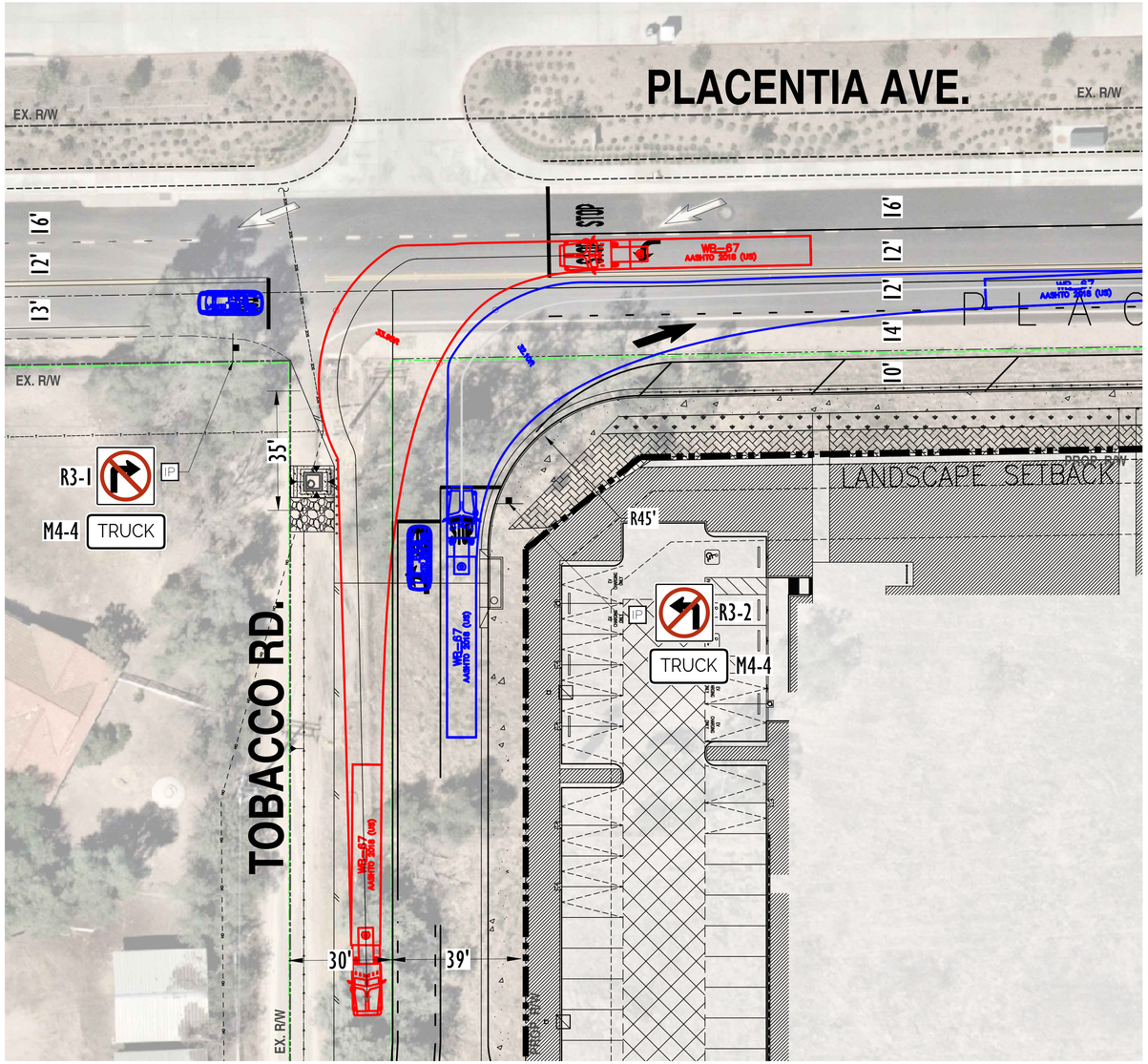
0 10 20 40 60 80

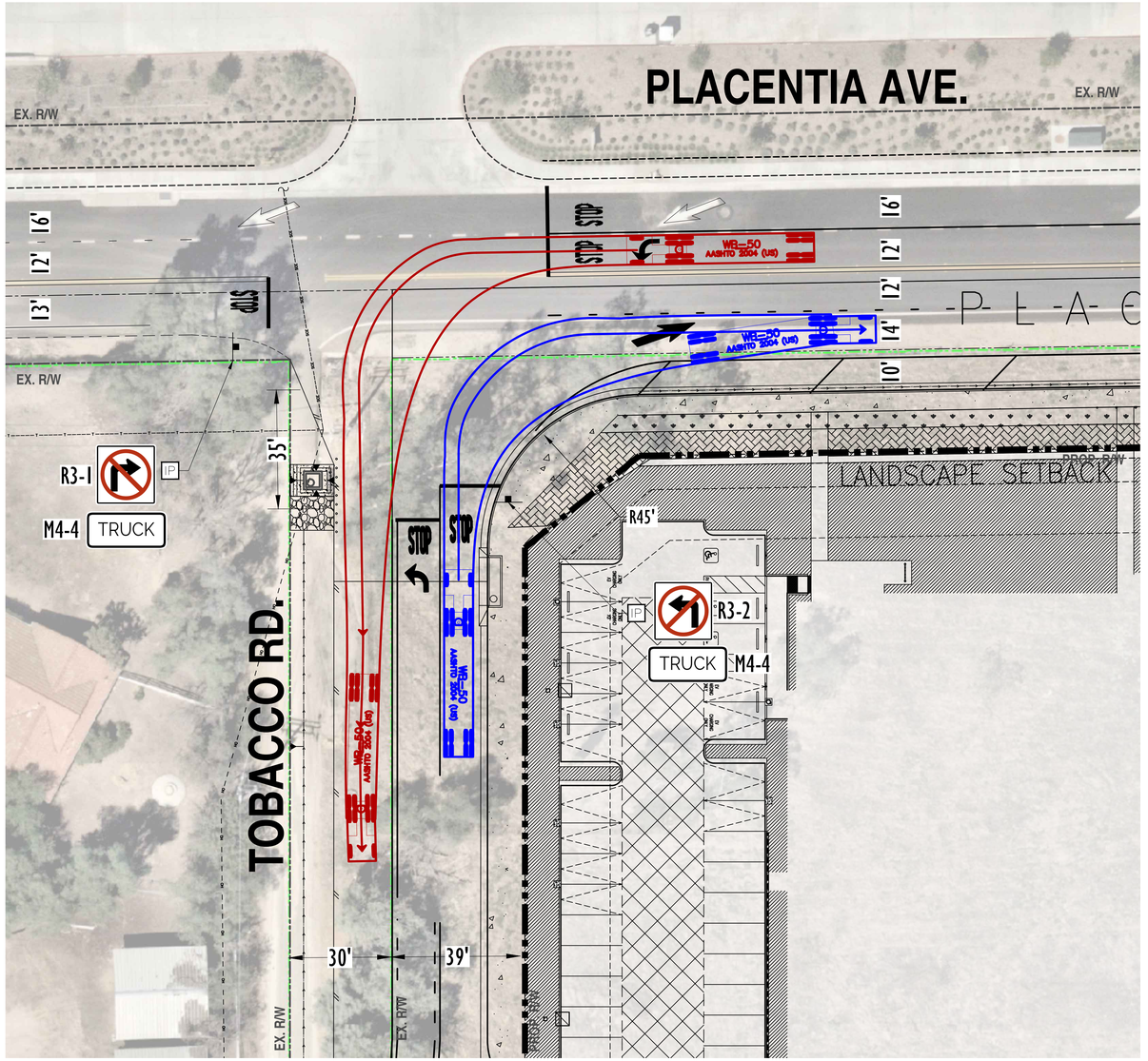
	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

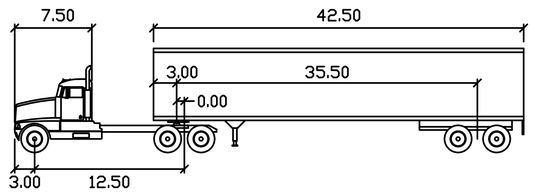
EXHIBIT 6: WB-67 TRUCK TURNING TEMPLATE
OPENING DAY TOBACCO ROAD AT PROJECT DRIVEWAY 2

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

15749 - ACAD\15749_F5.dwg - 4/16/25 - JG

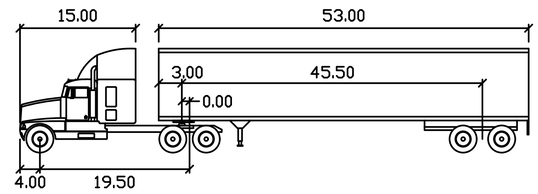






WB-50

	feet		
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.50	Steering Angle	17.7
Tractor Track	8.00	Articulating Angle	70.0
Trailer Track	8.50		



WB-67

	feet		
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.50	Steering Angle	28.4
Tractor Track	8.00	Articulating Angle	75.0
Trailer Track	8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

SIGNING CONSTRUCTION NOTES:

IP FURNISH AND INSTALL SIGN (AS NOTED) AND POST (IF NECESSARY) PER CITY STANDARDS.

EXHIBIT 7: WB-67 & WB-50 TRUCK TURNING TEMPLATE
OPENING DAY TOBACCO ROAD AT PLACENTIA AVENUE

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

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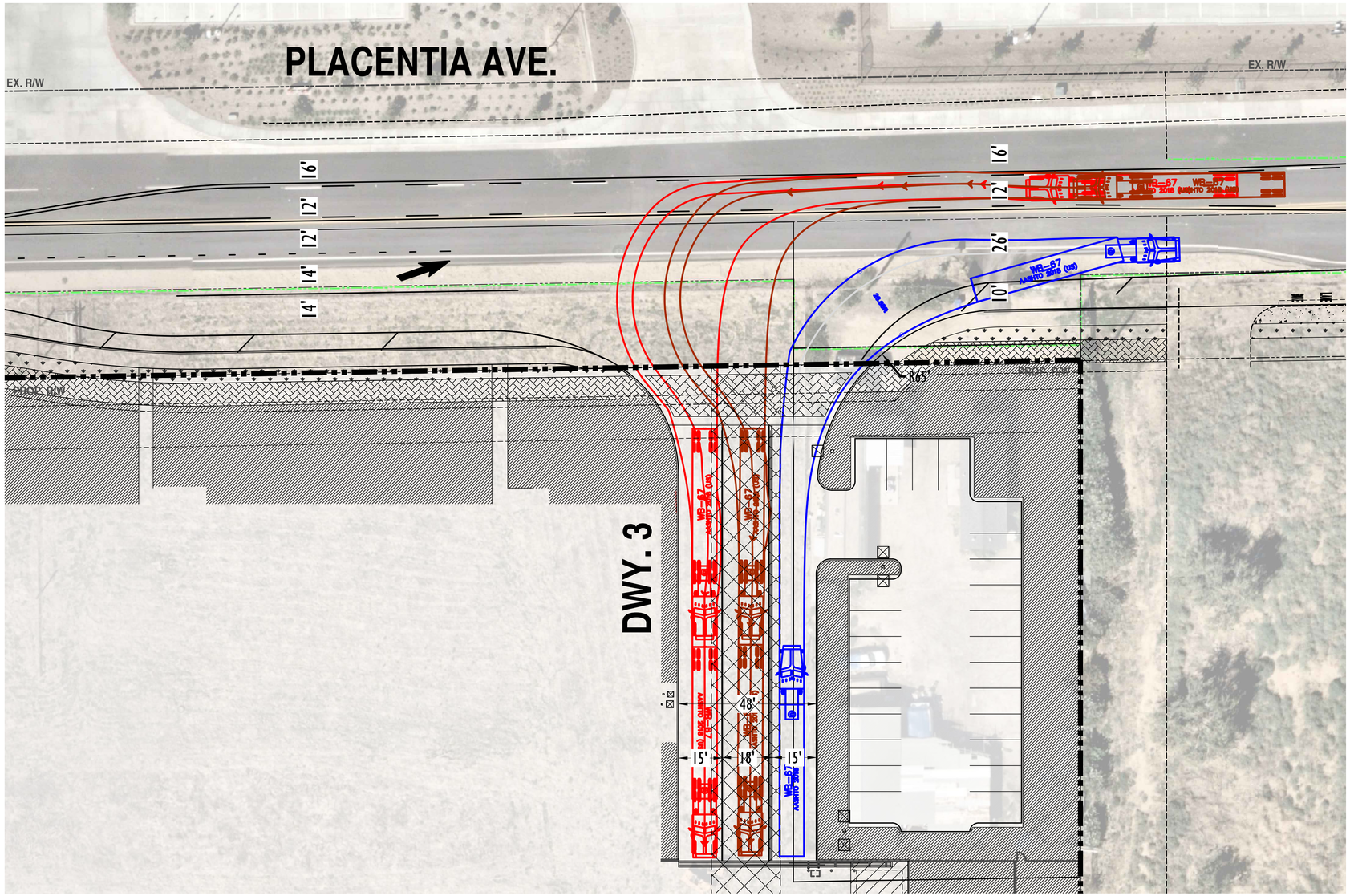

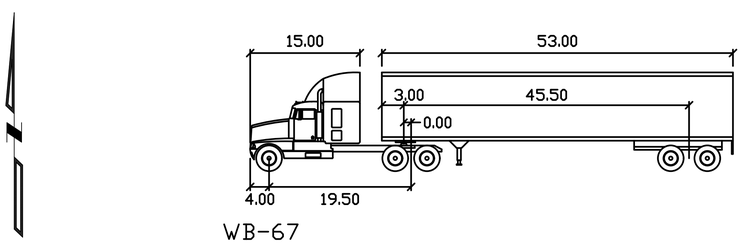

WB-67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 8: WB-67 TRUCK TURNING TEMPLATE
OPENING DAY PLACENTIA AVENUE AT PROJECT DRIVEWAY 3

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

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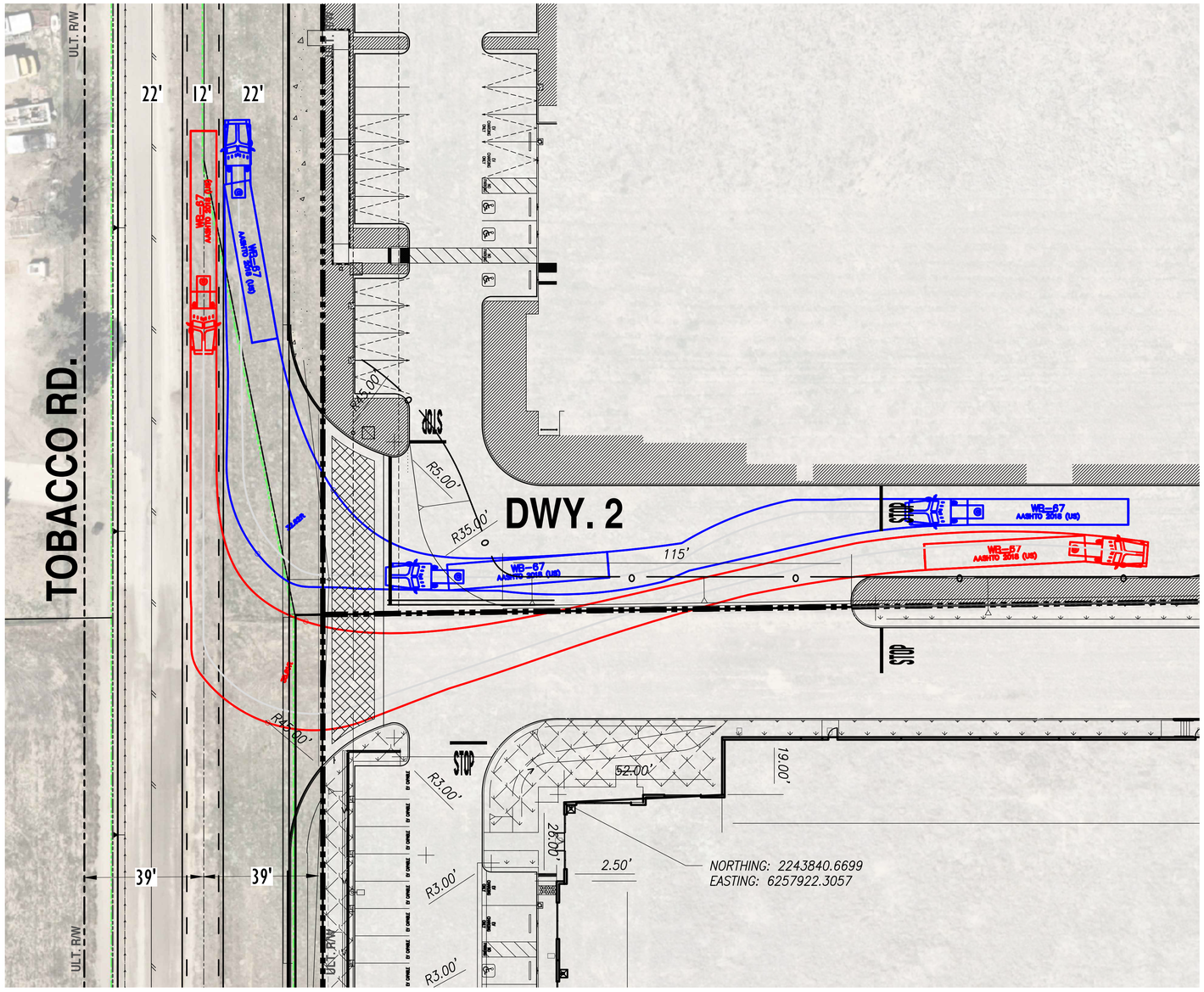

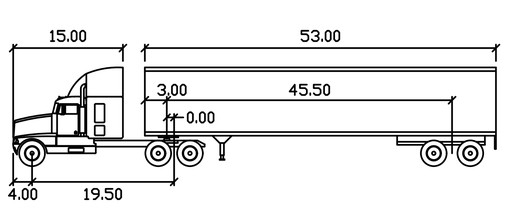

WB-67

	feet		
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.50	Steering Angle	28.4
Tractor Track	8.00	Articulating Angle	75.0
Trailer Track	8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 10: WB-67 TRUCK TURNING TEMPLATE
ULTIMATE TOBACCO ROAD AT PROJECT DRIVEWAY 2

URBAN CROSSROADS

WWW.URBANXROADS.COM
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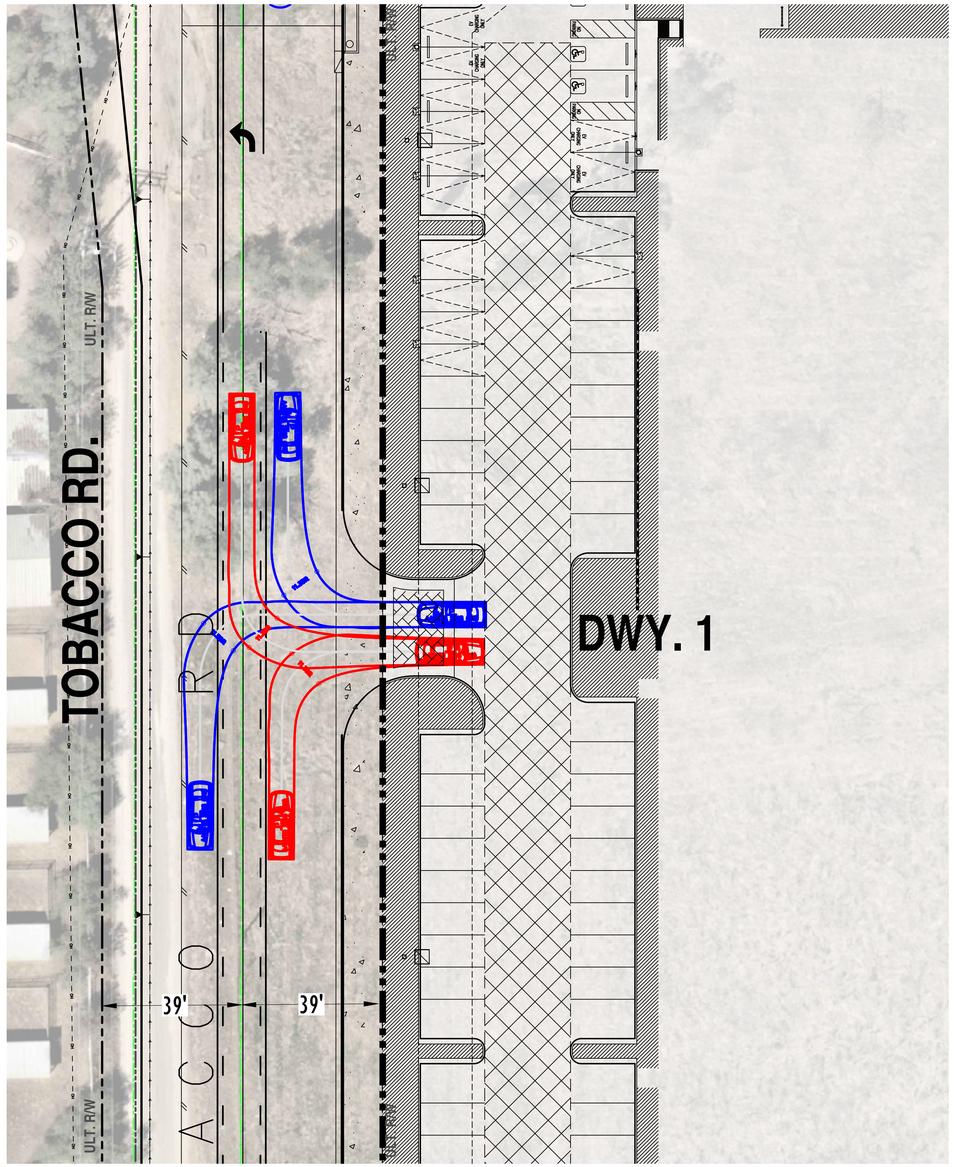

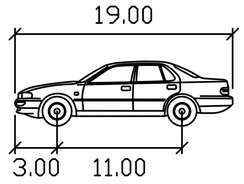

P

	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 9: PASSENGER CAR TURNING TEMPLATE
ULTIMATE TOBACCO ROAD AT PROJECT DRIVEWAY 1

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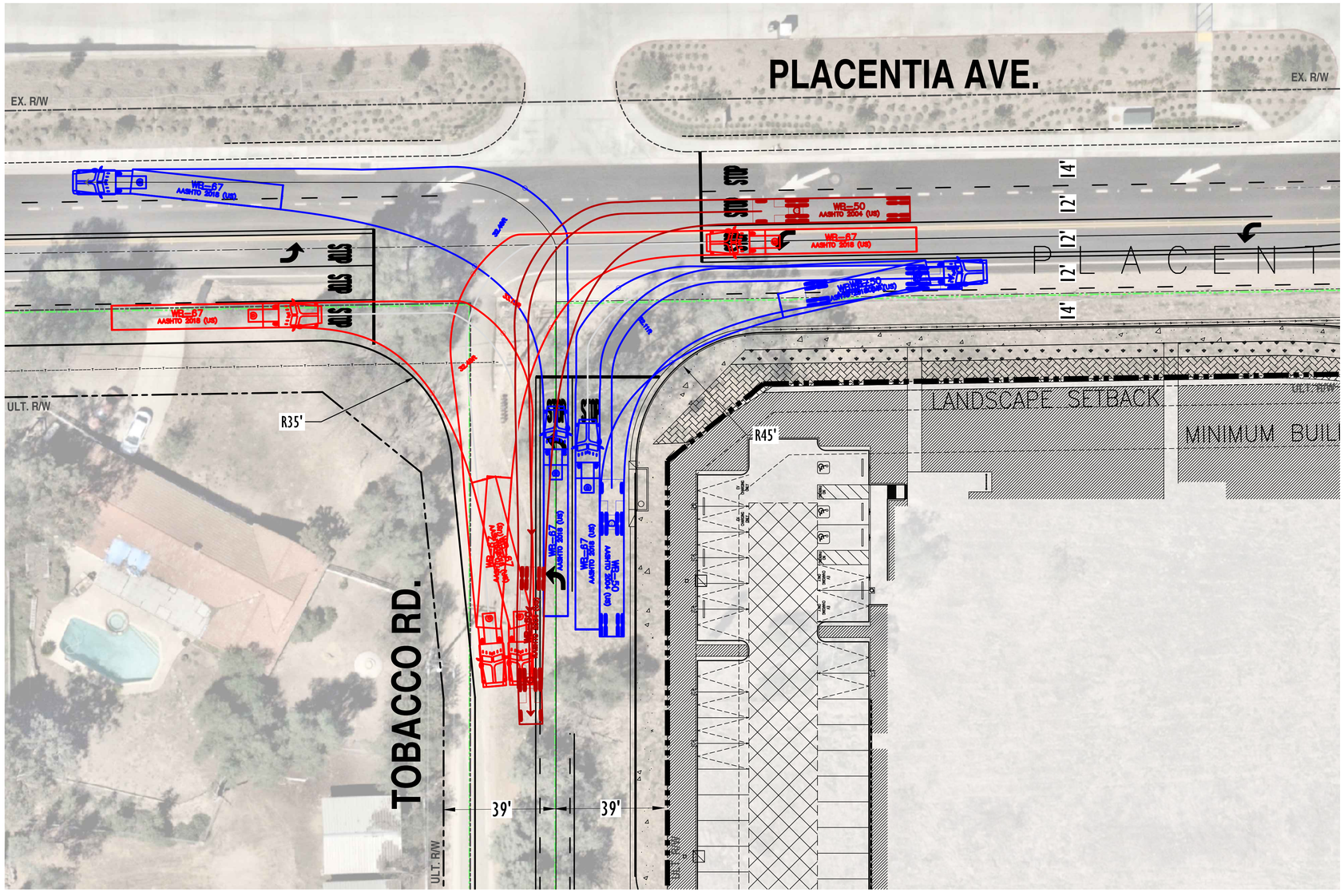

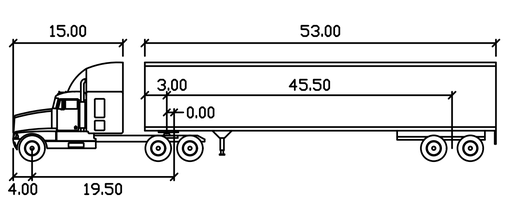

WB-67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 11: WB-67 TRUCK TURNING TEMPLATE
ULTIMATE TOBACCO ROAD AT PLACENTIA AVENUE

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

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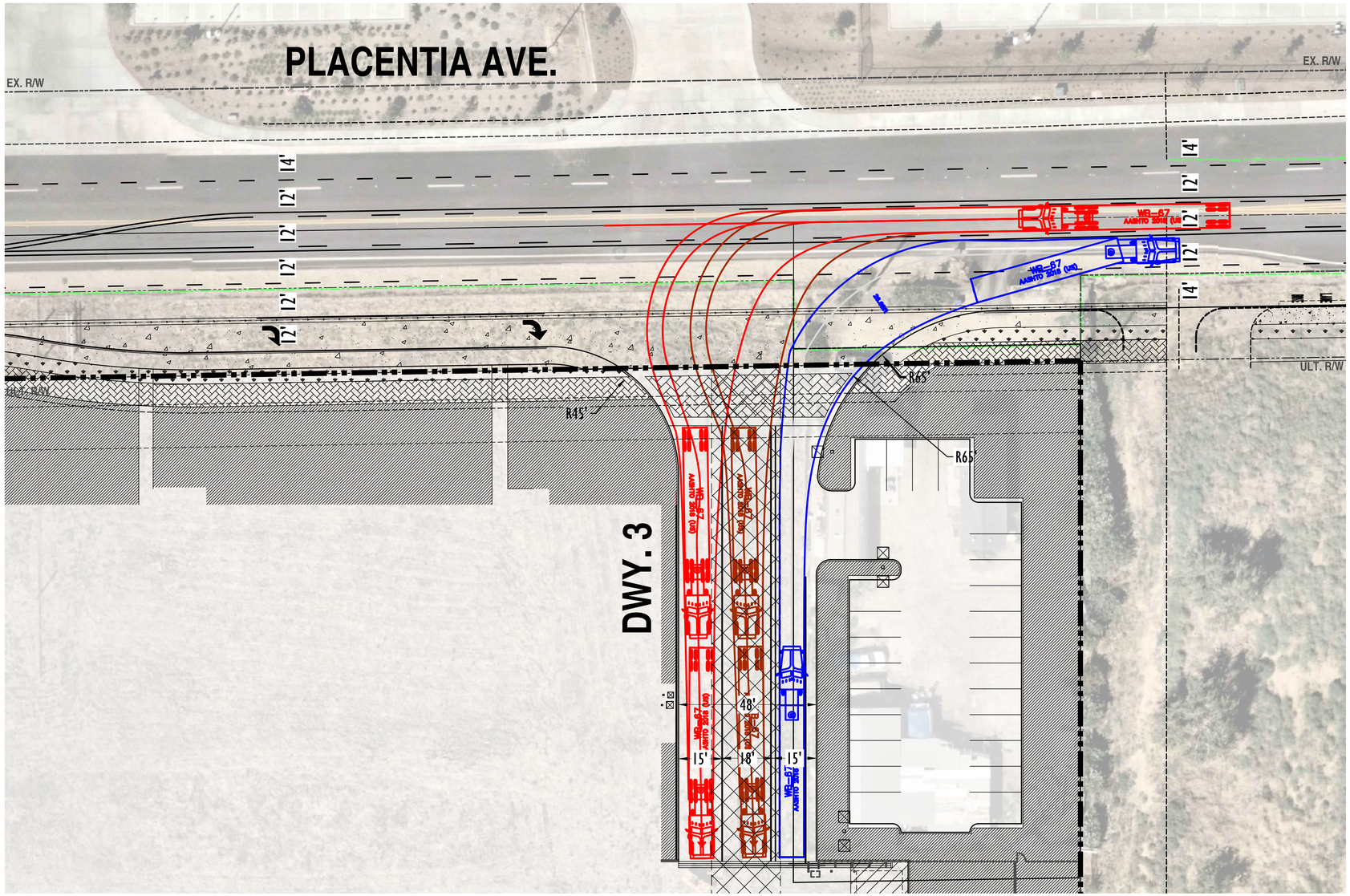

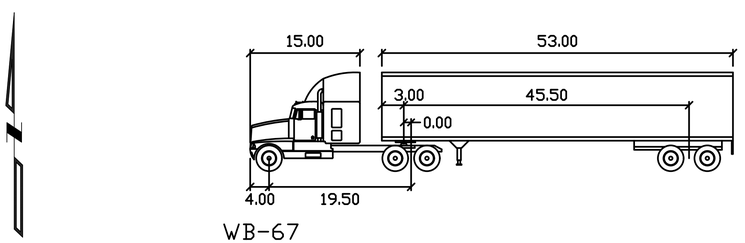

WB-67

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 12: WB-67 TRUCK TURNING TEMPLATE
ULTIMATE PLACENTIA AVENUE AT PROJECT DRIVEWAY 3

URBAN CROSSROADS

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TELEPHONE # 949-660-1994

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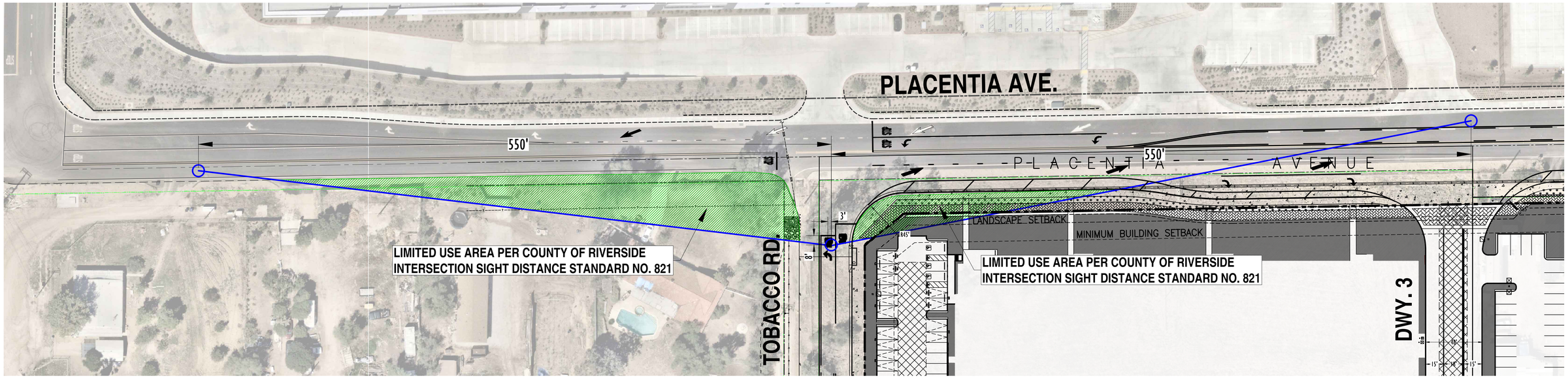
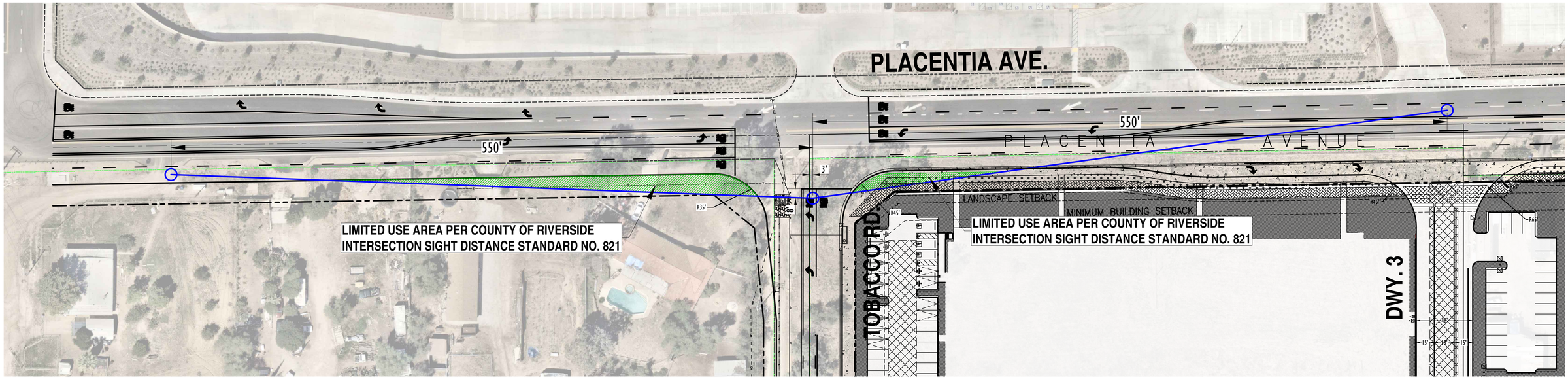
OPENING DAY



ULTIMATE



SCALE: 1" = 30' (ON 24" x 36" SHEET)

0 15 30 60 90 120

EXHIBIT 13: TOBACCO ROAD AT PLACENTIA AVENUE INTERSECTION SIGHT DISTANCE

URBAN CROSSROADS

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TELEPHONE # 949-660-1994

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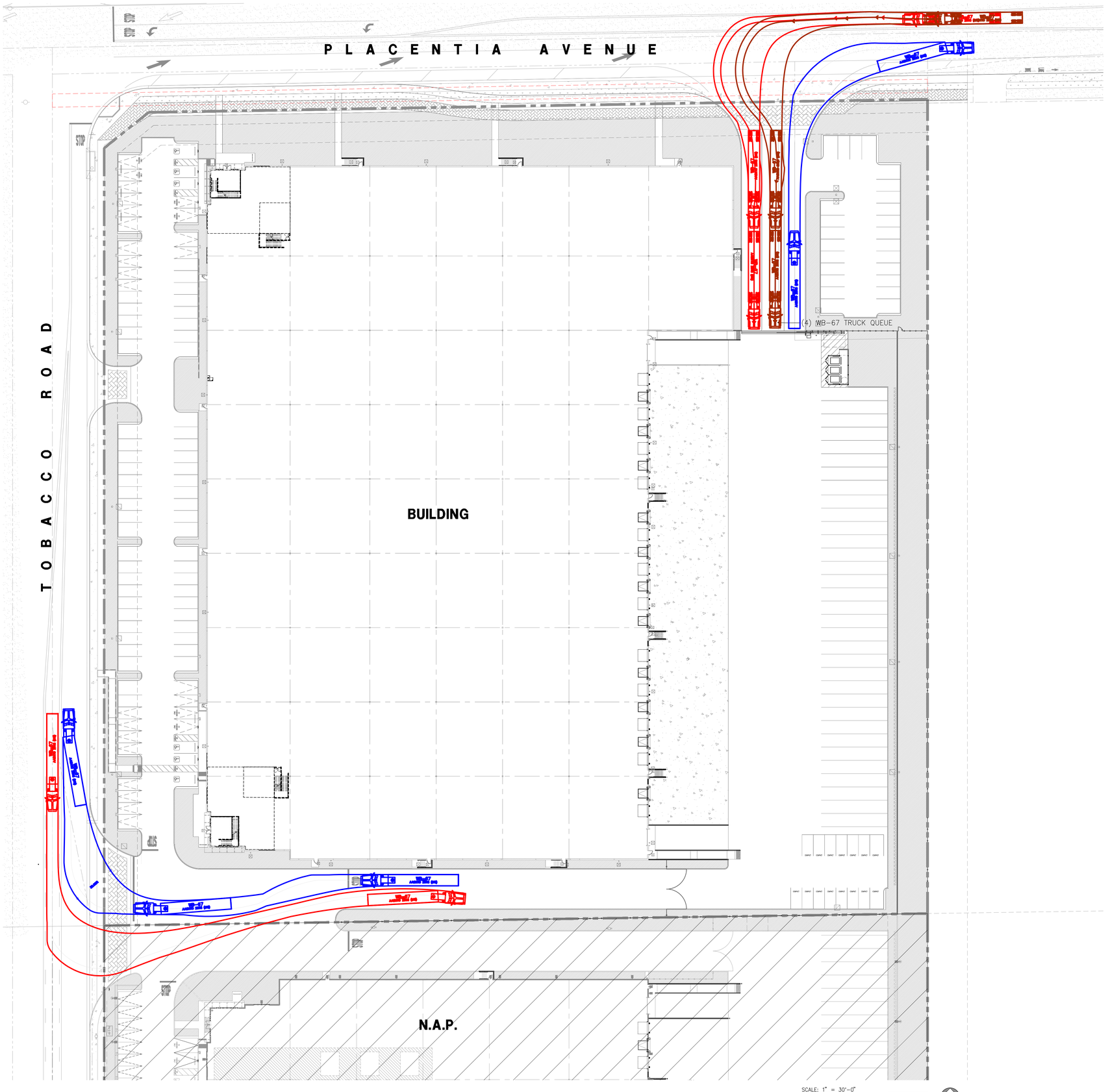
CASE: PPT230048
EXHIBIT: T-Truck Turn
DATE: 6/25/2025
PLANNER: KMason

☐ Meeting ☐ Comment Agenda ☑ Final



TRUCK TURN TEMPLATE scale: 1" = 30'-0" (A)

SCALE: 1" = 30'-0"
0 30' 60' 90'
TRUE NORTH

CAUTION : IF THIS SHEET IS NOT A 30" X 42" IT IS A REDUCED PRINT

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hpa, inc.
18831 bardeen avenue - ste. #100 irvine, ca 92612
tel: 949•863•1770
fax: 949•863•0851
email: hpa@hparchs.com

Owner:

THRIFTY OIL CO.

13116 Imperial Highway
Santa Fe Springs CA 90670
tel: 562-921-3581

Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: TRUCK TURN TEMPLATE

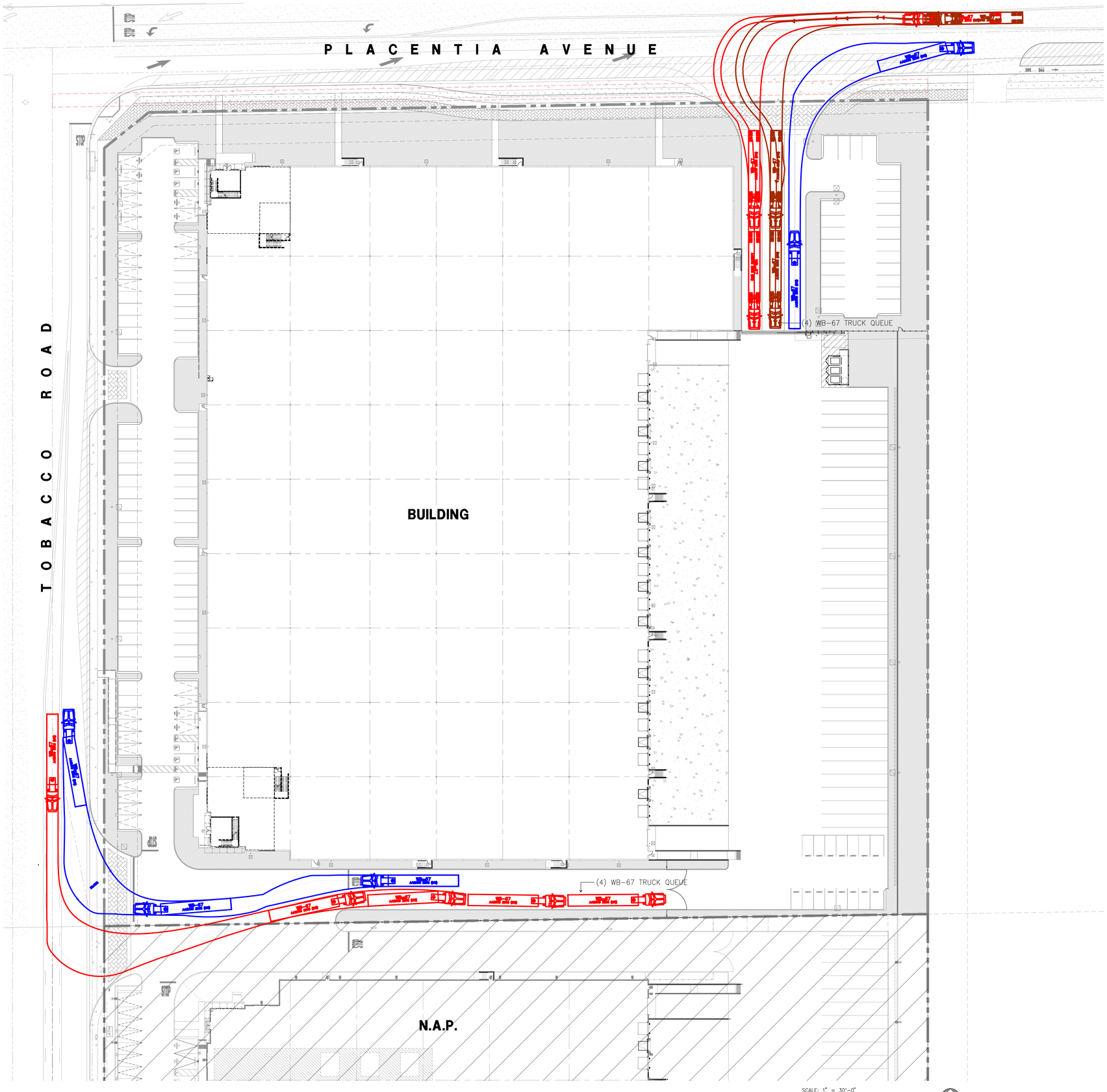
Project Number:	22484
Drawn by:	JK
Date:	

Revision:

DAC 5TH SUBMITTAL	01/13/25

Sheet:

DAB-A1.1B



TRUCK STACKING
scale: 1"=30'-0"

A

SCALE: 1" = 30'-0"
0 30' 60' 90'

N TRUE NORTH

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Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: TRUCK STACKING

Project Number:	22484
Drawn by:	JK
Date:	

Revision:

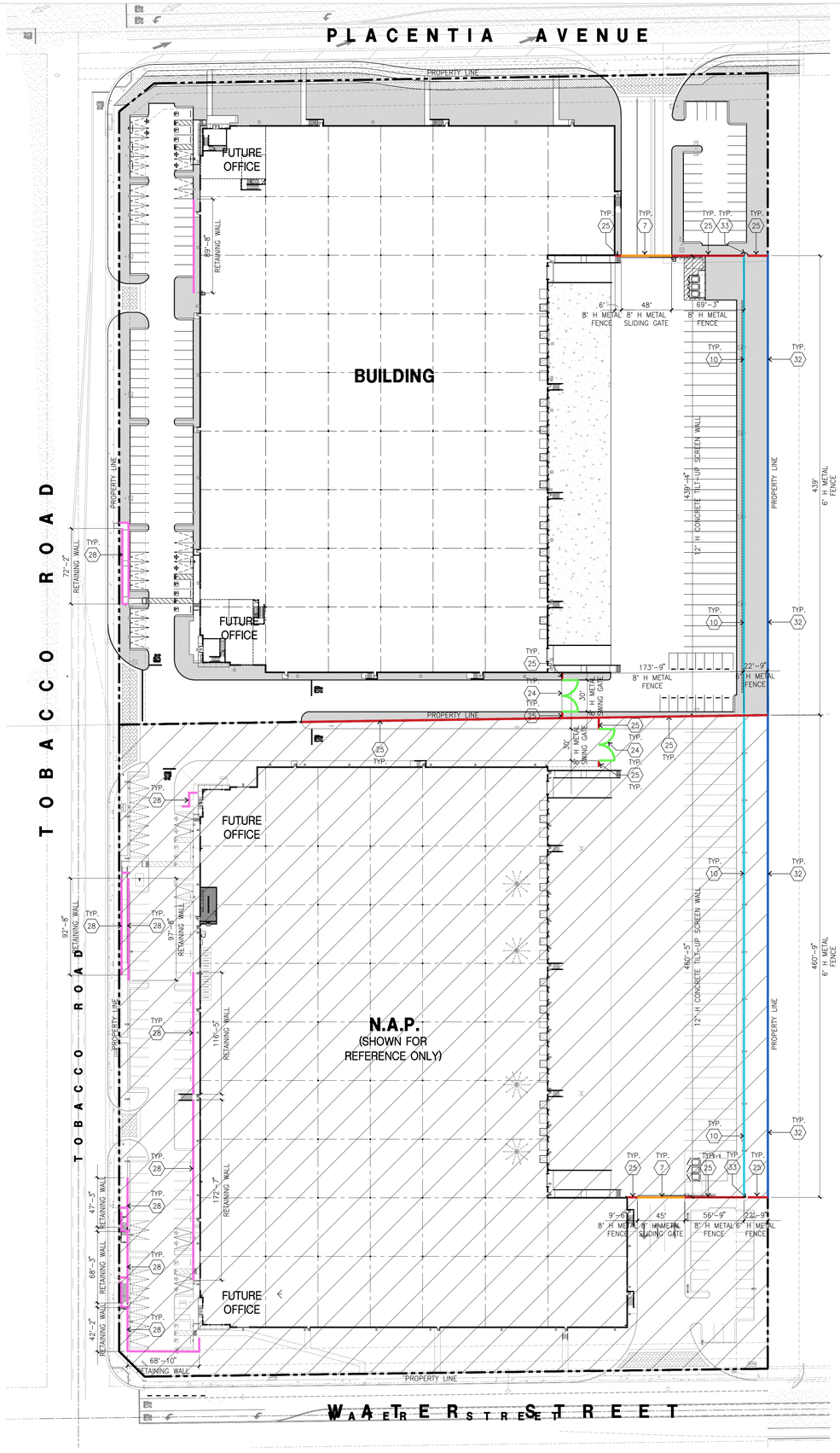
DAC 5TH SUBMITTAL	01/13/25

Sheet:

DAB-A1.1C

CASE: PPT230048
EXHIBIT: W-Wall&Fenc
DATE: 6/25/2025
PLANNER: KMason

☐ Meeting ☐ Comment Agenda ☑ Final

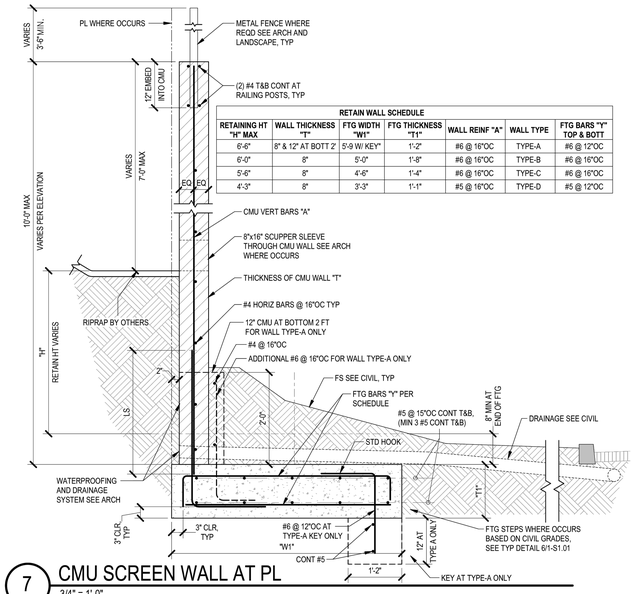


SITE PLAN KEYNOTES

1. PAVEMENT PER CIVIL. SEE CIVIL PLANS
2. NOT USED
3. CONCRETE WALKWAY, MEDIUM BROOM FINISH
4. DRIVEWAY APRONS TO BE CONSTRUCTED. SEE LANDSCAPE DRAWINGS.
5. 5'-6"X4" THICK CONCRETE EXTERIOR LANDING PAD TYP. AT ALL EXTERIOR MAN DOORS TO LANDSCAPED AREAS. FINISH TO BE MEDIUM BROOM FINISH. PROVIDE WALK TO PUBLIC WAY OR DRIVE WAY AS REQ. BY CITY INSPECTOR.
6. APPROXIMATE LOCATION OF TRANSFORMER. CONTRACTOR TO VERIFY WITH S.C.E.,
7. PROVIDE 8' HIGH METAL SLIDING GATES W/ KNOX-BOX PER FIRE DEPARTMENT STANDARDS PER DRIVEWAY.
8. CONCRETE RAMP W/ 42" HIGH CONCRETE WALL.
9. EXTERIOR BIKE RACK TYPICAL.
10. 12' HIGH CONCRETE TILT-UP SCREEN WALL.
11. EXTERIOR CONCRETE STAIR.
12. CONCRETE CURB. SEE CIVIL DRAWINGS.
13. LANDSCAPE. ALL LANDSCAPE AREAS INDICATED BY SHADING.
14. FUTURE GUARD SHACK. PROVIDE CONDUIT.
15. PRE-CAST CONCRETE WHEEL STOP.
16. CONCRETE FILLED GUARD POST "6 DIA. U.N.O. 42" H,
17. TRASH ENCLOSURE PER COUNTY STANDARD.
18. ACCESSIBLE ENTRY SIGN.
19. ACCESSIBLE PARKING STALL SIGN.
20. TRUNCATED DOME.
21. APPROXIMATE LOCATION OF FIRE HYDRANT.
22. WALL MOUNTED LIGHTING FIXTURE.
23. SITE LIGHT POLE W/ CONCRETE BASE.
24. 8' HIGH METAL SWING GATE W/ KNOX-BOX PER FIRE DEPARTMENT STANDARDS PER DRIVEWAY.
25. 8' HIGH METAL FENCE.
26. 2'X2' CONCRETE PAD FOR FUTURE EV CHARGER. PROVIDE CONDUIT.
27. ROOF DRAIN THRU CURB.
28. RETAINING WALL. SEE CIVIL DRAWINGS.
29. 2'X2' CONCRETE PAD WITH EV CHARGER INSTALLED.
30. NOT USED.
31. CONDUIT FOR FUTURE TRUCK EV CHARGERS
32. RETAINING WALL AND GUARDRAIL TO BE CONSTRUCTED BY EAST DEVELOPEMENT. SEE DETAIL BELOW FOR REFERENCE.
33. 3'W X 8'H MAN GATE FOR MAINTENANCE ACCESS.

NOTE: SEE CIVIL PLANS FOR TRAIL FENCING INFORMATION.

REFERENCE GRADING PERMIT: FM 0541-001-2596-0



7 CMU SCREEN WALL AT PL
3/4" = 1'-0"

NOTE: CMU SCREEN WALL DETAIL ABOVE IS DESIGNED BY MIYAMOTO AND SHOWN FOR REFERENCE ONLY.

FENCING PLAN A
scale: 1" = 50'-0"

SCALE: 1" = 50'-0"
0 50' 100' 150'
N TRUE NORTH

CAUTION : IF THIS SHEET IS NOT A 30" X 42" IT IS A REDUCED PRINT

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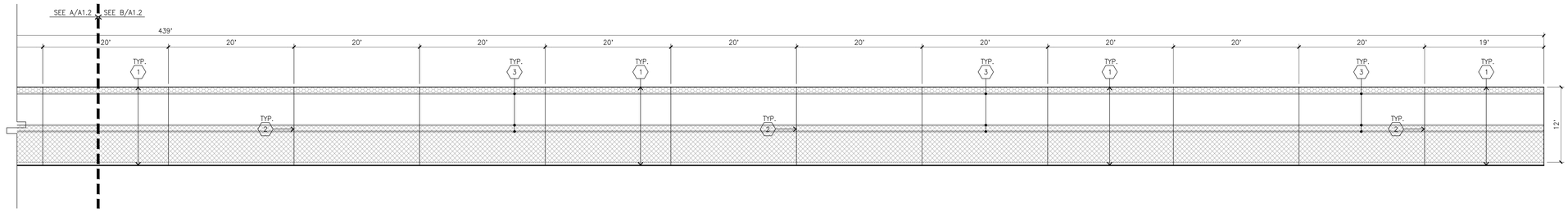
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

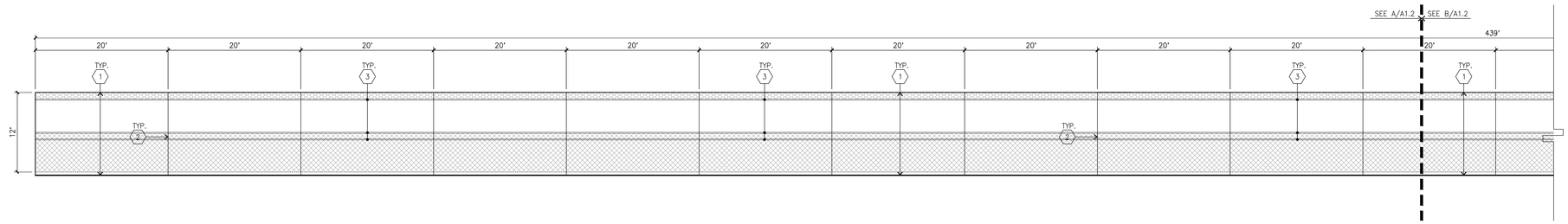
Title: FENCING PLAN

Project Number:	22484
Drawn by:	JK
Date:	
Revision:	
DAC 5TH SUBMITTAL	01/13/25

Sheet:
DAB-A1.0A



SCREEN WALL A
scale: 1/8" = 1'-0"



SCREEN WALL B
scale: 1/8" = 1'-0"

KEYNOTES - SCREEN WALL

1. 10' H CONCRETE TIL-UP SCREEN WALL PAINTED BOTH SIDES, TYPICAL SEE "S" DWG FOR THICKNESS.
2. PANEL JOINT. SEE "S" DRAWINGS. SEE DETAILS 4/AD.3
3. PANEL REVEAL. PAINTED TO MATCH ADJACENT.

GENERAL NOTES - SCREEN WALL

A. CONTRACTOR TO VERIFY ALL GRADES W/ CURRENT "C" PLAN & VERIFY SITE CONDITIONS. VERIFY ALL TYP. TOP OF WALL HEIGHT(T.O.W.) & FINISH SURFACE GRADE.

B. PROVIDE 2" DIA. P.V.C. WEEP HOLES @ 8' O.C. IN SCREEN WALLS @ GRADE LEVEL ON TRUCK SIDE.

C. CONTRACTOR TO PROVIDE WATER-PROOFING MEMBER TO SCREEN WALL AT ALL RETAINING/ BERMING CONDITIONS. PROVIDE WATERPROOFING @ HIGHSIDE OF WALL ONLY. CONTRACTOR TO SUBMIT WATERPROOFING SPECIFICATION TO ARCHITECT PRIOR TO INSTALETION.

D. NOT USED.

E. GATE MANUFACTURER TO PROVIDE DETAILING OF GATES TO WITHSTAND WINDLOAD PER STRUCTURAL PLAN, EXPOSURE "C" AND VERIFY ALL DIMENSIONS, DETAILS AND SITE CONDITION W/ CONTRACTOR.

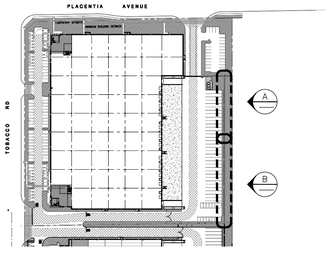
F. ALL GATES TO BE WALL BRACED. SUB-CONTRCTOR TO SUBMIT SHOP DRAWING TO ARCHITECT TO PRIOR TO INSTALLATION.

G. CONTRACTOR TO VERIFY ALL CIVIL AND STRUCTURAL DRAWINGS FOR SCREEN-WALL HEIGHT.

COLOR SCHED. - SCREEN WALL

1	2	3	4
SHERWIN WILLIAMS SW 6070 HERON PLUME	SHERWIN WILLIAMS SW 7040 FAWN BRINDLE	SHERWIN WILLIAMS SW 7075 WEB GRAY	SHERWIN WILLIAMS SW 7051 ANALYTICAL GRAY

KEYMAP



HPA architecture

hpa, inc.
18831 bardeen avenue - ste. #100 irvine, ca 92612
tel: 949•863•1770
fax: 949•863•0851
email: hpa@hparchs.com

Owner:

THRIFTY OIL CO.

13116 Imperial Highway
Santa Fe Springs CA 90670
tel: 562-921-3581

Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: SCREEN WALL ELEVATIONS

Project Number:	22484
Drawn by:	JK
Date:	

Revision:

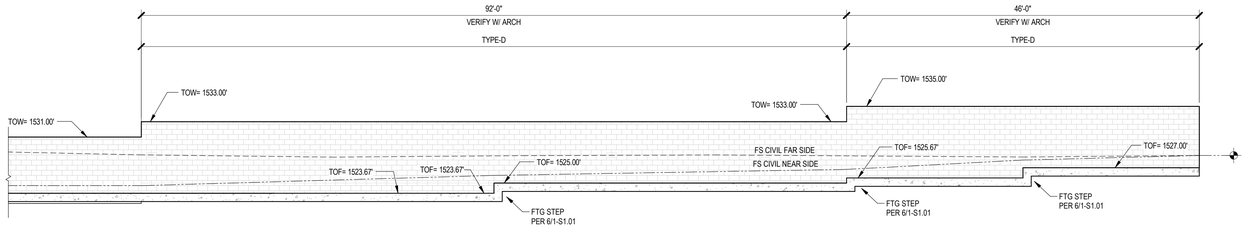
DAC 5TH SUBMITTAL	01/13/25

Sheet:

1-A1.2

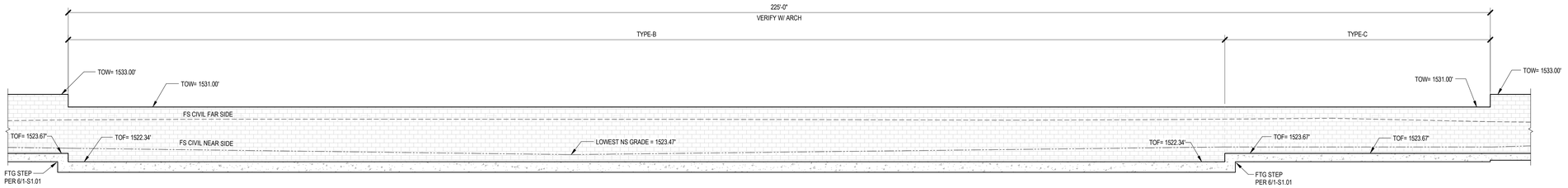
CAUTION : IF THIS SHEET IS NOT A 30" X 42" IT IS A REDUCED PRINT

FOR REFERENCE ONLY



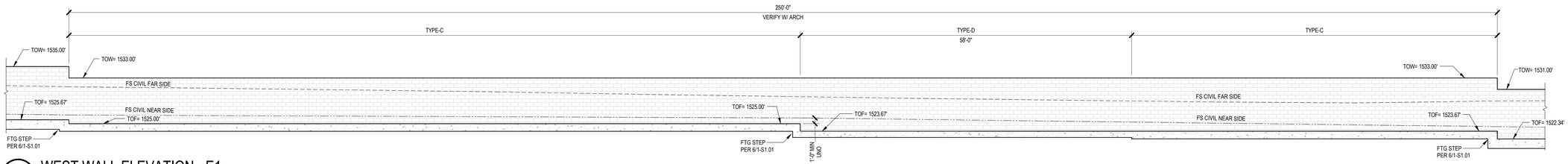
1 WEST WALL ELEVATION - D1

1/8" = 1'-0"



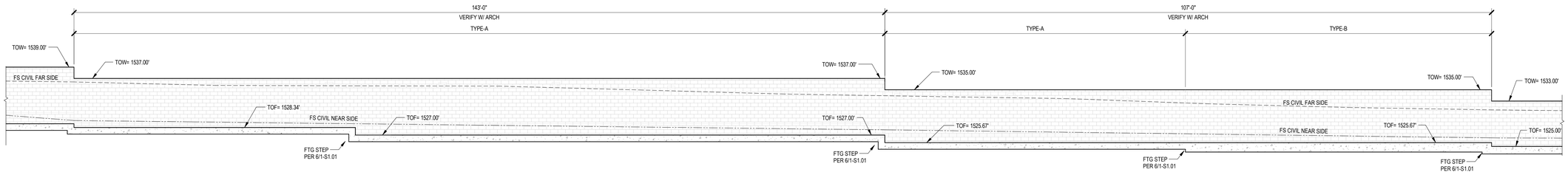
2 WEST WALL ELEVATION - D2

1/8" = 1'-0"



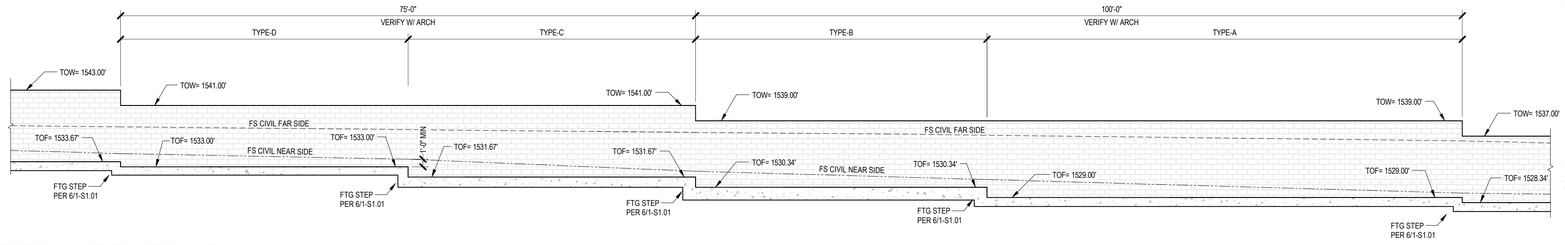
3 WEST WALL ELEVATION - E1

1/8" = 1'-0"



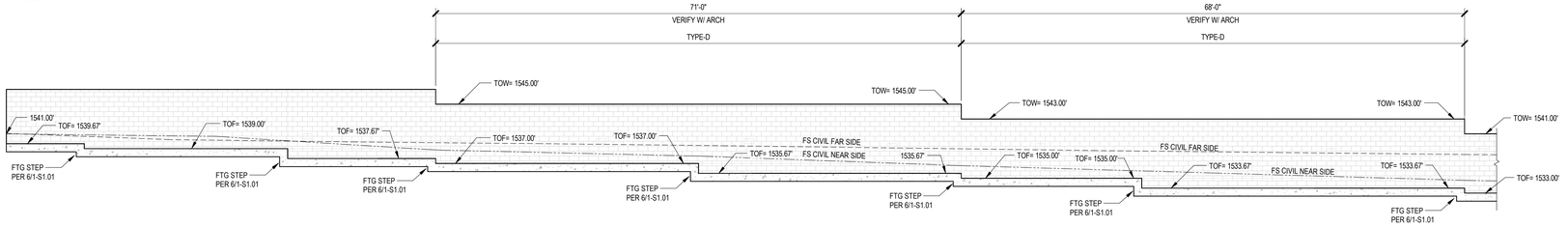
4 WEST WALL ELEVATION - E2

1/8" = 1'-0"



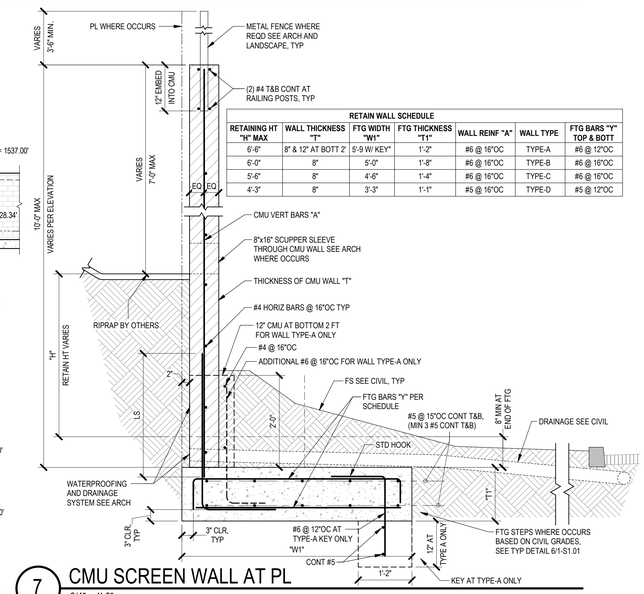
5 WEST WALL ELEVATION - F1

1/8" = 1'-0"



6 WEST WALL ELEVATION - F2

1/8" = 1'-0"



RETAIN WALL SCHEDULE

RETAINING HT "H" MAX	WALL THICKNESS "T"	FTG WIDTH "W1"	FTG THICKNESS "T1"	WALL REINF "A"	WALL TYPE	FTG BARS "Y" TOP & BOTT
6'-6"	8" & 12" AT BOTT 2'	5'-9 W/ KEY"	1'-2"	#6 @ 16"OC	TYPE-A	#6 @ 12"OC
6'-0"	8"	5'-0"	1'-8"	#6 @ 16"OC	TYPE-B	#6 @ 16"OC
5'-6"	8"	4'-6"	1'-4"	#6 @ 16"OC	TYPE-C	#6 @ 16"OC
4'-3"	8"	3'-3"	1'-1"	#5 @ 16"OC	TYPE-D	#5 @ 12"OC

7 CMU SCREEN WALL AT PL

3/4" = 1'-0"

BOULDER ASSOCIATES
300 SPECTRUM CENTER DR, SUITE 730
IRVINE, CALIFORNIA 92618
949.727.9000

REGISTERED PROFESSIONAL ENGINEER
JEFFREY ALAN FLOYD
S3525
CIVIL
STATE OF CALIFORNIA
SIGNED 10/17/2024

miyamoto.
1201 Dove St., Suite 230
Newport Beach, CA 92660
JOB NO. M02004043.00
T: (949) 579-1170
miyamotointernational.com

RIVCO FM#
R_RUHS_BH_HRV_SITE -
FM 0541-001-2596-0

BA PROJECT 225398.01

RUHS WELLNESS VILLAGE - SITE

20533 HARVILL AVENUE,
PERRIS CA 92570

CONSTRUCTION DOCUMENTS

DATE 3/13/2024

REVISIONS

#	DESCRIPTION	DATE
2	BULLETIN #2	09/23/2024
3	BULLETIN #3	10/21/2024

SHEET TITLE

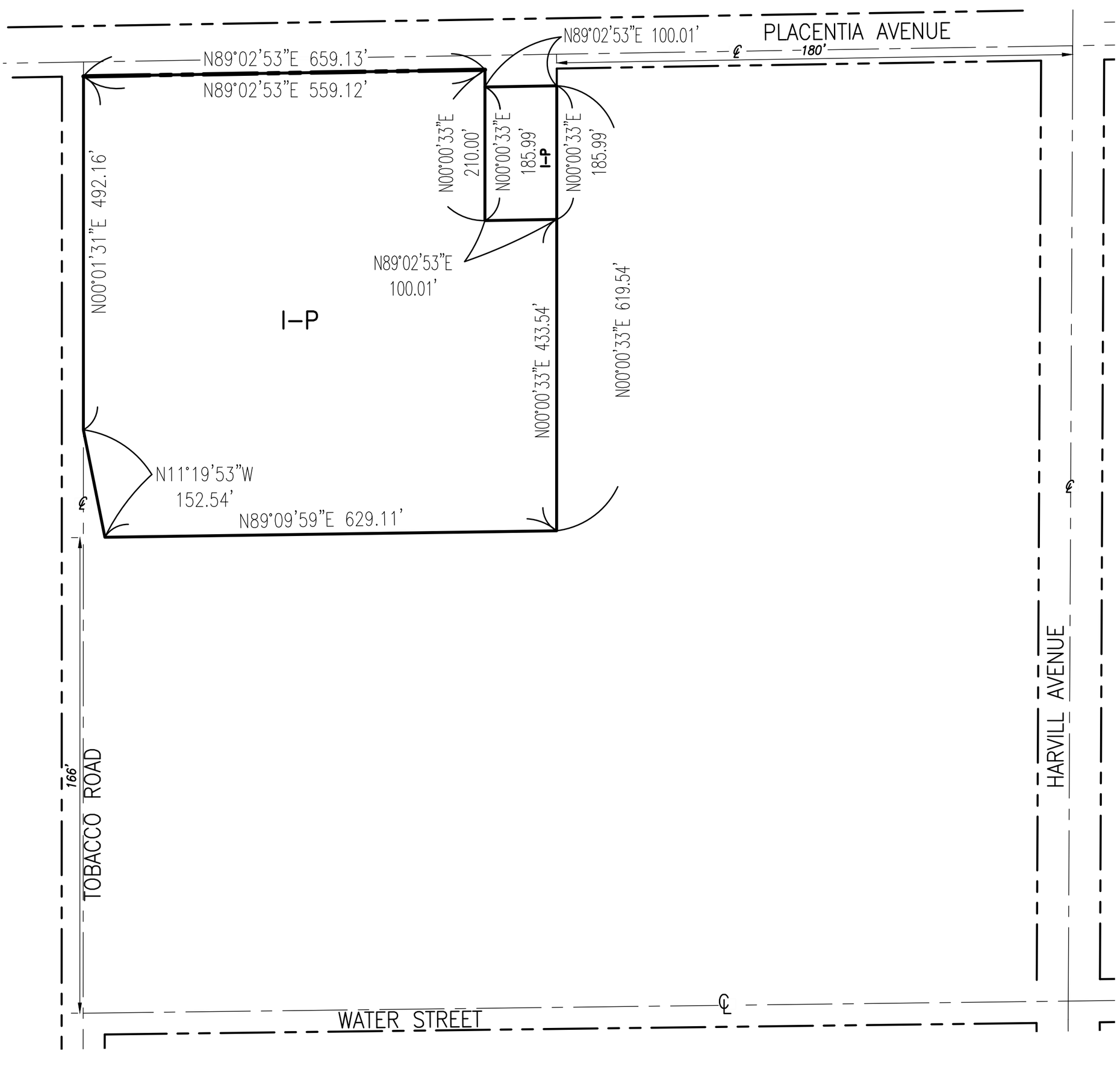
WEST WALL ELEVATIONS

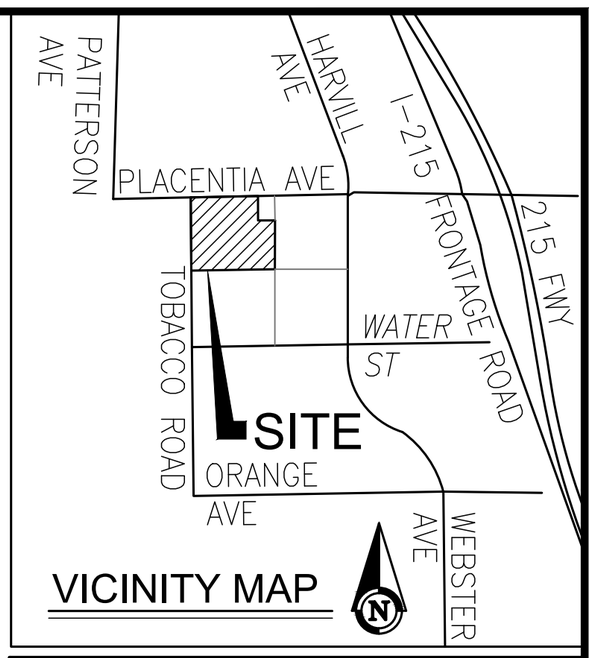
SHEET NUMBER

2 **1-S2.20** 2

©BOULDER ASSOCIATES

TOWNSHIP 4S, RANGE 4W, SECTION 13





APPROXIMATE GROSS LAND AREA:

APN: 317-260-017-9.19 AC APN: 317-260-018-0.429 AC

APPROXIMATE NET LAND AREA:

APN: 317-260-017-8.27 AC APN: 317-260-018-0.406 AC

RECORD OWNER/APPLICANT

THE ORDEN COMPANY.
13116 IMPERIAL HIGHWAY
SANTA FE SPRINGS, CA 90402
ATTN: STEPHANE WANDEL
EMAIL: SWANDEL@ORDENCOMAPNY.COM

EXHIBIT PREPARER

ARMSTRONG & BROOKS ENG.
1350 E. CHASE DR.
CORONA, CA 92881
ATTN: WILLIAM BROOKS
EMAIL: BILL@ARMSTRONGBROOKS.COM

UTILITY PURVEYORS:

WATER: EASTERN MUNICIPAL WATER DISTRICT
SEWER: EASTERN MUNICIPAL WATER DISTRICT
ELECTRIC: SOUTHERN CALIFORNIA EDISON
GAS: SOUTHERN CALIFORNIA GAS COMPANY
CABLE: CHARTER
TELE: FRONTIER
WASTE: WASTE MANAGEMENT

SCHOOL DISTRICT:

VAL VERDE UNIFIED SCHOOL DISTRICT

EX. ZONING CLASSIFICATION

R-R-1

EX. GENERAL PLAN DESIGNATION

RC:VLDR

PROP. GEN. PLAN DESIGNATION

CD:BP

EX. ZONING AREA

NORTH PERRIS AREA

PROP. ZONING AREA

I-P "INDUSTRIAL PARK"

LEGEND

I-P	INDUSTRIAL PARK

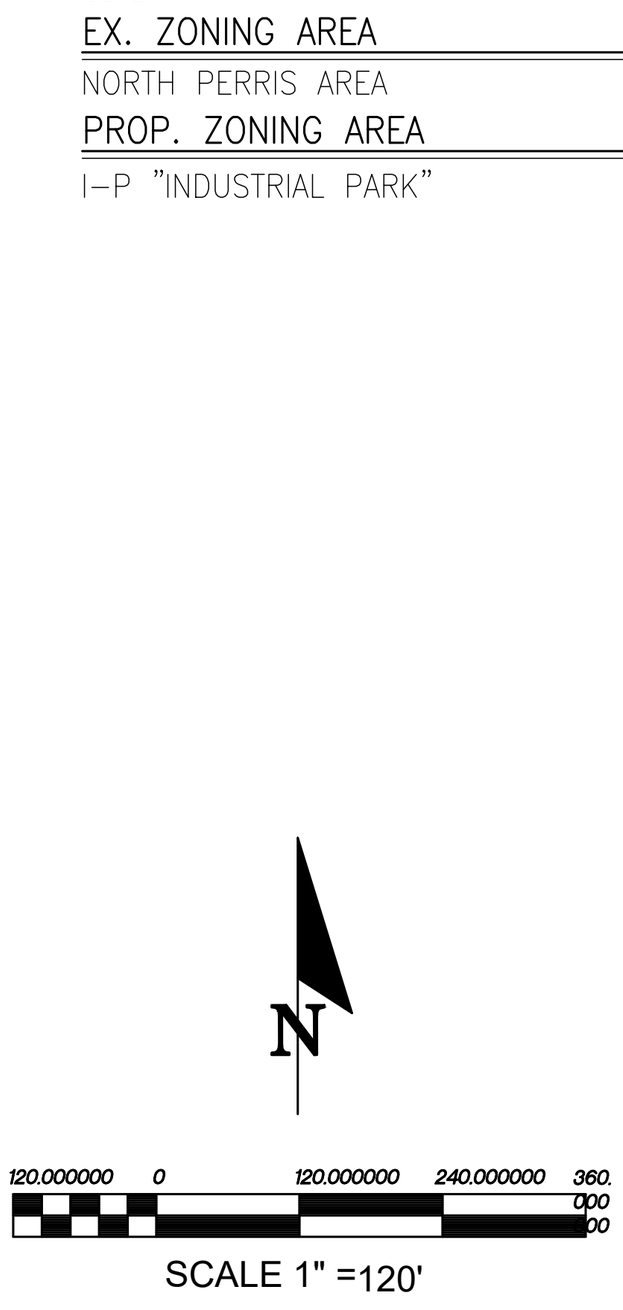
MAP NO. N/A
CHANGE OF OFFICIAL ZONING PLAN
AMENDING
MAP NO. 2 ORDINANCE NO. 348
CHANGE OF ZONE CASE NO. 230008
AMENDING ORDINANCE NO. N/A
ADOPTED BY ORDINANCE NO. N/A
XX/XX/XXXX
RIVERSIDE COUNTY BOARD OF SUPERVISORS

LEGAL DESCRIPTION: APN: 317-260-017

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE UNINCORPORATED AREA OF PERRIS AREA IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:
LOT 3 OF OAKES AND SAWYERS SUBDIVISION, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 1, PAGE 5 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY. EXCEPT THE NORTH 230.00 FEET OF THE EAST 100.00 FEET, SAID 230.00 FEET BEING MEASURED ON THE CENTER LINE OF PLACENTIA AVENUE; ALSO EXCEPT THAT PORTION DESCRIBED IN DEED TO THE COUNTY OF RIVERSIDE, RECORDED FEBRUARY 5, 1962 AS INSTRUMENT NO. 11202 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHWEST CORNER OF SAID LOT 3; THENCE NORTH 00° 30' 04" WEST ALONG THE WEST LINE OF SAID LOT, A DISTANCE OF 150.00 FEET; THENCE SOUTH 11° 50' 30" EAST, A DISTANCE OF 152.54 FEET TO THE SOUTH LINE OF SAID LOT; THENCE SOUTH 88° 39' 22" WEST, ALONG SAID SOUTH LINE, A DISTANCE OF 30.00 FEET TO THE POINT OF BEGINNING. EXCEPTING THEREFROM ANY MOBILE HOME LOCATED OR PLACED THEREON.

LEGAL DESCRIPTION: APN: 317-260-018

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE UNINCORPORATED AREA OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:
THE NORTH 230.00 FEET (MEASURED FROM THE CENTER LINE PLACENTIA AVENUE) OF THE EAST 100.00 FEET OF LOT 3 OAKES AND SAWYER'S SUBDIVISION, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 1, PAGE 5 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY. EXCEPTING THEREFROM, THAT PORTION CONVEYED TO THE COUNTY OF RIVERSIDE BY DEED RECORDED DECEMBER 6, 1974 AS INSTRUMENT NO. 155641, OF OFFICIAL RECORDS.



SCALE 1" =120'

APN: 317-260-017 & 317-260-018

EXHIBIT PREPARED 05/29/2025

COUNTY OF RIVERSIDE
ENVIRONMENTAL ASSESSMENT FORM: INITIAL STUDY

Project Case Type (s) and Number(s): [illegible] t No. 230008 (GPA230008) [illegible] No. 2300030 [illegible] an No. 230048 ([illegible]
Lead Agency Name: [illegible]
Address: [illegible]
Contact Person: [illegible]
Telephone Number: [illegible]
Applicant's Name: [illegible]
Applicant's Address: [illegible]

I. PROJECT INFORMATION

[illegible] *Regional Vicinity* [illegible] *Project Site - Aerial View* [illegible] *Project Site USGS View* [illegible] [1] [illegible]

[illegible]

[illegible]

Concurrent Entitlements:

[illegible]

- [illegible] t No. 230008 (GPA 230008) proposal [illegible]
- [illegible] e No. 230030 ([illegible] proposal to c[illegible] the [illegible]

[1] [illegible]

- [illegible] No. 230048 [illegible] proposal [illegible] construct [illegible] [illegible]

On-Site Improvements

[illegible]

[illegible] [illegible] [illegible] *Site Plan* [illegible]

[illegible] [illegible] [illegible] *Building Colored Elevations* [illegible]

[illegible] [illegible] *Building Elevations and Profiles* [illegible]

[illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] *Landscaping Plan* [illegible]

[illegible] D[illegible] [illegible] *Photometric Plan* [illegible]

[illegible] M[illegible] [illegible] M[illegible] [illegible] [illegible] [

- [illegible] *Off-Site Improvements Exhibit.*
- [illegible]

Construction

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Operations

[illegible] correlates with the “Light Industrial” General Plan Land Use designation. [illegible]

[illegible]

[illegible] *Employment Density Study* [illegible]

may not be in the Project's area of Riverside County).

A. Type of Project: ☒ ☐ ☐ ☐

B. Total Project Area:

Residential Acres:	**Lots:**	**Units:**	**Projected No. of Residents:**
Commercial Acres:	**Lots:**	**Sq. Ft. of Bldg. Area:**	**Est. No. of Employees:**
Industrial Acres:	**Lots:**	**Sq. Ft. of Bldg. Area:**	**Est. No. of Employees:**
Other:	**Lots:**	**Sq. Ft. of Bldg. Area:**	**Est. No. of Employees:**

C. Assessor's Parcel No(s):

Street References:

D. Section, Township & Range Description or reference/attach a Legal Description: *Steele Peek,*

E. Brief description of the existing environmental setting of the project site and its surroundings: *Project Site Zoning*

- **North:**
- **South:**

- **West:** [illegible] 2 [illegible] [illegible] [illegible]

[illegible]

[illegible]

[illegible] “Road Improved Standards and Specifications” by the Riverside County [illegible] D[illegible]

[illegible] According to the County’s traffic study guidelines, the Project generates less than [illegible]

Multipurpose Open Space: [illegible]

[illegible]

[illegible] and the Project’s landscaping plan complies with County Ordinance No. 859.3, “Water Efficient Landscape Requirements”. [illegible]

- **Safety:** [illegible]

□ □□2 □□□□□□□□□□□□□□r□□□□□□d□□r□□□□□□□□□□□□□□□d□□r□□□□□□□□□□□□□□r□□□□□□□□□□□□□□ □r□□□□□□□ r□□□□□□□□□□□□r□□□□□□□□□□□□□□□□□□□□□□□□r□□□□□□r□□□□□□□□□□□□□□□□□□□□□□□□□□□□□r□□□□□□□□□□□□□□□□d□□□□□□□□□□□□□□□d□□□□□□□ □□□□□□□□□□ d□□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□□

H. Adopted Specific Plan Information

1. Name and Number of Specific Plan, if any:

2. Specific Plan Planning Area, and Policies, if any:

I. Existing Zoning:

J. Proposed Zoning, if any:

K. Adjacent and Surrounding Zoning:

III. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

[illegible] least one impact that is a "Potentially Significant Impact" or "Less than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.[illegible]

☐ [illegible]	☐ [illegible]	☐ [illegible]
☐ [illegible]	☐ [illegible]	☐ [illegible]
☐ [illegible]	☐ [illegible]	☒ [illegible]
☒ [illegible]	☐ [illegible]	☐ [illegible]
☒ [illegible]	☐ [illegible]	☐ [illegible]
☐ [illegible]	☒ [illegible]	☐ [illegible]
☐ [illegible]	☐ [illegible]	
☐ [illegible]	☐ [illegible]	

IV. DETERMINATION

[illegible]

A PREVIOUS ENVIRONMENTAL IMPACT REPORT/NEGATIVE DECLARATION WAS NOT PREPARED

☐ [illegible] **COULD NOT** [illegible] **NEGATIVE DECLARATION** [illegible]

☒ [illegible] **A MITIGATED NEGATIVE DECLARATION** [illegible]

☐ [illegible] **ENVIRONMENTAL IMPACT REPORT** [illegible]

A PREVIOUS ENVIRONMENTAL IMPACT REPORT/NEGATIVE DECLARATION WAS PREPARED

☐ [illegible] **NO NEW ENVIRONMENTAL DOCUMENTATION IS REQUIRED** [illegible]

☐ [illegible] **ADDENDUM** [illegible]

☐ [illegible] **SUPPLEMENT TO THE ENVIRONMENTAL IMPACT REPORT** [illegible]

[illegible] [illegible]

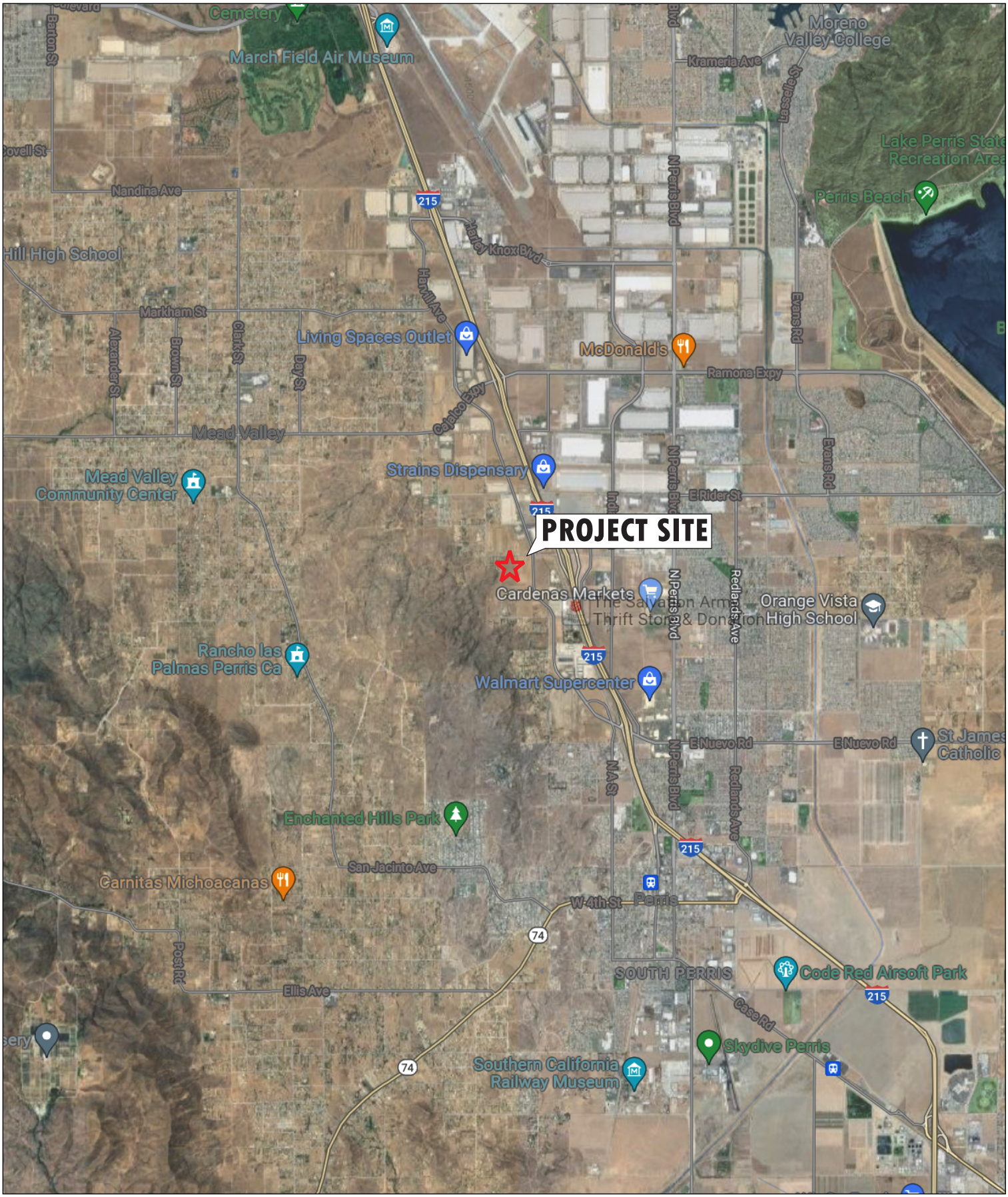
☐ [illegible] **a SUBSEQUENT ENVIRONMENTAL IMPACT REPORT** [illegible]

Krista Mason

04/25/2025

Krista Mason

Planning Director



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LILBURN CORPORATION

REGIONAL LOCATION

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California

FIGURE 1

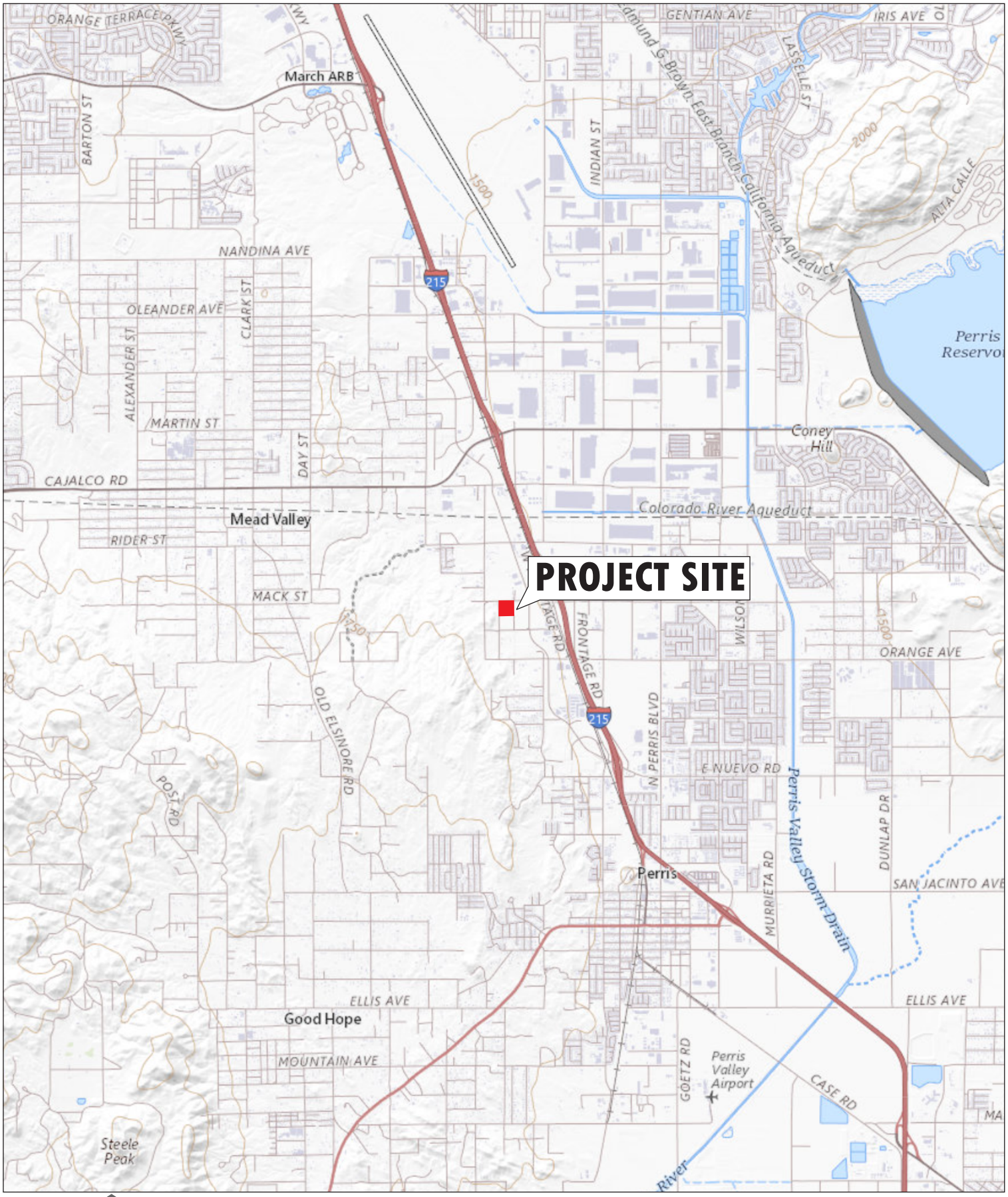


0 160
Feet

LILBURN CORPORATION

PROJECT SITE-AERIAL VIEW

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California
FIGURE 2



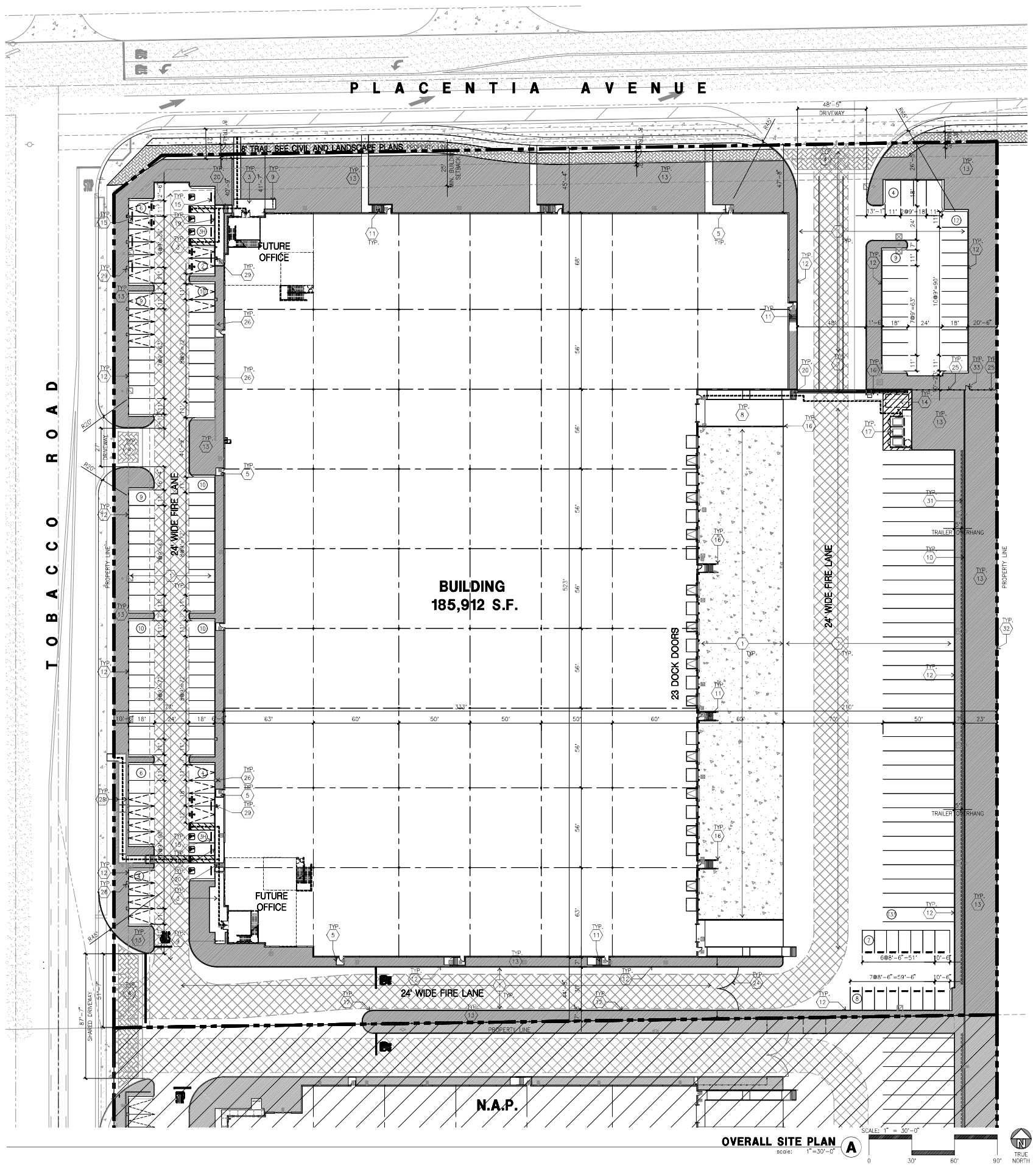
0 1.00
Miles

LILBURN CORPORATION

PROJECT SITE-USGS VIEW

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California

FIGURE 3



SITE PLAN KEYNOTES

1. PAVEMENT PER CIVIL. SEE CIVIL PLANS
2. NOT USED
3. CONCRETE WALKWAY, MEDIUM BROOM FINISH
4. DRIVEWAY APRONS TO BE CONSTRUCTED. SEE LANDSCAPE DRAWINGS.
5. 5'-6"X4" THICK CONCRETE EXTERIOR LANDING PAD TYP. AT ALL EXTERIOR MAN DOORS TO LANDSCAPED AREAS. FINISH TO BE MEDIUM BROOM FINISH. PROVIDE WALK TO PUBLIC WAY OR DRIVE WAY AS REQ. BY CITY INSPECTOR.
6. APPROXIMATE LOCATION OF TRANSFORMER. CONTRACTOR TO VERIFY WITH S.C.E.
7. PROVIDE 8' HIGH METAL SLIDING GATES W/ KNOX-BOX PER FIRE DEPARTMENT STANDARDS PER DRIVEWAY.
8. CONCRETE RAMP W/ 42" HIGH CONCRETE WALL.
9. EXTERIOR BIKE RACK TYPICAL.
10. 12' HIGH CONCRETE TILT-UP SCREEN WALL.
11. EXTERIOR CONCRETE STAIR.
12. CONCRETE CURB. SEE CIVIL DRAWINGS.
13. LANDSCAPE. ALL LANDSCAPE AREAS INDICATED BY SHADING.
14. FUTURE GUARD SHACK. PROVIDE CONDUIT.
15. PRE-CAST CONCRETE WHEEL STOP.
16. CONCRETE FILLED GUARD POST "6 DIA. U.N.O. 42" H.
17. TRASH ENCLOSURE PER COUNTY STANDARD.
18. ACCESSIBLE ENTRY SIGN.
19. ACCESSIBLE PARKING STALL SIGN.
20. TRUNCATED DOME.
21. APPROXIMATE LOCATION OF FIRE HYDRANT.
22. WALL MOUNTED LIGHTING FIXTURE.
23. SITE LIGHT POLE W/ CONCRETE BASE.
24. 8' HIGH METAL SWING GATE W/ KNOX-BOX PER FIRE DEPARTMENT STANDARDS PER DRIVEWAY.
25. 8' HIGH METAL FENCE.
26. 2'X2' CONCRETE PAD FOR FUTURE EV CHARGER. PROVIDE CONDUIT.
27. ROOF DRAIN THRU CURB.
28. RETAINING WALL. SEE CIVIL DRAWINGS.
29. 2'X2' CONCRETE PAD WITH EV CHARGER INSTALLED.
30. NOT USED.
31. CONDUIT FOR FUTURE TRUCK EV CHARGERS
32. RETAINING WALL AND GUARDRAIL TO BE CONSTRUCTED BY EAST DEVELOPEMENT. SEE DETAIL BELOW FOR REFERENCE.
33. 3'W X 8'H MAN GATE FOR MAINTENANCE ACCESS.

SITE PLAN GENERAL NOTES

1. THE SITE PLAN BASED ON THE SOILS REPORT PREPARED BY: TBD
2. IF SOILS ARE EXPANSIVE IN NATURE, USE STEEL REINFORCING FOR ALL SITE CONCRETE.
3. ALL DIMENSIONS ARE TO THE FACE OF CONCRETE WALL, FACE OF CONCRETE CURB OR GRID LINE U.N.O.
4. SEE "C" PLANS FOR ALL CONCRETE CURBS, GUTTERS AND SWALES.
5. THE ENTIRE PROJECT SHALL BE PERMANENTLY MAINTAINED WITH AN AUTOMATIC IRRIGATION SYSTEM.
6. SEE "C" DRAWINGS FOR POINT OF CONNECTIONS TO OFF-SITE UTILITIES. CONTRACTOR SHALL VERIFY ACTUAL UTILITY LOCATIONS.
7. PROVIDE POSITIVE DRAINAGE AWAY FROM BLDG. SEE "C" DRAWINGS.
8. CONTRACTOR TO REFER TO "C" DRAWINGS FOR ALL HORIZONTAL CONTROL DIMENSIONS. SITE PLANS ARE FOR GUIDANCE AND STARTING LAYOUT POINTS.
9. SEE "C" DRAWINGS FOR FINISH GRADE ELEVATIONS.
10. CONCRETE SIDEWALKS TO BE A MINIMUM OF 4" THICK W/ TOOLED JOINTS AT 6' O.C. EXPANSION/CONSTRUCTION JOINTS SHALL BE A MAXIMUM 12' EA. WAY. EXPANSION JOINTS TO HAVE COMPRESSIVE EXPANSION FILLER MATERIAL OF 1/4". FINISH TO BE A MEDIUM BROOM FINISH U.N.O.
11. PAINT CURBS AND PROVIDE SIGNS TO INFORM OF FIRE LANES AS REQUIRED BY FIRE DEPARTMENT.
12. CONSTRUCTION DOCUMENTS PERTAINING TO THE LANDSCAPE AND IRRIGATION OF THE ENTIRE PROJECT SITE SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT AND APPROVED BY PUBLIC FACILITIES DEVELOPMENT PRIOR TO ISSUANCE OF BUILDING PERMITS.
13. PRIOR TO FINAL CITY INSPECTION, THE LANDSCAPE ARCHITECT SHALL SUBMIT A CERTIFICATE OF COMPLETION TO PUBLIC FACILITIES DEVELOPMENT.
14. ALL LANDSCAPE AND IRRIGATION DESIGNS SHALL MEET CURRENT CITY STANDARDS AS LISTED IN GUIDELINES OR AS OBTAINED FROM PUBLIC FACILITIES DEVELOPMENT.
15. ALL VERTICAL MOUNTING POLES OF CHAIN LINK FENCING SHALL BE CAPPED.
16. LANDSCAPED AREAS SHALL BE DELINEATED WITH A MINIMUM SIX INCHES (6") HIGH CURB.
17. PROVIDE PHOTOVOLTAIC PANELS AS REQUIRED BY APPLICABLE CODES.

SITE LEGEND

- PAVING, SEE "C" DRWGS.
- STANDARD PARKING STALL (9' X 18')
- ACCESSIBLE PARKING STALL (9' X 18') W/ 5' ACCESSIBLE AISLE
- VAN ACCESSIBLE PARKING STALL (12' X 18') W/ 5' ACCESSIBLE AISLE
- STANDARD ACCESSIBLE EVCS WITH ISA SIGN AND MARKING "EV CHARGING ONLY", 9'X18' +5' W/ ACCESSIBLE AISLE
- VAN ACCESSIBLE EVCS WITH ISA SIGN AND MARKING "EV CHARGING ONLY", 12'X18'+5' W/ ACCESSIBLE AISLE
- STANDARD EVCS SIZE, 9'X18'
- EV CAPABLE SPACE WITHOUT EVSE SIZE 9'X18'
- LANDSCAPED AREA
- 26' WIDE FIRE LANE
- TRAIL
- PROPERTY LINE
- ACCESSIBLE PATH OF TRAVEL 4' MIN. WIDE, 1:20 MAX. SLOPE & 2% MAX. CROSS SLOPE, EXCEPT FOR PARKING ACCESS AISLES AND DOOR LANDINGS WHERE THE MAX SLOPE IS 2% IN ALL DIRECTIONS AND UNLESS NOTED OTHERWISE.
- LIGHTING FIXTURE
- EV CHARGER
- EV CHARGER FOR FUTURE

CAUTION : IF THIS SHEET IS NOT A 30" X 42" IT IS A REDUCED PRINT

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Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: OVERALL SITE PLAN

Project Number:	22484
Drawn by:	JK
Date:	
Revision:	
DAC 5TH SUBMITTAL	01/13/25

Sheet:

DAB-A1.1

SITE PLAN

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California

FIGURE 4

LILBURN CORPORATION

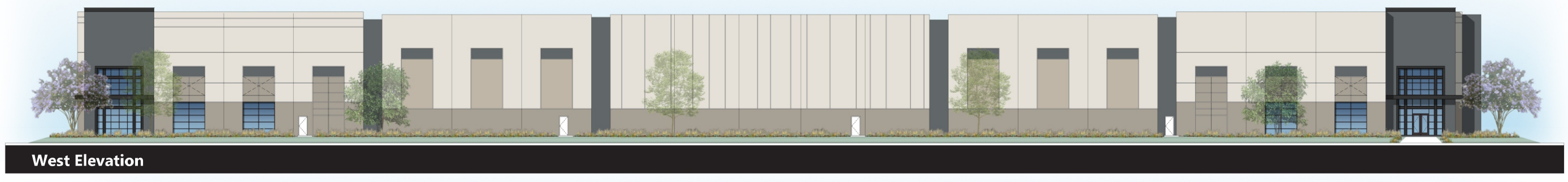
BUILDING COLORED ELEVATIONS

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California

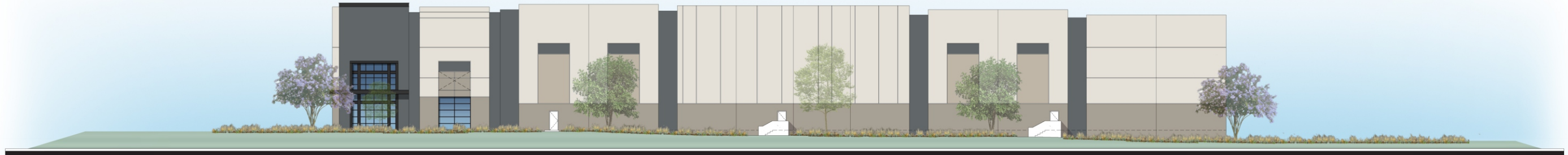
FIGURE 5A



North Elevation



West Elevation



South Elevation



East Elevation

Conceptual Elevations - 36ft Clear

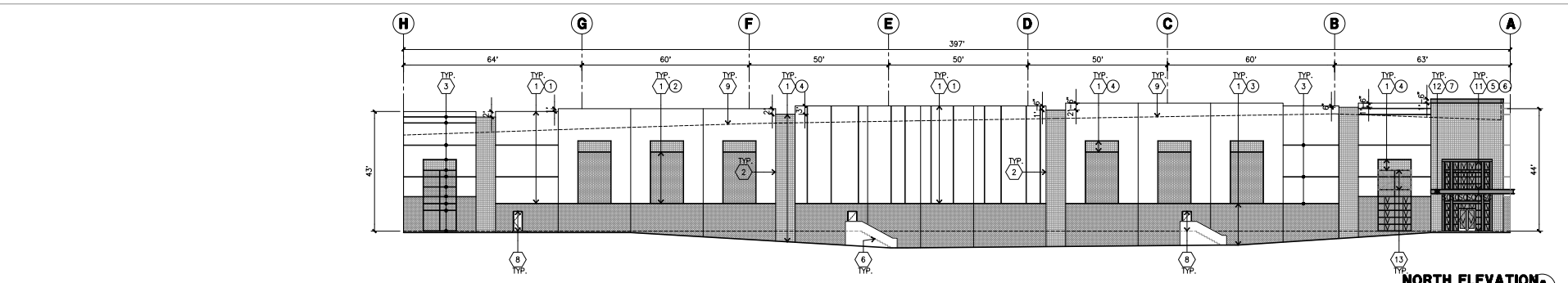
PERRIS NORTH

City of Riverside, California #21226 | 11. 08. 2024

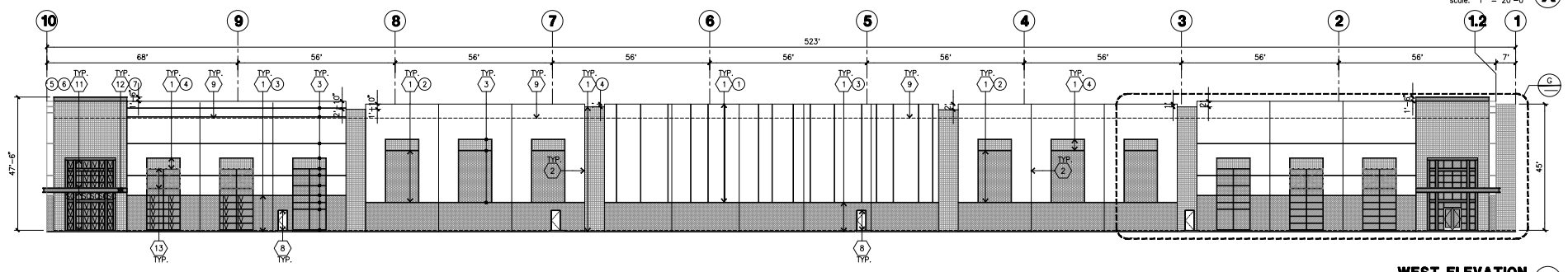
HPA architecture 43 Years

THE ORDEN COMPANY

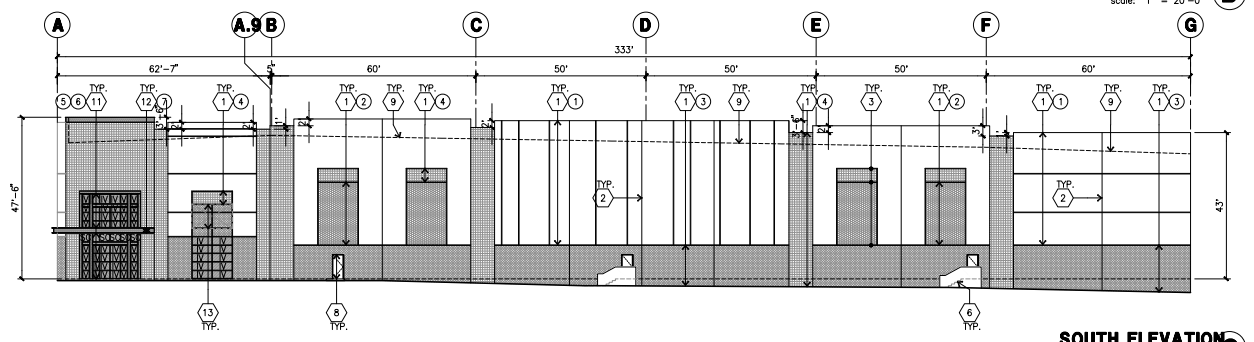
LILBURN CORPORATION



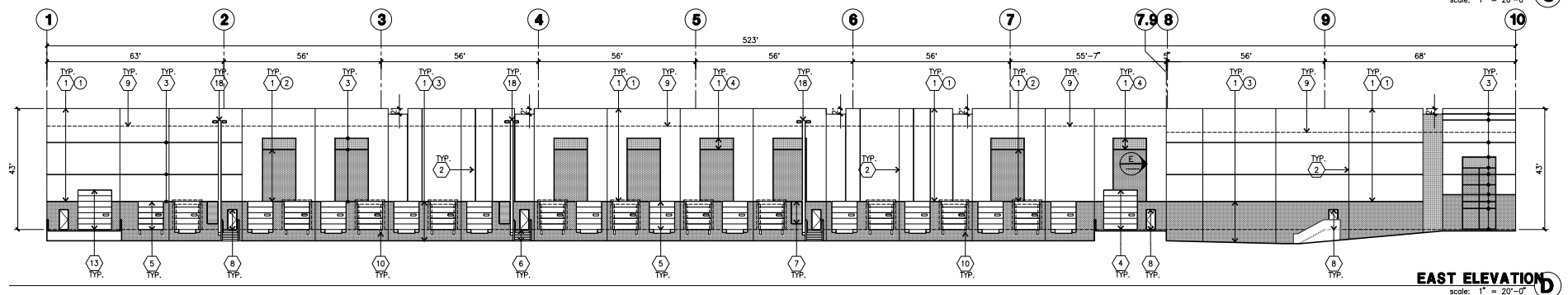
NORTH ELEVATION A
scale: 1" = 20'-0"



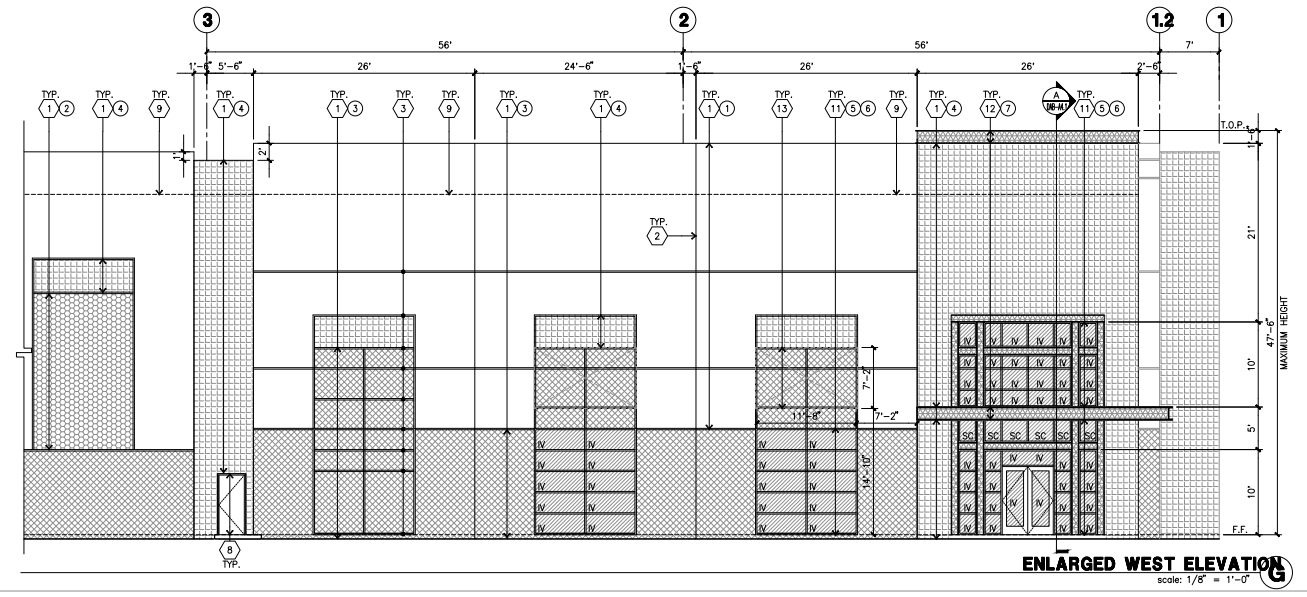
WEST ELEVATION B
scale: 1" = 20'-0"



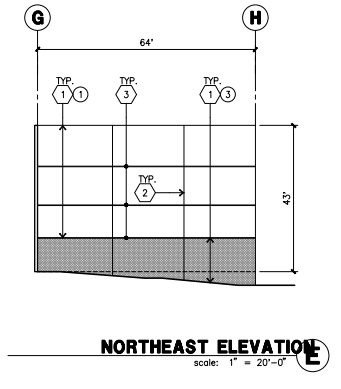
SOUTH ELEVATION C
scale: 1" = 20'-0"



EAST ELEVATION D
scale: 1" = 20'-0"



ENLARGED WEST ELEVATION G
scale: 1/8" = 1'-0"



NORTHEAST ELEVATION E
scale: 1" = 20'-0"

ELEVATION KEYNOTES

1. CONCRETE TILT-UP PANEL.
2. PANEL JOINT.
3. PANEL REVEAL. ALL REVEALS TO HAVE A MAX. OF 3/8" CHAMFER. REVEAL COLOR TO MATCH ADJACENT BUILDING FIELD COLOR. U.N.O.
4. 12' X 14' OVERHEAD DOOR @ DRIVE THRU. PROVIDE COMPLETE WEATHER-STRIPPING PROTECTION ALL AROUND.
5. 9' X 10' OVERHEAD DOOR @ DRIVE THRU. PROVIDE COMPLETE WEATHER-STRIPPING PROTECTION ALL AROUND.
6. CONCRETE STAIR, LANDING AND GUARDRAIL W/ METAL PIPE HANDRAIL. PROVIDE NON SKID NOSING TO MEET ADA REQUIREMENTS. PROVIDE CONTRASTING COLORED 3" WIDE WARNING STRIPE INTEGRAL TO CONCRETE AT TOP LANDING AND BOTTOM TREAD PER ADA REQUIREMENTS.
7. 4' X 8' METAL LOUVER OPENING FOR VENTILATION. PAINT TO MATCH BUILDING COLOR.
8. HOLLOW METAL DOORS. PROVIDE COMPLETE WEATHER STRIPING ALL AROUND DOOR.
9. ROOF LINE BEYOND.
10. DOCK DOOR BUMPER TYPICAL.
11. ALUMINUM STOREFRONT FRAMING WITH TEMPERED GLAZING AT ALL DOORS, SIDELITES ADJACENT TO DOORS AND GLAZING WITH BOTTOMS LESS THAN 18" ABOVE FINISH FLOOR ELEVATION.
12. METAL CANOPY.
13. KNOCK-OUT PANEL.
14. INTERIOR ROOF DRAIN W/ 2 OVERFLOW SCUPPERS.
15. CONC. FILLED GUARD POST. 6" DIA. U.N.O.. 42"H.
16. EXTERIOR LIGHTING FIXTURE.
17. APPROXIMATE LOCATION OF ADDRESS ON WALL.
18. EXTERIOR DOWN SPOUTS W/ 2 OVERFLOW SCUPPERS.

ELEVATION GENERAL NOTES

1. ALL PAINT COLOR CHANGES TO OCCUR AT INSIDE CORNERS UNLESS NOTED OTHERWISE.
2. ALL PAINT FINISHES ARE TO BE FLAT UNLESS NOTED OTHERWISE.
3. T.O.P. EL.= TOP OF PARAPET ELEVATION.
4. F.F. = FINISH FLOOR ELEVATION.
5. STOREFRONT CONSTRUCTION: GLASS, METAL ATTACHMENTS AND LINTELS SHALL BE DESIGNED TO RESIST — MPH. EXPOSURE "C" WINDS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO INSTALLATION.
6. CONTRACTOR SHALL FULLY PAINT ONE CONCRETE PANEL W/ SELECTED COLORS. ARCHITECT AND OWNER SHALL APPROVE PRIOR TO PAINTING REMAINDER OF BUILDING.
7. BACK SIDE OF PARAPETS TO HAVE SMOOTH FINISH AND BE PAINTED WITH ELASTOMERIC PAINT.
8. FOR SPANDREL GLAZING, ALLOW SPACE BEHIND SPANDREL TO BREATH. PROVIDE 1" DIAMETER HOLES AT CONCRETE WALL.
9. USE ADHESIVE BACK WOOD STRIPS FOR ALL REVEAL FORMS.
10. THE FIRST COAT OF PAINT TO BE ROLLED-ON AND THE SECOND COAT TO BE SPRAYED-ON
11. ALL ROLL-UP DOORS AND SERVICE DOORS TO BE PAINTED TO MATCH BUILDING COLOR.

ELEVATION COLOR LEGEND/SCHED.

1. PAINT. COLOR : SW 6070 HERON PLUME (259-C1)
2. PAINT. COLOR : SW 7051 ANALYTICAL GRAY (246-C2)
3. PAINT. COLOR : SW 7640 FAWN BRINDLE (247-C5)
4. PAINT. COLOR : SW 7075 WEB GRAY (235-C6)
5. MULLIONS COLOR : BLACK MULLION
6. GLAZING COLOR : BLUE GLAZING
7. METAL CANOPY: BLACK I-BEAM

GLAZING LEGEND

NOTE: ALL EXTERIOR AND INTERIOR GLAZING SHALL BE TEMPERED.

IV — INSULATED VISION GLASS

SC — SPANDREL GLASS WITH CONCRETE BEHIND

V — SINGLE LITE VISION GLASS

IV : INSULATED VISION GLASS
1/4" VISTACOOL PACIFICA + 1/4" SOLARBAN 60 CLEAR
1" INSULATED GLASS UNIT WITH 1/2" AIRSPACE AND 1/4" LITES
U: 0.27 SHGC: 0.21 VLT: 26%
MINIMUM VT TO BE 0.42 PER 2016 CEC TABLE 140.3-B

SC : SPANDREL WITH CONCRETE BEHIND
1/4" VISTACOOL PACIFICA WITH HARMONY BLUE OPACICOAT PAINTED ON REFLECTIVE. INSTALLED ON CONCRETE.

V : VISION GLASS
1/4" VISTACOOL PACIFICA

MULLIONS : BLACK ANODIZED.

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tel: 562-921-3581

Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	-

Title: ELEVATIONS

Project Number:	22484
Drawn by:	JK
Date:	
Revision:	
DAC 5TH SUBMITTAL	01/13/25

Sheet:

DAB-A3.1

BUILDING ELEVATIONS AND PROFILES

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California

FIGURE 5B

LILBURN CORPORATION

LANDSCAPING PLAN

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California

FIGURE 6



RIGHT-OF-WAY LANDSCAPING SHALL BE MAINTAINED BY THE PROPERTY OWNER UNLESS OTHERWISE DIRECTED BY COUNTY OF RIVERSIDE LMD DEPARTMENT STAFF

TRAIL WITHIN RIGHT-OF-WAY AREA SHALL BE MAINTAINED BY PROPERTY OWNER UNLESS OTHERWISE DIRECTED BY COUNTY OF RIVERSIDE LMD STAFF.

PLANTING LEGEND

TREES

SYMBOL	BOTANICAL/COMMON NAME	SIZE	QTY	WUCOLS	REMARKS
	Cercidium 'Desert Museum' Blue Palo Verde	36" Box	9	L	Multi
	Chilopsis linearis Desert Willow	36" Box	2	L	Multi
	Chitalpa tashkentensis Chitalpa	36" Box	16	L	Standard
	Street tree TBD Construction Phase Street tree TBD Construction Phase	36" Box	16	M	Street Tree
	Pinus eldarica Afghan Pine	36" Box	8	L	Standard
	Platanus racemosa California Sycamore	36" Box	11	M	Standard
	Rhus lancea African Sumac	36" Box	12	L	Standard
	Tristania conferta Brisbane Box	36" Box	36	M	Standard
	Cupressus sempervirens Italian Cypress	36" Box	4	L	Standard

SHRUBS

SYMBOL	BOTANICAL/COMMON NAME	SIZE	QTY	WUCOLS	SPACING
	Baccharis p. 'Centennial' Coyote Bush	5 Gal	0	L	4' OC 2.5' from hardscape
	Callistemon 'Little John' Dwarf Bottle Brush	5 Gal	0	L	3' OC 2' from hardscape
	Carex pansa Sand Dune Sledge	5 Gal	0	L	3' OC 2' from hardscape
	Carex tumulicola European Grey Sedge	5 Gal	0	M	3' OC 2' from hardscape
	Cistus spp. (except Cistus ladanifer) Rockrose	5 Gal	0	L	3' OC 2' from hardscape
	Dietes bicolor Fortnight Lily	5 Gal	0	M	3' OC 2' from hardscape
	Ligustrum j. Texanum Texas Privet	5 Gal	0	M	3' OC 2' from hardscape
	Pittosporum tobira 'Variegata' Variegated Mock Orange	5 Gal	0	M	3' OC 2' from hardscape
	Pittosporum t. 'Wheeleri' Wheeler's Dwarf	5 Gal	0	M	3' OC 2' from hardscape
	Rhaphiolepis i. 'Clara' Indian Hawthorn 'Clara'	5 Gal	0	M	3' OC 2' from hardscape
	Rhaphiolepis i. 'Springtime' Indian Hawthorn 'Springtime'	5 Gal	0	M	3' OC 2' from hardscape
	Rosmarinus o. 'Tuscan Blue' Rosemary 'Tuscan Blue'	5 Gal	0	L	4' OC 2.5' from hardscape
	Salvia c. 'Allen Chickering' Allen Chickering Sage	5 Gal	0	L	4' OC 2.5' from hardscape
	Salvia greggii Autumn Sage	5 Gal	0	L	3' OC 2' from hardscape
	Salvia leucantha Mexican Sage	5 Gal	0	L	3' OC 2' from hardscape
	Westringia fruticosa Coast Rosemary	5 Gal	0	L	5' OC 3' from hardscape
	Westringia f. 'Grey Box' Dwarf Coast Rosemary	5 Gal	0	L	3' OC 2' from hardscape

ACCENT SHRUBS

SYMBOL	BOTANICAL/COMMON NAME	SIZE	QTY	WUCOLS	SPACING
	Agave americana Century Plant	5 Gal	0	L	8' OC 6' from hardscape
	Agave 'Blue Flame' Blue Flame Agave	5 Gal	0	L	3' OC 2' from hardscape
	Agave 'Blue Glow Blue Glow Agave	5 Gal	0	L	3' OC 2' from hardscape
	Agave desmettiana Smooth Agave	5 Gal	0	L	6' OC 3.5' from hardscape
	Aloe maculata Soap Aloe	5 Gal	0	L	3' OC 2' from hardscape
	Aloe striata Coral Aloe	1 Gal	0	L	15" OC 9" from hardscape
	Dasylerion wheeleri Desert Spoon	5 Gal	0	L	5' OC 3' from hardscape
	Hesperaloe parviflora Red Yucca	5 Gal	0	L	3' OC 2' from hardscape

INFILTRATION BASIN PLANT LIST

SYMBOL	BOTANICAL/COMMON NAME	SIZE	QUANTITY	WUCOLS	SPACING
	Carex tumulicola Foothill Sedge	5 Gal	0	L	24" O.C.
	Juncus patens California Grey Rush	5 Gal	0	L	18" O.C.

Moderate water use plants and irrigation in 5' wide planting area between sidewalk and trail.

Public Trail.

3" 3/4" crushed rock decorative rock -Desert Gold or equivalent in 5' truck overhang with 2' EV Future EV space

GROUNDCOVER

SYMBOL	BOTANICAL/COMMON NAME	SIZE	QTY	WUCOLS	SPACING
	Baccharis p. 'Pigeon Point' Dwarf Coyote Bush	1 Gal	0	L	6' O.C.
	Carissa m. 'Green Carpet' Prostrate Natal Plum	1 Gal	0	M	36" O.C.
	Hemerocallis hybridus-Yellow Yellow Day Lily	1 Gal	0	M	24" O.C.
	Myoporum parvifolium Myoporum	1 Gal	0	L	36" O.C.
	Rosmarinus o. 'Huntington Carpet' Prostrate Rosemary	1 Gal	0	L	48" O.C.
	Trachelopspermum jasminiodes Star Jasmine	1 Gal	0	M	24" O.C.
	Tulbaghia violacea Society Garlic	1 Gal	0	M	24" O.C.

Parking Lot Area including parking stalls
20,412 sf 10% landscape required 2,041 sf
78.7% landscape provided 16,072 sf

Parking Lot Shading Provided: 10,625 sf 51.8%
Parking Lot Area = 20,412 sf

GENERAL PARKING LOT SHADING CRITERIA
ALL PARKING AREAS EXCLUDING DRIVE AISLES SHALL RECEIVE A MIN. 50% SHADING UTILIZING AN ASSORTMENT OF EVERGREEN AND DECIDUOUS TREES. (CANOPY OF TREES WITH 15 YEARS OF AGE)

CONSTRUCTION CONSERVATION STATEMENT
THE IRRIGATION SYSTEM WILL BE DESIGNED UTILIZING 'STATE OF THE ART' IRRIGATION EQUIPMENT SUCH AS SMART CONTROLLERS, RAIN SHUT OFF DEVICES, MASTER VALVES AND FLOW SENSORS AND WATER EFFICIENT IRRIGATION HEADS.

NO EXISTING MATURE TREE VEGETATION IS PRESENT ON SITE WITHIN PROJECT AREA, CANNOT BE PRESERVED AND INCORPORATED INTO LANDSCAPE PLAN.

NOTES:
1. ALL TREES WITHIN 6' OF HARDSCAPE SHALL LINEAR ROOT BARRIER. BE SURE TO EXTEND 5' (MIN.) ALONG HARDSCAPE IN BOTH DIRECTIONS FROM THE CENTER OF THE TREE.
2. CONTRACTOR TO INSTALL CONCRETE MOW CURB BETWEEN PLANTERS AND ROCK AREAS.
3. ALL PLANTER AREAS TO RECEIVE A 3" LAYER OF SHREDDED ORGANIC MULCH
4. PROJECT INCLUDING ON AND OFF SITE TO BE MAINTAINED BY OWNER.
5. PER ORDINANCE NO. 348, SECTION 18.12, 50% OF PARKING AREA SHALL BE SHADED.
6. IRRIGATION AND PLANTING TO BE IN ACCORDANCE WITH RIVERSIDE COUNTY ORDINANCE NO. 859.
7. PER ORDINANCE 457, SLOPES EXCEEDING 15 FEET IN VERTICAL HEIGHT SHALL BE PLANTED WITH DROUGHT-TOLERANT SHRUBS, SPACED AT NO MORE THAN 10 FEET ON CENTER, OR TREES, SPACED NOT TO EXCEED 20 FEET ON CENTER, OR A COMBINATION OF SUCH SHRUBS AND TREES AT EQUIVALENT SPACINGS, IN ADDITION TO A DROUGHT-TOLERANT GRASS OR GROUND COVER.
8. LANDSCAPE PLAN TO CONFORM TO ORDINANCE NO. 859.3 AND COUNTY OF RIVERSIDE GUIDE TO CA FRIENDLY LANDSCAPING.
9. ALL ABOVE GROUND UTILITES TO BE SCREENED WITH PLANT MATERIAL.
10. HYDROZONES WILL BE PROPERLY DESIGNATED AND METHODS OF IRRIGATION IDENTIFIED.
11. NO OVERHEAD IRRIGATION ALLOWED WITHIN 24" OF NON-PERMEABLE SURFACES. SLOPED AREA WILL BE IRRIGATION WITH ROTARY HEADS AND PLANTING AREAS LESS THAN 10' IN WIDTH WILL BE USING SUBSURFACE DRIP IRRIGATION. DRIP IRRIGATION WILL ALSO BE UTILIZED IN PLANTING AREASUNDER THE LOW WULCOLS ZONE. PROJECT SHALL USE AT LEAST 40% POINT TO POINT DRIP METHOD.
12. SUBSURFACE OR LOW-VOLUME IRRIGATION MUST BE USED FOR IRREGULARLY SHAPED AREAS OR LESS THAN 10 FEET IN WIDTH.
13. ALL PLANTER AREAS PROTECTED BY A 6" HIGH CONCRETE CURB
14. CAR OVERHANG AREAS TO BE MULCHED. SHRUBS OR GROUNDCOVER TO BE PLANTED OUTSIDE THE OVERHANG AREA.
15. PLANT MATERIAL IS RESTRICTED TO A MAXIMUM HEIGHT OF 12" AT MATURITY WITHIN RESTRICTED SIGHTLINE AREA PER COUNTY STANDARD.
16. A 6" HIGH CURB WITH A 12" WIDE CONCRETE WALKWAY SHALL BE CONSTRUCTED ALONG PLANTERS ON END STALLS ADJACENT TO VEHICLE PARKING SPACES.
17. PLANT MATERIAL SHALL BE SEPARATED BY WATER NEEDS IN SEPARATE HYDROZONES.

THERE IS THE PRESENCE OF SEVERAL MULTIPLE SPECIES HABITAT CONSERVATION PLAN (MSHCP) PARCELS WITHIN 1 MILE OF THE PROJECT ALL PART OF THE SU-1 MOTTE/RIMROCK RESERVE - THE APN ARE LISTED BELOW: 317190011, 322240027, 317190008, 322240028, 322240030, 322263049, 322240003, 322240023, 322240025, 322170005

PRIOR TO PROJECT CONSTRUCTION, I AGREE TO SUBMIT A COMPLETE LANDSCAPE CONSTRUCTION DOCUMENT PACKAGE THAT APPLIES WITH THE REQUIREMENTS OF APPLICABLE ORDINANCES, INCLUDING BUT NOT NECESSARILY LIMITED TO ORDINANCE 859.3; ORDINANCE 348, ORDINANCE 461; PROJECT CONDITIONS OF APPROVAL, AND IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED LANDSCAPE CONCEPT PLAN. SHOULD THE ORDINANCES BE REVISED, PLANS MAY BE SUBJECT TO CHANGE.

TRAIL WITHIN RIGHT-OF-WAY AREA SHALL BE MAINTAINED BY PROPERTY OWNER UNLESS OTHERWISE DIRECTED BY COUNTY OF RIVERSIDE LMD STAFF.

RIGHT-OF-WAY LANDSCAPING SHALL BE MAINTAINED BY THE PROPERTY OWNER UNLESS OTHERWISE DIRECTED BY COUNTY OF RIVERSIDE LMD DEPARTMENT STAFF

PLANT MATERIAL PROTECTION NOTE
PLANT MATERIALS SHALL BE PROTECTED FROM VEHICULAR ENCROACHMENT OR OVERHANG.

N

0 15' 30' 60' 120'

Placentia Avenue and Tobacco Road Sheet 1

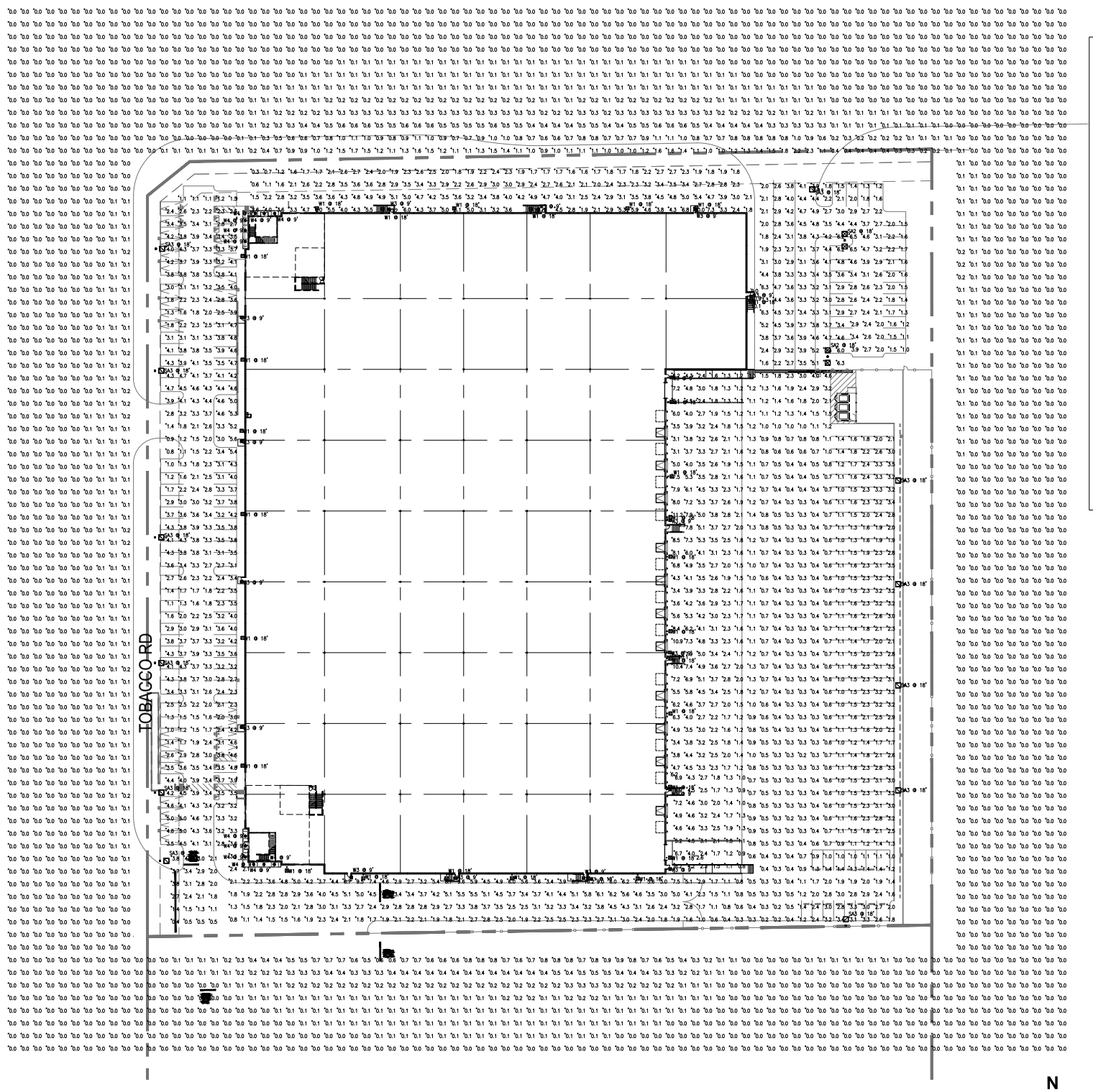
23-09 | 07.03.24 12.24.24
11.27.23 08.06.24 01.13.25 DAC 5th Submittal
03.08.24 10.21.24
03.12.2410.30.24

County of Riverside, California

REGISTERED LANDSCAPE ARCHITECT — RICHARD K. HARRIS — STATE OF CALIFORNIA

HUNTER LANDSCAPE
711 FEE ANA STREET PLACENTIA, CA 92870
714.986.2400 FAX 714.986.2408
Applicant: HPA, Inc. tel: 949.863.1770
18831 Bardeen Ave. Ste 100, Irvine, CA 92612
Owner: Thrifty Oil Co. tel: 562.921.3581
13116 Imp. Highway, Santa Fe Springs, CA 90670

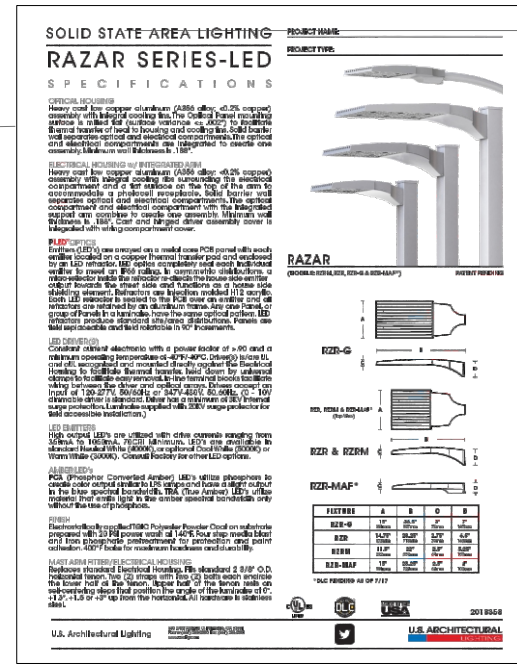
LILBURN CORPORATION

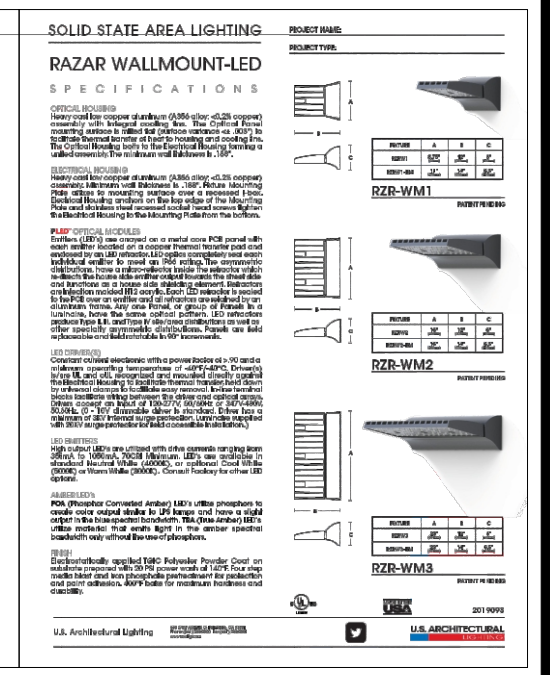


ELECTRICAL SITE PHOTOMETRIC PLAN
SCALE: 1"=40'-0"

1

N





Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
⊠	W3	19	U.S. ARCHITECTURAL LIGHTING	RZR-WM1-PLED-II-W-20LED-350mA-27K EM1 WALL MT AT 9 FT AFG WM511 BUG RATING B1 U0 G1	CAST BLACK PAINTED FINNED METAL HOUSING.	20 WHITE LIGHT EMITTING DIODES (LEDS), BASE UP.	20	RZR-WM1-PLED-II-W-20LED-350mA-40K.ies	151	0.9	21.4
⊠	SA3	12	U.S. ARCHITECTURAL LIGHTING	RZR-M-PLED-IV-FT-48LED-1050mA-27K-HS MSF311MW511 POLE MT AT 18 FT AFG BUG RATING B1 U0 G3	CAST BLACK PAINTED FINNED METAL HOUSING.	48 WHITE LIGHT EMITTING DIODES (LEDS), BASE UP.	48	RZRM-PLED-IV-FT-48LED-1050mA-27K-HS.ies	256	0.9	159.6
⊠	W1	29	U.S. ARCHITECTURAL LIGHTING	RZR-WM2-PLED-IV-FT-40LED-1050mA-27K MW511 MSF 311 WALL MT AT 18 FT AFG BUG RARING B2 U0 G3	CAST BLACK PAINTED FINNED METAL HOUSING.	40 WHITE LIGHT EMITTING DIODES (LEDS), BASE UP.	40	RZR-WM2-PLED-IV-FT-40LED-1050mA-27K.ies	326	0.9	128.2
⊠	SA2	2	U.S. ARCHITECTURAL LIGHTING	RZR-M-PLED-VSQ-W-48LED-1050mA-27K MW511 MSF311 POLE MT AT 18 FT AFG 15.5 FT POLE 30 IN BASE BUG RATING B5 U0 G3	CAST BLACK PAINTED FINNED METAL HOUSING.	48 WHITE LIGHT EMITTING DIODES (LEDS), BASE UP.	48	RZRM-PLED-VSQ-W-48LED-1050mA-27K.ies	358	0.9	319.2
	W4	12	U.S. ARCHITECTURAL LIGHTING	LC6SLEM 27K 6LCSL 14 L EM	6 INCH LBR DOWNLIGHT 1400LM 2700K		1		1641	0.9	18

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	2.5 fc	16.7 fc	0.0 fc	N/A	N/A
Calc Zone #2	+	0.1 fc	9.6 fc	0.0 fc	N/A	N/A
Calc Zone #3	+	3.2 fc	10.0 fc	0.3 fc	33.3:1	10.7:1
Calc Zone #4	+	2.1 fc	3.9 fc	1.0 fc	3.9:1	2.1:1
Calc Zone #5	+	10.0 fc	10.0 fc	10.0 fc	1.0:1	1.0:1
Calc Zone #6	+	10.2 fc	10.2 fc	10.2 fc	1.0:1	1.0:1
Calc Zone #7	+	10.0 fc	10.9 fc	9.0 fc	1.2:1	1.1:1
Calc Zone #8	+	10.9 fc	10.9 fc	10.9 fc	1.0:1	1.0:1
Calc Zone #9	+	11.5 fc	12.9 fc	10.1 fc	1.3:1	1.1:1
Calc Zone #10	+	6.2 fc	6.2 fc	6.2 fc	1.0:1	1.0:1
Calc Zone #11	+	2.6 fc	2.6 fc	2.6 fc	1.0:1	1.0:1
Calc Zone #14	+	3.0 fc	8.9 fc	0.8 fc	11.1:1	3.8:1

RPM
Engineers, Inc.
102 DISCOVERY
Irvine, CA. 92618
Tel: 949-380-3044
Fax: 949-380-1454
Contact: David Du
e-mail: davidd@rpmpe.com

REGISTERED PROFESSIONAL ENGINEER
JAN V. NGUYEN
No. E15596
Ex:12-31-2025
ELECTRICAL
STATE OF CALIFORNIA

CAUTION : IF THIS SHEET IS NOT A 30" X 42" IT IS A REDUCED PRINT

PHOTOMETRIC PLAN

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California

FIGURE 7

HPA architecture

hpa, inc.
18831 bardeen avenue - ste.
#100 irvine, ca
92612
tel: 949•863•1770
fax: 949•863•0851
email: hpa@hparchs.com

Owner:

THRIFTY OIL CO.

13116 Imperial Highway
Santa Fe Springs CA 90670
tel: 562-921-3581

Project:

Perris North

SEC of Tobacco and Placentia
Riverside County CA

Consultants:

Civil:	Armstrong & Brooks
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	-
Landscape:	-
Fire Protection:	-
Soils Engineer:	-

Title:

SITE PHOTOMETRIC PLAN

Project Number:	22484
Drawn by:	JK.
Date:	
Revision:	
DAC 5TH SUBMITTAL	01/13/25

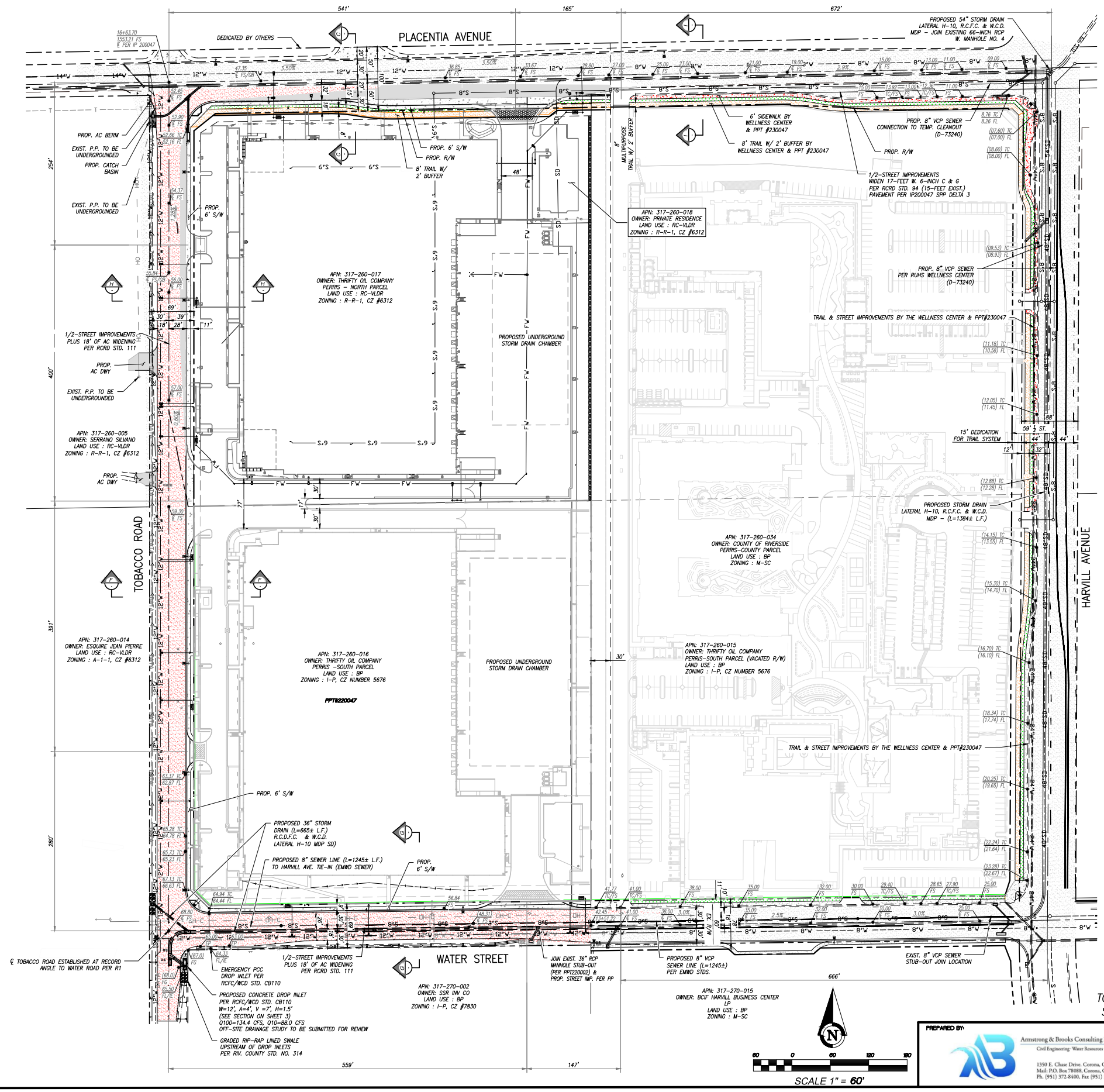
Sheet:

FC-1.0

RPM#23-001#1 01/17/2025

LILBURN CORPORATION

PLOT PLAN : COUNTY OF RIVERSIDE CASE NO: 230048



SCALE 1" = 60'

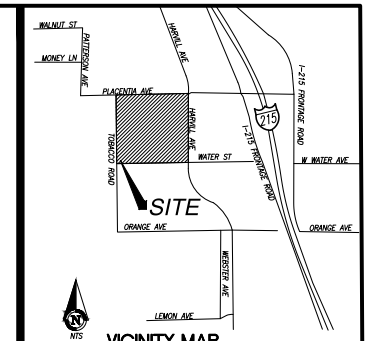
LAND AREA DEDICATION SUMMARY

PARCEL	GROSS ACREAGE	DEDICATED ACREAGE	NET ACREAGE
017	9.19 ACRES	0.92 ACRES	8.27 ACRES
018	0.429 ACRES	0.023 ACRES	0.406 ACRES
TOTAL GROSS ACREAGE = 9.61		TOTAL DEDICATION ACREAGE = 0.943	TOTAL NET ACREAGE = 8.68

TOTAL OFFSITE STREET IMPROVEMENTS (IMPACT AREA) = 0.433 ACRES

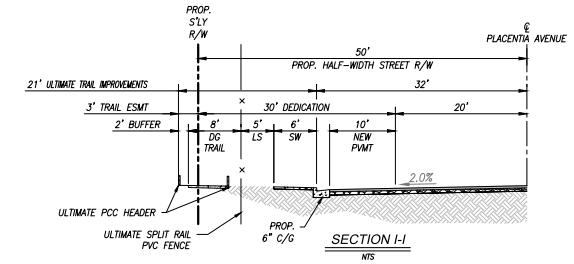
LEGEND

- PROPOSED ASPHALT CONCRETE & BASE (STREET WIDENING)
- EX. ASPHALT CONCRETE & BASE
- PROPOSED PCC SIDEWALK / CURB & GUTTER
- EXISTING D.G. MULTIPURPOSE TRAIL
- EXISTING LANDSCAPE BUFFER
- EX. ASPHALT CONCRETE



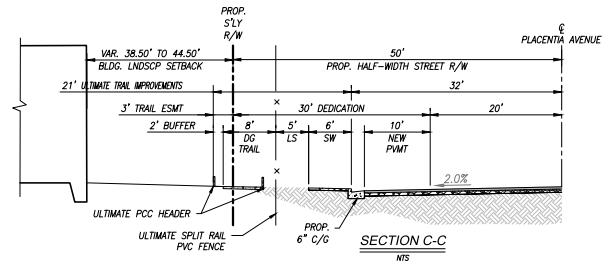
VICINITY MAP

TOWNSHIP 4S, RANGE 4W, SECTION 13



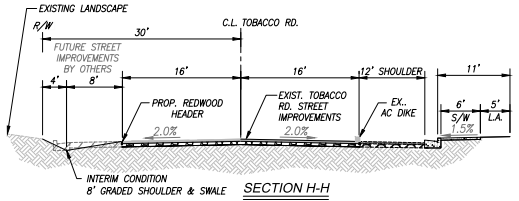
SECTION I-I

NTS



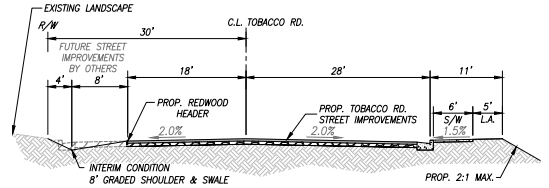
SECTION C-C

NTS



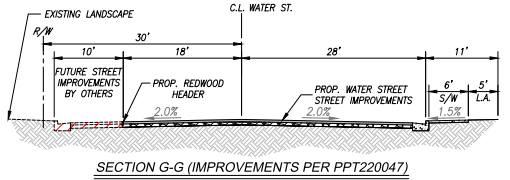
SECTION H-H

NTS



SECTION F-F (IMPROVEMENTS PER PPT 220047)

NTS



SECTION G-G (IMPROVEMENTS PER PPT220047)

NTS

TOBACCO ROAD & PLACENTIA AVENUE IMPROVEMENTS
SEE SHEET NO. 4 FOR TRUCK TURNING MOVEMENTS

PREPARED BY:

Armstrong & Brooks Consulting Engineers, Inc.
Civil Engineering · Water Resources · Surveying
1350 E. Chase Drive, Corona, CA 92881
Mail: P.O. Box 78088, Corona, CA 92877
Ph. (951) 372-8400, Fax (951) 372-8450

REGISTERED PROFESSIONAL ENGINEER — No. 52314 — Exp. 6/30/23 — CIVIL — STATE OF CALIFORNIA

THE ORDEN COMPANY - PERRIS NORTH SITE
OFF-SITE IMPROVEMENT EXHIBIT
INDUSTRIAL BLDG. SCHEME 10
APN'S 317-260-017 AND 317-260-018

SHEET 3 OF 4

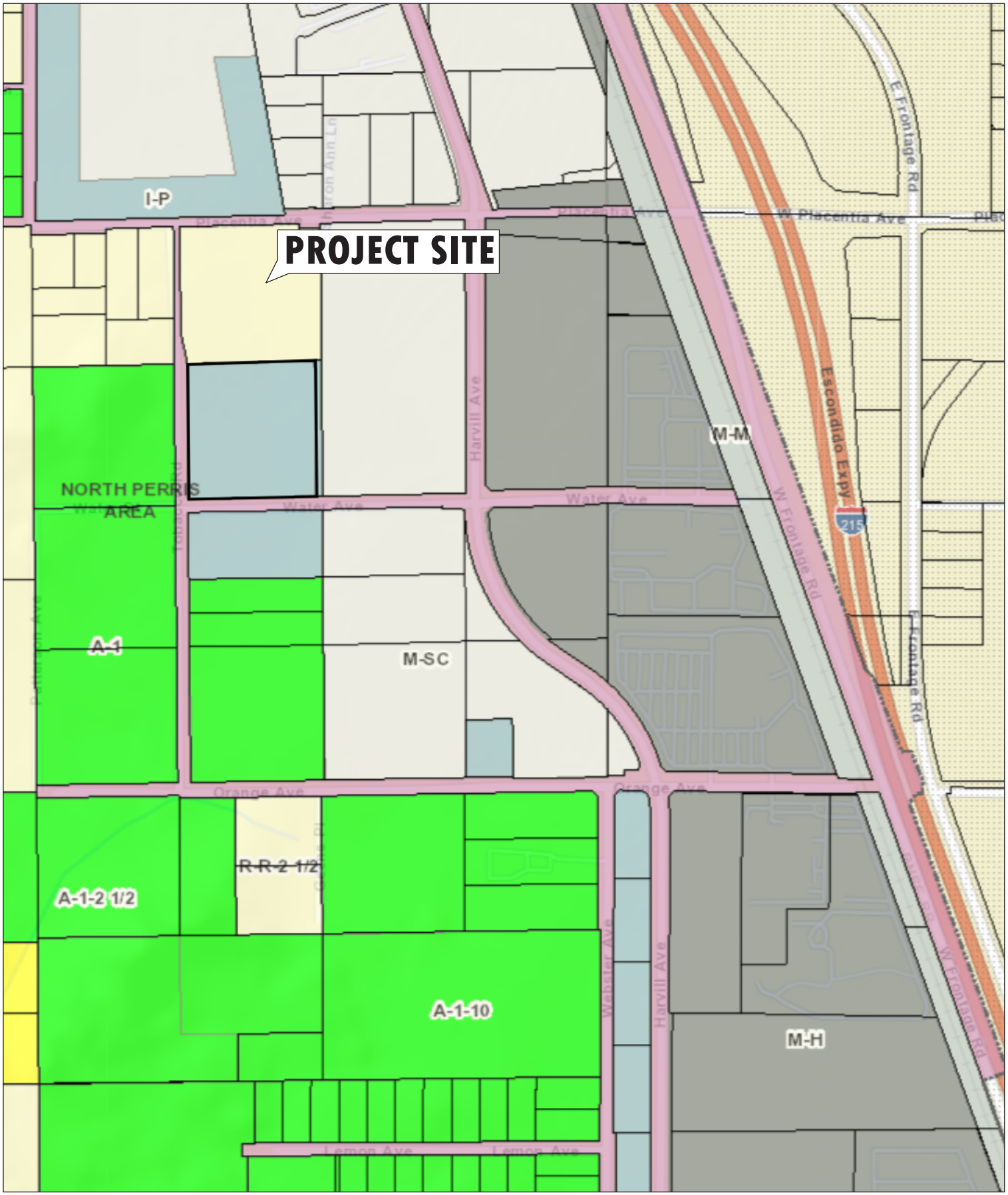
PAC 5TH SUBMITTAL: PPT 230048

OFF-SITE IMPROVEMENT AREAS

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California

FIGURE 8

LILBURN CORPORATION



0 1200 Feet

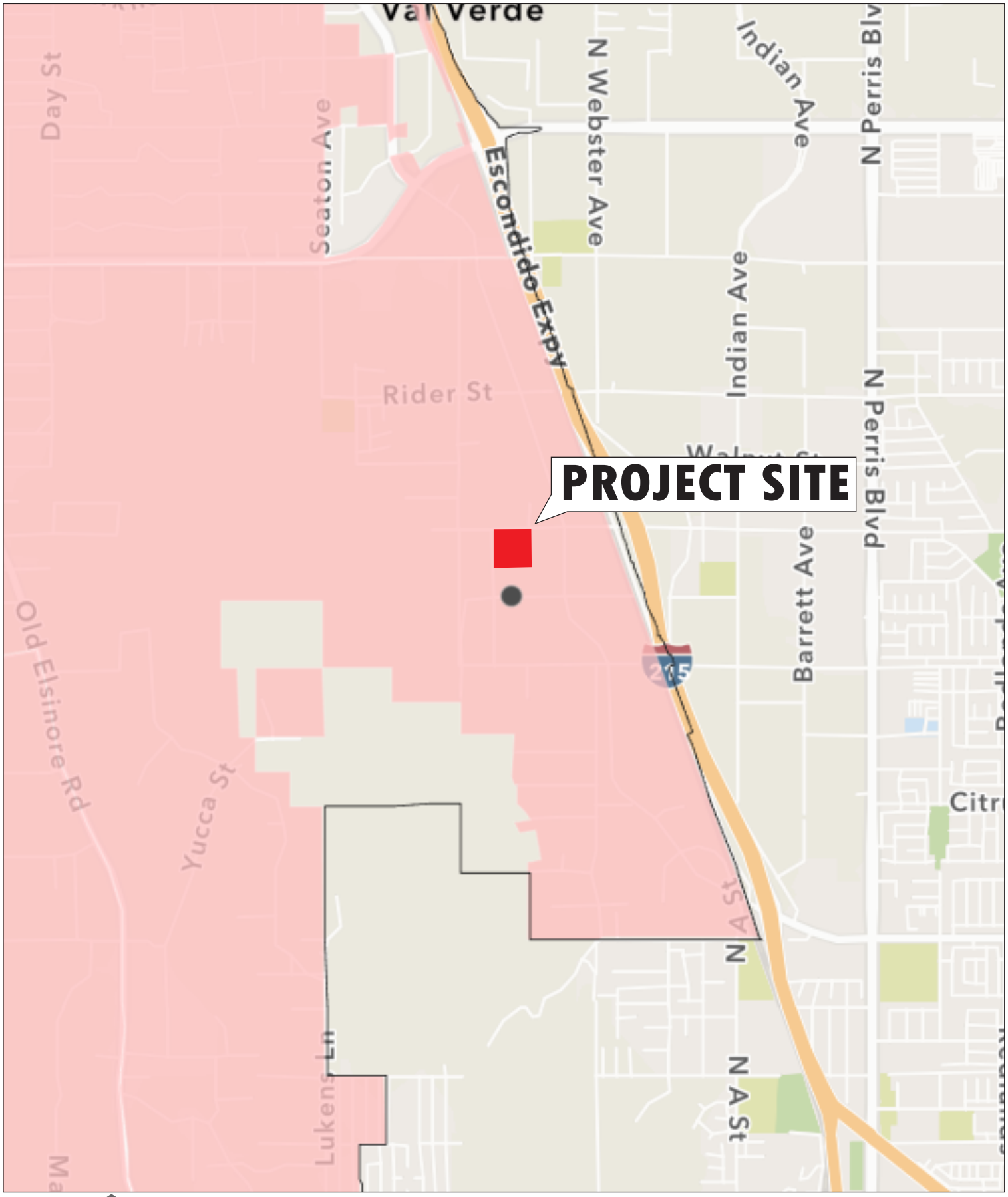
LILBURN CORPORATION

A-1
A-1/2 1/2
A-1-10
I-P
M-H
M-M
M-SC
R-R1
R-R5
R-1 2 1/2

PROJECT SITE ZONING

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California

FIGURE 9



0 2.00 Mile

LILBURN CORPORATION

County Supervisorial District Boundary

Environmental Justice Communities

ENVIRONMENTAL JUSTICE COMMUNITIES

Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California

FIGURE 10

V. ENVIRONMENTAL ISSUES ASSESSMENT

AESTHETICS				
1. Scenic Resources	☐	☐	☐	☒
	☐	☐	☒	☐
	☐	☐	☒	☐

Source(s):

- [illegible]
- [illegible]

2.	**Mt. Palomar Observatory**	☐	☐	☒

Source(s):

Source(s):

3. Other Lighting Issues

	☐	☐	☒	☐
	☐	☐	☒	☐

Source(s):

AGRICULTURE & FOREST RESOURCES				
4. Agriculture	☐	☐	☐	☒
	☐	☐	☐	☒
	☐	☐	☒	☐
	☐	☐	☐	☒

Source(s): R d – M r 2 *Agricultural Resources* R d D r R r r d M d M r r r d

d

rd R d – M r 2 d r d M d M r r r r rd d "r d r" which is not r d r r d D d r d r r d r d r r d d r d r r d d M d M r r r r R r rd r is designated "Other Lands" or "Undefined". r d d r r r r d

r d R r D R d r r r r d r r r r d 2 2 r d r r r d d d d r r r d d d r d r r r R r d r Report identifies the Project parcels as "Not in an Agricultural Preserve" r r d r r r r r r d r r d r d d r r d

r r r r d r R r R d r R R r d r d r d r d r r d M r r r M r r r r r r r r r 2 r r d r r r r d r r d d r rd ance No. 625 "Right Farm" is designed to reduce the County's loss of its agricultural resources by limiting the

2 – r r

Ordinance No. 625 provides that "[illegible]" There are no [illegible]

[illegible]

5. Forest [illegible]

[illegible]

Source(s): [illegible]
Forestry Resources Western Riverside County [illegible]

[illegible]

AIR QUALITY

6. Air Quality Impacts	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐

Source(s): Riverside County Climate Action Plan ("CAP"); MD ; *Thrifty Oil Warehouse Project, Air Quality Impact Analysis*; and *Thrifty Oil Warehouse Project Mobile Source Health Risk Assessment,*

□ □□□□

disturbance. Irrespective of the site's land use designation, development of the site to its [illegible]

[illegible]

[illegible] As described by the County's Municipal Code Section [illegible] Project's uses [illegible] consistent with the site's [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Table 1
Estimated Project Construction Emissions

Year	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
2025	0.96	11.11	22.63	0.03	1.35	0.42
Winter						
2025	0.96	41.90	31.03	0.21	10.14	3.56
2026	47.03	19.09	34.63	0.05	1.88	0.63
Maximum Daily Emissions	**47.03**	**41.09**	**34.63**	**0.21**	**10.14**	**3.56**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Table 2
Estimated Peak Operational Emissions

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
Mobile Source	1.05	10.00	13.30	0.11	5.45	1.54
Area Source	5.80	0.07	8.08	0.00	0.01	0.01
Stationary Source	0.98	2.75	2.51	0.00	0.14	0.14
Project Maximum Daily Emissions	**7.83**	**12.82**	**23.89**	**0.11**	**5.60**	**1.96**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Winter						
Mobile Source	1.01	10.50	11.40	0.11	5.45	1.54
Area Source	4.47	0.00	0.00	0.00	0.00	0.00
Stationary Source	.098	2.75	2.51	0.00	0.14	0.14

Project Maximum Daily Emissions	**6.46**	**13.25**	**13.91**	**0.11**	**5.59**	**1.68**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

- R1: Location R1 represents the existing residence at 20601 Tobacco Road, approximately 165 feet southwest of the Project Site. Since there are no private outdoor living areas (backyards) facing the Project Site, receptor R1 is placed at the building façade.
- R2: Location R2 represents the existing residence at 23551 Placentia Avenue, approximately 90 feet west of the Project Site. Since there are no private outdoor living areas (backyards) facing the Project Site, receptor R2 is placed at the building façade.
- R3: Location R3 represents the Barker Logistics facility located approximately 155 feet north of the Project Site.
- R4: Location R4 represents the FedEx Freight transportation service center located at 20388 Harvill Avenue, approximately 985 feet northeast of the Project Site.
- R5: Location R5 represents the Crafttech Metal Forming, Inc. metal fabricator facility located at 24100-B Water Street, approximately 1,465 feet east of the Project Site.
- R6: Location R6 represents the Star Milling Co. feeding manufacturer building located at 23901 Water Street, approximately 1,253 feet southeast of the Project Site.
- R7: Location R7 represents the existing residence at 20800 Tobacco Road, approximately 1,031 feet south of the Project Site. Since there are no private outdoor living areas (backyards) facing the Project Site, receptor R7 is placed at the building façade.
- R8: Location R8 represents Val Verde Elementary School, located approximately 3,709 feet southeast of the Project Site.

MD determining the Project's potential to cause an individual a cumulatively significant impact.

LST Methodology

[illegible]

Table 3
Localized Significance Summary of Construction

Construction Activity	Year	Emissions (lbs/day)			
		NO_X	CO	PM_{10}	$PM_{2.5}$
Demolition	**Maximum Daily Emissions**	**10.72**	**18.36**	**0.26**	**0.18**
	SCAQMD Localized Threshold	120	625	5	3
	Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
Site Preparation	**Maximum Daily Emissions**	**15.69**	**29.96**	**5.77**	**2.79**
	SCAQMD Localized Threshold	222	1,269	12	6
	Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
Grading	**Maximum Daily Emissions**	**10.73**	**19.03**	**2.38**	**1.02**
	SCAQMD Localized Threshold	189	1,032	9	5
	Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

Table 4
Localized Significance Summary of Operations

Scenario	Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**4.20**	**12.88**	**0.28**	**0.19**
SCAQMD Localized Threshold	273	1,635	4	2
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

[illegible]

[illegible]

[illegible]

[illegible]

- [illegible] R[illegible] [illegible] R[illegible] [illegible] [illegible] [

BIOLOGICAL RESOURCES

7. Wildlife & Vegetation	☐	☒	☐	☐
	☐	☒	☐	☐
	☐	☒	☐	☐
	☐	☐	☒	☐
	☐	☐	☐	☒
	☐	☐	☐	☒

	☐	☐	☒	☐

Source(s): *Biological Resources Assessment, Jurisdictional Delineation, and MSHCP Consistency Analysis for the Development of APNs: 317-260-017 and 018, Unincorporated Perris, Riverside County, California* *Burrowing Owl Western Riverside MSHCP Protocol Survey Report, Jennings Environmental,*

Criteria Cell Location.

- *Criteria Cell 2529*

6.1.2 - Riverine/Riparian Resources.

6.1.4 - Urban/Wildland Interface [illegible]

6.3.2 - Additional Surveys. [illegible]

[illegible] **BIO-1** [illegible] to "Mitigation" [illegible]

[illegible]

[illegible]

[illegible]

BIO-1

coordination with the CDFW administers the MBTA. CDFW's

BIO-2

Refer to "Mitigation" at the end of

2

2

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

BIO-1 [illegible]

BIO-2 [illegible]

[illegible]

CULTURAL RESOURCES

8. Historic Resources			☒	
			☒	

Source(s): *Phase I Cultural Resources Study for the Thrifty Oil Warehouse Project*

9. Archaeological Resources	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐

Source(s): *Phase I Cultural Resources Study for the Thrifty Oil Warehouse Project,*

ENERGY

10. Energy Impacts	☐	☐	☒	☐
	☐	☐	☒	☐

Source(s): Riverside County Climate Action Plan ("CAP"); *Thrifty Oil Warehouse Project Energy Analysis*; and *Thrifty Oil Warehouse Project Greenhouse Gas Analysis*

Discussion:

Construction

Operation

Operation

[illegible]

[illegible]

[illegible]

GEOLOGY AND SOILS

11. Alquist-Priolo Earthquake Fault Zone or County Fault Hazard Zones	☐	☐	☒	☐

Source(s): *Seismic Hazards;* *Geotechnical Engineering Exploration and Analysis Proposed Commercial Building 23641 Placentia Avenue Perris, CA*

as "Low" impact in regard to seismic activity.

12. Liquefaction Potential Zone	☐	☐	☒	☐

Source(s): *Liquefaction Zones* *Geotechnical Engineering Exploration and Analysis Proposed Commercial Building 23641 Placentia Avenue Perris, CA,*

13. Ground-shaking Zone ☐ ☐ ☒ ☐

Source(s): [illegible] *Fault Lines* [illegible] *Geotechnical Engineering Exploration and Analysis Proposed Commercial Building 23641 Placentia Avenue Perris, CA* [illegible]

[illegible]

[illegible] However, based on the review of "CGS Seismic Zonation Program" as well [illegible] property is not located within "Liquefiable" area. In addition, review of the Susceptibility map [illegible] condition of approval and verified by the County's review process would ensure that impacts [illegible] the CBC as included as a condition of approval and verified by the County's review process [illegible]

[illegible]

14. Landslide Risk ☐ ☐ ☒ ☐

Source(s): 2 2 2 *Landslide Risk* *Geotechnical Engineering Exploration and Analysis Proposed Commercial Building 23641 Placentia Avenue Perris, CA,* 2 2

Landslides, Rockfall Hazards. *Steep Slopes*

Lateral Spreading.

through the County's permitting process would ensure that settlement related impacts

15. Ground Subsidence	☐	☐	☒	☐

Source(s): *Documented Subsidence Areas* *Geotechnical Engineering Exploration and Analysis Proposed Commercial Building 23641 Placentia Avenue Perris, CA*

16. Other Geologic Hazards	☐	☐	☐	☒

Source(s): *Geotechnical Engineering Exploration and Analysis Proposed Commercial Building 23641 Placentia Avenue Perris, CA,*

17. Slopes	☐	☐	☐	☒
	☐	☐	☐	☒
	☐	☐	☐	☒

Source(s): *Geotechnical Engineering Exploration and Analysis Proposed Commercial Building 23641 Placentia Avenue Perris, CA*

18. Soils	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☐	☒

Source(s): *Geotechnical Engineering Exploration and Analysis Proposed Commercial Building 23641 Placentia Avenue Perris, CA*

19. Wind Erosion and Blowsand from project either on or off site.	☐	☐	☒	☐

Source(s): [illegible] *Wind Erosion Susceptibility Areas* [illegible]

[illegible]

[illegible] did evaluate the potential effects of "severe weather" due to climate change. "Severe weather" was defined as localized storms that bring heavy rain, [illegible] identified "industrial buildings" to have a "moderate vulnerability" to severe weather. [illegible] the County's review process would ensure that impacts related to [illegible]

[illegible]

[illegible]

[illegible]

GREENHOUSE GAS EMISSIONS [illegible]

20. Greenhouse Gas Emissions	☐	☐	☒	☐
[illegible]	☐	☐	☒	☐

Source(s): [illegible] ("CAP") *Thrifty Oil Warehouse Project, Greenhouse Gas Analysis,* [illegible]

[illegible]

[illegible] activity. Without the natural greenhouse gas effect, the earth's average temperature would [illegible] of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

[illegible] Riverside County's Climate Action Plan ([illegible] proposed development projects within the County. To address the state's requirement to [illegible] emissions within the County by 49% below "existing" 2008 levels by the year 2030 and 83% below the 2008 baseline levels by 2050. The County's GHG reduction targets are consi[illegible]

Table 5
Project GHG Emissions

Emission Source	Emissions (MT/yr)				
	CO_2	CH_4	N_2O	Refrigerants	Total CO_2e
Annual construction-related emissions amortized over 30 years	27.09	8.77E-04	1.93E-03	0.02	27.71
Mobile Source	1,427.00	0.03	0.18	1.83	1,483.00
Area Source	3.77	0.00	0.00	0.00	3.78
Energy Source	141.00	0.01	0.00	0.00	142.00
Water Usage	60.30	1.40	0.03	0.00	105.00
Waste	15.60	1.56	0.00	0.00	54.50
Stationary Source	11.40	0.00	0.00	0.00	11.50
Total CO_2e (All Sources)	**1,827.49**				

[illegible]

[illegible] [illegible] [illegible] [

22. Airports	☐	☐	☐	☒
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☐	☒

Source(s):

HYDROLOGY AND WATER QUALITY				
23. Water Quality Impacts	☐	☐	☒	☐
	☐	☐	☐	☒
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☐	☒
	☐	☐	☐	☒
	☐	☐	☒	☐

Source(s): *Flood Hazard Zone* *Dam Hazard Inundation* *Hydrology Study for The Orden Company-Perris North Development* *Project Specific Water Quality Management Plan*

(BMPs) for treatment purposes. The site BMP's will consist of pre

LAND USE/PLANNING

24. Land Use	☐	☐	☒	☐
	☐	☐	☐	☒

Source(s):

“Business Park” as “employee intensive uses, including research & development, technology centers, corporate offices, “clean” industry and supporting retail uses,” and
the use of Business Park, and the Project’s FAR is

MINERAL RESOURCES				
25. Mineral Resources	☐	☐	☐	☒
	☐	☐	☐	☒
	☐	☐	☐	☒

Source(s): *Mineral Resources Area*

NOISE

26. Airport Noise	☐	☐	☒	☐
	☐	☐	☐	☒

Source(s): *Airport Locations* *Thrifty Oil Warehouse, Noise and Vibration Analysis*

Riverside County Airport Land Use Compatibility Plan Policy Document[3] *Noise and Vibration Analysis* Project's industrial land uses experience *clearly acceptable*

[3] [illegible]

27. Noise Effects by the Project	☐	☐	☒	☐
	☐	☐	☒	☐

Source(s): *Land Use Compatibility for Community Noise Exposure;* *Thrifty Oil Warehouse, Traffic Study Scoping Agreement,* *Thrifty Oil Warehouse, Noise and Vibration Analysis, Urban Crossroads, February 29, 2024*

R

R

R

(commonly called a “sound level”) measured in dB. An A

Significance Criteria Summary.

Table 6
Significance Criteria Summary

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
			≥ 5 dBA CNEL Project increase	
			≥ 3 dBA CNEL Project increase	
			≥ 1.5 d	
			≥ 3 dBA CNEL Project increase	
			≥ 12 dBA CNEL Project increase	
			d	d
			≥ 5 dBA L	
			≥ 3 dBA L	
			≥ 1.5 dBA L	
			d	d

[1] FICON, 1992.
[2] County of Riverside General Plan Noise Element, Table N-1.
[3] Caltrans Traffic Noise Analysis Protocol, April 2020.
[4] County of Riverside General Plan Municipal Code, Section 9.52.040.
[5] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[6] Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Ambient Noise Level Measurements

Table 7
Ambient Noise Level Measurements

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	

[1]
[2]
"D

[illegible]

[illegible]

[illegible]

Table 9
Construction Reference Noise Levels

Construction Stage	Reference Construction Equipmnet[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Composite Reference Noise Level (dBA L_{eq})[2]	Reference Power Level (dBA L_w)[3]
Site Preparation	Tractor	80	84.0	115.6
	Backhoe	74		
	Grader	81		
Grading	Scraper	80	83.3	114.9
	Excavator	77		
	Dozer	78		
Building Construction	Crane	73	80.6	112.2
	Generator	78		
	Front End Loader	75		
Paving	Paver	74	77.8	109.5
	Dump Truck	72		
	Roller	73		
Architectural Coating	Man Lift	68	76.2	107.8
	Compressor (air)	74		
	Generator (<25kVA)	70		

[1] FHWA Road Construction Noise Model.
[2] Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings.

Noise and Vibration Analysis

Table 10
On-Site Construction Equipment Noise Level Summary

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	67.3	66.6	63.9	61.2	59.5	70.1
R2	68.9	68.2	65.5	62.8	61.1	71.7
R3	58.4	57.7	55.0	52.3	50.6	61.2

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

[illegible]

[illegible]

[illegible]

[illegible] ng. This zone correlates with the "[illegible]" General Plan Land Use designation.

[illegible] *Reference Noise Level Measurements* [illegible]

Table 11
Reference Noise Level Measurements

Reference Noise Source	Noise Source Height (Feet)	Min./ Hour[1]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[2]
		Day	Night		
Loading Dock Activity	8'	60	60	62.8	103.4
Parking Lot Vehicle Movements	5'	60	60	52.6	81.1
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Trash Enclosure Activity	5'	60	30	57.3	89.0
Truck Movements	8'	60	60	59.8	93.2

[1] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

[2] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

[illegible]

Table 12
Daytime Operational Noise Levels
(7:00 a.m. to 10:00 p.m.)

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)		
	R1	R2	R3
Loading Dock Activity	27.5	27.6	38.3
Parking Lot Vehicle Movements	39.0	41.8	27.6
Roof-Top Air Conditioning Units	39.7	41.8	28.3
Trash Enclosure Activity	14.2	15.0	19.2
Truck Movements	36.3	26.6	28.4
Total (All Noise Sources)	**43.4**	**45.0**	**39.4**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1. (see Appendix I)

[illegible]

Table 13
Nighttime Operational Noise Levels
(10:00 p.m. to 7:00 a.m.)

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)		
	R1	R2	R3
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Total (All Noise Sources)	**42.6**	**44.0**	**39.3**

[illegible]

[illegible]

Off-Site Traffic

considered to occur when the project's predicted noise level exceeds the existing noise

not specifically identify what portion of the residential land use that is considered "noise sensitive." Noise

Table 14
Existing With Project Traffic Noise Level INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				Without Project	With Project	Project Addition	Limit	Exceeded?

[illegible]

[illegible]

[illegible]

Table 15
Vibration Source Levels for Construction Equipment

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089
Vibratory Roller	0.210

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

[illegible]

[illegible]

[illegible]

Table 16
Project Construction Vibration Levels

Location[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]						Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jack-hammer	Loaded Trucks	Large bulldozer	Vibratory Roller	Highest Vibration Level		
R1	115'	0.000	0.004	0.008	0.009	0.021	0.021	0.3	No
R2	188'	0.000	0.002	0.004	0.004	0.010	0.010	0.3	No
R3	1,011'	0.000	0.000	0.000	0.000	0.001	0.001	0.3	No

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Distance from receiver building facade to Project construction boundary (Project site boundary).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 10-5).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

Table 17
Summary of CEQA Significance Findings

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
Operational Noise	9	*Less Than Significant*	-
Project Construction Noise	10	*Less Than Significant*	-
Nighttime Concrete Pour		*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

PALEONTOLOGICAL RESOURCES:

28. Paleontological Resources

☐	☒	☐	☐

Source(s): *Paleontological Sensitivity* *Paleontological Resources Assessment for the Thrifty Oil Warehouse Project*

[illegible]

[illegible]

[illegible] while the eastern portion has a “high” sensitivity for [illegible]. Because of the County identified “high” sensitivity on a portion of the Project [illegible] **PAL-1** [illegible] **PAL-1** [illegible]

[illegible]

PAL–1: Paleontological Monitoring.

Portions of this site are mapped in the County’s General Plan as having a High potential for [illegible]

[illegible]

2 [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

*Pursuant the County “SABER Policy”, paleontological fossils found in the County shall be signed by the qualified paleontologist responsible for the report’s content. All plans, and all required review applications shall be uploaded to the County’s PLUS

POPULATION AND HOUSING				
29. Housing	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐

Source(s):

PUBLIC SERVICES

30. Fire Services	☐	☐	☒	☐

Source(s):

Project's increased demand on fire services could impact the RCFD's

31. Sheriff Services ☐ ☐ ☒ ☐

Source(s): [illegible]

[illegible]

[illegible] heriff's D[illegible] Sheriff's Department [illegible]

[illegible]

[illegible]

32. Schools ☐ ☐ ☒ ☐

Source(s): [illegible]

[illegible]

[illegible]

[illegible]

33. Libraries	☐	☐	☒	☐

Source(s):

34. Health Services	☐	☐	☒	☐

Source(s):

Healthcare Facilities nearest Project:

-
-
-
-

RECREATION

35. Parks and Recreation	☐	☐	☒	☐

		M		

Source(s):

36. Recreational Trails

Source(s): *Riverside County Trails and Bikeway System* *Trails and Bikeway System*

TRANSPORTATION

37. Transportation	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐

Source(s): *Thrifty Oil Warehouse Focused Traffic Assessment, Urban Crossroads, January 30, 2025* *Thrifty Oil Warehouse, Vehicle Miles Traveled Screening Analysis* 2

Area Plan's vision for bikeways and

Essentially a project's environmental impacts can no longer

Transportation Analysis Guidelines for Level of Service, Vehicle Miles Traveled

Truck Access

[illegible]

- [illegible] – [illegible] *Exhibit 7 of Attachment F* [illegible] *Exhibit 7 and Exhibit 11 of Attachment F* [illegible]

- [illegible] – [illegible] *Exhibit 8 of Attachment F* [illegible] *Exhibit 12 of Attachment F* [illegible]

[illegible] Tobacco Road (PPT220047) at the request of County staff, a proposed "joint use" driveway [illegible]

Truck Stacking

[illegible] is well in excess of the anticipated truck activity. Based on the Project's anticipated trip [illegible] *Exhibits 3 and 4 of Attachment F in Appendix J*). A "Tenant Advisory" could be implemented to identify [illegible]

[illegible]

d [illegible]

[illegible] site under all State, federal and local transport regulations along the area's roadways. [illegible]

[illegible]

38. Bike Trails	☐	☐	☒	☐

[illegible]

Source(s): [illegible] *Riverside County Trails and Bikeway System* [illegible] *Trails and Bikeway System.*

[illegible]

[illegible]

[illegible]

TRIBAL CULTURAL RESOURCES

39. Tribal Cultural Resources	☐	☒	☐	☐
	☐	☒	☐	☐

Source(s): *Phase I Cultural Resources Study for the Thrifty Oil Warehouse Project,* *AB52/SB18 Tribal Consultation Notification Letters and Mitigation*

Tribal Notification Summary

SB18

SB 18 amended GC §65560 to "allow the protection of cultural places in open space element of the general plan" and amended Civil Code §815.3 to add "California Native American tribes to the list of places."

AB52

the law's purview. Tribal Cultural Resources are tho
category termed "traditional cultural property" (TCP) which
Documenting Traditional Cultural Properties (Parker and King 1998), "traditional" in this context refers
property plays in a community's
(a) are rooted in that community's history, and (b) are important in maintaining the

Yuhaaviatam of San Manuel Nation

in an email dated January 08, 2024, that stated, "*The proposed project is located outside of Serrano ancestral territory and, as such, YSMN will not be requesting to receive consulting party status with the lead agency or to participate in the scoping, development, or review of documents created pursuant to legal and regulatory mandates"*

Morongo Band of Mission Indians

Tribal cultural resources are non-renewable resources and therefore of high importance to the Morongo Tribe, therefore, tribal participation (a.k.a. tribal monitors) is recommended during all ground disturbing activities. We look forward to working with the Lead Agency to protect these irreplaceable resources out of respect for ancestors of the Morongo people who left them there, and for the people of today and for generations to come. Projects within this area are potentially sensitive for cultural resources regardless of the presence or absence of remaining surface artifacts and features. Our office requests to initiate

government-to-government consultation under Assembly Bill (AB) 52 (California Public Resources Code § 21080.3.1) and Senate Bill (SB) 18 (Government Code § 65352).

[illegible]

Rincon Band of Luiseno Indians

[illegible] letter stated that the project "*within the Traditional Use Area (TUA) of the Luiseño people. As such, the Rincon Band is traditionally and culturally affiliated to the project area*". The tribe requested project [illegible]

Pechanga Band of Luiseno Indians

[illegible] stated: "*The Pechanga Tribe asserts that the Undertaking is a part of 'Atáaxum (Luiseño) territory, and therefore the Tribe's aboriginal territory as evidenced by the existence of cultural features associated with religious practice and an extensive artifact record in the vicinity of the Project. This culturally sensitive area is affiliated with the Pechanga Band of Indians because of the Tribe's cultural ties to this area as well as our extensive history with the County and other projects within the area. The Tribe hereby informs the County that the Project site is located within a Traditional Cultural Property (TCP). We will provide additional information regarding tribal affiliation and the TCP in our consultation as well as provide more specific, confidential information on potential TCRs that may be impacted by the proposed Project. Additionally, the Tribe requests that no Phase II testing or other ground-disturbing archaeological activities be conducted on the site until after the Tribe and the County consult about the TCRs in our government-to-government consultation".*

Agua Caliente Band of Cahuilla Indians

[illegible]

Soboba Band of Luiseno Indians

[illegible] **TCR-1** [illegible] **TCR-3** [illegible]

[illegible]

TCR-1: [illegible] identify the "Most Likely Descendant". The Most Likely Descendant shall then make [illegible]

TCR-2: [illegible]

- [illegible]
- [illegible]
- [illegible]

TCR-3: [illegible]

[illegible]

[illegible]

[illegible]

it has adequate capacity to serve the project's projected demand in addition to the provider's existing	☐	☐	☒	☐

Source(s): *SAN 53-WS20230001350 – APN: 317-260-017, 018*

42. Solid Waste	☐	☐	☒	☐
County Waste Management Department's (RCWMD) Badlands Landfill, located	☐	☐	☒	☐

Source(s):

accounted for in the County's long

Project would be required to comply with the County's recycling regulations where separate

43. Utilities

	☐	☐	☒	☐
	☐	☐	☐	☒
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☒	☐
	☐	☐	☐	☒

roject's electricity, natural gas, and

2022 "will serve" the project and

WILDFIRE e Responsibility Area ("SRA"),

44. Wildfire Impacts	☐	☐	☒	☐
	☐	☐	☒	☐

	☐	☐	☒	☐
	☐	☐	☐	☒
	☐	☐	☒	☐

Source(s):

Fire Hazard Severity Zone,

Fire Hazard Severity Zone (West County) and Emergency Service Facilities

Wildland-Urban Interface

2 Fire Hazard Severity Zone

Severity Zone. The area west of Tobacco Road is mapped as within a “Very High” Fire

Source(s):

46.				

Source(s):

47.		☐	☒	☐	☐

Source(s):

□ □□□□

IX. SUMMARY OF MITIGATION MEASURES

Mitigation Measure	Monitoring Method
BIO-1: [illegible]	[illegible]
BIO-2: [illegible]	[illegible]

PAL–1: Paleontological Monitoring. Portions of this site are mapped in the County's General Plan as having a high potential for paleontological resources (fossils). Proposed project site grading/earthmoving activities could potentially impact this resource. HENCE: PRIOR TO ISSUANCE OF GRADING PERMITS: 1. The applicant shall retain a qualified paleontologist approved by the County to create and implement a project-specific plan for monitoring site grading/earthmoving activities (project paleontologist). 2. The project paleontologist retained shall review the approved development plan and grading plan and conduct any pre-construction work necessary to render appropriate monitoring and mitigation requirements as appropriate. These requirements shall be documented by the project paleontologist in a Paleontological Resource Impact Mitigation Program (PRIMP). This PRIMP shall be submitted for approval by the County Geologist prior to issuance of a Grading Permit. Information to be contained in the PRIMP, at a minimum and in addition to other industry standards and Society of Vertebrate Paleontology standards, are as follows: a. A corresponding and active County Grading Permit (BGR) Number must be included in the title of the report. PRIMP reports submitted without a BGR number in the title will not be reviewed. b. PRIMP must be accompanied by the final grading plan for the subject project. c. Description of the proposed site and planned grading operations. d. Description of the level of monitoring required for all earth-moving activities in the project area. e. Identification and qualifications of the qualified paleontological monitor to be employed for grading operations monitoring.	M

f. Identification of personnel with authority and responsibility to temporarily halt or divert grading equipment to allow for recovery of large specimens.	
g. Direction for any fossil discoveries to be immediately reported to the property owner who in turn will immediately notify the County Geologist of the discovery.	
h. Means and methods to be employed by the paleontological monitor to quickly salvage fossils as they are unearthed to avoid construction delays.	
i. Sampling of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates.	
j. Procedures and protocol for collecting and processing of samples and specimens.	
k. Fossil identification and curation procedures to be employed.	
l. Identification of the permanent repository to receive any recovered fossil material. *Pursuant the County "SABER Policy", paleontological fossils found in the County should, by preference, be directed to the Western Science Center in the City of Hemet. A written agreement between the property owner/developer and the repository must be in place prior to site grading.	
m. All pertinent exhibits, maps, and references.	
n. Procedures for reporting of findings.	
o. Identification and acknowledgement of the developer for the content of the PRIMP as well as acceptance of financial responsibility for monitoring, reporting and curation fees. The property owner and/or applicant on whose land the paleontological fossils are discovered shall provide appropriate funding for monitoring, reporting, delivery and curating the fossils at the institution where the fossils will be placed and will provide confirmation to the County that such funding has been paid to the institution. All reports shall be signed by the qualified paleontologist responsible for the report's content. All reports shall also be signed by all other parties responsible for the	

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

report's content (eg. Professional Geologist), as necessary A signed electronic copy of the report, project plans, and all required review applications shall be uploaded to the County's PLUS Online System. Please use the following COUNTY OF RIVERSIDE links for this purpose:[illegible] Filing instructions for a Paleontological Report Review - COUNTY OF RIVERSIDE[illegible] Instructions for submitting Paleontological Documents through Riverside County's Plus Online - COUNTY OF RIVERSIDE[illegible] Paleontological Report Review Supplemental Information Form - COUNTY OF RIVERSIDE[illegible] Reports and/or review applications are not to be submitted directly to the County Geologist, Project Planner, Land Use Counter, Plan Check, or any other County office. In addition, the applicant shall submit proof of hiring (i.e., copy of executed contract, retainer agreement, etc.) a project paleontologist for the in-grading implementation of the PRIMP.[illegible] Per the County's SABER (Safeguard Artifacts Being Excavated in Riverside County) Policy, paleontological fossils found in the County of Riverside should, by preference, be directed to the Western Science Center in the City of Hemet.[illegible]	
TCR-1: Human Remains. If human remains are found on this site, the developer/permit holder or any successor in interest shall comply with State Health and Safety Code Section 7050.5. Pursuant to State Health and Safety Code Section 7050.5, if human remains are encountered, no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to Public Resources Code Section 5097.98 (b), remains shall be left in place and free from disturbance until a final decision as to the treatment and their disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted by the coroner within the period specified by law (24 hours). Subsequently, the Native American Heritage Commission shall	[illegible]

identify the "Most Likely Descendant". The Most Likely Descendant shall then make recommendations and engage in consultation with the property owner concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.	
TCR-2: Unanticipated Resource Discovery. The developer/permit holder or any successor in interest shall comply with the following for the life of this permit. If during ground disturbance activities, unanticipated cultural resources* are discovered, the following procedures shall be followed: • All ground disturbance activities within 100 feet of the discovered cultural resource shall be halted and the applicant shall call the Riverside County Planning Department, County Archaeologist, immediately upon discovery of the cultural resource. • A meeting shall be convened between the developer, the project archaeologist**, the Native American tribal representative(s) (or other appropriate ethnic/cultural group representative), the County Archaeologist or appropriate representative from the Riverside County Planning Department to discuss the significance of the find. At the meeting with the aforementioned parties, a decision is to be made, with the concurrence of the County Archaeologist or appropriate representative from the Riverside County Planning Department, as to the appropriate treatment (avoidance, documentation, recovery, etc.) for the Tribal Cultural Resource. All proposed evaluations shall be limited to nondestructive analysis, and subject to approval by the consulting tribe(s). • Further ground disturbance shall not resume within the area of the discovery until the appropriate treatment has been accomplished.	[illegible]
TCR-3: Native American Monitor. American Monitor Prior to the issuance of grading permits, the developer/permit applicant shall enter into agreement(s) with the consulting tribe(s) for the appropriate number of Native American	[illegible]

Monitor(s). In conjunction with the Archaeological Monitor(s), the Native American Monitor(s) shall attend the pre-grading meeting with the contractors to provide Cultural Sensitivity Training for all construction personnel. In addition, an adequate number of Native American Monitor(s) shall be on-site during all initial ground disturbing activities and excavation of soils in each portion of the project site including clearing, grubbing, tree removals, grading and trenching. In conjunction with the Archaeological Monitor(s), the Native American Monitor(s) have the authority to temporarily divert, redirect or halt the ground disturbance activities to allow identification, evaluation, and potential recovery of Tribal Cultural Resources. Activities will be documented in Tribal Monitoring Notes which will be provided to the applicant on a regular basis and required to be submitted as part of the Phase IV Report to the County Archaeologist prior to grading final inspection. The developer/permit applicant shall submit a fully executed copy of the agreement(s) to the County Archaeologist or appropriate representative from Riverside County Planning Department to ensure compliance with this mitigation measure and associated condition of approval. Upon verification, the Archaeologist shall clear this condition. This agreement shall not modify any condition of approval or mitigation measure.	

X. RIVERSIDE COUNTY CONDITIONS OF APPROVAL

60. Prior to Grading Permit Issuance

[illegible]

[illegible]

[illegible]

70. Prior to Grading Final Inspection

[illegible]

[illegible]

[illegible]

□ □□□□

r r r d, *Thrifty Oil Warehouse Project, Air Quality Impact Analysis* r 2 2 2

r r r d, *Thrifty Oil Warehouse Project Energy Analysis,* r 2 2 2

r r r d *Thrifty Oil Warehouse Project Greenhouse Gas Analysis,* r 2 2 2

r r r d, *Thrifty Oil Warehouse Project Mobile Source Health Risk Assessment,* r 2 2 2

r r r d *Thrifty Oil Warehouse, Noise and Vibration Analysis* r 2 2 2

r r r d *Thrifty Oil Warehouse, Focused Traffic Assessment* r r 2 2 2

r r r d, *Thrifty Oil Placentia Avenue Warehouse Trip Generation Assessment* r r r d D r 2 2 2

r r r d, *Thrifty Oil Warehouse, Vehicle Miles Traveled Screening Evaluation* M r 2 2

r r r *Phase 1 Environmental Site Assessment Report* 2 2 22

Thrifty Oil Warehouse Project
(PPT230048, PDA 8407, OAPL2300972)
AIR QUALITY IMPACT ANALYSIS
COUNTY OF RIVERSIDE

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JANUARY 24, 2024

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LIST OF ABBREVIATED TERMS

%	Percent
°F	Degrees Fahrenheit
(1)	Reference
µg/m^3	Microgram per Cubic Meter
1992 CO Plan	*1992 Federal Attainment Plan for Carbon Monoxide*
1993 CEQA Handbook	*SCAQMD's CEQA Air Quality Handbook (1993)*
2016-2040 RTP/SCS	*2016-2040 Regional Transportation Plan/Sustainable Communities Strategy*
AB 2595	California Clean Air Act
AQIA	Air Quality Impact Analysis
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
BC	Black Carbon
Brief	*Brief of Amicus Curiae by the SCAQMD in the Friant Ranch Case*
C_2Cl_4	Perchloroethylene
C_4H_6	1,3-butadiene
C_6H_6	Benzene
C_2H_3Cl	Vinyl Chloride
C_2H_4O	Acetaldehyde
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CEQA Guidelines	*2023 CEQA Statute and Guidelines*
CH_2O	Formaldehyde
CO	Carbon Monoxide
COH	Coefficient of Haze
COHb	Carboxyhemoglobin

County	County of Riverside
Cr(VI)	Chromium
CTP	Clean Truck Program
DPM	Diesel Particulate Matter
DRRP	Diesel Risk Reduction Plan
EC	Elemental Carbon
EIR	Environmental Impact Report
EMFAC	Emissions FACtor Model
EPA	Environmental Protection Agency
ETW	Equivalent Test Weight
EV	Electric Vehicle
GHG	Greenhouse Gas
GVWR	Gross Vehicle Weight Rating
H_2S	Hydrogen Sulfide
HDT	Heavy-Duty Trucks
HHDT	Heavy-Heavy-Duty Trucks
HI	Hazard Index
hp	Horsepower
HPLV	High-Pressure-Low-Volume
lbs	Pounds
lbs/day	Pounds Per Day
LDA	Light Duty Auto
LDT1/LDT2	Light-Duty Trucks
LHDT1/LHDT2	Light-Heavy-Duty Trucks
LST	Localized Significance Threshold
LST Methodology	*Final Localized Significance Threshold Methodology*
MATES	Multiple Air Toxics Exposure Study
MCY	Motorcycles
MDV	Medium-Duty Vehicles
MHDT	Medium-Heavy-Duty Trucks
MICR	Maximum Individual Cancer Risk
MM	Mitigation Measures
mph	Miles Per Hour
MWELO	California Department of Water Resources' Model Water Efficient
N_2	Nitrogen
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards

NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
O_2	Oxygen
O_3	Ozone
O_2 Deficiency	Chronic Hypoxemia
OBD-II	On-Board Diagnostic
ODC	Ozone Depleting Compounds
Pb	Lead
PM	Particulate Matter
PM_{10}	Particulate Matter 10 microns in diameter or less
$PM_{2.5}$	Particulate Matter 2.5 microns in diameter or less
POLA	Port of Los Angeles
POLB	Port of Long Beach
ppm	Parts Per Million
Project	Thrifty Oil Warehouse Project
RECLAIM	Regional Clean Air Incentives Market
RFG-2	Reformulated Gasoline Regulation
ROG	Reactive Organic Gases
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
sf	Square Feet
SIPs	State Implementation Plans
SO_2	Sulfur Dioxide
SO_4	Sulfates
SO_X	Sulfur Oxides
SRA	Source Receptor Area
TAC	Toxic Air Contaminant
Title 24	California Building Code
TITLE I	Non-Attainment Provisions
TITLE II	Mobile Sources Provisions
UFP	Ultrafine Particles
URBEMIS	URBan EMISsions
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
vph	Vehicles Per Hour

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EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *Thrifty Oil Warehouse Project Air Quality Impact Analysis* (AQIA) are summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the *CEQA Guidelines* (*CEQA Guidelines*) (1). Table ES-1 shows the findings of significance for each potential air quality impact under CEQA before and after any required mitigation measures (MM) described below.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Regional Construction Emissions	3.4	*Less Than Significant*	*n/a*
Localized Construction Emissions	3.7	*Less Than Significant*	*n/a*
Regional Operational Emissions	3.5	*Less Than Significant*	*n/a*
Localized Operational Emissions	3.7	*Less Than Significant*	*n/a*
CO "Hot Spot" Analysis	3.9	*Less Than Significant*	*n/a*
Air Quality Management Plan	3.10	*Less Than Significant*	*n/a*
Sensitive Receptors	3.12	*Less Than Significant*	*n/a*
Odors	3.13	*Less Than Significant*	*n/a*
Cumulative Impacts	3.14	*Less Than Significant*	*n/a*

ES.2 REGULATORY REQUIREMENTS

There are numerous requirements that development projects must comply with by law, and that were put in place by federal, State, and local regulatory agencies for the improvement of air quality.

Any operation or activity that might cause the emission of any smoke, fly ash, dust, fumes, vapors, gases, or other forms of air pollution, which can cause damage to human health, vegetation, or

other forms of property, or can cause excessive soiling on any other parcel shall conform to the requirements of the SCAQMD.

SCAQMD RULES

SCAQMD Rules that are currently applicable during construction activity for this Project are described below.

SCAQMD RULE 402

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any such persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule do not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

Odor Emissions. All uses shall be operated in a manner such that no offensive odor is perceptible at or beyond the property line of that use.

SCAQMD RULE 403

This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources by requiring actions to prevent and reduce fugitive dust emissions. Rule 403 applies to any activity or human-made condition capable of generating fugitive dust and requires best available control measures to be applied to earth moving and grading activities.

The contractor shall adhere to the following applicable measures of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 miles per hour (mph) per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- All access points to the Project site shall have track out devices installed.
- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are limited to 15 mph or less.

Dust Control, Operations. Any operation or activity that might cause the emission of any smoke, fly ash, dust, fumes, vapors, gases, or other forms of air pollution, which can cause damage to human health, vegetation, or other forms of property, or can cause excessive soiling on any other parcel, shall conform to the requirements of the SCAQMD.

SCAQMD RULE 1113

This rule serves to limit the VOC content of architectural coatings used on projects in the SCAQMD. Any person who supplies, sells, offers for sale, or manufactures any architectural coating for use on projects.

SCAQMD RULE 1301

This rule is intended to provide that pre-construction review requirements to ensure that new or relocated facilities do not interfere with progress in attainment of the National Ambient Air Quality Standards (NAAQS), while future economic growth within the SCAQMD is not unnecessarily restricted. The specific air quality goal is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors. Rule 1301 also limits emission increases of ammonia, and Ozone Depleting Compounds (ODCs) from new, modified or relocated facilities by requiring the use of Best Available Control Technology (BACT).

SCAQMD RULE 1401

A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any 1 hour that is as dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States (U.S.) Bureau of Mines.

SCAQMD RULE 2305

The SCAQMD adopted Rule 2305, the Warehouse Indirect Source Rule, on May 7, 2021. Owners and operators associated with warehouses 100,000 square feet (sf) or larger are required to directly reduce nitrogen oxides (NO_X) and particulate matter emissions, or to otherwise facilitate emission and exposure reductions of these pollutants in nearby communities. The rule imposes a "Warehouse Points Compliance Obligation" (WPCO) on warehouse operators. Operators satisfy the WPCO by accumulating "Warehouse Actions and Investments to Reduce Emissions Points" (WAIRE Points) in a given 12-month period. WAIRE Points are awarded by implementing measures to reduce emissions listed on the WAIRE Menu, or by implementing a custom WAIRE Plan approved by the SCAQMD.

Although the Project would comply with Rule 2305, it should be noted that there is no way to quantify these reductions in the California Emissions Estimator Model (CalEEMod). The two most pertinent regulatory requirements that could be modeled, are Rule 403 (Fugitive Dust) (2) and Rule 1113 (Architectural Coatings) (3). Credit for Rule 403 and Rule 1113 have been taken in the analysis.

ES.3 PROJECT MITIGATION MEASURES

ES.3.1 CONSTRUCTION-SOURCE MMS

Unmitigated Project construction-source emissions would not exceed SCAQMD regional thresholds, thus implementation of construction mitigation measures is not required.

ES.3.2 OPERATIONAL-SOURCE MMS

Unmitigated Project operational-source emissions would not exceed SCAQMD regional thresholds, thus implementation of operational mitigation measures is not required.

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1 INTRODUCTION

This report presents the results of the AQIA prepared by Urban Crossroads, Inc., for the proposed Thrifty Oil Warehouse Project (Project). The purpose of this AQIA is to evaluate the potential impacts to air quality associated with construction and operation of the Project and recommend measures to mitigate impacts considered potentially significant in comparison to thresholds established by the SCAQMD.

1.1 SITE LOCATION

The proposed project is located on the southeast corner of Tobacco Road and Placentia Avenue at 23641 Placentia Avenue in the County of Riverside, as shown on Exhibit 1-A.

1.2 PROJECT DESCRIPTION

The Project consists of the development of a 185,785 square foot (sf) warehouse building with 167,785 sf of warehousing use and 18,000 sf of office space (9,000 sf on first and second floors). The total Project site is 8.72 acres on APNs 317-260-017 and 317-261-018. A preliminary site plan for the proposed Project is shown on Exhibit 1-B. The Project is anticipated to have an Opening Year of 2026.

Construction is expected to commence in January 2025 and would last through January 2026. Construction activities will include demolition, site preparation, grading, building construction, paving, and architectural coating. To support the Project development, there will be frontage street improvements as well as offsite sewer improvements for the Project.

The Project site is located within an unincorporated portion of the County of Riverside. As per the General Plan, the unincorporated portions of the County are divided into 19 area plans. These area plans provide more detailed land use and policy direction regarding local issues such as land use, circulation, open space, and other topical areas (4). Per the General Plan, the Project site is located within the Mead Valley Area Plan and is designated for Business Park uses. The Business Park land use designation allows for employee-intensive uses, including research and development, technology centers, corporate and support office uses, clean industry and supporting retail uses (4).

EXHIBIT 1-A: LOCATION MAP

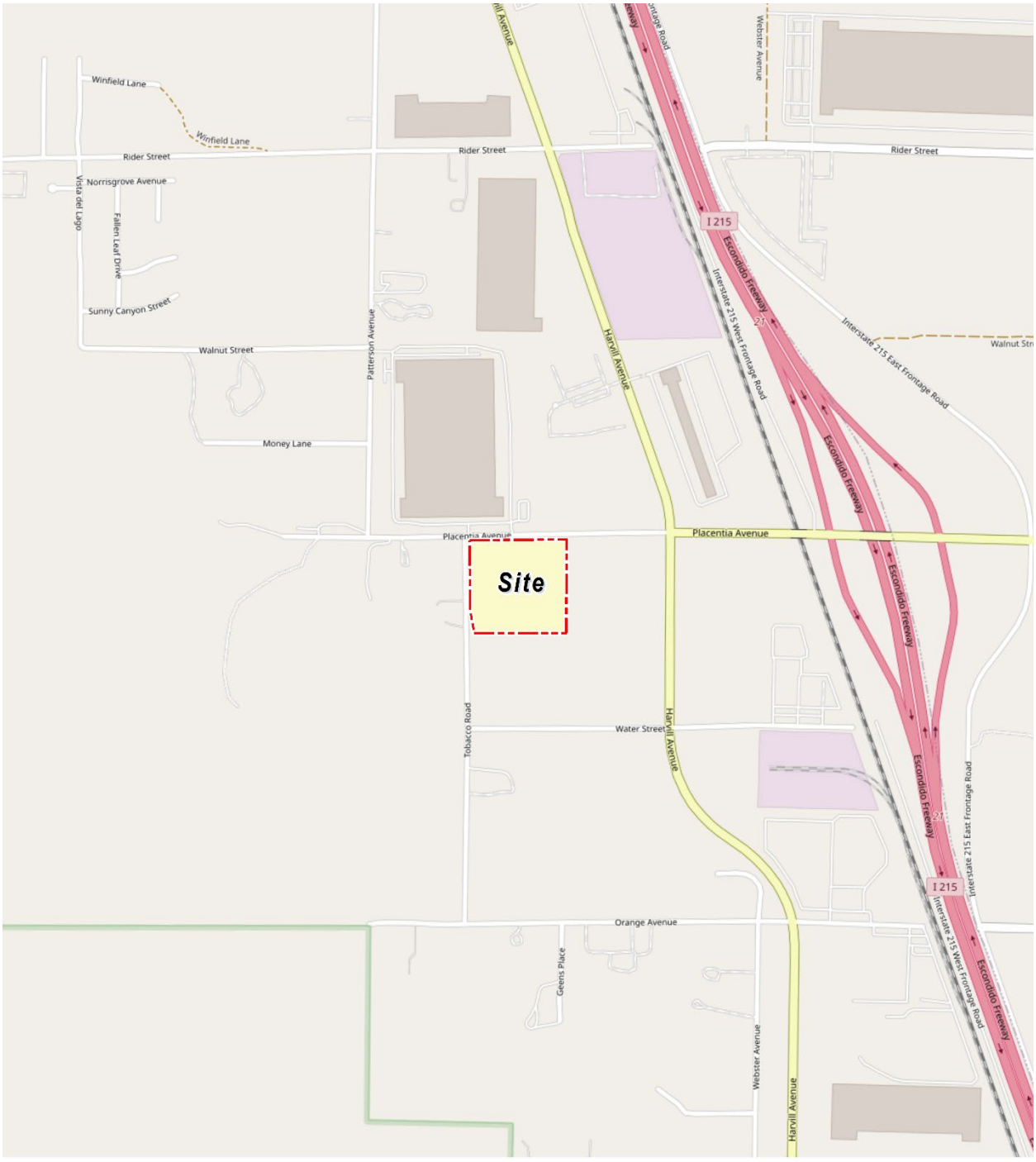
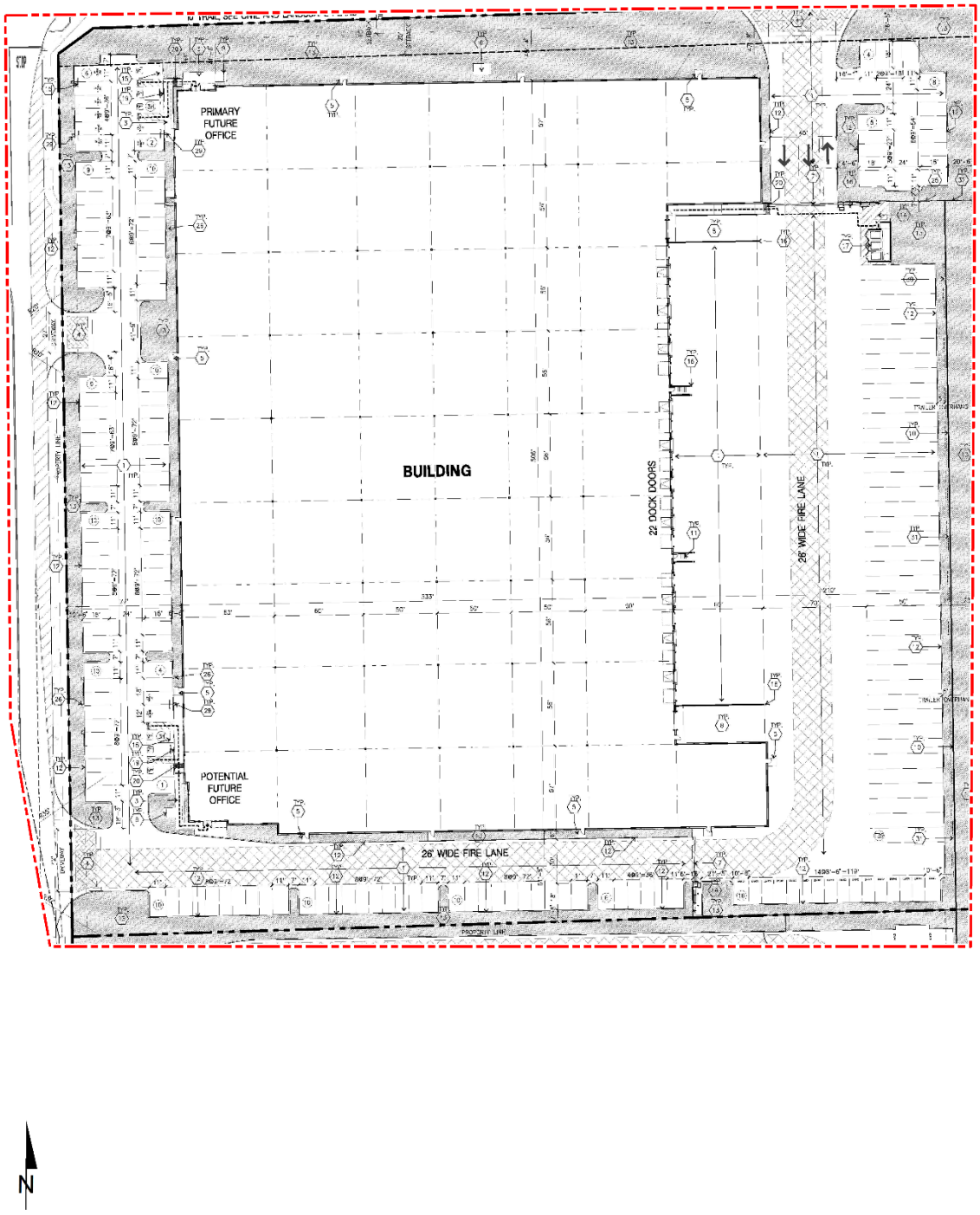


EXHIBIT 1-B: PRELIMINARY SITE PLAN



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2 AIR QUALITY SETTING

This section provides an overview of the existing air quality conditions in the Project area and region.

2.1 SOUTH COAST AIR BASIN

The Project site is located in the South Coast Air Basin (SCAB) within the jurisdiction of SCAQMD (5). The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards. As previously stated, the Project site is located within the SCAB, a 6,745-square mile subregion of the SCAQMD, which includes the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County.

The SCAB is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east, and the San Diego Air Basin to the south.

2.2 REGIONAL CLIMATE

The regional climate has a substantial influence on air quality in the SCAB. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality.

The annual average temperatures throughout the SCAB vary from the low to middle 60s degrees Fahrenheit (°F). Due to a decreased marine influence, the eastern portion of the SCAB shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SCAB, with average minimum temperatures of 47°F in downtown Los Angeles and 36°F in San Bernardino. All portions of the SCAB have recorded maximum temperatures above 100°F.

Although the climate of the SCAB can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of SCAB climate. Humidity restricts visibility in the SCAB, and the conversion of sulfur dioxide (SO_2) to sulfates (SO_4) is heightened in air with high relative humidity. The marine layer provides an environment for that conversion process, especially during the spring and summer months. The annual average relative humidity within the SCAB is 71% along the coast and 59% inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90% of the SCAB's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the SCAB with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the SCAB. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. On the shortest day of the year, there are approximately 10 hours of possible sunshine, and on the longest day of the year, there are approximately 14½ hours of possible sunshine.

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. During the late autumn to early spring rainy season, the SCAB is subjected to wind flows associated with the traveling storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed "Santa Anas" each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime offshore drainage wind. Summer wind flows are created by the pressure differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the SCAB is the "Catalina Eddy," a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

In the SCAB, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire SCAB. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as nitrogen oxides (NO_X) and carbon monoxide (CO) from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline.

2.3 WIND PATTERNS AND PROJECT LOCATION

The distinctive climate of the Project area and the SCAB is determined by its terrain and geographical location. The SCAB is located in a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter.

Wind patterns across the south coastal region are characterized by westerly and southwesterly onshore winds during the day and easterly or northeasterly breezes at night. Winds are characteristically light although the speed is somewhat greater during the dry summer months than during the rainy winter season.

2.4 CRITERIA POLLUTANTS

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and health effects are identified below (6):

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
CO	CO is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone (O_3), motor vehicles operating at slow speeds are the primary source of CO in the SCAB. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen (O_2) supply to the heart. Inhaled CO has no direct toxic effect on the lungs but exerts its effect on tissues by interfering with O_2 transport and competing with O_2 to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for O_2 supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (O_2 deficiency) as seen at high altitudes.
SO_2	SO_2 is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant	Coal or oil burning power plants and industries,	A few minutes of exposure to low levels of SO_2 can result in airway constriction in some

Criteria Pollutant	Description	Sources	Health Effects
	mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO_2 oxidizes in the atmosphere, it forms SO_4. Collectively, these pollutants are referred to as sulfur oxides (SO_X).	refineries, diesel engines	asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2. Animal studies suggest that despite SO_2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to separate the effects of SO_2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically, or one pollutant alone is the predominant factor.
NO_X	NO_X consist of nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with O_2. Their lifespan in the atmosphere ranges from	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming	Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is

Criteria Pollutant	Description	Sources	Health Effects
	one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. NO_X is typically created during combustion processes and are major contributors to smog formation and acid deposition. NO_2 is a criteria air pollutant and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO_2 is the most abundant in the atmosphere. As ambient concentrations of NO_2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO_2 than those indicated by regional monitoring station.	equipment and residential heating.	associated with long-term exposure to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups. In animals, exposure to levels of NO_2 considerably higher than ambient concentrations result in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of O_3 exposure increases when animals are exposed to a combination of O_3 and NO_2.
O_3	O_3 is a highly reactive and unstable gas that is formed when VOCs and NO_X, both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. O_3 concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.	Formed when reactive organic gases (ROG) and NO_X react in the presence of sunlight. ROG sources include any source that burns fuels, (e.g., gasoline, natural gas, wood, oil) solvents, petroleum processing and	Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for O_3 effects. Short-term exposure (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased

Criteria Pollutant	Description	Sources	Health Effects
		storage and pesticides.	susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated O_3 levels are associated with increased school absences. In recent years, a correlation between elevated ambient O_3 levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple outdoor sports and live in communities with high O_3 levels. O_3 exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes O_3 may be more toxic than exposure to O_3 alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.
Particulate Matter	PM_{10}: A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. Particulate matter pollution is a major cause of reduce visibility (haze) which is caused by the scattering of light and consequently the significant reduction air clarity. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be	Sources of PM_{10} include road dust, windblown dust and construction. Also formed from other pollutants (acid rain, NO_X, SO_X, organics). Incomplete combustion of any fuel. $PM_{2.5}$ comes from	A consistent correlation between elevated ambient fine particulate matter (PM_{10} and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In

Criteria Pollutant	Description	Sources	Health Effects
	deposited, resulting in adverse health effects. Additionally, it should be noted that PM_{10} is considered a criteria air pollutant. $PM_{2.5}$: A similar air pollutant to PM_{10} consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include SO_4 formed from SO_2 release from power plants and industrial facilities and nitrates that are formed from NO_X release from power plants, automobiles, and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. $PM_{2.5}$ is a criteria air pollutant.	fuel combustion in motor vehicles, equipment, and industrial sources, residential and agricultural burning. Also formed from reaction of other pollutants (acid rain, NO_X, SO_X, organics).	recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in lifespan, and an increased mortality from lung cancer. Daily fluctuations in $PM_{2.5}$ concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long term exposure to particulate matter. The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM_{10} and $PM_{2.5}$.
VOC	VOCs are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form O_3 to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the	Organic chemicals are widely used as ingredients in household products. Paints, varnishes, and wax all contain organic solvents, as do many cleaning, disinfecting, cosmetic, degreasing and hobby products. Fuels are made up of organic chemicals. All of these products can release organic	Breathing VOCs can irritate the eyes, nose, and throat, can cause difficulty breathing and nausea, and can damage the central nervous system as well as other organs. Some VOCs can cause cancer. Not all VOCs have all these health effects, though many have several.

Criteria Pollutant	Description	Sources	Health Effects
	solvents used in paints. Exceptions to the VOC designation include CO, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The terms VOC and ROG (see below) interchangeably.	compounds while you are using them, and, to some degree, when they are stored.	
ROG	Similar to VOC, ROGs are also precursors in forming O_3 and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and NO_X react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The terms ROG and VOC (see previous) interchangeably.	Sources similar to VOCs.	Health effects similar to VOCs.
Lead (Pb)	Pb is a heavy metal that is highly persistent in the environment and is considered a criteria pollutant. In the past, the primary source of Pb in the air was emissions from vehicles burning leaded gasoline. The major sources of Pb emissions are ore and metals processing, particularly Pb smelters, and piston-engine aircraft operating on leaded aviation gasoline. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers. It should be noted that the Project does not include operational activities such as metal processing or Pb acid battery manufacturing. As such, the Project is not anticipated to	Metal smelters, resource recovery, leaded gasoline, deterioration of Pb paint.	Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure. Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be

Criteria Pollutant	Description	Sources	Health Effects
	generate a quantifiable amount of Pb emissions.		stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.
Odor	Odor means the perception experienced by a person when one or more chemical substances in the air come into contact with the human olfactory nerves (7).	Odors can come from many sources including animals, human activities, industry, natures, and vehicles.	Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

2.5 EXISTING AIR QUALITY

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect are shown in Table 2-2 (8).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards. At the time of this AQIA, the most recent state and federal standards were updated by CARB on May 4, 2016, and are presented in Table 2-2. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, PM_{10}, and $PM_{2.5}$ are not to be exceeded. All others are not to be equaled or exceeded. It should be noted that the three-year period is presented for informational purposes and is not the basis for how the State assigns attainment status. Attainment status for a pollutant means that the SCAQMD meets the standards set by the EPA or the California EPA (CalEPA). Conversely, nonattainment means that an area has monitored air quality that does not meet the NAAQS or CAAQS standards. In order to improve air quality in nonattainment areas, a State Implementation Plan (SIP) is drafted by CARB. The SIP outlines the measures that the state will take to improve air quality. Once nonattainment areas meet the standards and additional redesignation requirements, the EPA will designate the area as a maintenance area (9).

TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (1 OF 2)

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page …

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TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (2 OF 2)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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2.6 REGIONAL AIR QUALITY

Air pollution contributes to a wide variety of adverse health effects. The EPA has established NAAQS for six of the most common air pollutants: CO, Pb, O_3, particulate matter (PM_{10} and $PM_{2.5}$), NO_2, and SO_2 which are known as criteria pollutants. The SCAQMD monitors levels of various criteria pollutants at 37 permanent monitoring stations and 5 single-pollutant source Pb air monitoring sites throughout the air district (10). On December 28, 2021, CARB posted the proposed 2021 amendments to the state and national area designations. See Table 2-3 for attainment designations for the SCAB (11). Appendix 2.1 provides geographic representation of the state and federal attainment status for applicable criteria pollutants within the SCAB.

TABLE 2-3: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SCAB

Criteria Pollutant	State Designation	Federal Designation
O_3 – 1-hour standard	Nonattainment	--
O_3 – 8-hour standard	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Unclassifiable/Attainment
NO_2	Attainment	Unclassifiable/Attainment
SO_2	Attainment	Unclassifiable/Attainment
Pb[1]	Attainment	Unclassifiable/Attainment

Note: See Appendix 2.1 for a detailed map of State/National Area Designations within the SCAB
"-" = The national 1-hour O_3 standard was revoked effective June 15, 2005.

2.7 LOCAL AIR QUALITY

The SCAQMD has designated general forecast areas and air monitoring areas (referred to as Source Receptor Areas [SRA]) throughout the district in order to provide Southern California residents about the air quality conditions. The Project site is located within SRA 24. The Perris Valley monitoring station within SRA 24 is located approximately 2.50 miles southeast of the Project site. The following stations will be used to report air quality data for O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$.

- SRA 24 (Perris Valley) – O_3 (for the years 2020 and 2021) and PM_{10} (for the year 2020)
- SRA 25 (Elsinore Valley) – O_3 (for the year 2022), CO, NO_2, PM_{10} (for the years 2021 and 2022)
- SRA 23 (Metropolitan Riverside County 1) – $PM_{2.5}$

Data from the Elsinore Valley and Metropolitan Riverside County 1 monitoring stations were utilized only in instances where data was not available.

[1] The Federal nonattainment designation for lead is only applicable towards the Los Angeles County portion of the SCAB.

The most recent three (3) years of data available is shown on Table 2-4 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to be representative of the local air quality at the Project site. Data for O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$ for 2020 through 2022 was obtained from the SCAQMD Air Quality Data Tables (12). Additionally, data for SO_2 has been omitted as attainment is regularly met in the SCAB and few monitoring stations measure SO_2 concentrations.

TABLE 2-4: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2020-2022

Pollutant	Standard	Year		
		2020	2021[A]	2022
O_3				
Maximum Federal 1-Hour Concentration (ppm)		0.125	0.117	0.121
Maximum Federal 8-Hour Concentration (ppm)		0.106	0.094	0.091
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	34	25	17
Number of Days Exceeding State/Federal 8-Hour Standard	> 0.070 ppm	74	60	37
CO				
Maximum Federal 1-Hour Concentration	> 35 ppm	0.9	0.9	0.9
Maximum Federal 8-Hour Concentration	> 20 ppm	0.7	0.8	0.6
NO_2				
Maximum Federal 1-Hour Concentration	> 0.100 ppm	0.044	0.044	0.037
Annual Federal Standard Design Value		0.007	0.007	0.007
PM_{10}				
Maximum Federal 24-Hour Concentration ($\mu g/m^3$)	> 150 $\mu g/m^3$	77	89	91
Annual Federal Arithmetic Mean ($\mu g/m^3$)		35.9	21.4	19.8
Number of Days Exceeding Federal 24-Hour Standard	> 150 $\mu g/m^3$	0	0	0
Number of Days Exceeding State 24-Hour Standard	> 50 $\mu g/m^3$	6	4	1
$PM_{2.5}$				
Maximum Federal 24-Hour Concentration ($\mu g/m^3$)	> 35 $\mu g/m^3$	41.00	82.1	38.5
Annual Federal Arithmetic Mean ($\mu g/m^3$)	> 12 $\mu g/m^3$	12.63	12.58	10.80
Number of Days Exceeding Federal 24-Hour Standard	> 35 $\mu g/m^3$	4	10	1

ppm = Parts Per Million
$\mu g/m^3$ = Microgram per Cubic Meter
Source: Data for O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$ was obtained from SCAQMD Air Quality Data Tables.
[A]Data for PM_{10} in 2021 was taken from SRA 25, as data for SRA 24 was unavailable.

2.8 REGULATORY BACKGROUND

2.8.1 FEDERAL REGULATIONS

The EPA is responsible for setting and enforcing the NAAQS for O_3, CO, NO_X, SO_2, PM_{10}, and Pb (13). The EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer

Continental Shelf). The EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (14). The CAA also mandates that states submit and implement SIPs for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions) (15) (16). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and Pb. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for $PM_{2.5}$. Table 2-3 (previously presented) provides the NAAQS within the SCAB.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and NO_X. NO_X is a collective term that includes all forms of NO_X which are emitted as byproducts of the combustion process.

2.8.2 CALIFORNIA REGULATIONS

CARB

CARB, which became part of CalEPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. AB 2595 mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for SO_4, visibility, hydrogen sulfide (H_2S), and vinyl chloride (C_2H_3Cl). However, at this time, H_2S and C_2H_3Cl are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (17) (13).

Local air quality management districts, such as the SCAQMD, regulate air emissions from stationary sources such as commercial and industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare Air Quality Management Plans (AQMP) that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a 5% or more annual reduction in emissions or 15% or more in a period of three years for ROGs, NO_X, CO and PM_{10}. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than 5% per year under certain circumstances.

TITLE 24 ENERGY EFFICIENCY STANDARDS AND CALIFORNIA GREEN BUILDING STANDARDS

California Code of Regulations (CCR) Title 24 Part 6: The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on August 1, 2009, and is administered by the California Building Standards Commission.

CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2022 California Green Building Code Standards that became effective on January 1, 2023. The CEC anticipates that the 2022 energy code will provide $1.5 billion in consumer benefits and reduce GHG emissions by 10 million metric tons (18). The Project would be required to comply with the applicable standards in place at the time plan check submittals are made. These require, among other items (19):

NONRESIDENTIAL MANDATORY MEASURES

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).

- Designated parking for clean air vehicles. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- EV charging stations. New construction shall facilitate the future installation of EV supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. The number of spaces to be provided for is contained in Table 5.106. 5.3.3 (5.106.5.3). Additionally, Table 5.106.5.4.1 specifies requirements for the installation of raceway conduit and panel power requirements for medium- and heavy-duty EV supply equipment for warehouses, grocery stores, and retail stores.
- Outdoor light pollution reduction. Outdoor lighting systems shall be designed to meet the backlight, uplight and glare ratings per Table 5.106.8 (5.106.8).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1. 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reuse or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
    - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
    - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor- mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
    - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
    - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).

- Outdoor potable water uses in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent (5.304.1).
- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gallons per day (GPD) (5.303.1.1 and 5.303.1.2).
- Outdoor water uses in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

2.8.3 AQMP

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMP to meet the state and federal ambient air quality standards (20). AQMPs are updated regularly to ensure an effective reduction in emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.10.

2.9 REGIONAL AIR QUALITY IMPROVEMENT

The Project is within the jurisdiction of the SCAQMD. In 1976, California adopted the Lewis Air Quality Management Act which created SCAQMD from a voluntary association of air pollution control districts in Los Angeles, Orange, Riverside, and San Bernardino counties. The geographic area of which SCAQMD consists of is known as the SCAB. SCAQMD develops comprehensive plans and regulatory programs for the region to attain federal standards by dates specified in federal law. The agency is also responsible for meeting state standards by the earliest date achievable, using reasonably available control measures.

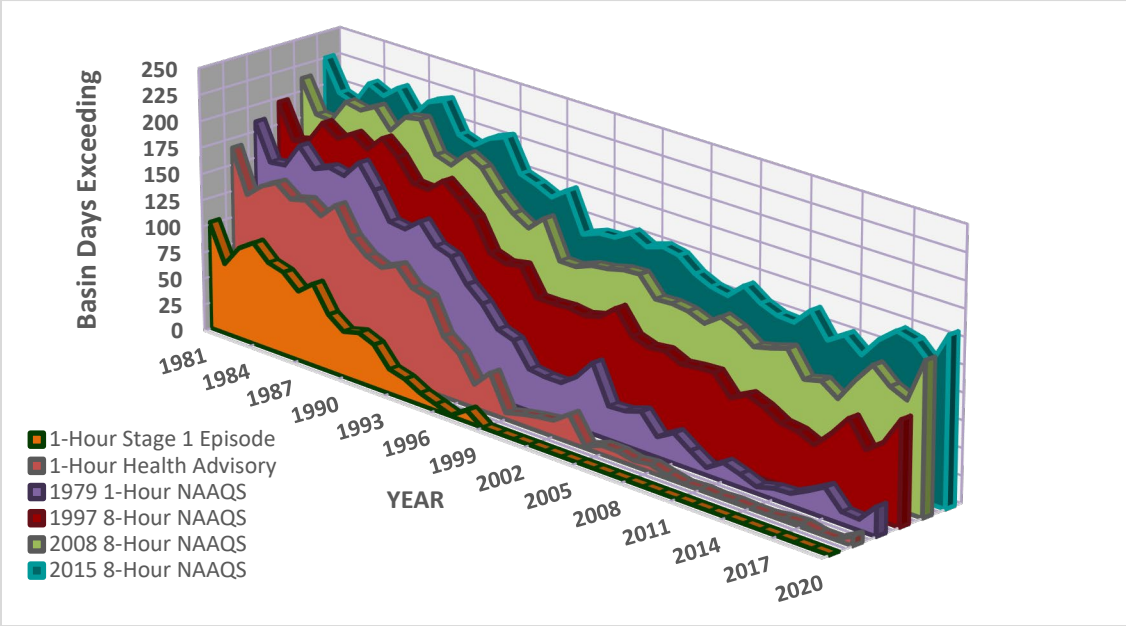
SCAQMD rule development through the 1970s and 1980s resulted in dramatic improvement in SCAB air quality. Nearly all control programs developed through the early 1990s relied on (i) the development and application of cleaner technology; (ii) add-on emission controls, and (iii) uniform CEQA review throughout the SCAB. Industrial emission sources have been significantly reduced by this approach and vehicular emissions have been reduced by technologies implemented at the state level by CARB.

As discussed above, the SCAQMD is the lead agency charged with regulating air quality emission reductions for the entire SCAB. SCAQMD created AQMPs which represent a regional blueprint for achieving healthful air on behalf of the 16 million residents of the SCAB. The 2012 AQMP states, "the remarkable historical improvement in air quality since the 1970's is the direct result

of Southern California's comprehensive, multiyear strategy of reducing air pollution from all sources as outlined in its AQMPs," (21).

Emissions of O_3, NO_X, VOC, and CO have been decreasing in the SCAB since 1975 and are projected to continue to decrease through 2020 (22). These decreases result primarily from motor vehicle controls and reductions in evaporative emissions. Although vehicle miles traveled (VMT) in the SCAB continue to increase, NO_X and VOC levels are decreasing because of the mandated controls on motor vehicles and the replacement of older polluting vehicles with lower-emitting vehicles. NO_X emissions from electric utilities have also decreased due to use of cleaner fuels and renewable energy. O_3 contour maps show that the number of days exceeding the 8-hour NAAQS has generally decreased between 1980 and 2020. For 2020, there was an overall decrease in exceedance days compared with the 1980 period. However, as shown on Table 2-5, O_3 levels have increased in the past three years due to higher temperatures and stagnant weather conditions. Notwithstanding, O_3 levels in the SCAB have decreased substantially over the last 30 years with the current maximum measured concentrations being approximately one-third of concentrations within the late 70's (23).

TABLE 2-5: SCAB O_3 TREND



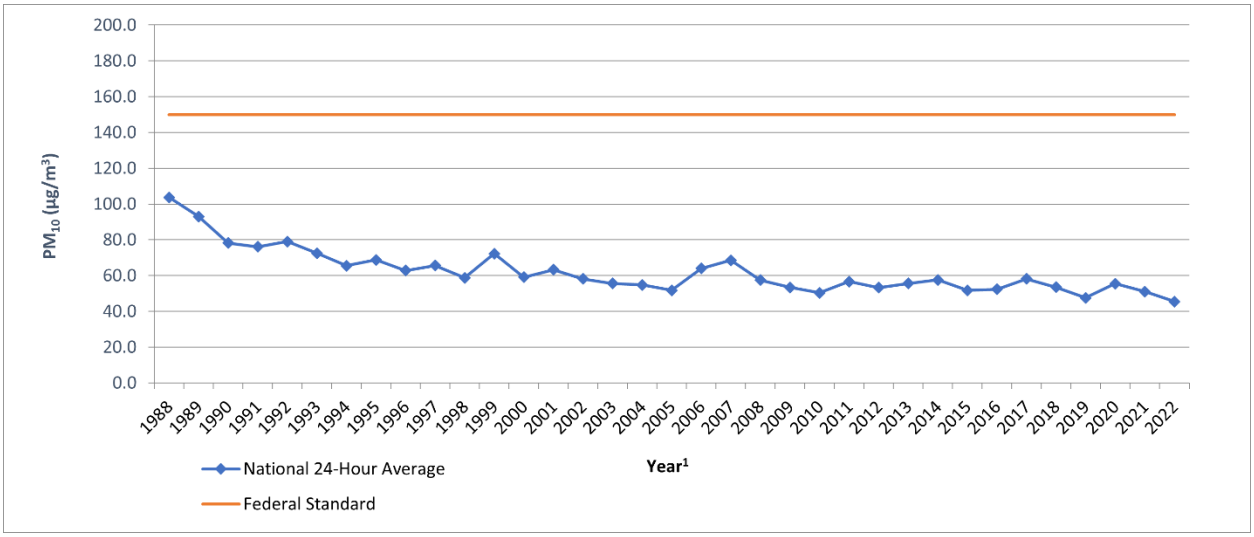
Source: 2020 SCAQMD, Historical O_3 Air Quality Trends (1976-2020)

The overall trends of PM_{10} and $PM_{2.5}$ levels in the air (not emissions) show an overall improvement since 1975. Direct emissions of PM_{10} have remained somewhat constant in the SCAB and direct emissions of $PM_{2.5}$ have decreased slightly since 1975. Area wide sources (fugitive dust from roads, dust from construction, and other sources) contribute the greatest amount of direct particulate matter emissions.

As with other pollutants, the most recent PM_{10} statistics show an overall improvement as illustrated in Tables 2-6 and 2-7. During the period for which data are available, the 24-hour

national annual average concentration for PM_{10} decreased by approximately 56%, from 103.7 microgram per cubic meter (µg/m³) in 1988 to 45.5 µg/m³ in 2022 (24). Although the values are below the federal standard, it should be noted that there are days within the year where the concentrations would exceed the threshold. The 24-hour state annual average for emissions for PM_{10}, have decreased by approximately 64%, from 93.9 µg/m³ in 1989 to 37.3 µg/m³ in 2022 (24). Although data in the late 1990's show some variability, this is probably due to the advances in meteorological science rather than a change in emissions. Similar to the ambient concentrations, the calculated number of days above the 24-hour PM_{10} standards has also shown an overall drop.

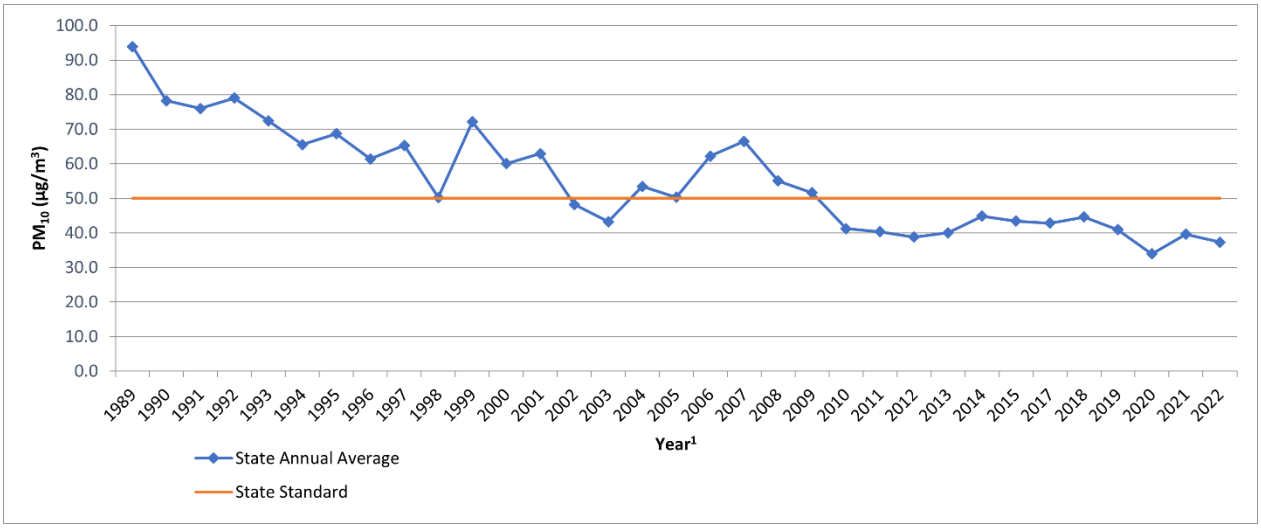
TABLE 2-6: SCAB AVERAGE 24-HOUR CONCENTRATION PM_{10} TREND (BASED ON FEDERAL STANDARD)[1]



Source: 2023 CARB, iADAM: Top Four Summary: PM_{10} 24-Hour Averages (1988-2022)

[1] Some years have been omitted from the table as insufficient data (or no) data has been reported. Years with reported value of "0" have also been omitted.

TABLE 2-7: SCAB ANNUAL AVERAGE CONCENTRATION PM_{10} TREND (BASED ON STATE STANDARD)[1]

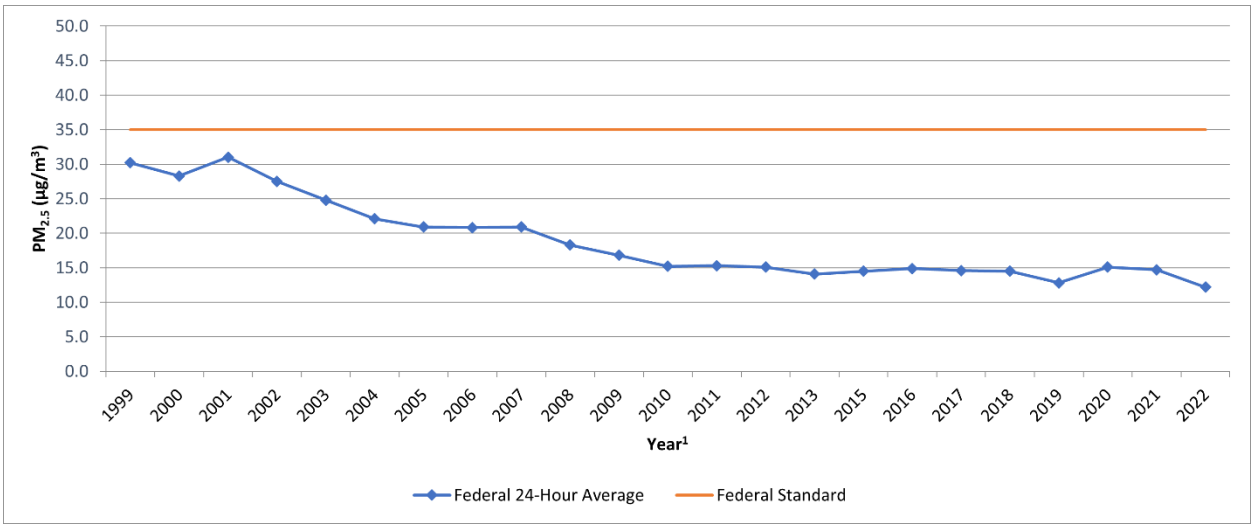


Source: 2023 CARB, iADAM: Top Four Summary: PM_{10} 24-Hour Averages (1988-2022)

[1] Some years have been omitted from the table as insufficient data (or no) data has been reported. Years with reported value of "0" have also been omitted.

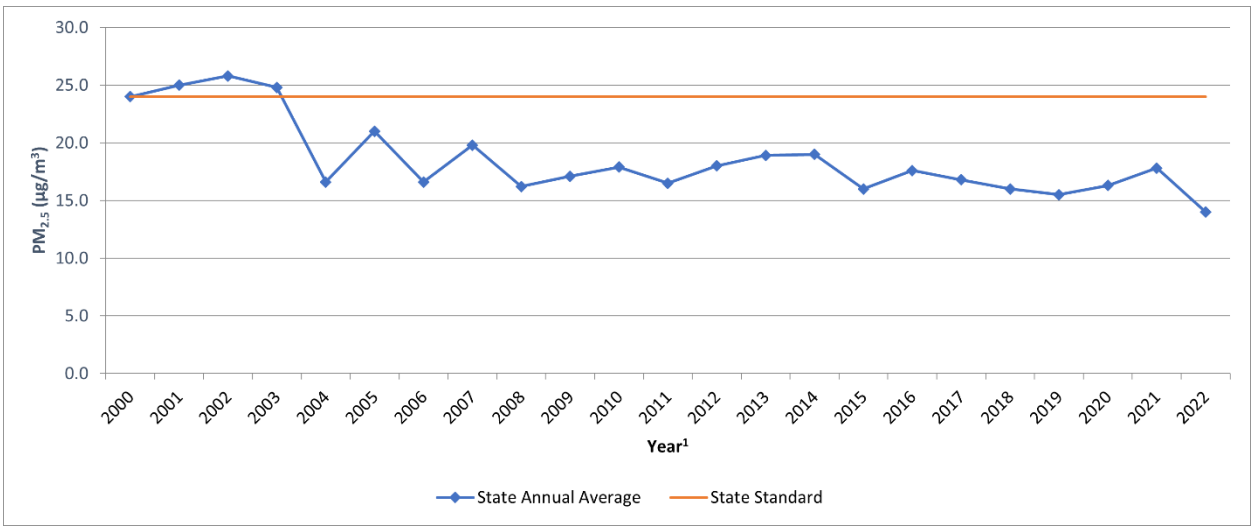
Tables 2-8 and 2-9 shows the most recent 24-hour average $PM_{2.5}$ concentrations in the SCAB from 1999 through 2022. Overall, the national and state annual average concentrations have decreased by almost 60% and 42% respectively (24). It should be noted that the SCAB is currently designated as nonattainment for the state and federal $PM_{2.5}$ standards.

TABLE 2-8: SCAB 24-HOUR AVERAGE CONCENTRATION $PM_{2.5}$ TREND (BASED ON FEDERAL STANDARD)[1]



Source: 2023 CARB, iADAM: Top Four Summary: $PM_{2.5}$ 24-Hour Averages (1999-2022)
[1] Some years have been omitted from the table as insufficient data (or no) data has been reported. Years with reported value of "0" have also been omitted.

TABLE 2-9: SCAB ANNUAL AVERAGE CONCENTRATION $PM_{2.5}$ TREND (BASED ON STATE STANDARD)[1]



Source: 2023 CARB, iADAM: Top Four Summary: $PM_{2.5}$ 24-Hour Averages (1999-2022)
[1] Some years have been omitted from the table as insufficient data (or no) data has been reported. Years with reported value of "0" have also been omitted.

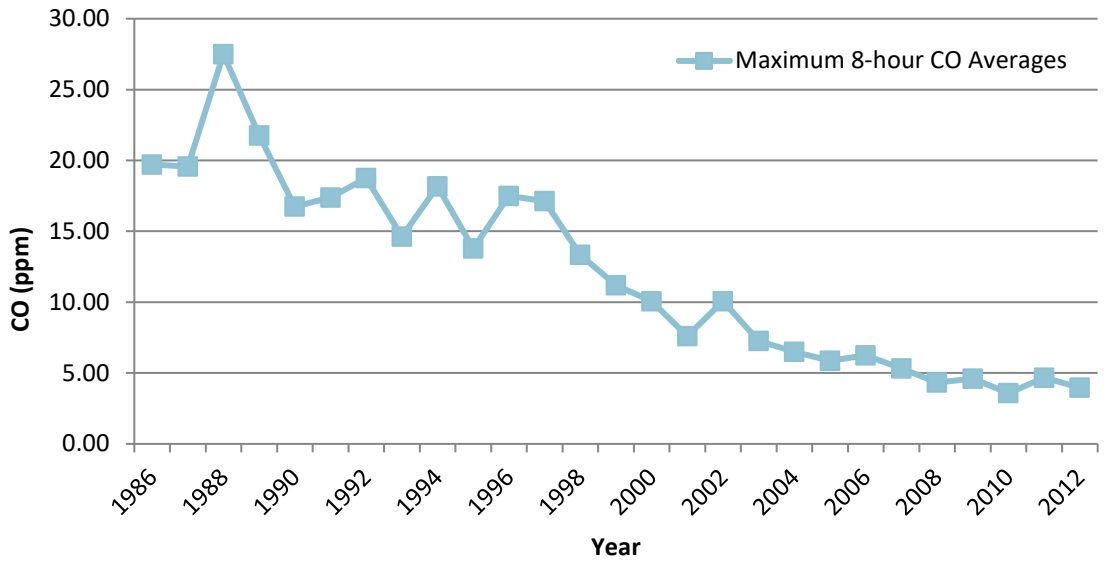
While the 2012 AQMP PM_{10} attainment demonstration and the 2015 associated supplemental SIP submission indicated that attainment of the 24-hour standard was predicted to occur by the end of 2015, it could not anticipate the effect of the ongoing drought on the measured $PM_{2.5}$.

The 2006 to 2010 base period used for the 2012 attainment demonstration had near-normal rainfall. While the trend of $PM_{2.5}$-equivalent emission reductions continued through 2015, the severe drought conditions contributed to the $PM_{2.5}$ increases observed after 2012. As a result of the disrupted progress toward attainment of the federal 24-hour $PM_{2.5}$ standard, SCAQMD submitted a request and the EPA approved, in January 2016, a "bump up" to the nonattainment classification from "moderate" to "serious," with a new attainment deadline as soon as practicable, but not beyond December 31, 2019. As of March 14, 2019, the EPA approved portions of a SIP revision submitted by California to address CAA requirements for the 2006 24-hour $PM_{2.5}$ NAAQS in the Los Angeles-SCAB Serious $PM_{2.5}$ nonattainment area. The EPA also approved 2017 and 2019 motor vehicle emissions budgets for transportation conformity purposes and inter-pollutant trading ratios for use in transportation conformity analyses (25).

In December 2022, the SCAQMD released the Final 2022 AQMP. The 2022 AQMP continues to evaluate current integrated strategies and control measures to meet the NAAQS, as well as explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (26). Similar to the 2016 AQMP, the 2022 AQMP incorporates scientific and technological information and planning assumptions, including the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (2020-2045 RTP/SCS) and updated emission inventory methodologies for various source categories (27).

The most recent CO concentrations in the SCAB are shown in Table 2-10 (24). CO concentrations in the SCAB have decreased markedly — a total decrease of more about 80% in the peak 8-hour concentration from 1986 to 2012. It should be noted 2012 is the most recent year where 8-hour CO averages and related statistics are available in the SCAB. The number of exceedance days has also declined. The entire SCAB is now designated as attainment for both the state and national CO standards. Ongoing reductions from motor vehicle control programs should continue the downward trend in ambient CO concentrations.

TABLE 2-10: SCAB 8-HOUR AVERAGE CONCENTRATION CO TREND[1]

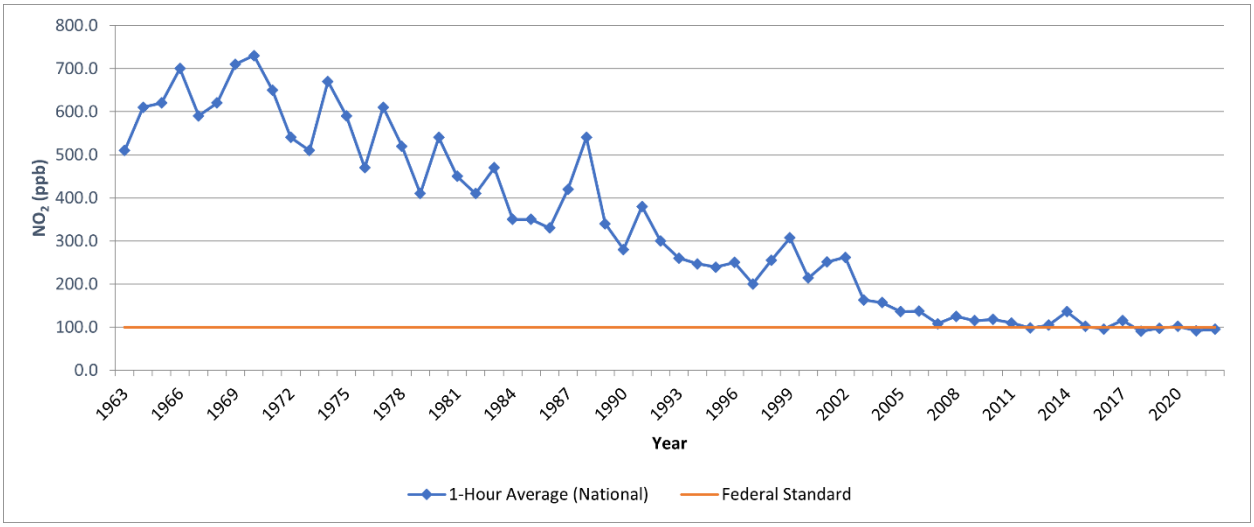


Source: 2020 CARB, iADAM: Top Four Summary: CO 8-Hour Averages (1986-2012)
[1] The most recent year where 8-hour concentration data is available is 2012.

Part of the control process of the SCAQMD's duty to greatly improve the air quality in the SCAB is the uniform CEQA review procedures required by SCAQMD's *CEQA Air Quality Handbook (1993)* (*1993 CEQA Handbook*) (28). The single threshold of significance used to assess Project direct and cumulative impacts has in fact "worked" as evidenced by the track record of the air quality in the SCAB dramatically improving over the course of the past decades. As stated by the SCAQMD, the District's thresholds of significance are based on factual and scientific data and are therefore appropriate thresholds of significance to use for this Project.

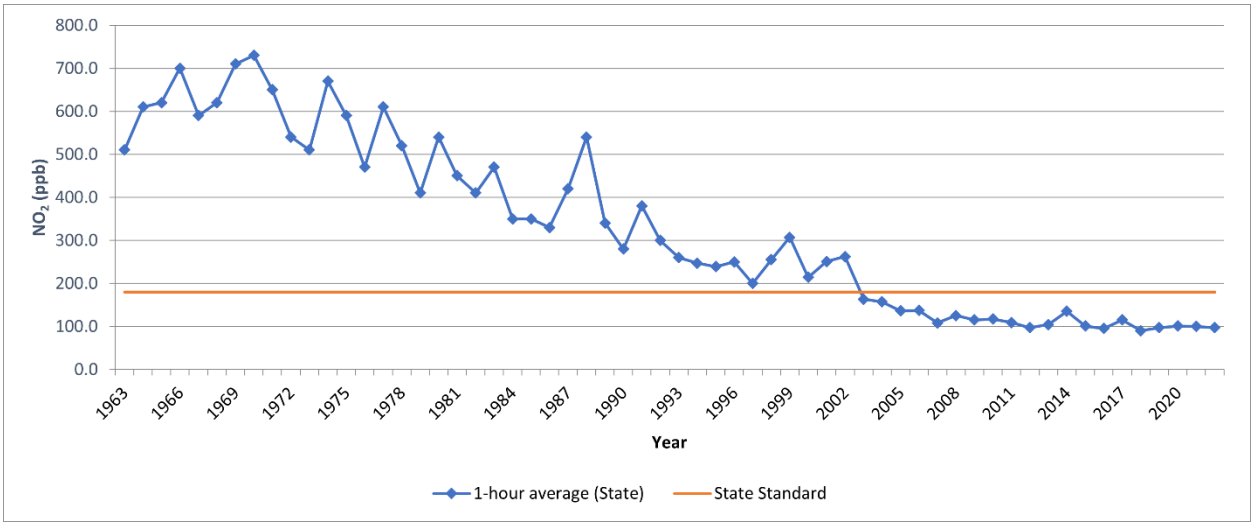
The most recent NO_2 data for the SCAB is shown in Tables 2-11 and 2-12 (24). Over the last 50 years, NO_2 values have decreased significantly; the peak 1-hour national and state averages for 2022 is approximately 81% lower than what it was during 1963. The SCAB attained the State 1-hour NO_2 standard in 1994, bringing the entire state into attainment. A new state annual average standard of 0.030 ppm was adopted by CARB in February 2007 (29). The new standard is just barely exceeded in the SCAQMD. NO_2 is formed from NO_X emissions, which also contribute to O_3. As a result, the majority of the future emission control measures would be implemented as part of the overall O_3 control strategy. Many of these control measures would target mobile sources, which account for more than three-quarters of California's NO_X emissions. These measures are expected to bring the SCAQMD into attainment of the state annual average standard.

TABLE 2-11: SCAB 1-HOUR AVERAGE CONCENTRATION NO_2 TREND (BASED ON FEDERAL STANDARD)



Source: 2023 CARB, iADAM: Top Four Summary: CO 1-Hour Averages (1963-2022)

TABLE 2-12: SCAB 1-HOUR AVERAGE CONCENTRATION NO_2 TREND (BASED ON STATE STANDARD)



Source: 2023 CARB, iADAM: Top Four Summary: CO 1-Hour Averages (1963-2022)

2.9.1 TOXIC AIR CONTAMINANTS (TAC) TRENDS

In 1984, as a result of public concern for exposure to airborne carcinogens, CARB adopted regulations to reduce the amount of TAC emissions resulting from mobile and area sources, such as cars, trucks, stationary sources, and consumer products. According to the *Ambient and Emission Trends of Toxic Air Contaminants in California* journal article (30) which was prepared for CARB, results show that between 1990-2012, ambient concentration and emission trends for the seven TACs responsible for most of the known cancer risk associated with airborne exposure in California have declined significantly (between 1990 and 2012). The seven TACs studied include

those that are derived from mobile sources: diesel particulate matter (DPM), benzene (C_6H_6), and 1,3-butadiene (C_4H_6); those that are derived from stationary sources: perchloroethylene (C_2Cl_4) and hexavalent chromium (Cr(VI)); and those derived from photochemical reactions of emitted VOCs: formaldehyde (CH_2O) and acetaldehyde (C_2H_4O)[2]. The decline in ambient concentration and emission trends of these TACs are a result of various regulations CARB has implemented to address cancer risk.

MOBILE SOURCE TACS

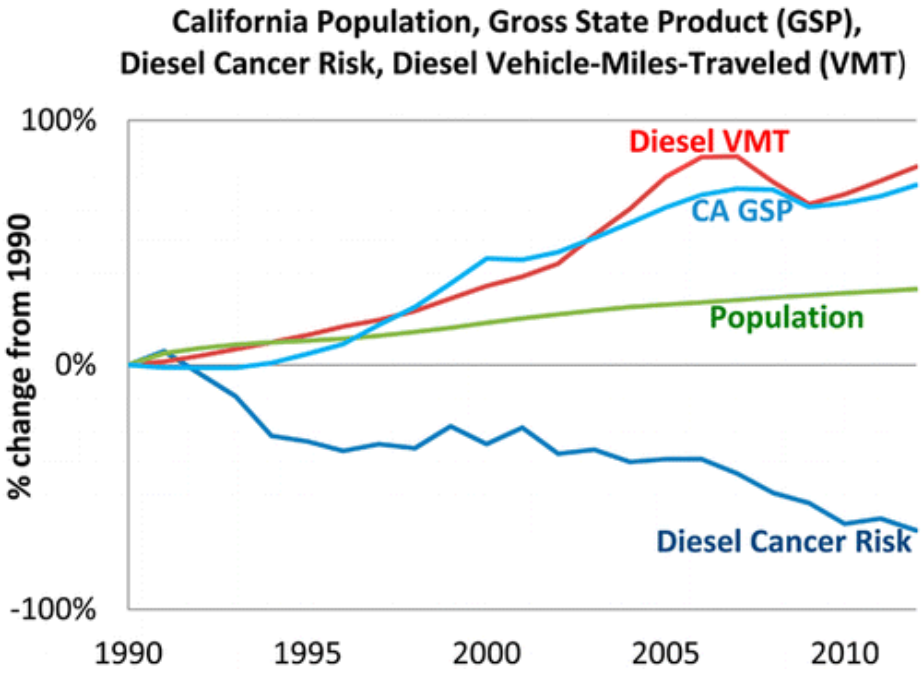
CARB introduced two programs that aimed at reducing mobile emissions for light and medium duty vehicles through vehicle emissions controls and cleaner fuel. In California, light-duty vehicles sold after 1996 are equipped with California's second-generation On-Board Diagnostic (OBD-II) system. The OBD-II system monitors virtually every component that can affect the emission performance of the vehicle to ensure that the vehicle remains as clean as possible over its entire life and assists repair technicians in diagnosing and fixing problems with the computerized engine controls. If a problem is detected, the OBD-II system illuminates a warning lamp on the vehicle instrument panel to alert the driver. This warning lamp typically contains the phrase "Check Engine" or "Service Engine Soon." The system would also store important information about the detected malfunction so that a repair technician can accurately find and fix the problem. CARB has recently developed similar OBD requirements for heavy-duty vehicles over 14,000 pounds (lbs). CARB's phase II Reformulated Gasoline Regulation (RFG-2), adopted in 1996, also led to a reduction of mobile source emissions. Through such regulations, benzene levels declined 88% from 1990-2012. 1,3-Butadiene concentrations also declined 85% from 1990-2012 as a result of the use of reformulated gasoline and motor vehicle regulations (30).

In 2000, CARB's Diesel Risk Reduction Plan (DRRP) recommended the replacement and retrofit of diesel-fueled engines and the use of ultra-low-sulfur (<15 ppm) diesel fuel. As a result of these measures, DPM concentrations have declined 68% since 2000, even though the state's population increased 31% and the amount of diesel vehicles miles traveled increased 81%, as shown on Exhibit 2-B. With the implementation of these diesel-related control regulations, CARB expects a DPM decline of 71% for 2000-2020.

SCAQMD's Multiple Air Toxics Exposure Study (MATES) study, discussed later illustrates the cancer risk trends, which show an approximate 80% reduction in risk from 2000 to 2020, which correlates to the reductions in DPM anticipated by CARB.

[2] It should be noted that ambient DPM concentrations are not measured directly. Rather, a surrogate method using the coefficient of haze (COH) and elemental carbon (EC) is used to estimate DPM concentrations.

EXHIBIT 2-A: DPM AND DIESEL VEHICLE MILES TREND



Source: 2020 CARB

DIESEL REGULATIONS

CARB and the Ports of Los Angeles and Long Beach (POLA and POLB) have adopted several iterations of regulations for diesel trucks that are aimed at reducing DPM. More specifically, CARB Drayage Truck Regulation (31), CARB statewide On-road Truck and Bus Regulation (32), and the Ports of Los Angeles and Long Beach Clean Truck Program (CTP) require accelerated implementation of "clean trucks" into the statewide truck fleet (33). In other words, older more polluting trucks would be replaced with newer, cleaner trucks as a function of these regulatory requirements.

Moreover, the average statewide DPM emissions for Heavy Duty Trucks (HDT), in terms of grams of DPM generated per mile traveled, would dramatically be reduced due to the aforementioned regulatory requirements.

Diesel emissions identified in this analysis would therefore overstate future DPM emissions since not all the regulatory requirements are reflected in the modeling.

CANCER RISK TRENDS

Based on information available from CARB, overall cancer risk throughout the SCAB has had a declining trend since 1990. In 1998, following an exhaustive 10-year scientific assessment process, CARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. The SCAQMD initiated a comprehensive urban toxic air pollution study called the Multiple Air Toxics Exposure Study (MATES). DPM accounts for more than 70% of the cancer risk.

In January 2018, as part of the overall effort to reduce air toxics exposure in the SCAB, SCAQMD began conducting the MATES V Program. MATES V field measurements were conducted at ten fixed sites (the same sites selected for MATES III and IV) to assess trends in air toxics levels. MATES V also included measurements of ultrafine particles (UFP) and black carbon (BC) concentrations, which can be compared to the UFP levels measured in MATES IV (34). The final report for the MATES V study was published August 2021. In addition to new measurements and updated modeling results, several key updates were implemented in MATES V. First, MATES V estimates cancer risks by taking into account multiple exposure pathways, which includes inhalation and non-inhalation pathways. This approach is consistent with how cancer risks are estimated in South Coast AQMD's programs such as permitting, Air Toxics Hot Spots (AB2588), and CEQA. Previous MATES studies quantified the cancer risks based on the inhalation pathway only. Second, along with cancer risk estimates, MATES V includes information on the chronic non-cancer risks from inhalation and non-inhalation pathways for the first time. Cancer risks and chronic non-cancer risks from MATES II through IV measurements have been re-examined using current Office of Environmental Health Hazard Assessment (OEHHA) and CalEPA risk assessment methodologies and modern statistical methods to examine the trends over time (35).

MATES-V calculated cancer risks based on monitoring data collected at ten fixed sites within the SCAB. None of the fixed monitoring sites are within the local area of the Project site. However, MATES-V has extrapolated the excess cancer risk levels throughout the SCAB by modeling the specific grids. The Project is located within a quadrant of the geographic grid of the MATES-V model which predicted a cancer risk of 293 in one million for the area containing the Project site. DPM is included in this cancer risk along with all other TAC sources. As in previous MATES iterations, DPM is the largest contributor to overall air toxics cancer risk. However, the average levels of DPM in MATES V are 53% lower at the 10 monitoring sites compared to MATES IV. Cumulative Project generated TACs are limited to DPM.

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3 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

This study quantifies air quality emissions generated by construction and operation of the Project and addresses whether the Project conflicts with implementation of the SCAQMD's AQMP and Lead Agency planning regulations. The analysis of Project-generated air emissions determines whether the Project would result in a cumulatively considerable net increase of any criteria pollutant for which the SCAB is in non-attainment under an applicable NAAQS and CAAQS. Additionally, the Project has been evaluated to determine whether the Project would expose sensitive receptors to substantial pollutant concentrations and the impacts of odors. The significance of these potential impacts is described in the following sections.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the *CEQA Guidelines* (14 CCR §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would (1):

- Conflict with or obstruct implementation of the applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The SCAQMD has also developed regional significance thresholds for other regulated pollutants, as summarized at Table 3-1 (36). The SCAQMD's *CEQA Air Quality Significance Thresholds* (March 2023) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

TABLE 3-1: MAXIMUM DAILY REGIONAL EMISSIONS THRESHOLDS

Pollutant	Regional Construction Threshold	Regional Operational Thresholds
NO_X	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_X	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Pb	3 lbs/day	3 lbs/day

lbs/day = Pounds Per Day

3.3 MODELS EMPLOYED TO ANALYZE AIR QUALITY

3.3.1 CALEEMOD

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

In May 2022, the SCAQMD, in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the CalEEMod Version 2022.1. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (37). Accordingly, the latest version of CalEEMod has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Appendices 3.1 through 3.3.

3.4 CONSTRUCTION EMISSIONS

3.4.1 CONSTRUCTION ACTIVITIES

Construction activities associated with the Project would result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Construction related emissions are expected from the following construction activities:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

DEMOLITION ACTIVITIES

The site is currently developed with existing uses/structures which total approximately 2,810 sf that will be demolished. Demolished material associated with demolition will be hauled off-site.

SITE PREPARATION AND GRADING ACTIVITIES

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). CalEEMod was utilized to calculate fugitive dust emissions resulting from this phase of activity. Per client provided data, this analysis assumes that earthwork activities are expected to require 62,025 cubic yards of import. For purposes of analysis, site preparation and grading activities are modeled as sequential phases.

BUILDING CONSTRUCTION, PAVING, AND ARCHITECTURAL COATING ACTIVITIES

Building construction and paving emissions are primarily associated with exhaust emissions from on-site equipment and vehicular trips to the site by construction workers and vendor trips. Architectural coating emissions include worker trips as well, but the primary pollutant emission of concern during this phase is ROG/VOC. CalEEMod default emission rates include the effects of Rule 1113 to limit ROG/VOC emissions. To present a reasonable worst-case scenario, the building construction, paving, and architectural coating activities are modeled as overlapping phases.

OFF-SITE UTILITY AND INFRASTRUCTURE IMPROVEMENTS

To support the Project development, there will be frontage street improvements as well as offsite sewer improvements for the Project. It is expected that the off-site construction activities would not take place at one location for the entire duration of construction. Impacts associated with these activities are not expected to exceed the emissions identified for Project-related construction activities since the off-site construction areas would have physical constraints on the amount of daily activity that could occur. The physical constraints would limit the amount of construction equipment that could be used, and any off-site and utility infrastructure construction would not use equipment totals that would exceed the equipment totals on Table 3-4. As such, no impacts beyond what has already been identified in this report are expected to occur.

ON-ROAD TRIPS

Construction generates on-road vehicle emissions from vehicle usage for workers, vendors, and haul trucks commuting to and from the site. The number of worker, vendor, and hauling trips are presented below in Table 3-2. Worker trips are based on CalEEMod defaults. It should be noted that for vendor trips, specifically, CalEEMod only assigns vendor trips to the Building Construction phase. Vendor trips would likely occur during all phases of construction. As such, the CalEEMod defaults for vendor trips have been adjusted based on a ratio of the total vendor trips to the number of days of each subphase of activity.

TABLE 3-2: CONSTRUCTION TRIP ASSUMPTIONS

Construction Activity	Worker Trips Per Day	Vendor Trips Per Day	Hauling Trips Per Day
Demolition	15	3	2
Site Preparation	18	2	0
Grading	15	3	388
Building Construction	78	24	0
Paving	15	0	0
Architectural Coating	16	0	0

3.4.2 CONSTRUCTION DURATION

For purposes of analysis, construction of Project is expected to commence in January 2025 and would last through February 2026. The construction schedule utilized in the analysis, shown in Table 3-3, represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent[3]. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per *CEQA Guidelines* (1).

3.4.3 CONSTRUCTION EQUIPMENT

Consistent with industry standards and typical construction practices, each piece of equipment listed in Table 3-4 would operate up to a total of eight (8) hours per day, or more than two-thirds of the period during which construction activities are allowed pursuant to the County Code. In accordance with the County of Riverside Good Neighbor Policy for Logistics and Warehouse/Distribution uses, it was assumed that equipment greater than 50 horsepower would meet at least CARB Tier 4 Interim emissions standards.

TABLE 3-3: CONSTRUCTION DURATION

Construction Activity	Start Date	End Date	Working Days
Demolition	1/7/2025	2/4/2025	20
Site Preparation	2/5/2025	2/19/2025	10
Grading	2/20/2025	3/20/2025	20
Building Construction	3/21/2025	2/6/2026	230
Paving	1/10/2026	2/6/2026	20
Architectural Coating	1/10/2026	2/6/2026	20

TABLE 3-4: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Construction Activity	Equipment[1]	Amount	Hours Per Day
Demolition	Rubber Tired Dozers	2	8
	Excavators	3	8
	Concrete/Industrial Saws	1	8
Site Preparation	Rubber Tired Dozers	3	8
	Crawler Tractors	4	8

[3] As shown in the CalEEMod User's Guide Version 2022.1, Section 4.3 "Off-Road Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

Construction Activity	Equipment[1]	Amount	Hours Per Day
Grading	Graders	1	8
	Excavators	1	8
	Rubber Tired Dozers	1	8
	Crawler Tractors	3	8
Building Construction	Forklifts	3	8
	Generator Sets	1	8
	Cranes	1	8
	Welders	1	8
	Tractors/Loaders/Backhoes	3	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8

[1] In order to account for fugitive dust emissions, Crawler Tractors were used in lieu of Tractors/Loaders/Backhoes during the site preparation and grading phases of Project construction.

3.4.4 CONSTRUCTION EMISSIONS SUMMARY

IMPACTS WITHOUT MITIGATION

The estimated maximum daily construction emissions without mitigation are summarized on Table 3-5. Detailed construction model outputs are presented in Appendix 3.1. Under the assumed scenarios, emissions resulting from the Project construction would not exceed criteria pollutant thresholds established by the SCAQMD.

TABLE 3-5: OVERALL CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION

Year	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
2025	0.96	11.11	22.63	0.03	1.35	0.42
Winter						
2025	0.96	41.90	31.03	0.21	10.14	3.56
2026	47.03	19.09	34.63	0.05	1.88	0.63
Maximum Daily Emissions	**47.03**	**41.90**	**34.63**	**0.21**	**10.14**	**3.56**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod construction-source (unmitigated) emissions are presented in Appendix 3.1.

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the Project would result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Operational emissions are expected from the following primary sources:

- Area Source Emissions
- Mobile Source Emissions
- Stationary Source Emissions

3.5.1 AREA SOURCE EMISSIONS

ARCHITECTURAL COATINGS

Over a period of time the buildings that are part of this Project would require maintenance and would therefore produce emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings. The emissions associated with architectural coatings were calculated using CalEEMod.

CONSUMER PRODUCTS

Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on defaults provided within CalEEMod.

LANDSCAPE MAINTENANCE EQUIPMENT

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. It should be noted that as October 9, 2021, Governor Gavin Newsom signed AB 1346. The bill aims to ban the sale of new gasoline-powered equipment under 25 gross horsepower (known as small off-road engines [SOREs]) by 2024. For purposes of analysis, the emissions associated with landscape maintenance equipment were calculated based on assumptions provided in CalEEMod.

3.5.2 ENERGY SOURCE EMISSIONS

COMBUSTION EMISSIONS ASSOCIATED WITH ELECTRICITY

Criteria pollutant emissions are emitted through the generation of electricity. However, because electrical generating facilities for the Project area are located either outside the region (state) or offset through the use of pollution credits (RECLAIM) for generation within the SCAB, criteria pollutant emissions from offsite generation of electricity are excluded from the evaluation of significance. Based on information provided by the Project applicant, the site is also not expected to utilize natural gas for the building envelope, and therefore would not generate any emissions from direct energy consumption. Electricity usage associated with the Project was calculated

based on CalEEMod defaults and includes 20% of the building user's electric power from renewable sources.

3.5.3 MOBILE SOURCE EMISSIONS

The Project related operational air quality emissions derive primarily from vehicle trips generated by the Project, including employee trips to and from the site and truck trips associated with the proposed uses. Trip characteristics available from the *Thrifty Oil Warehouse Project (PPT220047) Trip Generation Assessment* were utilized in this analysis (38).

PASSENGER VEHICLES

To determine emissions from passenger car vehicles, the CalEEMod defaults were utilized for trip length and trip purpose for the proposed industrial land use.

This analysis assumes that passenger cars include Light-Duty-Auto vehicles (LDA), Light-Duty-Trucks (LDT1[4] & LDT2[5]), Medium-Duty-Vehicles (MDV), and Motorcycles (MCY) vehicle types. In order to account for emissions generated by passenger cars, the fleet mix in Table 3-6 was utilized.

TABLE 3-6: PASSENGER CAR FLEET MIX

Land Use	% Vehicle Type				
	LDA	LDT1	LDT2	MDV	MCY
Warehousing	53.90%	4.13%	22.26%	17.20%	2.51%

Note: The Project-specific passenger car fleet mix used in this analysis is based on a proportional split utilizing the default CalEEMod percentages assigned to LDA, LDT1, LDT2, and MDV vehicle types.

TRUCKS

To determine emissions from trucks for the proposed industrial uses, the analysis incorporated the SCAQMD recommended truck trip length of 15.3 miles for 2-axle (LHDT1, LHDT2), 14.2 miles for 3-axle (MHDT) trucks, and 39.9 miles for 4+-axle (HHDT) trucks and weighting the average trip lengths using traffic trip percentages. The trip length function for the proposed industrial building use has been calculated to 30.17 miles for warehousing and an assumption of 100% primary trips. This trip length assumption is higher than the CalEEMod defaults for trucks. In order to be consistent with the *Thrifty Oil Warehouse Project (PAR220087) Traffic Study Scoping Agreement*, trucks are broken down by truck type. The truck fleet mix is estimated by rationing the trip rates for each truck type based on information provided by the SCAQMD recommended truck mix, by axle type. Heavy trucks are broken down by truck type (or axle type) and are categorized as either Light-Heavy-Duty Trucks (LHDT1[6] & LHDT2 [7])/2-axle, Medium-Heavy-Duty Trucks (MHDT)/3-axle,

[4] Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

[5] Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.

[6] Vehicles under the LHDT1 category have a GVWR of 8,501 to 10,000 lbs.

[7] Vehicles under the LHDT2 category have a GVWR of 10,001 to 14,000 lbs.

and Heavy-Heavy-Duty Trucks (HHDT)/4+-axle. To account for emissions generated by trucks, the fleet mix in Table 3-7 was utilized.

TABLE 3-7: TRUCK FLEET MIX

Land Use	% Vehicle Type			
	LHDT1	LHDT2	MHDT	HHDT
Warehousing	13.65%	3.89%	21.05%	61.40%

Note: Project-specific truck fleet mix is based on the number of trips generated by each truck type (LHDT1, LHDT2, MHDT, and HHDT) relative to the total number of truck trips.

FUGITIVE DUST RELATED TO VEHICULAR TRAVEL

Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust inclusive of brake and tire wear particulates. The emissions estimate for travel on paved roads were calculated using CalEEMod.

3.5.4 ON-SITE CARGO HANDLING EQUIPMENT SOURCE EMISSIONS

It is common for industrial buildings to require the operation of exterior cargo handling equipment in the building's truck court areas. For this Project, on-site modeled operational equipment includes up to one (1) 75 horsepower (hp), electric-powered cargo handling equipment – port tractor operating 4 hours a day[8] for 365 days of the year. Per the County of Riverside Good Neighbor Guidelines, all on-site equipment (cargo handling equipment, yard goats, forklifts) utilized for the operation of the proposed Project will be electric powered and charging stations will be provided on-site.

3.5.5 STATIONARY SOURCE EMISSIONS

The proposed Project was conservatively assumed to include installation of a 300-horsepower diesel-powered emergency generator/fire pump. The emergency generator/fire pump was estimated to operate for up to 1 hour per day, 1 day per week for up to 50 hours per year for maintenance and testing purposes. Emissions associated with the stationary emergency diesel-powered emergency generator/fire pump were calculated using CalEEMod.

3.5.6 OPERATIONAL EMISSIONS SUMMARY

As previously stated, CalEEMod utilizes summer and winter EMFAC2021 emission factors in order to derive vehicle emissions associated with Project operational activities, which vary by season. The estimated operational-source emissions are summarized on Table 3-8. Detailed operation model outputs for the Project are presented in Appendix 3.2. Project operational activities would not exceed the numerical thresholds of significance established by the SCAQMD for emissions of any criteria pollutant. As such, operational impacts would be considered less-than-significant.

[8] Based on Table II-3, Port and Rail Cargo Handling Equipment Demographics by Type, from CARB's Technology Assessment: Mobile Cargo Handling Equipment document, a single piece of equipment could operate up to 2 hours per day (Total Average Annual Activity divided by Total Number Pieces of Equipment). As such, the analysis conservatively assumes that the tractor/loader/backhoe would operate up to 4 hours per day.

TABLE 3-8: SUMMARY OF PEAK OPERATIONAL EMISSIONS

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
Mobile Source	1.05	10.00	13.30	0.11	5.45	1.54
Area Source	5.80	0.07	8.08	0.00	0.01	0.01
Stationary Source	0.98	2.75	2.51	0.00	0.14	0.14
Project Maximum Daily Emissions	**7.83**	**12.82**	**23.89**	**0.11**	**5.60**	**1.69**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Winter						
Mobile Source	1.01	10.50	11.40	0.11	5.45	1.54
Area Source	4.47	0.00	0.00	0.00	0.00	0.00
Stationary Source	0.98	2.75	2.51	0.00	0.14	0.14
Project Maximum Daily Emissions	**6.46**	**13.25**	**13.91**	**0.11**	**5.59**	**1.68**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod operational-source emissions are presented in Appendix 3.2.

3.6 LOCALIZED SIGNIFICANCE

BACKGROUND ON LST DEVELOPMENT

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4[9]. LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

[9] The purpose of SCAQMD's Environmental Justice program is to ensure that everyone has the right to equal protection from air pollution and fair access to the decision-making process that works to improve the quality of air within their communities. Further, the SCAQMD defines Environmental Justice as "…equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution."

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the *LST Methodology* (39).

EMISSIONS CONSIDERED

Based on SCAQMD's *LST Methodology*, emissions for concern during construction activities are on-site NO_X, CO, $PM_{2.5}$, and PM_{10}. The *LST Methodology* clearly states that "off-site mobile emissions from the Project should not be included in the emissions compared to LSTs (40)." As such, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered.

MAXIMUM DAILY DISTURBED-ACREAGE

The "acres disturbed" for analytical purposes are based on specific equipment type for each subcategory of construction activity and the estimated maximum area a given piece of equipment can pass over in an 8-hour workday (as shown on Table 3-9). The equipment-specific grading rates are summarized in the SCAQMD's *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds* and CalEEMod User's Guide *Appendix A: Calculation Details for CalEEMod* (41) (42). The disturbed area per day is representative of a piece of equipment making multiple passes over the same land area. In other words, one Rubber Tired Dozer can make multiple passes over the same land area totaling 0.5 acres in a given 8-hour day. Based on Table 3-9, the Project's construction activities could actively disturb approximately 1 acre per day during demolition, 3.5 acre per day during site preparation, and 2.5 acres per day during grading activities.

TABLE 3-9: MAXIMUM DAILY DISTURBED-ACREAGE

Construction Activity	Equipment Type	Equipment Quantity	Acres graded per 8-hour day	Operating Hours per Day	Acres graded per day
Demolition	Rubber Tired Dozers	2	0.5	8	1
Total acres disturbed per day during Demolition					1
Site Preparation	Crawler Tractors	4	0.5	8	2
	Rubber Tired Dozers	3	0.5	8	1.5
Total acres disturbed per day during Site Preparation					3.5
Grading	Crawler Tractors	3	0.5	8	1.5
	Graders	1	0.5	8	0.5
	Rubber Tired Dozers	1	0.5	8	0.5
Total acres disturbed per day during Grading					2.5

Source: Maximum daily disturbed acreage based on equipment list presented in Appendix 3.1.

RECEPTORS

As previously stated, LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable NAAQS and CAAQS at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Project activities.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, and individuals with pre-existing respiratory or cardiovascular illness. Structures that house these persons or places where they gather are defined as "sensitive receptors". These structures typically include uses such as residences, hotels, and hospitals where an individual can remain for 24 hours. Consistent with the LST Methodology, the nearest land use where an individual could remain for 24 hours to the Project site has been used to determine construction and operational air quality impacts for emissions of PM_{10} and $PM_{2.5}$, since PM_{10} and $PM_{2.5}$ thresholds are based on a 24-hour averaging time.

LSTs apply, even for non-sensitive land uses, consistent with *LST Methodology* and SCAQMD guidance. Per the *LST Methodology*, commercial and industrial facilities are not included in the definition of sensitive receptor because employees and patrons do not typically remain onsite for a full 24 hours but are typically onsite for 8 hours or less. However, *LST Methodology* explicitly states that "*LSTs based on shorter averaging periods, such as the NO_2 and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours* (40)." Therefore, any adjacent land use where an individual could remain for 1 or 8-hours, that is located at a closer distance to the Project site than the receptor used for PM_{10} and $PM_{2.5}$ analysis, must be considered to determine construction and operational LST air impacts for emissions of NO_2 and CO since these pollutants have an averaging time of 1 and 8-hours.

PROJECT-RELATED RECEPTORS

Receptors in the Project study area are described below and shown on Exhibit 3-A. Localized air quality impacts were evaluated at sensitive receptor land uses nearest the Project site. All distances are measured from the Project site boundary to the outdoor living areas (e.g., backyards) or at the building façade, whichever is closer to the Project site.

- R1: Location R1 represents the existing residence at 20601 Tobacco Road, approximately 165 feet southwest of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receptor R1 is placed at the building façade.
- R2: Location R2 represents the existing residence at 23551 Placentia Avenue, approximately 90 feet west of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receptor R2 is placed at the building façade.
- R3: Location R3 represents the Barker Logistics facility located approximately 155 feet north of the Project site.
- R4: Location R4 represents the FedEx Freight transportation service center located at 20388 Harvill Avenue, approximately 985 feet northeast of the Project site.

R5: Location R5 represents the Crafttech Metal Forming, Inc. metal fabricator facility located at 24100-B Water Street, approximately 1,465 feet east of the Project site.

R6: Location R6 represents the Star Milling Co. feeding manufacturer building located at the 23901 Water Street, approximately 1,253 feet southeast of the Project site.

R7: Location R7 represents the existing residence at 20800 Tobacco Road, approximately 1,031 feet south of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receptor R7 is placed at the building façade.

R8: Location R8 represents Val Verde Elementary School, located approximately 3,709 feet southeast of the Project site.

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Project's potential to cause an individual a cumulatively significant impact. The nearest land use where an individual could remain for 24 hours to the Project site has been used to determine localized construction and operational air quality impacts for emissions of PM_{10} and $PM_{2.5}$ (since PM_{10} and $PM_{2.5}$ thresholds are based on a 24-hour averaging time). The nearest receptors used for evaluation of localized impacts of PM_{10} and $PM_{2.5}$ are the existing residences at 23551 Placentia Avenue, represented by R2, approximately 90 feet (27 meters) west of the Project site. As such a 27-meter receptor distance will be used for evaluation of localized PM_{10} and $PM_{2.5}$.

As previously stated, and consistent with *LST Methodology*, the nearest commercial/industrial use to the Project site is used to determine construction and operational LST air impacts for emissions of NO_X and CO as the averaging periods for these pollutants are shorter (8 hours or less) and it is reasonable to assumed that an individual could be present at these sites for periods of one to 8 hours. It should be noted that the existing residence R2 is located at a closer distance than the nearest industrial/commercial use. As such, the same receptor will be used for evaluation of localized NO_X and CO.

EXHIBIT 3-A: RECEPTOR LOCATIONS



3.7 CONSTRUCTION-SOURCE EMISSIONS LST ANALYSIS

3.7.1 LOCALIZED THRESHOLDS FOR CONSTRUCTION ACTIVITY

Since the total acreage disturbed is less than five acres per day for demolition, site preparation and grading activities, the SCAQMD's screening look-up tables were utilized to determine impacts for phases. It should be noted that since the look-up tables identify thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in Table 3-10 were calculated by interpolating the threshold values for the Project's disturbed acreage.

TABLE 3-10: MAXIMUM DAILY LOCALIZED CONSTRUCTION EMISSIONS THRESHOLDS

Construction Activity	Construction Localized Thresholds			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Demolition	120 lbs/day	625 lbs/day	5 lbs/day	3 lbs/day
Site Preparation	222 lbs/day	1,269 lbs/day	12 lbs/day	6 lbs/day
Grading	189 lbs/day	1,032 lbs/day	9 lbs/day	5 lbs/day

Source: Localized Thresholds presented in this table are based on the SCAQMD Final LST Methodology, July 2008

3.7.2 CONSTRUCTION-SOURCE LOCALIZED EMISSIONS

IMPACTS WITHOUT MITIGATION

Table 3-11 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. For analytical purposes, emissions associated with peak demolition, site preparation and grading activities are considered for purposes of LSTs since these phases represent the maximum localized emissions that would occur. Any other construction phases of development that overlap would result in lesser emissions and consequently lesser impacts than what is disclosed herein. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions of any criteria pollutant. Outputs from the model runs for unmitigated construction LSTs are provided in Appendix 3.1.

TABLE 3-11: LOCALIZED CONSTRUCTION-SOURCE EMISSIONS – WITHOUT MITIGATION

Construction Activity	Year	Emissions (lbs/day)			
		NO_X	CO	PM_{10}	$PM_{2.5}$
Demolition	**Maximum Daily Emissions**	**10.72**	**18.36**	**0.26**	**0.18**
	SCAQMD Localized Threshold	120	625	5	3
	Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
Site Preparation	**Maximum Daily Emissions**	**15.69**	**29.96**	**5.77**	**2.79**
	SCAQMD Localized Threshold	222	1,269	12	6
	Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

Construction Activity	Year	Emissions (lbs/day)			
		NO_X	CO	PM_{10}	$PM_{2.5}$
Grading	**Maximum Daily Emissions**	**10.73**	**19.03**	**2.38**	**1.02**
	SCAQMD Localized Threshold	189	1,032	9	5
	Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod unmitigated localized construction-source emissions are presented in Appendix 3.1.

3.8 OPERATIONAL-SOURCE EMISSIONS LST ANALYSIS

As previously stated, the Project is located on an approximately 8.72-acre parcel. As noted previously, the *LST Methodology* provides look-up tables for sites with an area with daily disturbance of 5 acres or less. For projects that exceed 5 acres, the 5-acre LST look-up tables can be used as a screening tool to determine whether pollutants require additional detailed analysis. This approach is conservative as it assumes that all on-site emissions associated with the Project would occur within a concentrated 5-acre area. This screening method would therefore over-predict potential localized impacts, because by assuming that on-site operational activities are occurring over a smaller area, the resulting concentrations of air pollutants are more highly concentrated once they reach the smaller site boundary than they would be for activities if they were spread out over a larger surface area. On a larger site, the same amount of air pollutants generated would disperse over a larger surface area and would result in a lower concentration once emissions reach the project-site boundary. As such, LSTs for a 5-acre site during operations are used as a screening tool to determine if further detailed analysis is required.

The LST analysis generally includes on-site sources (area, energy, mobile, on-site cargo handling equipment, and stationary equipment – are previously discussed in Section 4.5 of this report). However, it should be noted that the CalEEMod outputs do not separate on-site and off-site emissions from mobile sources. As such, in an effort to establish a maximum potential impact scenario for analytic purposes, the emissions shown on Table 3-13 represent all on-site Project-related stationary (area) sources and Project-related mobile sources. It should be noted that the longest on-site distance is roughly 0.50 mile for both trucks and passenger cars. Modeling based on these assumptions demonstrates that even within broad encompassing parameters, Project operational-source emissions would not exceed applicable LSTs.

3.8.1 LOCALIZED THRESHOLDS FOR OPERATIONAL ACTIVITY

As previously stated, LSTs for a 5-acre site during operations are used as a screening tool to determine if further detailed analysis is required.

TABLE 3-12: MAXIMUM DAILY LOCALIZED OPERATIONAL EMISSIONS THRESHOLDS

Operational Localized Thresholds			
NO_X	CO	PM_{10}	$PM_{2.5}$
273 lbs/day	1,635 lbs/day	4 lbs/day	2 lbs/day

Source: Localized Thresholds presented in this table are based on the SCAQMD Final LST Methodology, July 2008

3.8.2 OPERATIONAL-SOURCE LOCALIZED EMISSIONS

IMPACTS WITHOUT MITIGATION

As shown on Table 3-13 operational emissions would not exceed the LST thresholds for the nearest sensitive receptor. Therefore, the Project would have a less than significant localized impact during operational activity. Outputs from the model runs for operation LSTs are provided in Appendix 3.3.

TABLE 3-13: LOCALIZED SIGNIFICANCE SUMMARY OF OPERATIONS

Scenario	Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**4.20**	**12.88**	**0.28**	**0.19**
SCAQMD Localized Threshold	273	1,635	4	2
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod unmitigated localized construction-source emissions are presented in Appendix 3.3.

3.9 CO "HOT SPOT" ANALYSIS

As discussed below, the Project would not result in potentially adverse CO concentrations or "hot spots." An adverse CO concentration, known as a "hot spot", would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration in the SCAB is now designated as attainment.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods[10]. This "hot spot" analysis did not predict any exceedance e of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on Table 3-14.

[10] The CO "hot spot" analysis conducted in 2003 is the most current study used for CO "hot spot" analysis in the SCAB.

TABLE 3-14: CO MODEL RESULTS

Intersection Location	CO Concentrations (ppm)		
	Morning 1-hour	Afternoon 1-hour	8-hour
Wilshire Boulevard/Veteran Avenue	4.6	3.5	3.7
Sunset Boulevard/Highland Avenue	4	4.5	3.5
La Cienega Boulevard/Century Boulevard	3.7	3.1	5.2
Long Beach Boulevard/Imperial Highway	3	3.1	8.4

Source: 2003 AQMP, Appendix V: Modeling and Attainment Demonstrations
Notes: Federal 1-hour standard is 35 ppm and the deferral 8-hour standard is 9.0 ppm.

Based on the SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (*1992 CO Plan*), peak carbon monoxide concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of traffic volumes and congestion at a particular intersection. As evidence of this, for example, of the 8.4 ppm 8-hr CO concentration measured at the Long Beach Blvd. and Imperial Hwy. intersection (i.e., the highest CO generating intersection within the "hot spot" analysis), only 0.7 ppm was attributable to the traffic volumes and congestion at this intersection; the remaining 7.7 ppm were due to the ambient air measurements at the time the 2003 AQMP was prepared (43). In contrast, an adverse CO concentration, known as a "hot spot", would occur if an exceedance of the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9 ppm were to occur.

The ambient 1-hr and 8-hr CO concentration within the Project study area is estimated to be 0.9 ppm and 0.6 ppm, respectively (data from Lake Elsinore Area station for 2022). Therefore, even if the traffic volumes for the proposed Project were ten times the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, the Project would not be capable of resulting in a CO "hot spot" at any study area intersections. As noted above, only 0.7 ppm were attributable to the traffic volumes and congestion at one of the busiest intersections in the SCAB. Therefore if these traffic volumes were multiplied by ten times, it could be expected that the CO attributable to traffic would increase tenfold as well, resulting in 7 ppm – even if this were added to either the 1-hour or 8-hour CO concentrations within the Project study area, this would result in 7.9 ppm and 7.6 ppm for the 1-hr and 8-hr timeframes, respectively. Neither of which would exceed the applicable 1-hr standard of 20 ppm or the 8-hr standard of 9 ppm.

Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD) concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour (vph)—or 24,000 vph where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (44). Traffic volumes generating the CO concentrations for the "hot spot" analysis is shown on Table 3-15. The busiest intersection evaluated was that at Wilshire Boulevard and Veteran Avenue, which had AM/PM traffic volumes of 8,062 vph and 7,719 vph respectively (43).

TABLE 3-15: TRAFFIC VOLUMES

Intersection Location	Peak Traffic Volumes (vph)				
	Eastbound (AM/PM)	Westbound (AM/PM)	Southbound (AM/PM)	Northbound (AM/PM)	Total (AM/PM)
Wilshire Boulevard/Veteran Avenue	4,954/2,069	1,830/3,317	721/1,400	560/933	8,062/7,719
Sunset Boulevard/Highland Avenue	1,417/1,764	1,342/1,540	2,304/1,832	1,551/2,238	6,614/5,374
La Cienega Boulevard/Century Boulevard	2,540/2,243	1,890/2,728	1,384/2,029	821/1,674	6,634/8,674
Long Beach Boulevard/Imperial Highway	1,217/2,020	1,760/1,400	479/944	756/1,150	4,212/5,514

Source: 2003 AQMP

3.10 AQMP

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the SCAG, county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

Currently, these state and federal air quality standards are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMPs to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

In December 2022, the SCAQMD released the *Final 2022 AQMP* (*2022 AQMP*). The *2022 AQMP* continues to evaluate current integrated strategies and control measures to meet the CAAQS, as well as explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (45). Similar to the 2016 AQMP, the *2022 AQMP* incorporates scientific and technological information and planning assumptions, including the *2020-2045 RTP/SCS*, a planning document that supports the integration of land use and transportation to help the region meet the federal CAA requirements (27). The Project's consistency with the AQMP will be determined using the *2022 AQMP* as discussed below. The Project's consistency with the AQMP will be determined using the 2022 AQMP as discussed below.

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the *1993 CEQA Handbook* (46). These indicators are discussed below:

3.10.1 CONSISTENCY CRITERION NO. 1

The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

The violations that Consistency Criterion No. 1 refer to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if regional or localized significance thresholds were exceeded.

Construction Impacts – Consistency Criterion 1

Consistency Criterion No. 1 refers to violations of the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if localized or regional significance thresholds were exceeded. As evaluated, the Project's localized and regional construction-source emissions would not exceed applicable regional significance threshold and LST thresholds. As such, a less than significant impact is expected.

Operational Impacts – Consistency Criterion 1

As evaluated, the Project would not exceed the applicable regional and localized significance thresholds for operational activity. Therefore, the Project would not conflict with the AQMP according to this criterion.

On the basis of the preceding discussion, the Project is determined to be consistent with the first criterion.

3.10.2 CONSISTENCY CRITERION NO. 2

The Project will not exceed the assumptions in the AQMP based on the years of Project build-out phase.

The *2022 AQMP* demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the district are provided to the SCAG, which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections in County of Riverside General Plan is considered to be consistent with the AQMP***.***

Construction Impacts – Consistency Criterion 2

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur, with disturbance of the entire site occurring during construction activities. As such, when considering that no emissions thresholds will be exceeded, a less than significant impact would result.

Operational Impacts – Consistency Criterion 2

The Project site is located within an unincorporated portion of the County of Riverside. As per the General Plan, the unincorporated portions of the County are divided into 19 area plans. These area plans provide more detailed land use and policy direction regarding local issues such as land use, circulation, open space, and other topical areas (4). Per the General Plan, the Project site is located within the Mead Valley Area Plan and is designated for Business Park uses. The Business Park land use designation allows for employee-intensive uses, including research and development, technology centers, corporate and support office uses, clean industry and supporting retail uses (4).

As previously stated, the Project consists of the development of a 185,785-sf warehouse building with 167,785 sf of warehousing use and 18,000 sf of office space (9,000 sf on first and second floors). As such, the Project's proposed uses are generally consistent with the site's land use and zoning designations.

On the basis of the preceding discussion, the Project is determined to be consistent with the second criterion.

AQMP CONSISTENCY CONCLUSION

The Project would not result in or cause NAAQS or CAAQS violations. Additionally, the proposed Project is consistent with the land use and growth intensities reflected in the adopted General Plan. Furthermore, the Project would not exceed any applicable regional or local thresholds. As such, the Project is therefore considered to be consistent with the AQMP.

3.11 TOXIC AIR CONTAMINANTS

CONSTRUCTION AND OPERATIONAL

Based on the results of the *Thrifty Oil Warehouse Project Mobile Source Health Risk Assessment* (47), emissions generated from the Project during short-term construction and long-term operation will not exceed SCAQMD significance thresholds for cancer and non-cancer health risks. As such, a less than significant impact is expected.

3.12 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Results of the LST analysis indicate that the Project would not exceed the SCAQMD localized significance thresholds during construction. Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations during Project construction.

The Project would not exceed the SCAQMD localized significance thresholds during operational activity. Further Project traffic would not create or result in a CO "hotspot." Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of Project operations.

Additionally, results of the Health Risk Assessment determined that at the land use with the greatest potential exposure to Project construction-source and operational-source DPM

emissions, also known as the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project construction-source and operational-source DPM emissions is estimated at 1.77 in one million, which is less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be <0.01, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent land uses as a result of Project construction and operational activity. All other receptors during construction and operational activity would experience less risk than what is identified for this location.

3.12.1 FRIANT RANCH CASE

In December 2018, in the case of *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, the California Supreme Court held that an Environmental Impact Report's (EIR) air quality analysis must meaningfully connect the identified air quality impacts to the human health consequences of those impacts, or meaningfully explain why that analysis cannot be provided.

Most local agencies, including the County of Riverside, lack the data to do their own assessment of potential health impacts from criteria air pollutant emissions, as would be required to establish customized, locally-specific thresholds of significance based on potential health impacts from an individual development project. The use of national or "generic" data to fill the gap of missing local data would not yield accurate results because such data does not capture local air patterns, local background conditions, or local population characteristics, all of which play a role in how a population experiences air pollution. Because it is impracticable to accurately isolate the exact cause of a human disease (for example, the role a particular air pollutant plays compared to the role of other allergens and genetics in causing asthma), existing scientific tools cannot accurately estimate health impacts of the Project's air emissions without undue speculation. Instead, readers are directed to the Project's air quality impact analysis above, which provides extensive information concerning the quantifiable and non-quantifiable health risks related to the Project's construction and long-term operation.

Notwithstanding, this AQIA does evaluate the proposed Project's localized impact to air quality for emissions of CO, NO_X, PM_{10}, and $PM_{2.5}$ by comparing the proposed project's on-site emissions to the SCAQMD's applicable LST thresholds. The LST analysis above determined that the Project would not result in emissions exceeding SCAQMD's LSTs. Therefore, the proposed Project would not be expected to exceed the most stringent applicable federal or state ambient air quality standards for emissions of CO, NO_X, PM_{10}, and $PM_{2.5.}$

As the Project's emissions would comply with federal, state, and local air quality standards, the proposed Project's emissions are not sufficiently high enough to use a regional modeling program to correlate health effects on a basin-wide level and would not provide a reliable indicator of health effects if modeled.

3.13 ODORS

The potential for the Project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The Project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed Project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities and the temporary storage of typical solid waste (refuse) associated with the proposed Project's (long-term operational) uses. Standard construction requirements would minimize odor impacts from construction. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction and is thus considered less than significant. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with current solid waste regulations. The proposed Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, odors and other emissions (such as those leading to odors) associated with construction and operations activities of the proposed Project would be less than significant and no mitigation is required (48).

3.14 CUMULATIVE IMPACTS

As previously shown in Table 2-3, the CAAQS designate the Project site as nonattainment for O_3 PM_{10}, and $PM_{2.5}$ while the NAAQS designates the Project site as nonattainment for O_3 and $PM_{2.5}$.

The SCAQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (49). In this report the SCAQMD clearly states (Page D-3):

> *"…the SCAQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for TAC emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same*

> *significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.*
>
> *Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."*

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which SCAB is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

CONSTRUCTION IMPACTS

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that proposed Project construction-source air pollutant emissions would not result in exceedances of regional thresholds. Therefore, proposed Project construction-source emissions would be considered less than significant on a Project-specific and cumulative basis.

OPERATIONAL IMPACTS

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that proposed Project operational-source air pollutant emissions would not result in exceedances of regional thresholds. Therefore, proposed Project operational-source emissions would be considered less than significant on a project-specific and cumulative basis.

COUNTY OF RIVERSIDE GOOD NEIGHBOR POLICY

The County of Riverside adopted the Good Neighbor Policy for Logistics and Warehouse/Distribution Uses (Policy Number F-3) on November 19, 2019. (50) The goal of this policy is to provide a framework through which large-scale logistics and warehouse projects can be designed and operated in a way that lessens any impacts on surrounding communities and the environment.

Specifically, Table 3-16 identifies the following relevant guidelines that have been reviewed for consistency:

TABLE 3-16: GOOD NEIGHBOR POLICY RELEVANT GUIDELINES

Measure		Project Consistency
1.1	An "Air Quality" study shall be prepared in accordance with the Air Quality Management District (AQMD) guidelines which includes both project specific and cumulative impact analysis.	The analysis presented here conforms with applicable analytic guidelines and requirements. The analysis substantiates that all potential air quality impacts, including potential health risk impacts would be less-than-significant.
1.2	A "Health Risk Assessment" shall be prepared when a proposed warehouse/distribution facility is located within 1,000 feet of a sensitive receptor, in accordance with AQMD guidelines.	A health risk assessment has been prepared for the proposed Project in accordance with SCAQMD guidelines and is presented under a separate cover.
2.1	During construction of the warehouse/distribution facility, all heavy-duty haul trucks accessing the site shall have CARB-Compliant 2010 engines or newer approved CARB engine standards.	All heavy-duty haul trucks accessing the Project site during construction will be in compliance with the CARB Truck and Bus regulation, which requires that heavy duty trucks utilize CARB-Compliant 2010 or newer engines by January 1, 2023.
2.2	All diesel fueled off-road construction equipment greater than 50 horsepower, including but not limited to excavators, graders, rubber-tired dozers, and similar "off-road" construction equipment shall be equipped with CARB Tier 4 Compliant engines. If the operator lacks Tier 4 equipment, and it is not available for lease or short-term rental within 50 miles of the project site, Tier 3 or cleaner off-road construction equipment may be utilized subject to County approval.	All diesel-fueled off-road construction equipment rated greater than 50 horsepower will meet CARB Tier 4 standards.
2.3	The maximum daily disturbance area (actively graded area) shall not exceed 10 acres per day. Non-Grading construction activity in areas greater than 10 acres is allowed.	The maximum daily disturbance area will not exceed 10 acres per day during demolition, site preparation and grading. It is anticipated that no more than 9 acres would be graded per day.
2.7	Appropriate dust control measures that meet the SCAQMD standards shall be implemented for grading and construction activity.	The Project would comply with all applicable dust control measures, including SCAQMD Rules 401, 402, and 403.
2.8	Construction equipment maintenance records and data sheets, which includes equipment design specifications and equipment emission control tier classifications, as well as any other records necessary to verify compliance, shall be kept onsite and furnished to the County upon request.	The Project will maintain records on-site during construction to demonstrate compliance with the above requirements.
2.9	Construction Contractors shall prohibit truck drivers from idling more than five (5) minutes and require operators to turn off engines when not in use, in compliance with the California Air Resources Board regulations.	The Project would be required to comply with statewide anti-idling rules. Compliance with anti-idling rules diminishes the potential for localized emissions concentrations and reduces potential adverse effects at sensitive receptors.

Measure		Project Consistency
3.1	Warehouse/distribution facilities should be generally designed so that truck bays and loading docks are a minimum of 300 feet, measured from the property line of the sensitive receptor to the nearest dock door using a direct straight-line method. This distance may be reduced if the site design includes berms or other similar features to appropriately shield and buffer the sensitive receptors from the active truck operations areas. Other setbacks appropriate to the site's zoning classification shall be incorporated in the design.	As designed, the proposed Project's loading docks would not be located within 300 feet of any nearby sensitive receptors.
3.2	Warehouse/distribution facilities shall be designed to provide adequate on-site parking for commercial trucks and passenger vehicles and on-site queuing for trucks that is away from sensitive receptors. The general queuing and spill-over of trucks onto surrounding public streets shall be prevented. Commercial trucks shall not be parked in the public road right-of-way or nearby residential areas.	The site has been designed such that trucks would not need to queue on streets or elsewhere outside the proposed industrial building they serve. The Project design as approved by the County would act to limit on-site queuing, diminishing the potential for localized emissions concentrations and reduces potential adverse effects at sensitive receptors.
3.11	Warehouse/distribution facilities shall install electrical panels and conduit to facilitate future electrical connections, to eliminate idling of main and auxiliary engines during the loading and unloading process. At all cold storage facilities electrical connections shall be provided to each dock.	Loading docks would be wired for electrical hook-ups, allowing future users to seamlessly integrate electric charging for trucks, when such technology becomes readily available.
4.1	Facility operators shall maintain records of their facility owned and operated fleet equipment and ensure that all diesel-fueled Medium-Heavy Duty Trucks ("MHDT") and Heavy-Heavy Duty ("HHD") trucks with a gross vehicle weight rating greater than 19,500 pounds accessing the site use year CARB compliant 2010 or newer engines. The records should be maintained on-site and be made available for inspection by the County.	The proposed Project will comply with the CARB Truck and Bus regulation, which requires the use of CARB compliant 2010 or newer engines.
4.2	Facility operators shall prohibit truck drivers from idling more than five (5) minutes and require operators to turn off engines when not in use, in compliance with the California Air Resources Board regulations.	The Project would be required to comply with statewide anti-idling rules. Compliance with anti-idling rules diminishes the potential for localized emissions concentrations and reduces potential adverse effects at sensitive receptors.
4.4	Facility operators shall coordinate with CARB and SCAQMD to obtain the latest information about regional air quality concentrations, health risks, and trucking regulations.	The operator of the proposed facility will be required to remain in compliance with applicable air quality, health risk, and trucking regulations.

Measure		Project Consistency
4.5	On-site equipment, such as forklifts, shall be electric with the necessary electrical charging stations provided.	All on-site equipment utilized for the operation of the proposed Project will be electrically powered and charging stations will be provided on-site.
4.6	Facility operators shall establish specific truck routes between the facility and regular destinations, identifying the most direct routes to the nearest highway/freeway and avoid traveling near sensitive receptors.	The operator of the proposed facility will be required to provide this information to drivers accessing the facility.
4.9	A minimum of 5% or as required by the Cal Green Code, whichever is greater of employee parking spaces shall be designated for electric or other alternative fueled vehicles.	As designed, the proposed Project would meet or exceed California Green Building code requirements and provide parking spaces designated for EV charging at a minimum of 5% of the total auto parking stalls.
5.5	Each Facility shall designate a Compliance Officer responsible for implementing the measures described herein and/or in the project conditions of approval and mitigation measures. Contact information should be provided to the County and updated annually, and signs should be posted in visible locations providing the contact information for the Compliance Officer to the surrounding community. These signs shall also identify the website and contact information for the SCAQMD.	A designated Compliance Officer will be appointed for the facility to ensure compliance with these and other applicable requirements and contact information will be provided to the County on an annual basis. Signs will be posted in order to identify the Compliance Officer's contact information, as well as contact information for the SCAQMD.

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5 CERTIFICATIONS

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed Thrifty Oil Warehouse Project. The information contained in this air quality impact assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at hqureshi@urbanxroads.com

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Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April 2008
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AB2588 Regulatory Standards – Trinity Consultants • November 2006
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APPENDIX 2.1:

STATE/FEDERAL ATTAINMENT STATUS OF CRITERIA POLLUTANTS

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APPENDIX 3.1:

CALEEMOD PROJECT CONSTRUCTION EMISSIONS MODEL OUTPUTS

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APPENDIX 3.2:

CALEEMOD PROJECT OPERATIONAL EMISSIONS MODEL OUTPUTS

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APPENDIX 3.3:

CALEEMOD PROJECT OPERATIONAL LSTS EMISSIONS MODEL OUTPUTS

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Thrifty Oil Warehouse Project
(PPT230048, PDA 8407, OAPL2300972)
MOBILE SOURCE HEALTH RISK ASSESSMENT
COUNTY OF RIVERSIDE

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LIST OF ABBREVIATED TERMS

(1)	Reference
µg	Microgram
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AQMD	Air Quality Management District
ARB	Air Resources Board
ASF	Age Sensitivity Factor
CEQA	California Environmental Quality Act
CPF	Cancer Potency Factor
DPM	Diesel Particulate Matter
EMFAC	Emission Factor Model
EPA	Environmental Protection Agency
FAH	Fraction of Time at Home
HHD	Heavy Heavy-Duty
HI	Hazard Index
HRA	Health Risk Assessment
LHD	Light Heavy-Duty
MEIR	Maximally Exposed Individual Receptor
MEIW	Maximally Exposed Individual Worker
MHD	Medium Heavy-Duty
NAD	North American Datum
OEHHA	Office of Environmental Health Hazard Assessment
PM_{10}	Particulate Matter 10 microns in diameter or less
Project	Thrifty Oil Warehouse Project
REL	Reference Exposure Level
SCAQMD	South Coast Air Quality Management District
TAC	Toxic Air Contaminant
TA	Traffic Analysis
URF	Unit Risk Factor
UTM	Universal Transverse Mercator
VMT	Vehicle Miles Traveled

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EXECUTIVE SUMMARY

This report evaluates the potential health risk impacts to sensitive receptors (which are residents) and adjacent workers associated with the development of the Project, more specifically, health risk impacts as a result of exposure to Toxic Air Contaminants (TACs) including diesel particulate matter (DPM) as a result of heavy-duty diesel trucks accessing the site. This section summarizes the significance criteria and Project health risks.

The results of the health risk assessment from Project-generated DPM emissions are provided in Table ES-1, ES-2, and ES-3 below for the Project.

CONSTRUCTION IMPACTS

The land use with the greatest potential exposure to Project construction-source DPM emissions is Location R2 which is located approximately 90 feet west of the Project site at an existing residence located at 23551 Placentia Avenue. Since there are no private outdoor living areas (backyards) facing the Project site, R2 is placed at the building façade. At the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project construction-source DPM emissions is estimated at 1.03 in one million, which is less than the South Coast Air Quality Management District (SCAQMD) significance threshold of 10 in one million. At this same location, non-cancer risks were estimated to be <0.01, which would not exceed the applicable threshold of 1.0. Although Location R2 is not the nearest receptor to the Project site, due to meteorological conditions in the vicinity of the Project site (wind speed and direction) it would experience the highest concentrations of DPM during Project construction. Because all other modeled receptors would experience lower concentrations of DPM during Project construction, all other receptors in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIR identified herein. As such, the Project will not cause a significant human health or cancer risk to adjacent land uses as a result of Project construction activity. All other receptors during construction activity would experience less risk than what is identified for this location.

OPERATIONAL IMPACTS

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project operational-source DPM emissions is Location R2 which is located approximately 90 feet west of the Project site at an existing residence located at 23551 Placentia Avenue. Since there are no private outdoor living areas (backyards) facing the Project site, R2 is placed at the building façade. At the MEIR, the maximum incremental cancer risk attributable to Project operational-source DPM emissions is estimated at 1.18 in one million, which is less than the SCAQMD significance threshold of 10 in one million. At this same location, non-cancer risks were estimated to be <0.01, which would not exceed the applicable significance threshold of 1.0. Although Location R2 is not the nearest receptor to the Project site, it is the location that would experience the highest concentrations of DPM during project operation due to meteorological conditions (wind speed and direction) in the vicinity of the Project site. All other receptors would experience lower concentrations of DPM

and thus less risk during operation of the proposed Project than the MEIR identified herein. As such, the Project will not cause a significant human health or cancer risk to adjacent land uses as a result of Project operational activity. All other receptors would experience less risk than what is identified for this location.

Worker Exposure Scenario[1]*:*

The worker receptor land use with the greatest potential exposure to Project operational -source DPM emissions is Location R3, which represents the potential worker receptor located approximately 155 feet north of the Project site. At the maximally exposed individual worker (MEIW), the maximum incremental cancer risk impact is 0.23 in one million which is less than the SCAQMD's threshold of 10 in one million. Maximum non-cancer risks at this same location were estimated to be <0.01, which would not exceed the applicable significance threshold of 1.0. Location R3 is the worker receptor that would experience the highest concentrations of DPM during Project operation due to meteorological conditions (wind speed and direction) in the vicinity of the Project site. All other worker receptors in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIW identified herein. As such, the Project will not cause a significant human health or cancer risk to nearby workers.

School Child Exposure Scenario:

The nearest school is Val Verde Elementary School, located approximately 3,700 feet southeast of the Project site and represented by Location R8. At the maximally exposed individual school child (MEISC), the maximum incremental cancer risk impact attributable to the Project is calculated to be 0.01 in one million, which is less than the significance threshold of 10 in one million. At this same location, non-cancer risks attributable to the Project were calculated to be <0.01, which would not exceed the applicable significance threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to nearby school children.

CONSTRUCTION AND OPERATIONAL IMPACTS

The land use with the greatest potential exposure to Project construction-source and operational-source DPM emissions is Location R2. At the MEIR, the maximum incremental cancer risk attributable to Project construction-source and operational-source DPM emissions is estimated at 1.88 in one million, which is less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be <0.01, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to nearby residents.

TABLE ES-1: SUMMARY OF CONSTRUCTION CANCER AND NON-CANCER RISKS

1 SCAQMD guidance does not require assessment of the potential health risk to on-site workers. Excerpts from the document OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines—The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2003), also indicate that it is not necessary to examine the health effects to on-site workers unless required by RCRA (Resource Conservation and Recovery Act) / CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) or the worker resides on-site.

Time Period	Location	Maximum Lifetime Cancer Risk (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold
1.08 Year Exposure	Maximum Exposed Sensitive Receptor (Location R2)	1.03	10	NO
Time Period	**Location**	**Maximum Hazard Index**	**Significance Threshold**	**Exceeds Significance Threshold**
Annual Average	Maximum Exposed Sensitive Receptor (Location R2)	<0.01	1.0	NO

TABLE ES-2: SUMMARY OF OPERATIONAL CANCER AND NON-CANCER RISKS

Time Period	Location	Maximum Lifetime Cancer Risk (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold
30 Year Exposure	Maximum Exposed Sensitive Receptor (Location R2)	1.18	10	NO
25 Year Exposure	Maximum Exposed Worker Receptor (Location R3)	0.23	10	NO
9 Year Exposure	Maximum Exposed Individual School Child (Location R8)	0.01	10	NO
Time Period	**Location**	**Maximum Hazard Index**	**Significance Threshold**	**Exceeds Significance Threshold**
Annual Average	Maximum Exposed Sensitive Receptor (Location R2)	<0.01	1.0	NO
Annual Average	Maximum Exposed Worker Receptor (Location R3)	<0.01	1.0	NO
Annual Average	Maximum Exposed Individual School Child (Location R8)	<0.01	1.0	NO

TABLE ES-3: SUMMARY OF CONSTRUCTION AND OPERATIONAL CANCER AND NON-CANCER RISKS

Time Period	Location	Maximum Lifetime Cancer Risk (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold
30 Year Exposure	Maximum Exposed Sensitive Receptor (Location R2)	1.88	10	NO
Time Period	**Location**	**Maximum Hazard Index**	**Significance Threshold**	**Exceeds Significance Threshold**
Annual Average	Maximum Exposed Sensitive Receptor (Location R2)	<0.01	1.0	NO

1 INTRODUCTION

This HRA has been prepared in accordance with the document Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (1) and is comprised of all relevant and appropriate procedures presented by the United States Environmental Protection Agency (U.S. EPA), California EPA and SCAQMD. Cancer risk is expressed in terms of expected incremental incidence per million population. The SCAQMD has established an incidence rate of ten (10) persons per million as the maximum acceptable incremental cancer risk due to TAC exposure from a project such as the proposed Project. This threshold serves to determine whether or not a given project has a potentially significant development-specific and cumulatively considerable impact.

The AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (2). In this report the AQMD states (Page D-3):

"…the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.

Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

The SCAQMD has also established non-carcinogenic risk parameters for use in HRAs. Non-carcinogenic risks are quantified by calculating a "hazard index," expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level (REL). A REL is a concentration at or below which health effects are not likely to occur. A hazard index less of than one (1.0) means that adverse health effects are not expected. In this HRA, non-carcinogenic exposures of less than 1.0 are considered less-than-significant. Both the cancer risk and non-carcinogenic risk thresholds are applied to the nearest sensitive receptors below.

1.1 SITE LOCATION

The proposed project is located on the southeast corner of Tobacco Road and Placentia Avenue at 23641 Placentia Avenue in the County of Riverside, as shown on Exhibit 1-A.

1.2 PROJECT DESCRIPTION

The Project consists of the development of a 185,785 square foot (sf) warehouse building with 167,785 sf of warehousing use and 18,000 sf of office space (9,000 sf on first and second floors). The total Project site is 8.72 acres on APNs 317-260-017 and 317-261-018. A preliminary site plan for the proposed Project is shown on Exhibit 1-B. The Project is anticipated to have an Opening Year of 2026.

Construction is expected to commence in January 2025 and would last through January 2026. Construction activities will include demolition, site preparation, grading, building construction, paving, and architectural coating. To support the Project development, there will be frontage street improvements as well as offsite sewer improvements for the Project.

The Project site is located within an unincorporated portion of the County of Riverside. As per the General Plan, the unincorporated portions of the County are divided into 19 area plans. These area plans provide more detailed land use and policy direction regarding local issues such as land use, circulation, open space, and other topical areas (3). Per the General Plan, the Project site is located within the Mead Valley Area Plan and is designated for Business Park uses. The Business Park land use designation allows for employee-intensive uses, including research and development, technology centers, corporate and support office uses, clean industry and supporting retail uses (3).

EXHIBIT 1-A: LOCATION MAP

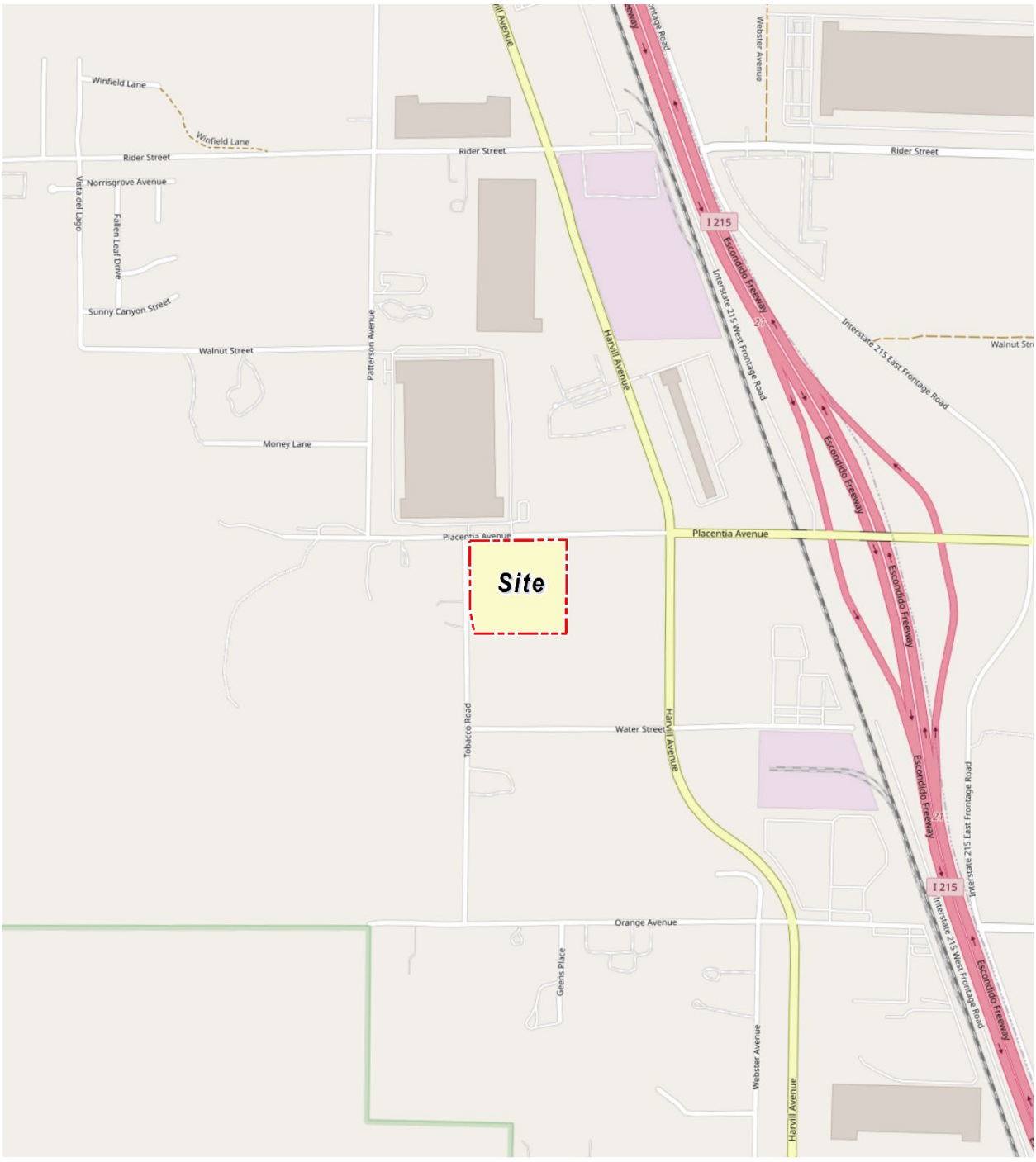
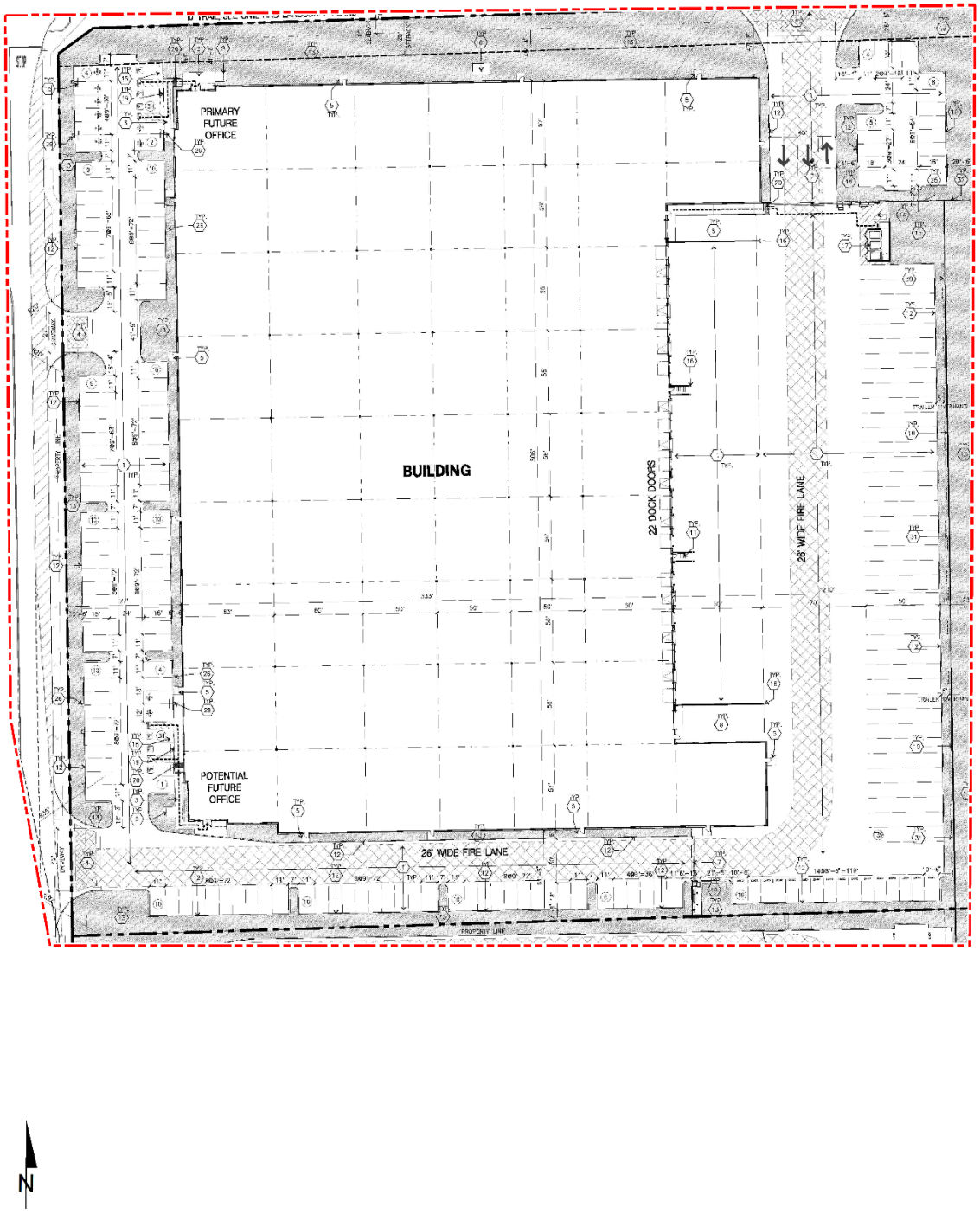


EXHIBIT 1-B: PRELIMINARY SITE PLAN



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2 BACKGROUND

2.1 BACKGROUND ON RECOMMENDED METHODOLOGY

This HRA is based on applicable guidelines to produce conservative estimates of human health risk posed by exposure to DPM. The conservative nature of this analysis is due primarily to the following factors:

- The ARB-adopted diesel exhaust Unit Risk Factor (URF) of 300 in one million per $\mu g/m^3$ is based upon the upper 95 percentile of estimated risk for each of the epidemiological studies utilized to develop the URF. Using the 95th percentile URF represents a very conservative (health-protective) risk posed by DPM because it represents breathing rates that are high for the human body.
- The emissions derived assume that every truck accessing the Project site will idle for 15 minutes under the unmitigated scenario, and this is an overestimation of actual idling times and thus conservative.[2] The California Air Resources Board (CARB's) anti-idling requirements impose a 5-minute maximum idling time and therefore the analysis conservatively overestimates DPM emissions from idling by a factor of 3.

2.2 CONSTRUCTION HEALTH RISK ASSESSMENT

2.2.1 EMISSIONS CALCULATIONS AND MODELING

The emissions calculations for the construction HRA component are based on an assumed mix of construction equipment and hauling activity as presented in the *Thrifty Oil Warehouse Project (PPT2200047) Air Quality Impact Analysis* ("technical study") prepared by Urban Crossroads, Inc. (4).

Construction related DPM emissions are expected to occur primarily as a function of the operation of heavy-duty construction equipment.

As discussed in the technical study, the Project would result in approximately 324 total working-days of construction activity. The construction duration by phase is shown on Table 2-1. A detailed summary of construction equipment assumptions by phase is provided at Table 2-2. The CalEEMod emissions outputs are presented in Appendix 2.1. The modeled emission sources for construction activity are illustrated on Exhibit 2-A. Consistent with SCAQMD's Localized Significance Threshold Methodology (5), DPM emissions from construction equipment were modeled using adjacent volume sources with a release height of 5 meters and an initial vertical dimension of 1.4 meters. On-road truck emissions were modeled as a line source (made up of multiple adjacent volume sources).

[2] Although the Project is required to comply with ARB's idling limit of 5 minutes, staff at SCAQMD recommends that the on-site idling emissions should be estimated for 15 minutes of truck idling (personal communication, in person, with Jillian Wong, December 22, 2016), which would take into account on-site idling which occurs while the trucks are waiting to pull up to the truck bays, idling at the bays, idling at check-in and check-out, etc.

TABLE 2-1: CONSTRUCTION DURATION

Construction Activity	Start Date	End Date	Working Days
Demolition	1/7/2025	2/4/2025	20
Site Preparation	2/5/2025	2/19/2025	10
Grading	2/20/2025	3/20/2025	20
Building Construction	3/21/2025	2/6/2026	230
Paving	2/7/2026	3/7/2026	20
Architectural Coating	3/8/2026	4/5/2026	20

TABLE 2-2: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Construction Activity	Equipment	Amount	Hours Per Day
Demolition	Rubber Tired Dozers	2	8
	Excavators	3	8
	Concrete/Industrial Saws	1	8
Site Preparation	Rubber Tired Dozers	3	8
	Crawler Tractors	4	8
Grading	Graders	1	8
	Excavators	1	8
	Rubber Tired Dozers	1	8
	Crawler Tractors	3	8
Building Construction	Forklifts	3	8
	Generator Sets	1	8
	Cranes	1	8
	Welders	1	8
	Tractors/Loaders/Backhoes	3	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8

EXHIBIT 2-A: MODELED CONSTRUCTION EMISSION SOURCES



2.3 OPERATIONAL HEALTH RISK ASSESSMENT

2.3.1 ON-SITE AND OFF-SITE TRUCK ACTIVITY

Vehicle DPM emissions were calculated using emission factors for particulate matter less than 10µm in diameter (PM_{10}) generated with the 2021 version of the EMission FACtor model (EMFAC) developed by the CARB. EMFAC 2021 is a mathematical model that CARB developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the ARB to project changes in future emissions from on-road mobile sources (6). The most recent version of this model, EMFAC 2021, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled (VMT) by speed, and number of starts per day.

Several distinct emission processes are included in EMFAC 2021. Emission factors calculated using EMFAC 2021 are expressed in units of grams per vehicle miles traveled (g/VMT) or grams per idle-hour (g/idle-hr), depending on the emission process. The emission processes and corresponding emission factor units associated with diesel particulate exhaust for this Project are presented below.

For this Project, annual average PM_{10} emission factors were generated by running EMFAC 2021 in EMFAC Mode for vehicles in the Riverside County jurisdiction. The EMFAC Mode generates emission factors in terms of grams of pollutant emitted per vehicle activity and can calculate a matrix of emission factors at specific values of temperature, relative humidity, and vehicle speed. The model was run for speeds traveled in the vicinity of the Project. The vehicle travel speeds for each segment modeled are summarized below.

- Idling – on-site loading/unloading at building loading docks
- 5 miles per hour – on-site vehicle movement including driving and maneuvering
- 25 miles per hour – off-site vehicle movement including driving and maneuvering.

It is expected that minimal idling would occur at nearby intersections during truck travel on study area roadways (e.g., at an intersection during a red light, or yielding to make a turn). Notwithstanding, the analysis conservatively utilizes a reduced off-site average speed of 25 miles per hour (below the posted speed limit) for travel on study area roadways, use of a lower average speed for off-site travel results in a higher emission factor and therefore any negligible idling that would occur during truck travel along the study area is accounted for.

Calculated emission factors are shown at Table 2-3. As a conservative measure, a 2026 EMFAC 2021 run was conducted and a static 2026 emissions factor data set was used for the entire duration of analysis herein (e.g., 30 years). Use of 2026 emission factors would overstate potential impacts since this approach assumes that emission factors remain “static” and do not change over time due to fleet turnover or cleaner technology with lower emissions that would be incorporated into vehicles after 2026. Additionally, based on EMFAC 2021, Light-Heavy-Duty Trucks are comprised of 59.8% diesel, Medium-Heavy-Duty Trucks are comprised of 91.9% diesel, and Heavy-Heavy-Duty Trucks are comprised of 94.9% diesel. Trucks fueled by diesel are

accounted for by these percentages accordingly in the emissions factor generation. Appendix 2.2 includes additional details on the emissions estimates from EMFAC.

The vehicle DPM exhaust emissions were calculated for running exhaust emissions. The running exhaust emissions were calculated by applying the running exhaust PM_{10} emission factor (g/VMT) from EMFAC over the total distance traveled. The following equation was used to estimate off-site emissions for each of the different vehicle classes comprising the mobile sources (7):

$$Emissions_{Speed\ A} = EF_{Run\ Exhaust} \times Distance \times \frac{Number\ of\ Trips\ per\ Day}{Seconds\ per\ Day}$$

Where:

$Emissions_{Speed\ A}$ = Vehicle emissions at a given speed A (g/s)

$EF_{Run\ Exhaust}$ = EMFAC running exhaust PM_{10} emission factor at speed A (g/vmt)

$Distance$ = Total distance traveled per trip (miles)

Similar to off-site traffic, on-site vehicle running emissions were calculated by applying the running exhaust PM_{10} emission factor (g/VMT) from EMFAC and the total vehicle trip number over the length of the driving path using the same formula presented above for on-site emissions. In addition, on-site vehicle idling exhaust emissions were calculated by applying the idle exhaust PM_{10} emission factor (g/idle-hr) from EMFAC and the total truck trip over the total assumed idle time (15 minutes). The following equation was used to estimate the on-site vehicle idling emissions for each of the different vehicle classes (7):

$$Emissions_{Idle} = EF_{Idle} \times Number\ of\ Trips \times Idling\ Time \times \frac{60\ minutes\ per\ hour}{seconds\ per\ day}$$

Where:

$Emissions_{Idle}$ = Vehicle emissions during Idling (g/s)

EF_{Idle} = EMFAC idle exhaust PM_{10} emission factor (g/s)

$Number\ of\ Trips$ = Number of trips per day

$Idling\ Time$ = Idling time (minutes per trip)

TABLE 2-3: 2026 WEIGHTED AVERAGE DPM EMISSIONS FACTORS

Speed	Weighted Average
0 (idling)	0.08855 (g/idle-hr)
5	0.02101 (g/mile)
25	0.00899 (g/mile)

Each roadway was modeled as a line source (made up of multiple adjacent volume sources). Due to the large number of volume sources modeled for this analysis, the corresponding coordinates

of each volume source have not been included in this report but are included in Appendix 2.3. The DPM emission rate for each volume source was calculated by multiplying the emission factor (based on the average travel speed along the roadway) by the number of trips and the distance traveled along each roadway segment and dividing the result by the number of volume sources along that roadway, as illustrated on Table 2-4. The modeled emission sources are illustrated on Exhibit 2-B for on-site sources and Exhibit 2-C for off-site sources. The modeling domain is limited to the Project's primary truck route and includes off-site sources in the study area for more than ¾ mile. This modeling domain is more inclusive and conservative than using only a ¼ mile modeling domain which is the distance supported by several reputable studies which conclude that the greatest potential risks occur within a ¼ mile of the primary source of emissions (8) (in the case of the Project, the primary source of emissions is the on-site idling and on-site travel).

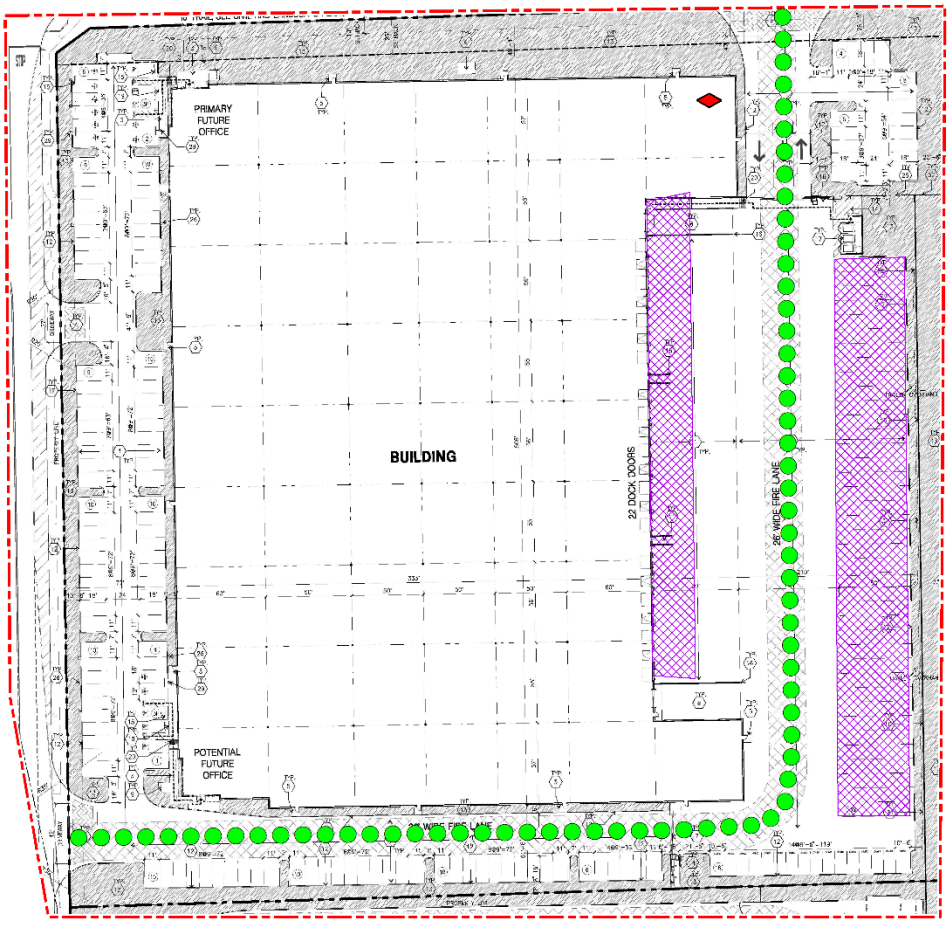
On-site truck idling was estimated to occur at building loading docks and at truck trailer parking areas. Although the Project's diesel-fueled truck and equipment operators will be required by State law to comply with CARB's idling limit of 5 minutes, staff at SCAQMD recommends that the on-site idling emissions be calculated assuming 15 minutes of truck idling (9), which would take into account on-site idling which occurs while the trucks are waiting to pull up to the truck bays, idling at the bays, idling at check-in and check-out, etc. As such, this analysis calculates truck idling at 15 minutes, consistent with SCAQMD's recommendation. Idling emissions at building loading docks and truck trailer parking areas were modeled in AERMOD as line sources, which consist of multiple adjacent volume sources.

As summarized in the *Thrifty Oil Warehouse Project (PPT2200047) Trip Generation* prepared by Urban Crossroads, Inc., the Project is expected to generate a total of approximately 320 actual vehicular trip-ends per day (160 vehicles inbound + 160 vehicles outbound) which includes 206 passenger vehicle trips (103 passenger vehicles inbound + 103 passenger vehicles outbound) and 114 two-way truck trips (57 trucks inbound per day + 57 trucks outbound) per day (10).

2.3.4 EMERGENCY FIRE PUMPS

The proposed Project was conservatively assumed to include installation of a 300-horsepower diesel-powered emergency fire pump. The emergency fire pump was estimated to operate for up to 1 hour per day, 1 day per week for up to 50 hours per year for maintenance and testing purposes. Emissions associated with the stationary emergency diesel-powered emergency fire pumps were calculated using CalEEMod. The emergency fire pump was modeled in AERMOD as point source, and because specific engine specifications is not known at this time, release parameters from the California Air Pollution Control Officers Association Facility Prioritization Guidelines were utilized (11).

EXHIBIT 2-B: MODELED ON-SITE EMISSION SOURCES



N

LEGEND:

Site Boundary | Idling Activity | Truck Movements | Fire Pump

EXHIBIT 2-C: MODELED OFF-SITE EMISSION SOURCES

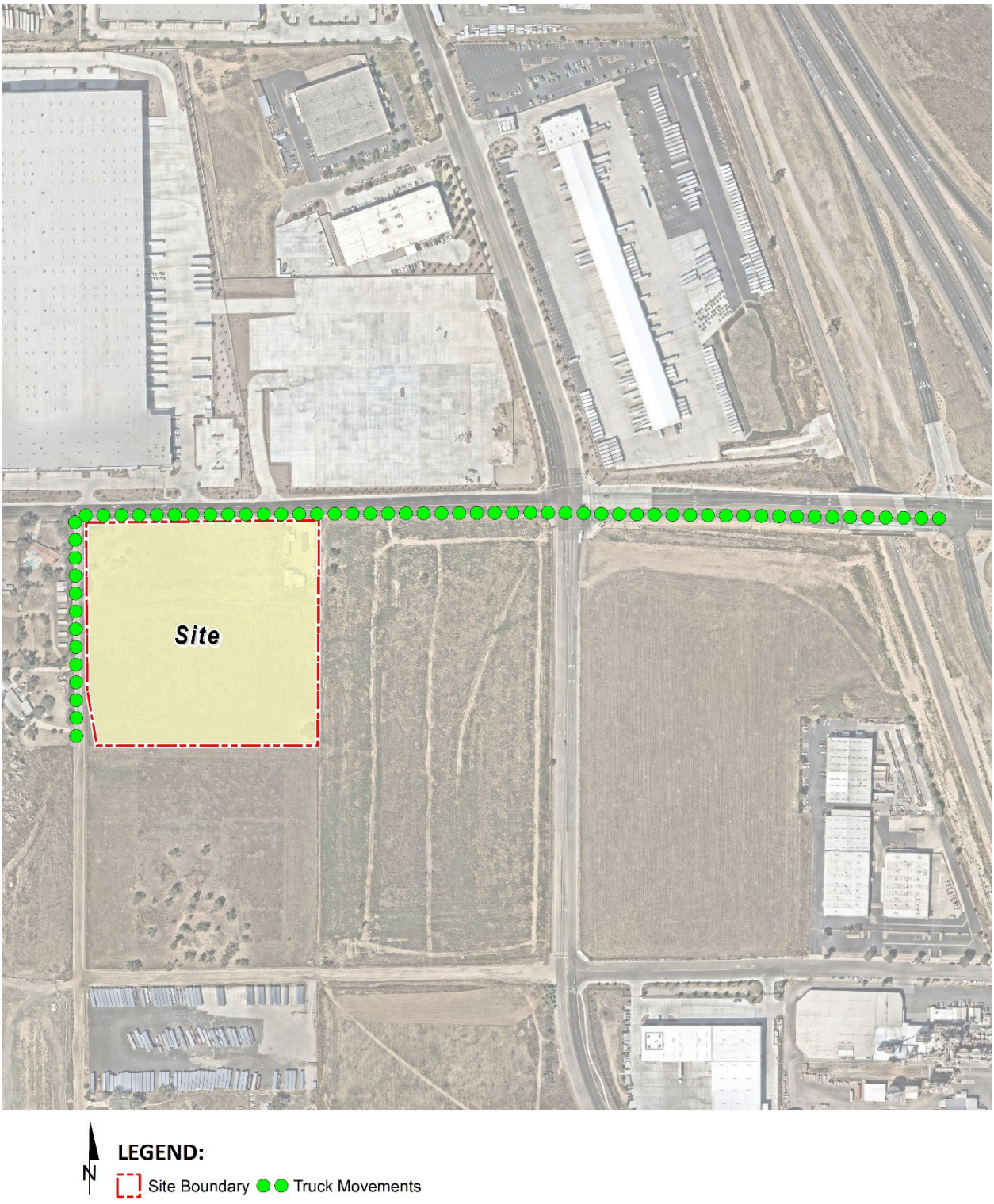


TABLE 2-4: DPM EMISSIONS FROM PROJECT TRUCKS (2026 ANALYSIS YEAR)

Truck Emission Rates						
Source		VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
Idling - Loading Docks	57			0.0885	1.26	1.460E-05
Idling - Truck Trailer Parking	57			0.0885	1.26	1.460E-05
Onsite North	114	10.28	0.0210		0.22	2.501E-06
Onsite South	114	20.29	0.0210		0.43	4.935E-06
Off-Site Travel - Placentia 50%	57	8.60	0.0090		0.08	8.945E-07
Off-Site Travel - Tobacco 50%	57	21.31	0.0090		0.19	2.217E-06
Off-Site Travel - Placentia Avenue 100%	114	54.19	0.0090		0.49	5.640E-06

[a] Vehicle miles traveled are for modeled truck route only.

[b] Emission rates determined using EMFAC 2021. Idle emission rates are expressed in grams per idle hour rather than grams per mile.

[c] This column includes the total truck travel and truck idle emissions. For idle emissions this column includes emissions based on the assumption that each truck idles for 15 minutes.

2.4 EXPOSURE QUANTIFICATION

The analysis herein has been conducted in accordance with the guidelines in the Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (1). The Environmental Protection Agency's (U.S. EPA's) AERMOD model has been utilized. For purposes of this analysis, the Lakes AERMOD View (Version 12.0.0) was used to calculate annual average particulate concentrations associated with site operations. Lakes AERMOD View was utilized to incorporate the U.S. EPA's latest AERMOD Version 23132 (12).

The model offers additional flexibility by allowing the user to assign an initial release height and vertical dispersion parameters for mobile sources representative of a roadway. For this HRA, the roadways were modeled as adjacent volume sources. Roadways were modeled using the U.S. EPA's haul route methodology for modeling of on-site and off-site truck movement. More specifically, the Haul Road Volume Source Calculator in Lakes AERMOD View has been utilized to determine the release height parameters. Based on the US EPA methodology, the Project's modeled sources would result in a release height of 3.49 meters and an initial lateral dimension of 4.0 meters, and an initial vertical dimension of 3.25 meters.

Model parameters are presented in Table 2-5 (13). The model requires additional input parameters including emission data and local meteorology. Meteorological data from the SCAQMD's Perris monitoring station was used to represent local weather conditions and prevailing winds (14).

TABLE 2-5: AERMOD MODEL PARAMETERS

Dispersion Coefficient (Urban/Rural)	Urban (population 2,189,641)
Terrain (Flat/Elevated)	Elevated (Regulatory Default)
Averaging Time	1 year (5-year Meteorological Data Set)
Receptor Height	0 meters (Regulatory Default)

Universal Transverse Mercator (UTM) coordinates for World Geodetic System (WGS) 84 were used to locate the Project site boundaries, each volume source location, and receptor locations in the Project vicinity. The AERMOD dispersion model summary output files for the Project are presented in Appendix 2.3. Modeled sensitive receptors were placed at residential and non-residential locations.

Receptors may be placed at applicable structure locations for residential and worker property and not necessarily the boundaries of the properties containing these uses because the human receptors (residents and workers) spend a majority of their time at the residence or in the workplace's building, and not on the property line. It should be noted that the primary purpose of receptor placement is focused on long-term exposure. For example, the HRA evaluates the potential health risks to residents, workers, and school children over a period of 30, 25, or 9 years of exposure, respectively. Notwithstanding, as a conservative measure, receptors were placed at either the outdoor living area or the building façade, whichever is closer to the Project site.

For purposes of this HRA, receptors include both residential and non-residential (worker and school child) land uses in the vicinity of the Project. These receptors are included in the HRA since residents and workers may be exposed at these locations over a long-term duration of 30, 25, and 9 years, respectively. This methodology is consistent with SCAQMD and OEHHA recommended guidance.

Any impacts to residents or workers located further away from the Project site than the modeled residential and workers would have a lesser impact than what has already been disclosed in the HRA at the MEIR, MEIW, and MEISC because concentrations dissipate with distance.

All receptors were set to existing elevation height so that only ground-level concentrations are analyzed. United States Geological Survey (USGS) Digital Elevation Model (DEM) terrain data based on a 7.5-minute topographic quadrangle map series using AERMAP was utilized in the HRA modeling to set elevations (15).

Discrete variants for daily breathing rates, exposure frequency, and exposure duration were obtained from relevant distribution profiles presented in the 2015 OEHHA Guidelines. Tables 2-6 through 2-9 summarize the Exposure Parameters for residents, workers, and school children based on 2015 OEHHA Guidelines. Appendix 2.4 includes the detailed risk calculation.

TABLE 2-6: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (CONSTRUCTION ACTIVITY)

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Fraction of Time at Home	Exposure Frequency (days/year)	Exposure Time (hours/day)
0 to 2	1,090	10	1.08	1.00	260	8

TABLE 2-7: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (30 YEAR RESIDENTIAL)

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Fraction of Time at Home	Exposure Frequency (days/year)	Exposure Time (hours/day)
-0.25 to 0	361	10	0.25	0.85	350	24
0 to 2	1,090	10	2	0.85	350	24
2 to 16	572	3	14	0.72	350	24
16 to 30	261	1	14	0.73	350	24

TABLE 2-8: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (25 YEAR WORKER)

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Exposure Frequency (days/year)	Exposure Time (hours/day)
16 to 41	230	1	25	250	12

TABLE 2-9: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (9 YEAR SCHOOL CHILD)

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Exposure Frequency (days/year) [a]	Exposure Time (hours/day)
4 to 13	631	3	9	180	12

[a] To represent the unique characteristics of the school-based population, the assessment employed the U.S. Environmental Protection Agency's guidance to develop viable dose estimates based on reasonable maximum exposures (RME). RME's are defined as the "highest exposure that is reasonably expected to occur" for a given receptor population. As a result, lifetime risk values for the student population were adjusted to account for an exposure duration of 180 days per year for nine (9) years. The 9 year exposure duration is also consistent with OEHHA Recommendations and consistent with the exposure duration utilized in school-based risk assessments for various schools within the Los Angeles County Unified School District (LAUSD) that have been accepted by the SCAQMD.

2.5 CARCINOGENIC CHEMICAL RISK

Excess cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens over a specified exposure duration. The estimated risk is expressed as a unitless probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF). A risk level of 10 in one million implies a likelihood that up to 10 people, out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the levels of toxic air contaminants over a specified duration of time.

Guidance from CARB and the California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA) recommends a refinement to the standard point estimate approach when alternate human body weights and breathing rates are utilized to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose. Once determined, contaminant dose is multiplied by the cancer potency factor (CPF) in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, to assess exposures, the following dose algorithm was utilized.

$$DOSE_{AIR} = \left(C_{AIR} \times \frac{BR}{BW} \times A \times EF\right) \times (1 \times 10^{-6})$$

Where:

$DOSE_{AIR}$ = chronic daily intake (mg/kg/day)

C_{AIR} = concentration of contaminant in air ($\mu g/m^3$)

$\frac{BR}{BW}$ = daily breathing rate normalized to body weight (L/kg BW-day)

A = inhalation absorption factor

EF	=	exposure frequency (days/365 days)
BW	=	body weight (kg)
1×10^{-6}	=	conversion factors (µg to mg, L to m^3)

$$RISK_{AIR} = DOSE_{AIR} \times CPF \times ASF \times FAH \times \frac{ED}{AT}$$

Where:

$DOSE_{AIR}$	=	chronic daily intake (mg/kg/day)
CPF	=	cancer potency factor
ASF	=	age sensitivity factor
FAH	=	fraction of time at home
ED	=	number of years within particular age group
AT	=	averaging time

2.6 NON-CARCINOGENIC EXPOSURES

An evaluation of the potential noncarcinogenic effects of chronic exposures was also conducted. Adverse health effects are evaluated by comparing a compound's annual concentration with its toxicity factor or Reference Exposure Level (REL). The REL for diesel particulates was obtained from OEHHA for this analysis. The chronic reference exposure level (REL) for DPM was established by OEHHA as 5 µg/m^3 (16).

Non-cancer health effects are expressed as a hazard index (HI), which is calculated using the following equation:

$$HI_{DPM} = \frac{C_{DPM}}{REL_{DPM}}$$

Where:

HI_{DPM}	=	Hazard index (unitless)
C_{DPM}	=	Annual average DPM concentration (µg/m^3)
REL_{DPM}	=	REL for DPM (the DPM concentration at which no adverse health effects are anticipated).

2.7 POTENTIAL PROJECT DPM-SOURCE CANCER AND NON-CANCER RISKS

CONSTRUCTION IMPACTS

The land use with the greatest potential exposure to Project construction-source DPM emissions is Location R2 which is located approximately 90 feet west of the Project site at an existing residence located at 23551 Placentia Avenue. Since there are no private outdoor living areas (backyards) facing the Project site, R2 is placed at the building façade. At the MEIR, the maximum incremental cancer risk attributable to Project construction-source DPM emissions is estimated at 1.03 in one million, which is less than the South Coast Air Quality Management District (SCAQMD) significance threshold of 10 in one million. At this same location, non-cancer risks were estimated to be <0.01, which would not exceed the applicable threshold of 1.0. Although Location R2 is not the nearest receptor to the Project site, due to meteorological conditions in the vicinity of the Project site (wind speed and direction) it would experience the highest concentrations of DPM during Project construction. Because all other modeled receptors would experience lower concentrations of DPM during Project construction, all other receptors in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIR identified herein. As such, the Project will not cause a significant human health or cancer risk to adjacent land uses as a result of Project construction activity. All other receptors during construction activity would experience less risk than what is identified for this location.

OPERATIONAL IMPACTS

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project operational-source DPM emissions is Location R2 which is located approximately 90 feet west of the Project site at an existing residence located at 23551 Placentia Avenue. Since there are no private outdoor living areas (backyards) facing the Project site, R2 is placed at the building façade. At the MEIR, the maximum incremental cancer risk attributable to Project operational-source DPM emissions is estimated at 1.18 in one million, which is less than the SCAQMD significance threshold of 10 in one million. At this same location, non-cancer risks were estimated to be <0.01, which would not exceed the applicable significance threshold of 1.0. Although Location R2 is not the nearest receptor to the Project site, it is the location that would experience the highest concentrations of DPM during project operation due to meteorological conditions (wind speed and direction) in the vicinity of the Project site. All other receptors would experience lower concentrations of DPM and thus less risk during operation of the proposed Project than the MEIR identified herein. As such, the Project will not cause a significant human health or cancer risk to adjacent land uses as a result of Project operational activity. All other receptors would experience less risk than what is identified for this location.

Worker Exposure Scenario[3]*:*

3 SCAQMD guidance does not require assessment of the potential health risk to on-site workers. Excerpts from the document OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines—The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2003), also indicate that it is not necessary to examine the health effects to on-site workers unless required by RCRA

The worker receptor land use with the greatest potential exposure to Project operational -source DPM emissions is Location R3, which represents the potential worker receptor located approximately 155 feet north of the Project site. At the MEIW, the maximum incremental cancer risk impact is 0.23 in one million which is less than the SCAQMD's threshold of 10 in one million. Maximum non-cancer risks at this same location were estimated to be <0.01, which would not exceed the applicable significance threshold of 1.0. Location R3 is the worker receptor that would experience the highest concentrations of DPM during Project operation due to meteorological conditions (wind speed and direction) in the vicinity of the Project site. All other worker receptors in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIW identified herein. As such, the Project will not cause a significant human health or cancer risk to nearby workers.

School Child Exposure Scenario:

The nearest school is Val Verde Elementary School, located approximately 3,700 feet southeast of the Project site and represented by Location R8. At the maximally exposed individual school child (MEISC), the maximum incremental cancer risk impact attributable to the Project is calculated to be 0.01 in one million, which is less than the significance threshold of 10 in one million. At this same location, non-cancer risks attributable to the Project were calculated to be <0.01, which would not exceed the applicable significance threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to nearby school children.

CONSTRUCTION AND OPERATIONAL IMPACTS

The land use with the greatest potential exposure to Project construction-source and operational-source DPM emissions is Location R2. At the MEIR, the maximum incremental cancer risk attributable to Project construction-source and operational-source DPM emissions is estimated at 1.88 in one million, which is less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be <0.01, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to nearby residents.

It should be noted that for clarity purposes, the receptors presented in Exhibit 2-D do not represent all modeled receptors and instead presents the nearest receptors that would experience the highest pollutant concentrations. A total of 10 receptors were modeled in the analysis. Appendix 2.5 presents a figure detailing the locations of all receptors as modeled in AERMOD.

(Resource Conservation and Recovery Act) / CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) or the worker resides on-site.

EXHIBIT 2-D: RECEPTOR LOCATIONS


Site
R1
R2
R3
R4
R5
R6
R7
R8
90'
155'
985'
165'
1,465'
3,709'
1,253'
1,031'
N
LEGEND:
Site Boundary
Distance from receptor to Project site boundary (in feet)
Receptor Locations

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3 REFERENCES

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4 CERTIFICATIONS

The contents of this health risk assessment represent an accurate depiction of the impacts to sensitive receptors associated with the proposed Thrifty Oil Warehouse Project Project. The information contained in this health risk assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me at (949) 660-1994.

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AEP – Association of Environmental Professionals
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June 2013
Planned Communities and Urban Infill – Urban Land Institute • June 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August 2007
AB2588 Regulatory Standards – Trinity Consultants • November 2006
Air Dispersion Modeling – Lakes Environmental • June 2006

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APPENDIX 2.1:

CALEEMOD OUTPUTS

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APPENDIX 2.2:

EMFAC EMISSIONS SUMMARY

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APPENDIX 2.3:

AERMOD MODEL INPUT/OUTPUT

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APPENDIX 2.4:

RISK CALCULATIONS

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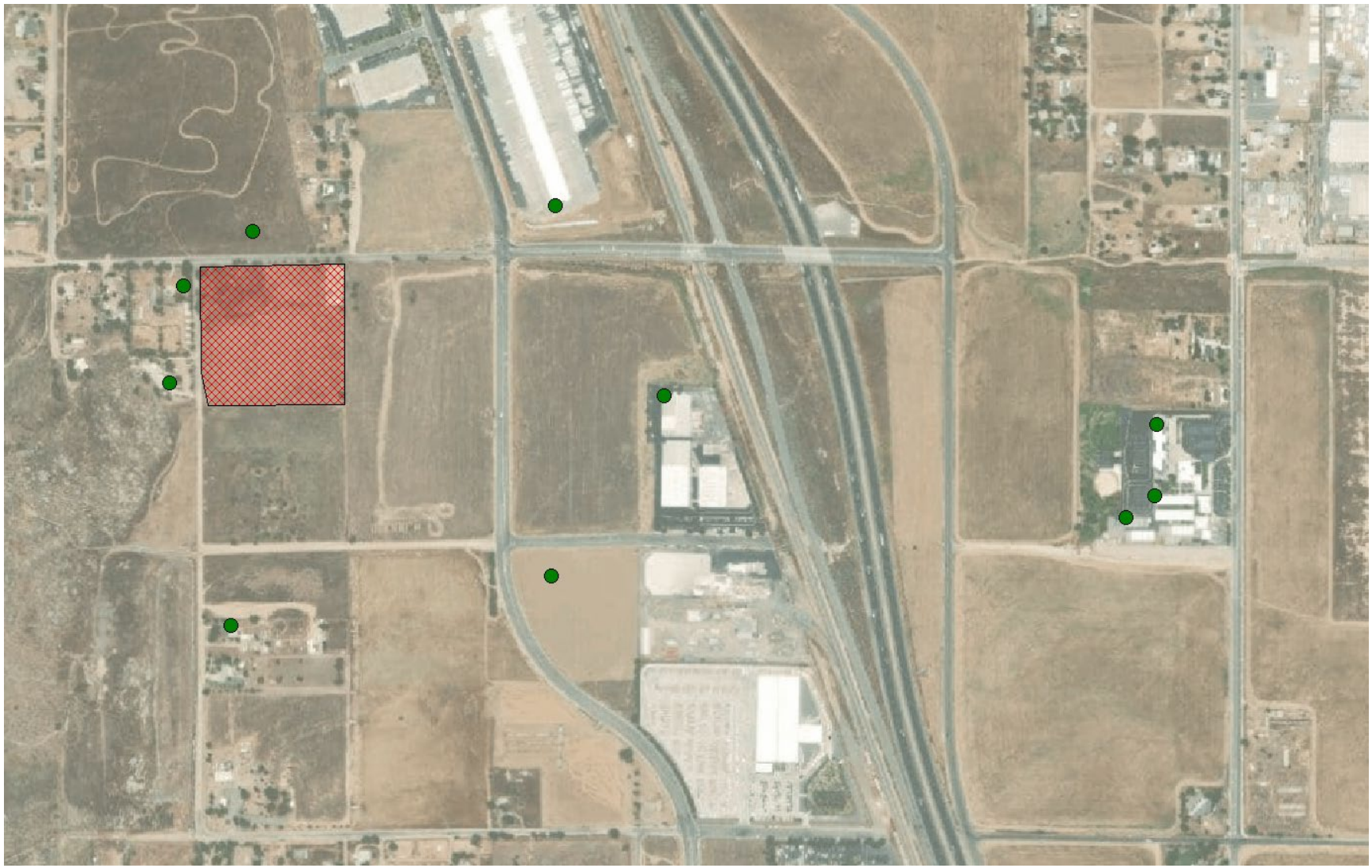
APPENDIX 2.5:

MODELED RECEPTORS



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BIOLOGICAL RESOURCES ASSESSMENT, JURISDICTIONAL DELINEATION, AND MSHCP CONSISTENCY ANALYSIS FOR THE DEVELOPMENT OF APNs: 317-260-017 and -18, IN UNINCORPORATED PERRIS, RIVERSIDE COUNTY, CALIFORNIA

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BIOLOGICAL RESOURCES ASSESSMENT, JURISDICTIONAL DELINEATION, AND MSHCP CONSISTENCY ANALYSIS FOR THE DEVELOPMENT OF APN: 317-260-017, and -18, IN UNINCORPORATED PERRIS, RIVERSIDE COUNTY, CALIFORNIA

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SECTION 1.0 - INTRODUCTION

Jennings Environmental, LLC (Jennings) was retained by Lilburn Corporation (Lilburn) to conduct a literature review and site survey for the proposed Thrifty Oil Co. Development Project (Project) within Assessor Parcel Numbers (APNs) 317-260-017 and -18, in unincorporated Perris, Riverside County, California. The survey identified vegetation communities, the potential for the occurrence of special status species, or habitats that could support special status wildlife species, and recorded all plants and animals observed or detected within the Project boundary. This biological resources assessment is designed to address the potential effects of the proposed project on designated critical habitats and/or any species currently listed or formally proposed for listing as endangered or threatened under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA) or species designated as sensitive by the California Department of Fish and Wildlife (CDFW) or the California Native Plant Society (CNPS).

Information contained in this document is in accordance with accepted scientific and technical standards that are consistent with the requirements of the United States Fish and Wildlife Service (USFWS) and CDFW. Additionally, the site was surveyed for any drainage features that would meet the definition of the Waters of the US (WOUS), Waters of the State (WOS), or CDFW jurisdiction. Additionally, the project is located within the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP). As such, this report also contains the results of the consistency analysis performed for the project.

1.1 PROJECT LOCATION

The Project is generally located within Section 13, Township 3 South, Range 4 West, and is depicted on the *Perris and Steele Peak* U.S. Geological Survey's (USGS) 7.5-minute topographic maps. More specifically the project is located within APNs 317-260-017 and -18, within unincorporated Perris, Riverside County, California. The Project site is located on the southeast corner of the intersection of Placentia Ave. and Tobacco Road. The site is surrounded by commercial development to the north, residential developments to the west and vacant land to the east and south. The Project site itself does contain one rural residence. (Figures 1 and 2 in Appendix A).

1.2 PROJECT DESCRIPTION

The proposed Project is to construct one 167,785 square foot (SF) concrete tilt-up, non-refrigerated warehouse on a 9.99-acres (net) of vacant land. The impacts include 9.64 acres of on-site impacts and 0.35 acres of off-site impacts The proposed Project is designed to house one or more tenant(s), which have not been designated at this time, and will include one 167,785 SF warehouse with 9 bays, two grade level docks, 22 high docks and two, 9,000 SF office spaces with mezzanines for a total square footage of 185,785, with related site landscaping, drainage basin, and parking.

These impacts will be permanent and are included in the assessment below. There will be no off-site staging or storing of equipment associated with this Project. Additionally, there are no fuel modification zones required.

2.0 – METHODOLOGY

2.1 LITERATURE REVIEW

Prior to performing the field survey, existing documentation relevant to the Project site was reviewed. The most recent records were reviewed for the following quadrangle containing and surrounding the Project site: *Perris and Steele Peak,* USGS 7.5-minute quadrangles. These databases contain records of reported occurrences of federal- or state-listed endangered or threatened species, California Species of Concern (SSC), or otherwise special status species or habitats that may occur within or in the immediate vicinity of the Project site. These sources include:

- California Natural Diversity Database (CNDDB) managed by CDFW (CDFW, 2024);
- USFWS Critical Habitat Mapper (USFWS 2024);
- California Native Plant Society's Electronic Inventory (CNPSEI) of Rare and Endangered Vascular Plants of California (CNPS, 2024), responsible for the California Rare Plank Rankings;
- U.S. Fish and Wildlife (USFWS) threatened and endangered species occurrence GIS overlay;
- USDA Natural Resources Conservation Service (NRCS) Web Soil Survey;
- USGS National Map;
- Calwater Watershed Maps;
- Environmental Protection Agency (EPA) Water Program "My Waters";
- USFWS Designated Critical Habitat Maps;
- California Essential Habitat Connectivity Areas (CEHC, 2024);
- Western Riverside Multiple Species Habitat Conservation Plan (MSHCP), Volume 1, The Plan
- MSHCP Information Map, Version 2.0

2.2 SOILS

Before conducting the surveys, soil maps for Riverside County were referenced online to determine the types of soil found within the Project site. Soils were determined in accordance with categories set forth by the United States Department of Agriculture (USDA) Soil Conservation Service and by referencing the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2024).

2.3 BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

Jennings biologist, Gene Jennings, conducted the general reconnaissance survey within the Project site to identify the potential for the occurrence of special status species, vegetation communities, or habitats that could support special status wildlife species. The surveys were conducted on foot, throughout the Project site between 0745 and 0930 hours on December 17, 2023. Weather conditions during the survey included temperatures ranging from 45 - 50, Fahrenheit with winds ranging from 0.00 – 1.3 miles-per-hour. Photographs of the Project site were taken to document existing conditions (Appendix B).

2.4 JURISDICTIONAL FEATURES

A general assessment of jurisdictional waters regulated by the United States Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and CDFW was conducted for the proposed Project area. Pursuant to Section 404 of the Clean Water Act, USACE regulates the discharge of dredged

and/or fill material into waters of the United States. The State of California (State) regulates the discharge of material into waters of the State pursuant to Section 401 of the Clean Water Act and the California Porter- Cologne Water Quality Control Act (California Water Code, Division 7, §13000 et seq.). Pursuant to Division 2, Chapter 6, Sections 1600-1602 of the California Fish and Game Code, CDFW regulates all substantial diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife. The initial assessment was conducted by a desktop survey through the USGS National Hydrography Dataset for hydrological connectivity. Additional assessment findings are discussed in Sections 3.1.2 and 3.2.4. A discussion of the regulatory framework is provided in Appendix C.

2.5 WESTERN RIVERSIDE MULTIPLE SPECIES HABITAT CONSERVATION PLAN

The MSHCP is intended to balance the demands of the growth of western Riverside County with the need to preserve open space and protect species of plants and animals that are threatened with extinction. The MSHCP addresses incidental take of "covered" species. Of the 146 species addressed in the Western Riverside County MSHCP, 118 are adequately conserved simply by implementing the conservation program. Incidental take of these 118 species is permitted by the Western Riverside County MSHCP. The remaining 28 species are partially conserved. They would be adequately conserved when certain additional conservation requirements are implemented. The additional requirements are identified in the species-specific conservation objectives for those 28 species. The Regional Conservation Authority (RCA) is the governing body that administers the MSHCP. Their database was researched prior to conducting the filed visit.

2.6 VEGETATION

All plant species observed within the Project site were recorded. Vegetation communities within the Project site were identified and qualitatively described. Plant communities were determined in accordance with the *Manual of California Vegetation*, *Second Edition* (Sawyer et al. 2009). Plant nomenclature follows that of *The Jepson Manual, Second Edition* (Baldwin et al. 2012). A comprehensive list of the plant species observed during the survey is provided in Appendix D.

All vegetation was mapped and documented in Appendix A and D, respectively. Vegetation mapping was completed by determining the dominant species found within each vegetation group. As described in the *Manual of California Vegetation*, *Second Edition* (Sawyer et al. 2009).

2.7 WILDLIFE

All wildlife and wildlife signs observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (native vegetation, wildlife trails, etc.) or in habitats with the potential to support state- and/or federally listed or otherwise special-status species. Notes were made on the general habitat types, species observed, and the conditions of the Project site. A comprehensive list of the wildlife species observed during the survey is provided in Appendix D.

2.8 WILDLIFE CORRIDORS

According to the California Essential Habitat Connectivity Project, the Project site is not mapped within an area for wildlife movement. Therefore, the proposed Project will not have an impact on any current wildlife corridors.

SECTION 3.0 – RESULTS

3.1 LITERATURE REVIEW RESULTS

According to the CNDDB, CNPSEI, and other relevant literature and databases, 55 sensitive species including 11 listed species, and 3 sensitive habitats, have been documented in the *Perris and Steele Peak* quads. This list of sensitive species and habitats includes any State and/or federally-listed threatened or endangered species, CDFW-designated Species of Special Concern (SSC), and otherwise Special Animals. "Special Animals" is a general term that refers to all of the taxa the CNDDB is interested in tracking, regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species." The CDFW considers the taxa on this list to be those of greatest conservation need.

An analysis of the likelihood for the occurrence of all CNDDB-sensitive species documented in the *Perris and Steele Peak* quads is provided in Table 2, in Appendix D. This analysis takes into account species range as well as documentation within the vicinity of the project area and includes the habitat requirements for each species and the potential for their occurrence on the site, based on required habitat elements and range relative to the current site conditions. According to the databases, no USFWS-designated critical habitat occurs within or adjacent to the project site.

3.1.1 SOILS

After a review of the USDA Soil Conservation Service and by referencing the USDA NRCS Web Soil Survey (USDA 2024), it was determined that the Project site is located within the Western Riverside Area, California area CA679. The Project site contains four (4) soil types (Figure 3 in Appendix A):

Cieneba rocky sandy loam, 15 to 50 percent slopes (CkF2). This soil is somewhat excessively drained with a very low to moderately low capacity to transmit water. This soil consists of residuum weathered from igneous rock, typically ranges in elevation from 500 to 4,000 feet above mean sea level (amsl), and is not considered prime farmland.

Greenfield sandy loam, 2 to 8 percent slopes (GyC2). This soil is well-drained with a moderately high to high capacity to transmit water. This soil consists of alluvium derived from granite, typically ranges in elevation from 100 to 3,500 feet amsl, and is considered prime farmland if irrigated.

Hanford coarse sandy loam, 2 to 8 percent slopes (HcC). This soil is well-drained with a high capacity to transmit water. This soil consists of alluvium derived from granite, typically ranges in elevation from 680 to 2,930 feet (amsl), and is considered prime farmland if irrigated.

Monserate sandy loam, 5 to 8 percent slopes (MmC2). This soil is well-drained with a very low capacity to transmit water. This soil consists of alluvium derived from granite, typically ranges in elevation from 700 to 2,500 feet (amsl), and is farmland of statewide importance.

None of the observed soil types are hydric soils.

3.1.2 SPECIAL STATUS SPECIES BACKGROUND

Of the 55 species found within the *Perris and Steele Peak* quads, 11 have a special designation of either: federally listed or state-listed. The discussion below provides the background information on those species that have the potential to occur within the Project site.

Burrowing Owl – SSC

The burrowing owl (BUOW) is a state and federal Species of Special Concern (SSC). This owl is a mottled, brownish, sand-colored, dove-sized raptor, with large, yellow eyes, a rounded head lacking ear tufts, white eyebrows, and long legs compared to other owl species. It is a ground-dwelling owl typically found in arid prairies, fields, and open areas where vegetation is sparse and low to the ground. The BUOW is heavily dependent upon the presence of mammal burrows, with ground squirrel burrows being a common choice, in its habitat to provide shelter from predators, and inclement weather, and to provide a nesting place. They are also known to make use of human-created structures, such as cement culverts and pipes, for burrows.

BUOW spends a great deal of time standing on dirt mounds at the entrance to a burrow or perched on a fence post or other low-to-the-ground perch from which they hunt for prey. BUOWs frequently hunt by hovering in place above the ground and dropping on their prey from above. They feed primarily on insects such as grasshoppers, June beetles, and moths, but will also take small rodents, birds, and reptiles. They are active during the day and night but are considered a crepuscular owl; generally observed in the early morning hours or at twilight. [The breeding season for BUOW is February 1 through August 31. Up to 11, but typically 7 to 9, eggs are laid in a burrow, abandoned pipe, or other subterranean hollows where incubation is complete in 28-30 days. Young BUOW fledges in 44 days. The BUOW is considered a migratory species in portions of its range, which includes western North America from Canada to Mexico, and east to Texas and Louisiana. BUOW populations in California are considered to be sedentary or locally migratory.

Throughout its range, the BUOW is vulnerable to habitat loss, predation, vehicular collisions, and destruction of burrow sites and the poisoning of ground squirrels. BUOW has disappeared from significant portions of their range in the last 15 years and, overall, nearly 60% of the breeding groups of owls known to have existed in California during the 1980s had disappeared by the early 1990s (Burrowing Owl Consortium 1993). The BUOW is not listed under the state or federal Endangered Species Act but is considered both a federal [The USFWS doesn't have a formal finding on the burrowing owl, except as a MBTA species] and state Species of Special Concern. The BUOW is a migratory bird protected by the international treaty under the Migratory Bird Treaty Act of 1918 (as amended) and by State law under the California Fish and Game Code (CDFG Code #3513 & #3503.5).

3.1.3 DESIGNATED CRITICAL HABITAT

The site is not located within or adjacent to any USFWS-designated Critical Habitat. No further action is required.

3.1.4 JURISDICTIONAL WATERS

Aerial imagery of the site was examined and compared with the surrounding USGS 7.5-minute topographic quadrangle maps to identify drainage features within the survey area as indicated by topographic changes, blue-line features, or visible drainage patterns. The U.S. Fish and Wildlife Service National Wetland Inventory and Environmental Protection Agency (EPA) Water Program "My Waters" data layers were also reviewed to determine whether any hydrologic features and wetland areas had been documented within the vicinity of the site. Similarly, the Soil maps from the U.S. Department of Agriculture (USDA) - Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2024) were reviewed to identify the soil series on-site and to check if they have been identified regionally as hydric soils. Upstream and downstream connectivity of waterways (if present) was reviewed in the field, on aerial imagery, and topographic maps to determine jurisdictional status. No obvious signs of jurisdictional features were observed during the literature review.

3.1.5 HYDROLOGY AND HYDROLOGIC CONNECTIVITY

Hydrologically, the project site is located within the Perris Valley Hydrologic Sub-Area (HSA 802.11) which comprises a 106,456-acre drainage area within the larger Lower San Jacinto River Hydrologic Area (Hydrologic Unit Code [HUC10] 1807020203) (CalTrans, 2024). The Lower San Jacinto River watershed in Perris is bordered to the north by the Middle Santa Ana River and San Timoteo Wash watershed, to the east by the Middle San Jacinto River watersheds, to the south by the Murrieta Creek watershed, and to the west by the Temescal Wash watershed (Figure 4 in Appendix A).

3.1.6 MSHCP

Prior to the field visit the Regional Conservation Authority's website and databases were searched. This includes the MSHCP plan itself and any relevant protocol survey requirements. The database also includes a mapping program that contains site-specific information related to criteria cell location, special survey areas for plants and animals, and vegetation mapping.

A summary of the MSHCP Conservation Goals and Policies as they relate to this Project is provided below in Table 1.

Table 1: MSHCP Conservation Goals for Project Area

Conservation Goals	Within /Adjacent	Not Within /Adjacent
Proposed Constrained Linkages: **None**		X
Core Areas: **None**		X

Conservation Goals	Within /Adjacent	Not Within /Adjacent
Linkages: **None**		X
Constrained Linkage:		X
Habitat Block:		X
Core: **None**		X
Criteria Cell**: 2529**	X	
Pre-existing conservation Area		X
Riparian/Riverine or Vernal Pool Habitat		X
Narrow Endemic Plant Survey Area		X
Criteria Species Survey Area		X
Urban/Wildlife Interface		X
Mammal Survey Area		X
Amphibian Survey Area		X
Burrowing Owl Survey Area	X	

3.2 FIELD STUDY RESULTS

3.2.1 HABITAT

The habitat on-site consists of a mix of bare ground and *Brassica nigra – Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance (Upland Mustards or star-thistle fields). The site shows signs of vegetation management in the form of mowing or weed whacking. Additionally, there was a previous development within the northwest corner of the site that was removed sometime after 2016. Figure 5 in Appendix A shows the vegetation communities present onsite while Table 1 in Appendix D contains a list of all plants found on-site. Surrounding land uses include residential developments and commercial developments. Table 2 below shows the habitats on-site and their acreage.

The site also contains an existing development within the northeast corner. The northeast corner contains a residential building and associated infrastructure.

Table 2 – Vegetation Communities and Their Proposed Impacts

Habitat Type	On-Site (Within Cell) (Acres)	Off-Site (Within Cell) (Acres)	On-Site (Outside Cell) (Acres)	Off-Site (Outside Cell) (Acres)
Developed/Disturbed	0.40	0.03	0.08	0.02
Brassica nigra – Centaurea (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance (Upland Mustards or star-thistle fields)	9.16	0.0.30	0.00	0.00
TOTAL	9.56	0.33	0.08	0.02

3.2.2 WILDLIFE

Species observed or otherwise detected on or in the vicinity of the project site during the surveys included; yellow-rumped warbler (*Setophaga coronata*), house finch (*Haemorhous mexicanus*), and European starling (*Sturnus vulgaris*). A complete list of all wildlife observed is included in Table 1 of Appendix D.

3.2.3 SPECIAL STATUS SPECIES

No State and/or federally listed threatened or endangered species or other sensitive species were observed on-site during surveys.

Burrowing Owl – SSC

Although the site showed evidence of past disturbance, the conditions present onsite are suitable for BUOW. The assessment survey was structured, in part, to detect BUOW, which has been observed in the near vicinity of the Project site (within 5 miles). The survey consisted of walking transects spaced to provide 100% visual coverage of the Project site and a 500-foot buffer (Figure 6 in Appendix A). The result of the focused survey was that no evidence of BUOW was found in the survey area. No BUOW pellets, feathers, or whitewash were found. No burrowing owl individuals were observed.

Although no BUOW individuals were observed on the survey date, the Project site and adjacent area does contain some habitat that would be considered suitable for BUOW. The site does contain suitable soils for this species and California ground squirrel (*Otospermophilus beecheyi*) was present on-site. California ground squirrel is a burrow surrogate species for BUOW. Therefore, focused surveys using the MSHCP BUOW Protocol were completed. Section 3.3.4 contains the results of the protocol surveys.

3.2.4 NESTING BIRDS

Portions of the Project site and the immediate surrounding area provide suitable habitats for nesting birds. There are mature trees and shrubs within and adjacent to the site that provide bird nesting habitat. As such the Project site is subject to the following nesting bird regulations. Recommendations for avoidance and minimization are in Section 4.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (as amended). This Act implements four international conservation treaties that the U.S. entered into with Canada in 1916, Mexico in 1936, Japan in 1972, and Russia in 1976. It is intended to ensure the sustainability of populations of all protected migratory bird species. The Act has been amended with the signing of each treaty, as well as when any of the treaties were amended, such as with Mexico in 1976 and Canada in 1995. The Act prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service.

California Fish and Game Code

The Project site is also subject to Sections 3503 and 3503.5 of the Fish and Game Code. Section 3503 states, "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto". Section 3503.5 states, "It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto".

3.2.5 JURISDICTIONAL WATERS

Waters of the United States and Waters of the State

The USACE has the authority to permit the discharge of dredged or fill material in the Waters of the U.S. under Section 404 CWA. The Regional Water Quality Board has authority over the permitted discharge of dredged or fill material in the Waters of the State under Section 401 CWA as well as the Porter-Cologne Water Quality Control Act. The Project area was surveyed with 100 percent visual coverage and no drainage features were present on site. As such, the subject parcel does not contain any wetlands, Waters of the U.S., or Waters of the State.

Fish and Game Code Section 1602 - State Lake and/or Streambed

The CDFW asserts jurisdiction over any drainage feature that contains a definable bed and bank or associated riparian vegetation. The Project area was surveyed with 100 percent visual coverage and no definable bed or bank features exist on the project site. There is an outlet structure that deposits water onto the site from the surrounding parcels, however, it appears that the amount of water that is discharged does not stay within a defined location or channel. It is either absorbed into the soil or lost to sheet flow within the parcel. As such, the subject parcel does not contain any areas under CDFW jurisdiction.

3.2.6 WETLANDS

NWI maps did not identify portions within the Project site as a Riverine/Riparian system. The site does not contain hydric vegetation, hydric soils, or wetland hydrology. In order to be classified as a wetland all three criteria must be present within the project site. As such, there are no wetlands currently present on site.

3.3 MSHCP CONSISTENCY ANALYSIS

The Project is located within The Mead Valley Area Plan of the MSHCP. The target conservation acreage range for The Mead Valley Area Plan is 4,980 – 6,730 acres; it is composed of approximately 3,095 acres of existing Public/Quasi-Public Lands and 1,885 – 3,635 acres of Additional Reserve Lands.

The MSHCP Conservation Area comprises a variety of existing and proposed Cores, Linkages, Constrained Linkages, and Noncontiguous Habitat Blocks (referred to herein generally as "Cores and Linkages"). The Cores and Linkages within the Mead Valley Area Plan include:

- Contains a portion of Proposed Constrained Linkage 19
- Contains a portion of Proposed Core 1
- Contains a portion of Proposed Extension of Existing Core 4
- Contains a small portion of Proposed Linkage 3
- Contains a portion of Proposed Linkage 7
- Contains a portion of Proposed Noncontiguous Habitat Block 4

3.3.1 PUBLIC QUASI-PUBLIC LANDS (PQP) AND COVERED ROADS

Pursuant to Sections 3.2.1 PQP Lands are a Subset of MSHCP Conservation Area lands totaling approximately 347,000 acres of lands known to be in public/private ownership and expected to be managed for open space value and/or in a manner that contributes to the Conservation of Covered Species (including lands contained in existing reserves), as generally depicted in Figure 3-1 of the MSHCP, Volume I. Section 7.2.1 Existing Roads within Existing PQP Lands are existing roadways within existing Public/Quasi-Public Lands, including interstates, freeways, State highways, city and county maintained roadways, as well as local roads, which are not city, or county maintained that provide property access. This latter category of other maintained roadways is generally maintained by the adjacent property owners, either individually or collectively. Table 7-1, of the MSHCP, provides an estimate summarizing the extent of these various types of existing roadways which are permitted to remain within Public/Quasi-Public Lands.

Although the Project site is located adjacent to PQP Lands, the proposed Project does not impact PQP Lands. The majority of PQP Lands in this area are within Lake Elsinore.

➢ *No further discussion on this subject is made in this analysis*

3.3.2 SUBUNIT AREA/CELL CRITERIA

Pursuant to Section 3.3.12, Subunits are areas within an area plan that contain target conservation acreages along with a description of the planning species, biological issues, and considerations. The Project site is within Subunit 1: Motte/Rimrock of the Mead Valley Area Plan and is also located within Criteria Cell 2529 which will contribute to the proposed noncontiguous Habitat Block 4. As stated in the MSHCP the conservation goals for Criterial Cell 2529 are:

> *Criteria Cell 2529*: Conservation within this Cell will contribute to assembly of Proposed Noncontiguous Habitat Block 4. Conservation within this Cell will focus on assembly of coastal

sage scrub habitat. Areas conserved within this Cell will be connected to coastal sage scrub habitat proposed for conservation in Cell Group B to the west. Conservation within this Cell will range from 5%-15% of the Cell focusing in the western portion of the Cell.

Table 3 below contains an analysis of the land conservation goals for Cell 2529 with Figure 7 in Appendix A showing the current land uses within the Criteria Cell and the surrounding Cells.

Table 3 – Criteria Cell 2529 Land Conservation Analysis

Criteria Cell 2529		
Feature	**Acres**	**Comments**
Total Area of Cell 2529	**161.55**	**Described for 5-15 percent conservation, focusing on the western portion.**
Proposed Project Impact	9.89	The on-site improvements and a portion of the offsite improvements are within Cell 2529
Existing Development	35.66	Developed Area within the Cell
Future Covered Roads	0	No covered roads within the Cell
Public/Quasi Public Lands	0	None
Easement/Rights-of-Way	0	None
Exempt Lands	0	None
Undeveloped Lands that would not Contribute	0	None
Subtotal – Development within Cell 2529	45.24	
ARL Conserved Lands (Existing and Pending)		
RCA Owned/Managed Lands	0	None
Other Existing Conserved Lands (MOU with RCA)	0	None
Subtotal – ARL Conserved Lands	0	None
Undeveloped Lands Potentially Available for Conservation within Cell 2529		
Undeveloped Lands	125.89	Total area of Cell 2529 (161.55 acres) Total area of development (35.66 acres) Total ARL Conserved Lands (0 acres)
Conclusion		
[illegible] **16.155 acres** [illegible]		

As detailed above the proposed Project is consistent with the MSHCP because there are sufficient lands within Criteria Cell 2529 to meet the conservation goals. Additionally, the main conservation goals of Criteria Cell 2529 are to conserve coastal sage scrub habitat, mostly within the western edge of the Cell. The proposed Project is located in the center portion of the Cell and does not contain coastal sage scrub habitat. Therefore, this Project is consistent with Section 3.3.12 of the MSHCP

- *No further discussion on this subject is made in this analysis*

3.3.3 NARROW ENDEMIC PLANT SPECIES

Pursuant to Section 6.1.3 of the MSHCP, focused surveys for narrow endemic plant species are required for properties within the mapped areas if the appropriate habitat is present. The survey area maps have been reviewed and assessed, and the proposed project is not located within a Narrow Endemic Plant Species Survey Area based on Figure 6-1 of the MSHCP.

- *No further discussion on this subject is made in this analysis*

3.3.4 ADDITIONAL SURVEY NEEDS AND PROCEDURES

Based on Figures 6-2 (Criteria Area Species Survey Areas), 6-3 (Amphibian Species Survey Areas), 6-4 (BUOW Survey Areas), and 6-5 (Mammal Species Survey Areas) of the MSHCP and the MSHCP Mapping Program, the site is located in an area where additional surveys are needed for BUOW in conjunction with MSHCP implementation in order to achieve coverage for these species.

BUOW: Pursuant to MSHCP Section 6.3.2, surveys shall be conducted within suitable habitat for BUOW, according to accepted protocols.

- Survey Results: Based on the 2023/2024 field surveys which are detailed in the BUOW Protocol Survey Report, the site does contain suitable habitat for this species, although the property is continually maintained. No burrowing owls were observed during the site visit. No portion of the project site showed any evidence of past or present BUOW activity. No feathers, whitewash, or castings were found. The site does contain suitable burrow surrogate species California ground squirrel (Otospermophilus beecheyi) are present on-site. Non-Breeding and breeding season surveys were conducted as per the MSHCP Survey Protocol for this species.

- BUOW is considered absent from the Project site. However, because the site does contain suitable habitat for this species, Pre-Construction surveys are required. Section 4 below contains the survey recommendations for this species.

3.3.5 RIPARIAN/RIVERINE AREAS AND VERNAL POOLS

The MSHCP describes the protection of Riparian/Riverine Areas and Vernal Pools within the MSHCP Plan Area as important to the conservation of certain amphibian, avian, fish, invertebrate and plant species. The MSHCP describes guidelines to ensure that the biological functions and values for species inside the MSHCP Conservation Area are maintained, as outlined in Volume 1, Section 6.1.2.

Riparian/ Riverine

Pursuant to Section 6.1.2 of the MSHCP, Riparian/Riverine areas are lands which contain habitat dominated by trees, shrubs, persistent emergent vegetation, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from nearby freshwater sources, or areas with freshwater flow during all or a portion of the year. Riverine habitat includes all wetlands and deepwater

habitats contained in natural or artificial channels periodically or continuously containing flowing water or which forms a connecting link between the two bodies of standing water. Riverine habitat is bounded on the landward side by upland, by the channel bank (including natural and man-made levees), or by wetlands dominated by trees, shrubs, persistent emergents, mosses, or lichens. In braided streams, the system is bounded by the banks forming the outer limits of the depression within which the braiding occurs. Springs discharging into a channel are considered part of the riverine habitat. The term riparian is used to define the type of wildlife habitat found along the banks of a river, stream, lake, or other body of water. Riparian habitats are ecologically diverse and can be found in many types of environments including grasslands, wetlands, and forests.

The Project site does not contain any areas that meet the definition of Riparian/Riverine. Although the Project site does contain two *Tamarix spp.* trees near the corner of the intersection Tobacco Road and Placentia Ave., these two individuals do not offer sufficient canopy size and understory density for any riparian bird species. Additionally, the entire Project site does not contain hydric soils or the necessary hydrology to create a riparian/riverine system. None of the soils on-site are listed as hydric and there was no evidence of ponding. The texture of the soils on site are sandy in nature and do not retain water. Additionally, the Project site lacks the necessary hydrology as there are no drainages or streams that traverse the area. Any rainfall that occurs within the site will be absorbed into the ground and funneled to Lake Elsinore.

- *No further discussion on this subject is made in this analysis*

Vernal Pools

Pursuant to Section 6.1.2 of the MSHCP, Vernal Pools are seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. The determination that an area exhibits vernal pool characteristics should consider (1) the length of time the area exhibits upland and wetland characteristics, and (2) the manner in which the area fits into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soils, and drainage characteristics, uses to which it has been subjected, and weather and hydrologic records.

The Project site does not contain the appropriate soils, vegetation, or hydrology to allow for vernal pools. There was no evidence such as mud cracks, fine-soil deposition, water-stain rings or other characteristics of water ponding for a sufficient period of time to allow for the development of vernal pools.

- *No further discussion on this subject is made in this analysis*

Fairy Shrimp

The MSHCP contains coverage for three species of fairy shrimp (Riverside, vernal pool, and Santa Rosa fairy shrimps). As mentioned in the Vernal Pool discussion, the site does not contain suitable pool habitats. Additionally, the primary constituent elements for fairy shrimps are:

> Small to large pools with moderate to deep depths that hold water for sufficient lengths of time necessary for fairy shrimp incubation and reproduction, but not necessarily every year; the associated watershed(s) and other hydrologic features that support pool basins and their related pool complexes; flat or gently sloping topography; and any soil type with a clay component and/or an impermeable surface or subsurface layer known to support vernal pool habitat. All proposed critical habitat areas contain one or more of the primary constituent elements for the Riverside fairy shrimp.

As described above the soils on-site are sandy loam in nature and no areas with sufficient ponding for fairy shrimp incubation were observed during the site visit. Additionally, the Project site does not contain the necessary hydrology to support vernal pools. As such, they are considered absent from the Project site.

- ☐ *No further discussion on this subject is made in this analysis*

Riparian Birds

The MSCHP includes coverage for many riparian birds, including least Bell's vireo, southwestern willow flycatcher, and yellow-billed cuckoo. As mentioned above in the Riparian/Riverine section, the site does not contain any riparian or riverine habitats which are a required constituent element for the riparian bird species. As such, these species are considered absent from the Project site.

- ☐ *No further discussion on this subject is made in this analysis*

3.3.6 INFORMATION ON OTHER SPECIES

Delhi sands flower-loving fly

The Delhi Sands flower-loving fly is found at low numbers and is narrowly distributed within the Plan Area. This species is restricted by the distribution and availability of open Habitats within the fine, sandy Delhi series soils. USFWS has identified three main population areas are known to currently or to have at one time existed in the Plan Area. One is located in the northwestern corner of the Plan Area, a second is located in the Jurupa Hills, and the third is located in the Agua Mansa Industrial Center area. Because the Delhi Sands flower-loving fly requires a specific Habitat type, this species will require site-specific considerations, protection and enhancement of this limited Habitat type, and species-specific management to maintain the Habitat and populations.

The Project site does not contain the appropriate soils for this species and is not within or near known areas for this species.

- ☐ *No further discussion on this subject is made in this analysis*

Species Not Adequately Conserved

As described in Section 2.1.4, of the 146 Covered Species addressed in the MSHCP, 118 species are considered to be adequately conserved. The remaining 28 Covered Species will be considered to be adequately conserved when certain conservation requirements are met as identified in the species-specific conservation objectives for those species. For 16 of the 28 species, particular species-specific

conservation objectives, which are identified in Table 9-3 in Volume 1 of the MSHCP must be satisfied to shift those particular species to the list of Covered Species Adequately Conserved. For the remaining 12 species, a Memorandum of Understanding must be executed with the Forest Service that addresses management for these species on Forest Service Land in order to shift these species to the list of Covered Species Adequately Conserved.

The Project site does not contain the appropriate habitats for any of these species. There is no occurrence potential for any of these species to occur within the Project site.

- ☐ *No further discussion on this subject is made in this analysis*

3.3.7 URBAN/ WILDLANDS INTERFACE

Section 6.1.4 of the MSHCP presents guidelines to minimize the indirect effects of projects in proximity to the MSCHP Conservation areas. This section provides mitigation measures for impacts associated with Drainage, Toxics, Lighting, Noise, Invasives, Barriers, and Grading/Land Development.

The site is in the vicinity of the western portion of the Criteria Cell, which is the area with the primary goal of conservation. As such the following discussion for Urban/Wildlands interface is provided.

Drainage

The Project's stormwater should be directed to a stormwater basin on the project site. The basin shall be designed in accordance with all federal, state, regional, and local standards and regulations concerning water quality. These measures will assure that the project stormwater discharges are no greater in volume and velocity than current undeveloped conditions and that the water leaving the site complies with all applicable water quality standards.

Toxics

According to the MSHCP, measures shall be incorporated to ensure that application of chemicals do not result in discharge to the MSHCP Conservation Area. During the construction of the project, construction activities have the potential to cause release of toxics that could impact the MSHCP Conservation Area. To address these potential short-term impacts, the project is required to stage construction operations as far away from Lake Elsinore to the maximum extent feasible. These mitigation measures will be imposed by the County of Riverside.

Lighting

The proposed Project is not anticipated to significantly increase lighting and glare. All light sources will be designed with internal baffles to direct the lighting towards the ground and the developed areas and have a zero-side angle cut off to the horizon. All lighting will be consistent with County of Riverside's Light Pollution Ordinance and the MSHCP.

Noise

The proposed Project is not anticipated to have a significant increase in noise. All noise levels will be in compliance with County of Riverside's Standards.

- *No further discussion on this subject is made in this analysis*

Invasives

The proposed Project will have minimal landscaping around the site and will not plant invasive species in accordance with Section 6.1.4 of the MSHCP and Riverside County Ordinance No. 859.

- *No further discussion on this subject is made in this analysis*

Barriers

The proposed Project will be walled off and include landscaping around the Project site. However, Tobacco Road is between the Project site and the desired conservation area. As such, the proposed Project can do nothing to further secure the desired area as there is a public roadway between the two and the Project applicant does not own the parcels on the opposite side of the road.

- *No further discussion on this subject is made in this analysis*

Grading/Land Development

The proposed Project will be walled off and include landscaping around the Project site. However, Tobacco Road is between the Project site and the desired conservation area. As such, the proposed Project does not propose any grading or land development directly adjacent to the desired conservation area.

- *No further discussion on this subject is made in this analysis*

3.3.7 BEST MANAGEMENT PRACTICES (VOLUME I, APPENDIX C)

Appendix C of the MSHCP details Best Management Practices (BMPs) that should be implemented. County and Cities have the following obligations under the MSHCP and the Implementing Agreement. As such,the following BMPs are required for this project which will be implemented prior to construction:

1. A condition shall be placed on grading permits requiring a qualified biologist to conduct a training session for project personnel prior to grading. The training shall include a description of the species of concern and its habitats, the general provisions of the Endangered Species Act (Act) and the MSHCP, the need to adhere to the provisions of the Act and the MSHCP, the penalties associated with violating the provisions of the Act, the general measures that are being implemented to conserve the species of concern as they relate to the project, and the access routes to and project site boundaries within which the project activities must be accomplished.
2. Water pollution and erosion control plans shall be developed and implemented in accordance with RWQCB requirements.
3. The footprint of disturbance shall be minimized to the maximum extent feasible. Access to sites shall be via pre-existing access routes to the greatest extent possible.
4. The upstream and downstream limits of projects disturbance plus lateral limits of disturbance on either side of the stream shall be clearly defined and marked in the field and reviewed by the biologist prior to initiation of work.

5. Projects should be designed to avoid the placement of equipment and personnel within the stream channel or on sand and gravel bars, banks, and adjacent upland habitats used by target species of concern.
6. Projects that cannot be conducted without placing equipment or personnel in sensitive habitats should be timed to avoid the breeding season of riparian identified in MSHCP Global Species Objective No. 7.
7. When stream flows must be diverted, the diversions shall be conducted using sandbags or other methods requiring minimal instream impacts. Silt fencing of other sediment trapping materials shall be installed at the downstream end of construction activity to minimize the transport of sediments offsite. Settling ponds where sediment is collected shall be cleaned out in a manner that prevents the sediment from reentering the stream. Care shall be exercised when removing silt fences, as feasible, to prevent debris or sediment from returning to the stream.
8. Equipment storage, fueling, and staging areas shall be located on upland sites with minimal risks of direct drainage into riparian areas or other sensitive habitats. These designated areas shall be located in such a manner as to prevent any runoff from entering sensitive habitat. Necessary precautions shall be taken to prevent the release of cement or other toxic substances into surface waters. Project related spills of hazardous materials shall be reported to appropriate entities including but not limited to applicable jurisdictional city, FWS, and CDFG, RWQCB and shall be cleaned up immediately and contaminated soils removed to approved disposal areas.
9. Erodible fill material shall not be deposited into water courses. Brush, loose soils, or other similar debris material shall not be stockpiled within the stream channel or on its banks.
10. The qualified project biologist shall monitor construction activities for the duration of the project to ensure that practicable measures are being employed to avoid incidental disturbance of habitat and species of concern outside the project footprint.
11. The removal of native vegetation shall be avoided and minimized to the maximum extent practicable. Temporary impacts shall be returned to pre-existing contours and revegetated with appropriate native species.
12. Exotic species that prey upon or displace target species of concern should be permanently removed from the site to the extent feasible.
13. To avoid attracting predators of the species of concern, the project site shall be kept as clean of debris as possible. All food-related trash items shall be enclosed in sealed containers and regularly removed from the site(s).
14. Construction employees shall strictly limit their activities, vehicles, equipment, and construction materials to the proposed project footprint and designated staging areas and routes of travel. The construction area(s) shall be the minimal area necessary to complete the project and shall be specified in the construction plans. Construction limits will be fenced with an orange snow screen. Exclusion fencing should be maintained until the completion of all construction activities. Employees shall be instructed that their activities are restricted to the construction areas.
15. The Permittee shall have the right to access and inspect any sites of approved projects including any restoration/enhancement area for compliance with project approval conditions including these BMPs.

Additionally, in accordance with the MSHCP the Counties and Cities have agreed to following long-term obligations.

A. Adopt and maintain ordinances or resolutions as necessary, and amend their General Plans as appropriate, to implement the requirements and to fulfill the purposes of the Permits, the MSHCP and the IA for private and public Development projects. Such requirements include: ***(1)*** *the collection of Local Development Mitigation Fees and other relevant fees as set forth in Section 8.5 of this document;* ***(2)*** *compliance with the HANS process or equivalent process to ensure application of the Criteria and thus, satisfaction of the local acquisition obligation;* ***(3)*** *compliance with the policies for the Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, set forth in Section 6.1.2 of this document;* ***(4)*** *compliance with the policies for the Protection of Narrow Endemic Plant Species set forth in Section 6.1.3 of this document;* ***(5)*** *compliance with survey requirements as set forth in Section 6.3.2 of this document;* ***(6)*** *require Urban/Wildlands Interface Guidelines compliance as set forth in Section 6.1.4 of this document; and* ***(7)*** *compliance with the Best Management Practices and the siting and design criteria as set forth in Section 7.0 and Appendix C of this document. The County and the Cities shall transmit to the RCA and the Wildlife Agencies relevant documents showing adoption and/or execution of the Implementation Mechanisms and any subsequent amendments thereto.*

B. Transmit any collected Local Development Mitigation Fees, other appropriate fees and associated interest as described in Section 8.5 of this document to the RCA at least quarterly.

C. Contribute to Plan implementation and Reserve Assembly as determined appropriate by the affected Permittee for County and City public projects, including but not limited to any one or any combination of the following: 1) acquisition of replacement Habitat at a 1:1 ratio that is Biologically Equivalent or Superior to the property being disturbed; or 2) payment of the Local Development Mitigation Fees as established for commercial and industrial Development. Such contribution shall occur prior to impacts to Covered Species and their Habitats.

D. Participate as a member agency in the RCA as set forth in Section 6.6.2 of this document.

E. Notify the RCA, through the Joint Project/Acquisition Review Process set forth in Section 6.6.2 of this document, of proposed Discretionary Projects within the Criteria Area and participate in any further requirements imposed by that section.

F. Take all necessary and appropriate actions, following applicable land use permit enforcement procedures and practices, to enforce the terms of project approvals for public and private projects, including compliance with the MSHCP, the Permits and the IA.

G. Carry out all other applicable requirements of the MSHCP, the IA and the Permits. Notwithstanding the foregoing, nothing within the MSHCP or the IA shall be construed to require any local government to provide funding, or any other form of compensation, beyond the fees collection, dedicated lands required pursuant to the IA and the MSHCP or other mitigation agreed to by the appropriate Parties, consistent with the terms and conditions of the MSHCP.

H. Manage MSHCP Conservation Area property or conservation easements owned or leased by the County or respective City pursuant to Sections 5.0 and 8.0 of this document.

I. Participate as a member of the RMOC as set forth in Section 6.6.4 of this document.

As such, the Project will be required to implement these standard procedures.

SECTION 4.0 – CONCLUSIONS,RECOMMENDATIONS, AND MITIGATION MEASURES

Based on the literature review and personal observations made in the project site and immediate vicinity, no State and/or federally listed threatened or endangered species are documented/or expected to occur within the Project site. Additionally, no plant species with the California Rare Plant Rank (CRPR) of 1 or 2 were observed on-site or documented/expected to occur on-site. No other sensitive species were observed within the project area or buffer area.

Jurisdictional Delineation

There are no streams, channels, washes, or swales that meet the definitions of Section 1600 of the State of California Fish and Game Code (FGC) under the jurisdiction of the CDFW, Section 401 ("Waters of the State") of the Clean Water Act (CWA) under the jurisdiction of the Regional Water Quality Control Board (RWQCB), or "Waters of the United States" (WoUS) as defined by Section 404 of the CWA under the jurisdiction of the U.S. Army Corps of Engineers (Corps) within the subject parcel. Therefore, no permit from any regulatory agency will be required.

MSHCP Consistency

The site is mapped within a criteria cell. However, the Project is consistent with the MSHCP policies found in Section 6 which include Riparian/Riverine Areas/Vernal Pools; Narrow Endemic Plant Species; Urban/Wildlands Interface; and Surveys for Special Status Species. As described above the Project will not conflict with the conservation goals of the criteria cell or the MSHCP. Therefore, the Project is consistent with MSCHP policies and conditions.

Burrowing Owl

Since there is some habitat within the Project site and adjacent area that is suitable for BUOW in general, the following mitigation measure should be implemented:

> A Pre-Construction Burrowing Owl Survey shall be conducted by a qualified biologist no more than 30-days prior to any ground disturbance activities. Surveys shall be completed following the recommendationsand guidelines provided within the Burrowing Owl Survey Instructions for the Western Riverside MSHCP (RCA, 2006). Surveys should be conducted during weather that is conducive to observing owls outside their burrows and detecting burrowing owl sign. Surveys will not be accepted if they are conducted during rain, high winds (> 20 mph), dense fog, or temperatures over 90 °F. Surveys should be conducted in the morning one hour before sunrise to two hours after sunrise or in the early evening two hours before sunset to one hour after sunset. Count and map all burrowing owl sightings, occupied burrows, and burrows with owl sign. Record the location of all owls including numbers of pairs and juveniles and any behavior such as courtship and mating. Map the extent of all suitable habitat. It should be noted that owl sign may not be detectable if surveys are conducted within 5 days following rain. If burrowing owls have colonized the project site prior to the initiation of ground-disturbing activities, the project

proponent will need to immediately inform the RCA and the Wildlife Agencies, and will need to coordinate further with RCA and the Wildlife Agencies, including the possibility of preparing a Burrowing Owl Protection and Relocation Plan, prior to initiating ground disturbance.

Nesting Birds

Since there is some habitat within and adjacent to the Project site that is suitable for nesting birds in general, the following mitigation measure should be implemented.

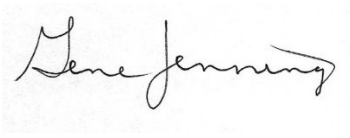
> Nesting bird nesting season generally extends from February 1 through September 15 in southern California and specifically, March 15 through August 31 for migratory passerine birds. To avoid impacts to nesting birds (common and special status) during the nesting season, a qualified Avian Biologist will conduct pre-construction Nesting Bird Surveys (NBS) prior to Project-related disturbance to nestable vegetation to identify any active nests. If no active nests are found, no further action will be required. If an active nest is found, the biologist will set appropriate no-work buffers around the nest which will be based upon the nesting species, its sensitivity to disturbance, nesting stage, and expected types, intensity, and duration of the disturbance. The nests and buffer zones shall be field-checked weekly by a qualified biological monitor. The approved no-work buffer zone shall be clearly marked in the field, within which no disturbance activity shall commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive.

Certification

I hereby certify that the statements furnished herein, and in the attached exhibits present data and information required for this analysis to the best of my ability, and the facts, statements, and information presented are true and correct to the best of my knowledge and belief. This report was prepared in accordance with professional requirements and standards. Fieldwork conducted for this assessment was performed by me. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project proponent and that I have no financial interest in the project.

Please do not hesitate to contact me at 909-534-4547 should you have any questions or require further information.

Sincerely,



Gene Jennings
Principal/Regulatory Specialist

Appendices:

Appendix A – Figures

Appendix B – Site Photos
Appendix C – Regulatory Framework
Appendix D – Tables

Section 5 – REFERENCES

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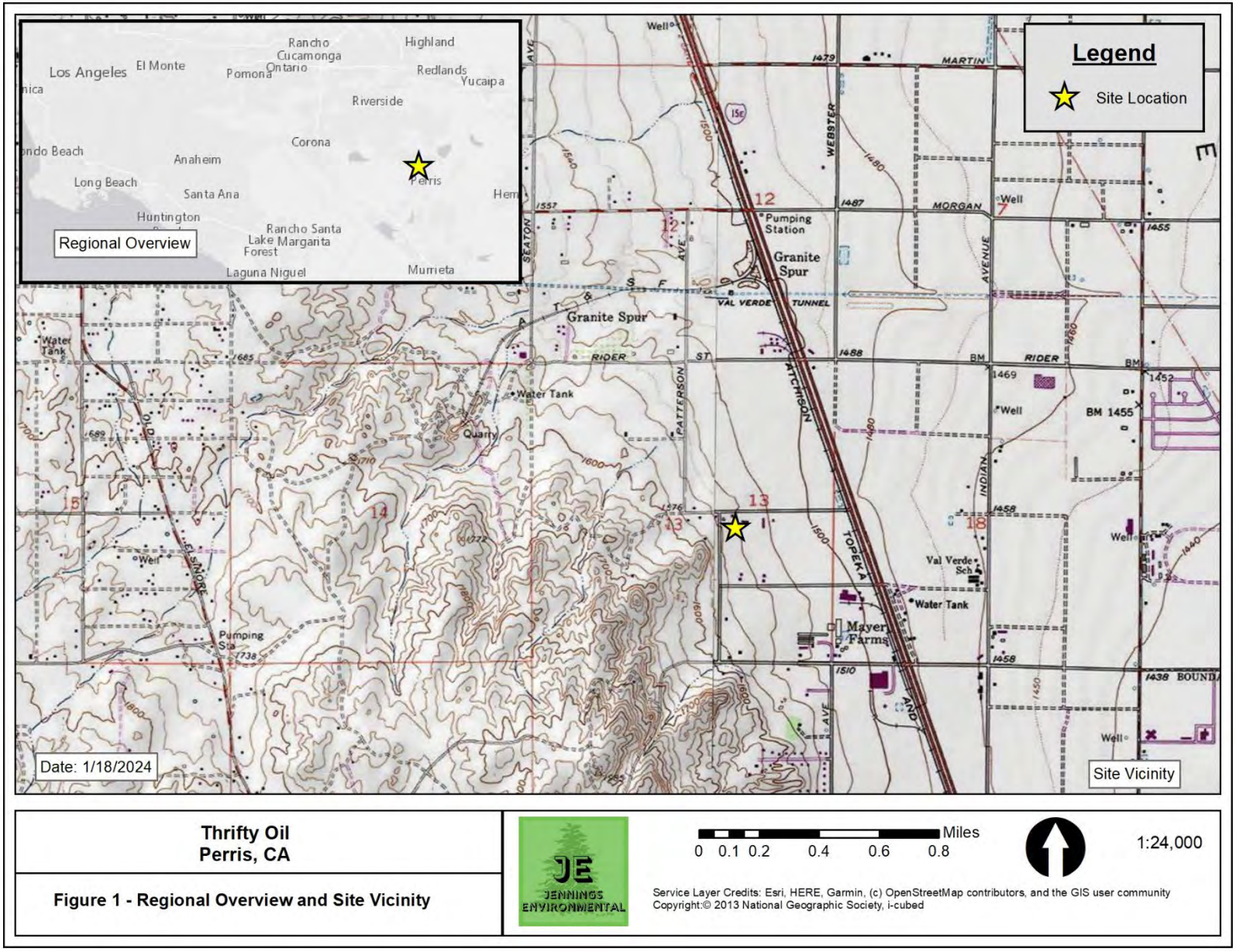
Riverside County Multiple Species Habitat Conservation Plan Burrowing Owl Survey Instructions https://www.wrc-rca.org/species/survey_protocols/burrowing_owl_survey_instructions.pdf

Appendix A - Figures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Site Location
Regional Overview
Los Angeles
El Monte
Pomona
Rancho Cucamonga
Ontario
Highland
Redlands
Yucaipa
Riverside
Corona
Anaheim
Long Beach
Santa Ana
Perris
Huntington
Rancho Santa Lake Margarita Forest
Laguna Niguel
Murrieta
Granite Spur
Pumping Station
Water Tank
Quarry
Val Verde Sch
Mayer Farms
Well
BM 1455
Date: 1/18/2024
Site Vicinity
Thrifty Oil
Perris, CA
Figure 1 - Regional Overview and Site Vicinity
JE
JENNINGS ENVIRONMENTAL
Miles
0 0.1 0.2 0.4 0.6 0.8
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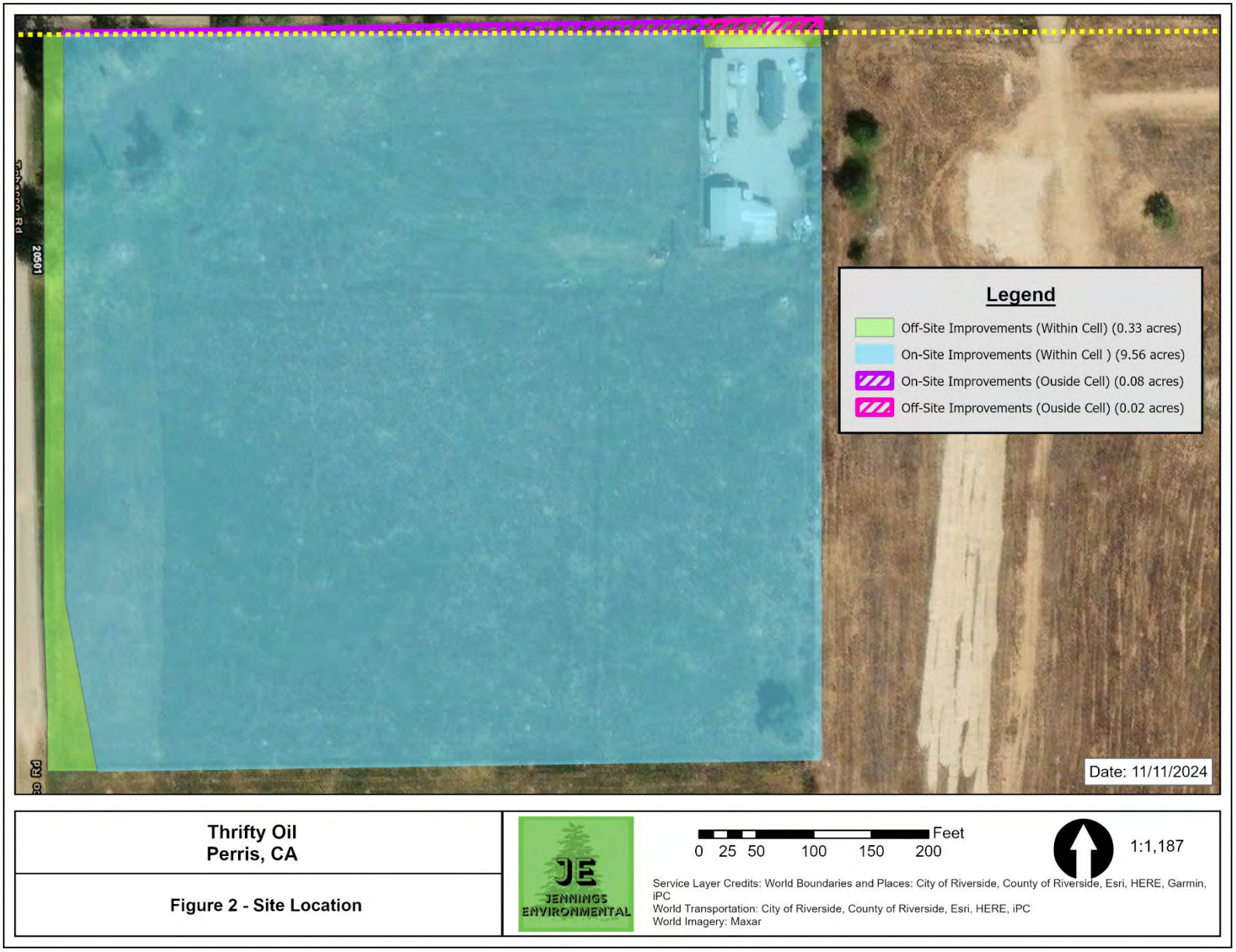
Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Copyright:© 2013 National Geographic Society, i-cubed


Legend
Off-Site Improvements (Within Cell) (0.33 acres)
On-Site Improvements (Within Cell) (9.56 acres)
On-Site Improvements (Ouside Cell) (0.08 acres)
Off-Site Improvements (Ouside Cell) (0.02 acres)
Date: 11/11/2024
Thrifty Oil
Perris, CA
Figure 2 - Site Location
JE
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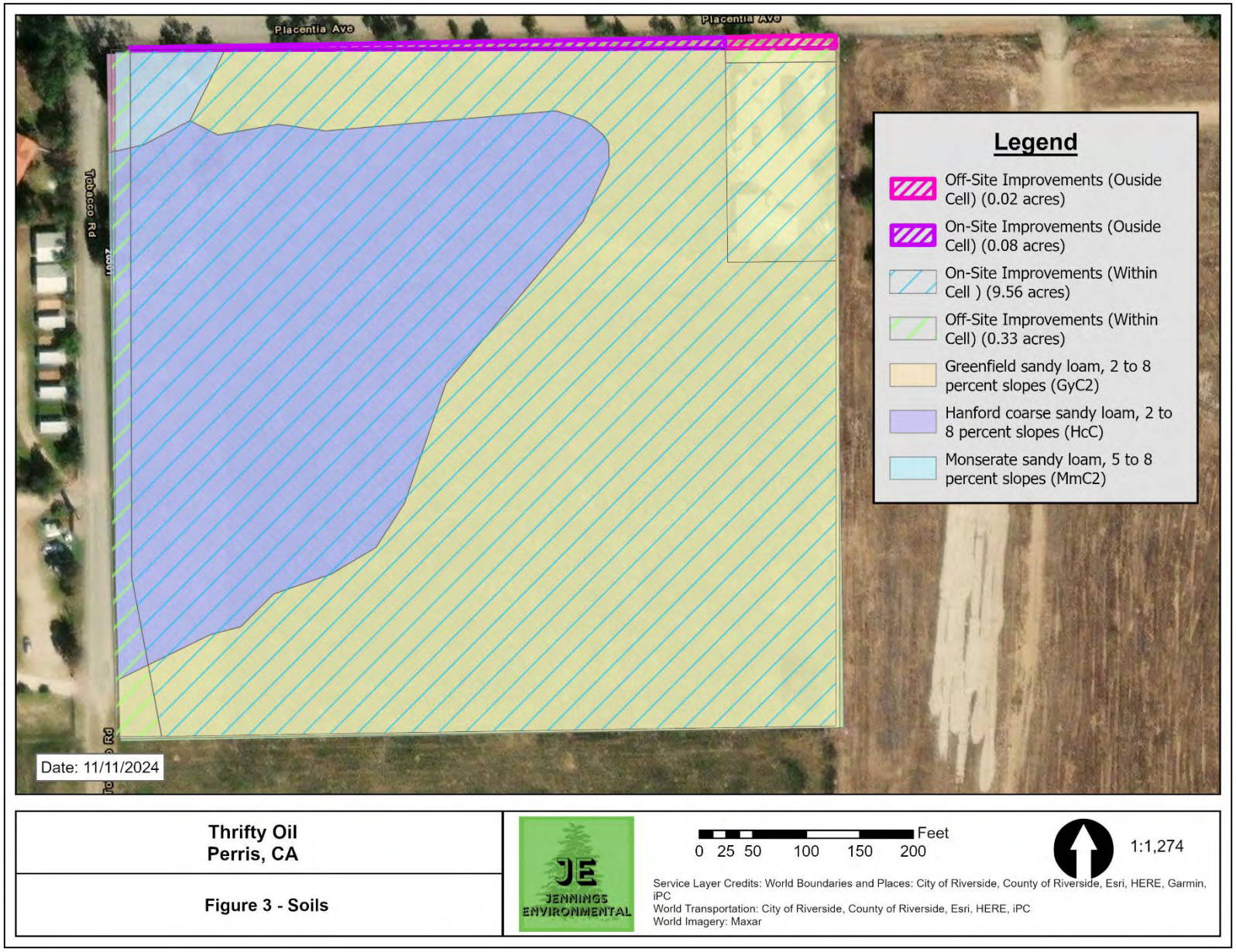
Feet
1:1,187
Service Layer Credits: World Boundaries and Places: City of Riverside, County of Riverside, Esri, HERE, Garmin, iPC
World Transportation: City of Riverside, County of Riverside, Esri, HERE, iPC
World Imagery: Maxar


Placentia Ave
Placentia Ave
Tobacco Rd
Legend
Off-Site Improvements (Ouside Cell) (0.02 acres)
On-Site Improvements (Ouside Cell) (0.08 acres)
On-Site Improvements (Within Cell) (9.56 acres)
Off-Site Improvements (Within Cell) (0.33 acres)
Greenfield sandy loam, 2 to 8 percent slopes (GyC2)
Hanford coarse sandy loam, 2 to 8 percent slopes (HcC)
Monserate sandy loam, 5 to 8 percent slopes (MmC2)
Date: 11/11/2024
Thrifty Oil
Perris, CA
Figure 3 - Soils
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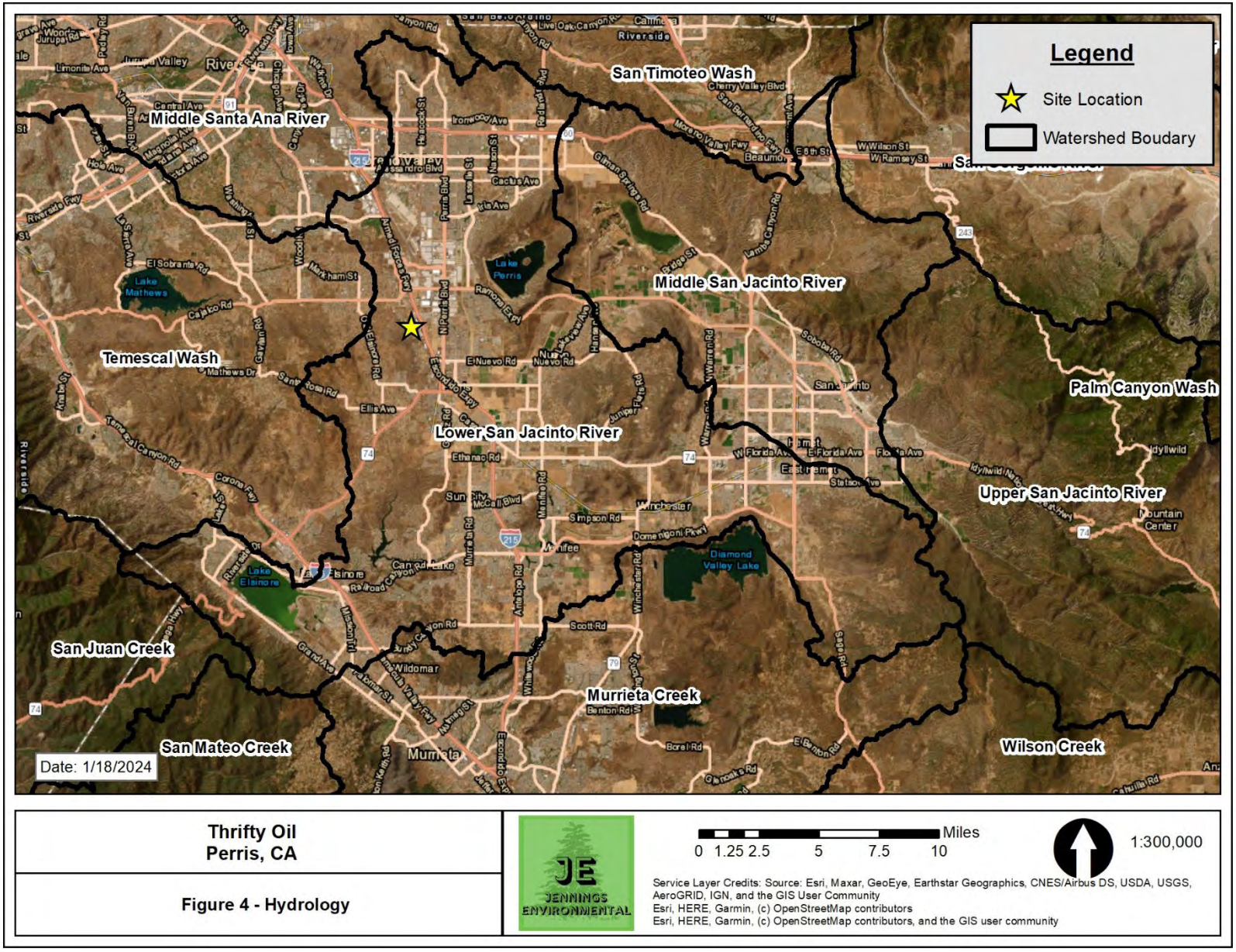
Legend
Site Location
Watershed Boudary
San Timoteo Wash
Middle Santa Ana River
Middle San Jacinto River
Temescal Wash
Lower San Jacinto River
Palm Canyon Wash
Upper San Jacinto River
San Juan Creek
Murrieta Creek
San Mateo Creek
Wilson Creek
Lake Perris
Lake Mathews
Lake Elsinore
Diamond Valley Lake
Date: 1/18/2024
Thrifty Oil
Perris, CA
Figure 4 - Hydrology
JE
JENNINGS ENVIRONMENTAL
Miles
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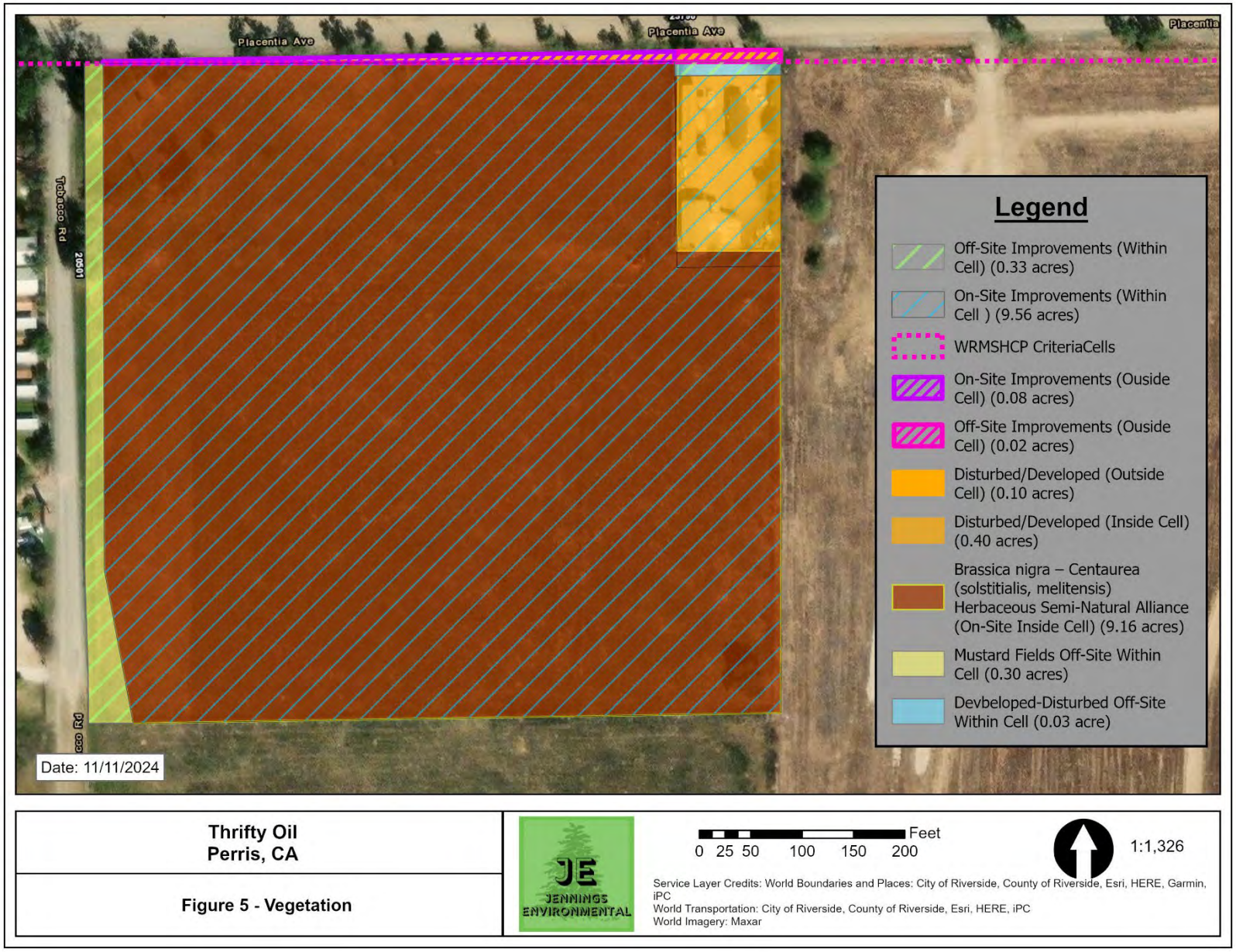
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community


Placentia Ave
Placentia Ave
Placentia
Tobacco Rd
Legend
Off-Site Improvements (Within Cell) (0.33 acres)
On-Site Improvements (Within Cell) (9.56 acres)
WRMSHCP CriteriaCells
On-Site Improvements (Ouside Cell) (0.08 acres)
Off-Site Improvements (Ouside Cell) (0.02 acres)
Disturbed/Developed (Outside Cell) (0.10 acres)
Disturbed/Developed (Inside Cell) (0.40 acres)
Brassica nigra – Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance (On-Site Inside Cell) (9.16 acres)
Mustard Fields Off-Site Within Cell (0.30 acres)
Devbeloped-Disturbed Off-Site Within Cell (0.03 acre)
Date: 11/11/2024
Thrifty Oil
Perris, CA
Figure 5 - Vegetation
JE
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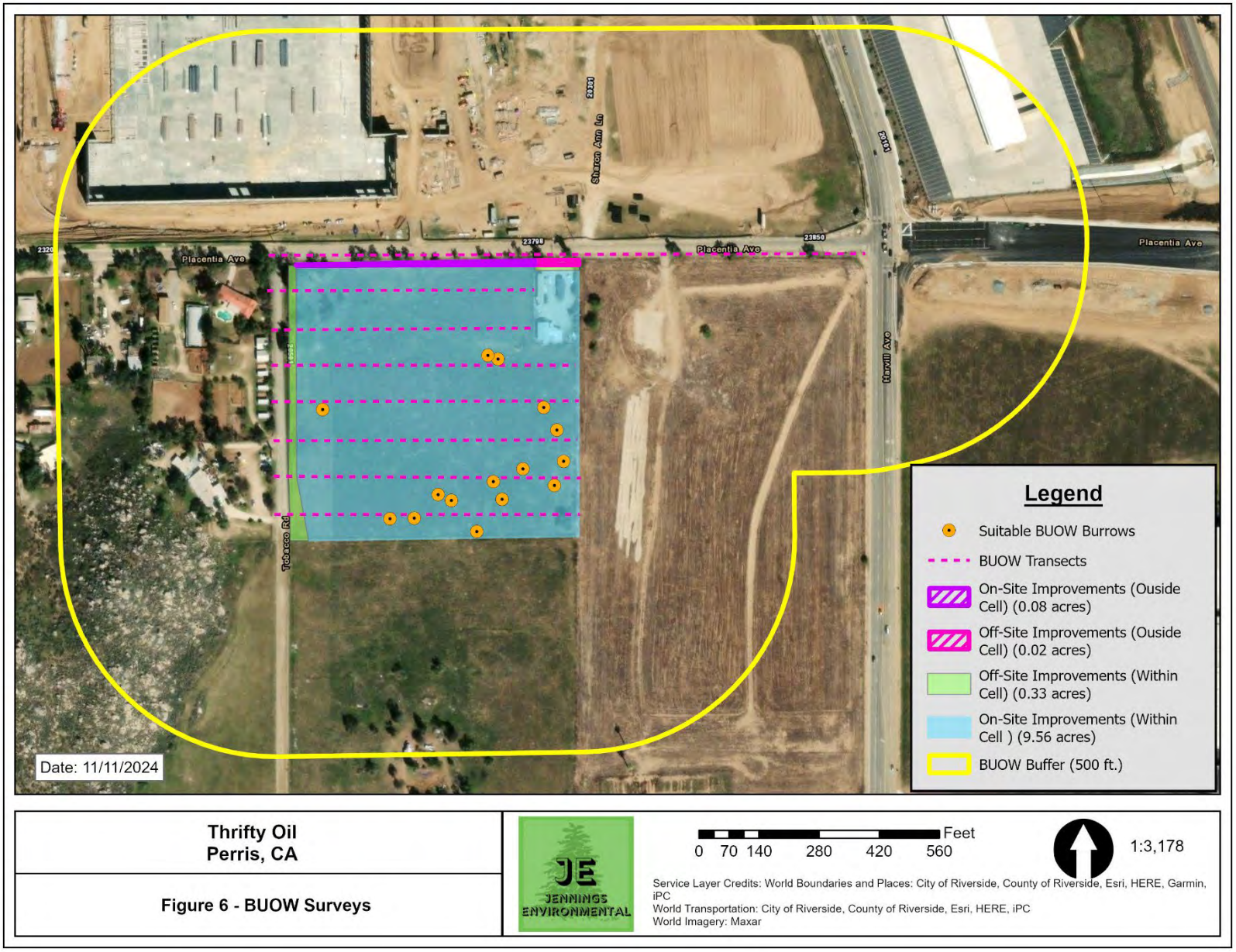
Placentia Ave
Placentia Ave
Placentia Ave
Sharon Ann Ln
Harvill Ave
Tobacco Rd
23708
23850
Date: 11/11/2024
Legend
Suitable BUOW Burrows
BUOW Transects
On-Site Improvements (Ouside Cell) (0.08 acres)
Off-Site Improvements (Ouside Cell) (0.02 acres)
Off-Site Improvements (Within Cell) (0.33 acres)
On-Site Improvements (Within Cell) (9.56 acres)
BUOW Buffer (500 ft.)
Thrifty Oil
Perris, CA
Figure 6 - BUOW Surveys
JE
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Service Layer Credits: World Boundaries and Places: City of Riverside, County of Riverside, Esri, HERE, Garmin, iPC
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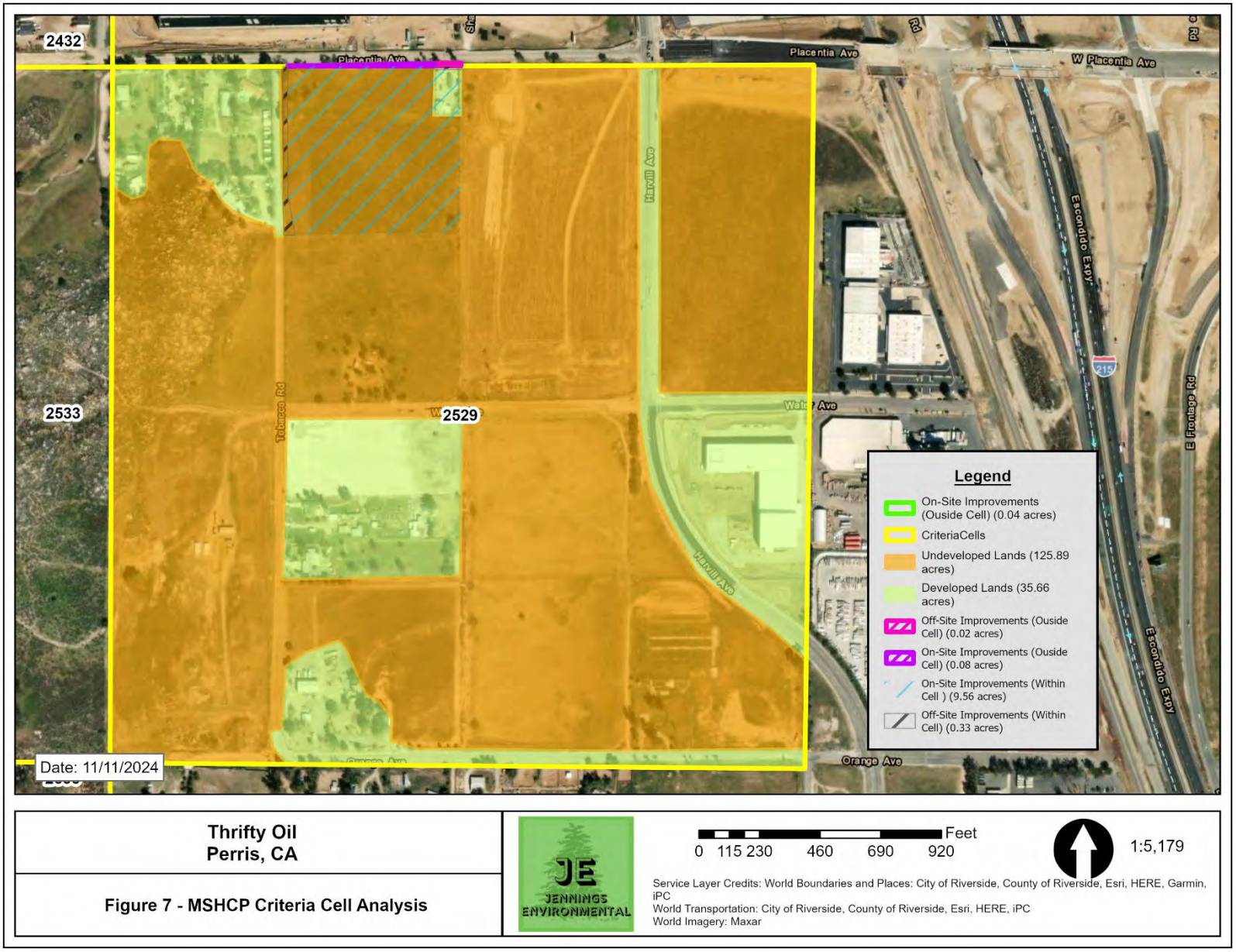
2432
2533
2529
Placentia Ave
W Placentia Ave
Harvill Ave
Tobacco Rd
Escondido Expy
215
E Frontage Rd
Orange Ave
Date: 11/11/2024
Legend
On-Site Improvements (Ouside Cell) (0.04 acres)
CriteriaCells
Undeveloped Lands (125.89 acres)
Developed Lands (35.66 acres)
Off-Site Improvements (Ouside Cell) (0.02 acres)
On-Site Improvements (Ouside Cell) (0.08 acres)
On-Site Improvements (Within Cell) (9.56 acres)
Off-Site Improvements (Within Cell) (0.33 acres)
Thrifty Oil
Perris, CA
Figure 7 - MSHCP Criteria Cell Analysis
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Appendix B - Photos

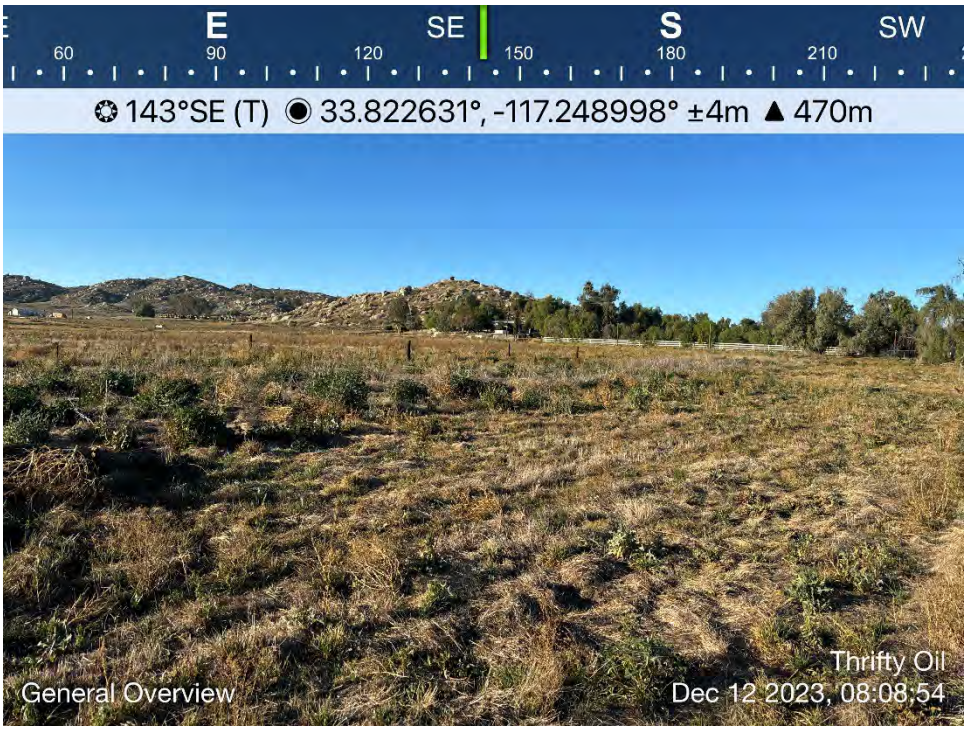
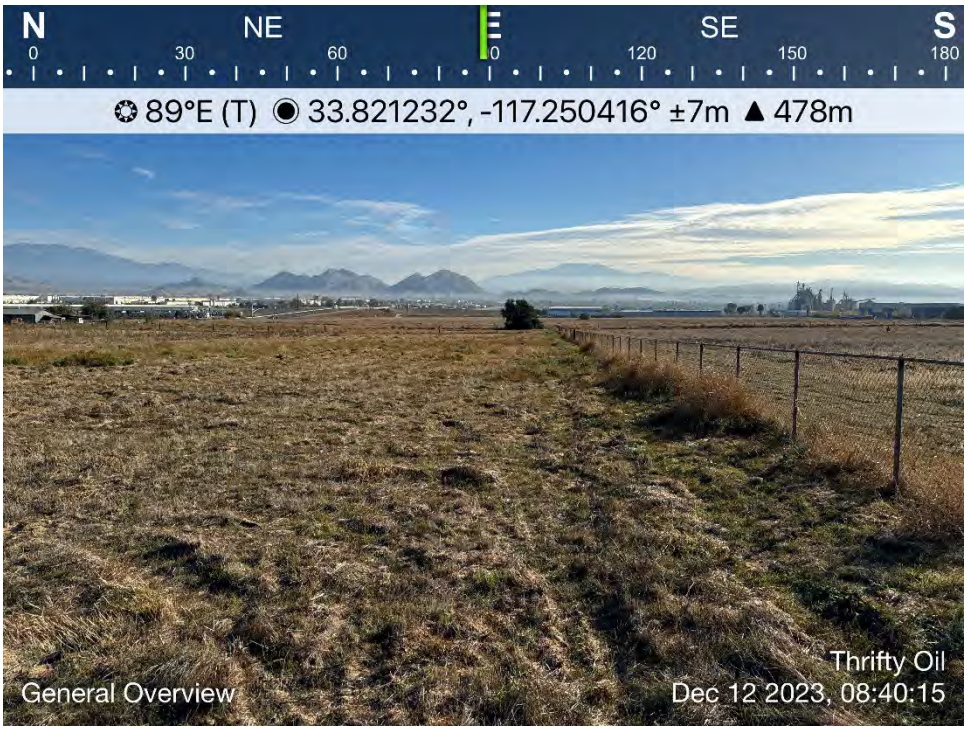
	Photo 1 – Northwest Corner
	Photo 2 – Northeast Corner

	Photo 3 – Eastern edge of site
	Photo 4 – Eastern edge of site

	Photo 5 – Southwest corner
	Photo 6 – Southwest corner

Appendix C – Regulatory Framework

1.1 FEDERAL JURISDICTION

1.1.1 United States Army Corps of Engineers

Activities within inland streams, wetlands, and riparian areas in California are regulated by agencies at the federal, state, and regional levels. At the federal level, the U.S. Army Corps of Engineers (USACE) Regulatory Program regulates activities within wetlands and waters of the US pursuant to Section 404 of the Federal Clean Water Act (CWA).

At the state level, the California Department of Fish and Wildlife (CDFW) regulates activities within the bed, bank, and associated habitat of a stream under the Fish and Game Code §§ 1600–1616. The California State Water Resources Board (SWRB) delegates authority at the regional level to Regional Water Quality Control Boards (RWQCB) that are responsible for regulating discharge into waters of the US under Section 401 of the federal CWA and waters of the State under the California Porter-Cologne Water Quality Act.

The CWA was implemented to maintain and restore the chemical, physical, and biological integrity of the Waters of the United States (33 Code of Federal Regulations [CFR] Part 328 Section 328.3). "Waters of the US" are defined as follows:

> **§ 328.3 Definitions.**
> For the purpose of this regulation these terms are defined as follows:
> (a) *Waters of the United States* means:
> (1) Waters which are:
> (i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
> (ii) The territorial seas; or
> (iii) Interstate waters, including interstate wetlands;
> (2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;
> (3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section:
> (i) That are relatively permanent, standing or continuously flowing bodies of water; or
> (ii) That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section;
> (4) Wetlands adjacent to the following waters:
> (i) Waters identified in paragraph (a)(1) of this section; or

(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3)(i) of this section and with a continuous surface connection to those waters; or

(iii) Waters identified in paragraph (a)(2) or (3) of this section when the wetlands either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section;

(5) Intrastate lakes and ponds, streams, or wetlands not identified in paragraphs (a)(1) through (4) of this section:

(i) That are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3)(i) of this section; or

(ii) That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section.

(b) The following are not ‘‘waters of the United States’’ even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;

(2) Prior converted cropland designated by the Secretary of Agriculture The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area’s status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;

(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and

(8) Swales and erosional features (*e.g.,* gullies, small washes) characterized by low volume, infrequent, or short duration flow.

(c) In this section, the following definitions apply:

(1) *Wetlands* means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically

adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

(2) *Adjacent* means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes, and the like are ''adjacent wetlands.''

(3) *High tide line* means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such at those accompanying a hurricane or other intense storm.

(4) *Ordinary high water mark* means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

(5) *Tidal waters* means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.

(6) *Significantly affect* means a material influence on the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section. To determine whether waters, either alone or in combination with similarly situated waters in the region, have a material influence on the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section, the

functions identified in paragraph (c)(6)(i) of this section will be assessed and the factors identified in paragraph (c)(6)(ii) of this section will be considered:

(i) Functions to be assessed:

(A) Contribution of flow;

(B) Trapping, transformation, filtering, and transport of materials (including nutrients, sediment, and other pollutants);

(C) Retention and attenuation of floodwaters and runoff;

(D) Modulation of temperature in waters identified in paragraph (a)(1) of this section; or

(E) Provision of habitat and food resources for aquatic species located in waters identified in paragraph (a)(1) of this section;

(ii) Factors to be considered:

(A) The distance from a water identified in paragraph (a)(1) of this section;

(B) Hydrologic factors, such as the frequency, duration, magnitude, timing, and rate of hydrologic connections, including shallow subsurface flow;

(C) The size, density, or number of waters that have been determined to be similarly situated;

(D) Landscape position and geomorphology; an

(E) Climatological variables such as temperature, rainfall, and snowpack.

1.2 STATE JURISDICTION

The State of California (State) regulates discharge of material into waters of the State pursuant to Section 401 of the CWA as well as the California Porter-Cologne Water Quality Control Act (Porter-Cologne; California Water Code, Division 7, §13000 et seq.). Waters of the State are defined by Porter-Cologne as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code Section 13050(e)). Waters of the State broadly includes all waters within the State's boundaries (public or private), including waters in both natural and artificial channels.

1.2.1 Regional Water Quality Control Board

Under Porter-Cologne, the State Water Resources Control Board (SWRCB) and the local Regional Water Quality Control Boards (RWQCB) regulate the discharge of waste into waters of the State. Discharges of waste include "fill, any material resulting from human activity, or any other 'discharge' that may directly or indirectly impact 'waters of the state.'" Porter-Cologne reserves the right for the State to regulate activities that could affect the quantity and/or quality of surface

and/or groundwaters, including isolated wetlands, within the State. Wetlands were defined as waters of the State if they demonstrated both wetland hydrology and hydric soils. Waters of the State determined to be jurisdictional for these purposes require, if impacted, waste discharge requirements (WDRs).

When an activity results in fill or discharge directly below the OHWM of jurisdictional waters of the United States (federal jurisdiction), including wetlands, a CWA Section 401 Water Quality Certification is required. If a proposed project is not subject to CWA Section 401 certification but involves activities that may result in a discharge to waters of the State, the project may still be regulated under Porter-Cologne and may be subject to waste discharge requirements. In cases where waters apply to both CWA and Porter-Cologne, RWQCB may consolidate permitting requirements to one permit.

1.2.2 California Department of Fish and Wildlife

Pursuant to Division 2, Chapter 6, Sections 1600-1602 of the California Fish and Game Code, the California Department of Fish and Wildlife (CDFW) regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife.

CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation" (California Code of Regulations, Title 14, Section 1.72). The jurisdiction of CDFW may include areas in or near intermittent streams, ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams that are indicated on USGS maps, watercourses that may contain subsurface flows, or within the flood plain of a water body. CDFW's definition of "lake" includes "natural lakes or man-made reservoirs." CDFW limits of jurisdiction typically include the maximum extents of the uppermost bank-to-bank distance and/or the outermost extent of riparian vegetation dripline, whichever measurement is greater.

In a CDFW guidance of stream processes and forms in dryland watersheds (Vyverberg 2010), streams are identified as having one or more channels that may all be active or receive water only during some high flow event. Subordinate features, such as low flow channels, active channels, banks associated with secondary channels, floodplains, and stream-associated vegetation, may occur within the bounds of a single, larger channel. The water course is defined by the topography or elevations of land that confine a stream to a definite course when its waters rise to their highest level. A watercourse is defined as a stream with boundaries defined by the maximal extent or expression on the landscape even though flow may otherwise be intermittent or ephemeral.

Artificial waterways such as ditches (including roadside ditches), canals, aqueducts, irrigation ditches, and other artificially created water conveyance systems also may be under the

jurisdiction of CDFW. CDFW may claim jurisdiction over these features based on the presence of habitat characteristics suitable to support aquatic life, riparian vegetation, and/or stream-dependent terrestrial wildlife. As with natural waterways, the limit of CDFW jurisdiction of artificial waterways includes the uppermost bank-to-bank distance and/or the outermost extent of riparian vegetation dripline, whichever measurement is greater.

CDFW does not have jurisdiction over wetlands but has jurisdiction to protect against a net loss of wetlands. CDFW supports the wetland criteria recognized by USFWS; one or more indicators of wetland conditions must exist for wetlands conditions to be considered present. The following is the USFWS accepted definition of a wetland:

> Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin et al. 1979).

In A Clarification of the U.S. Fish and Wildlife Service's Wetland Definition (Tiner 1989), the USFWS definition was further clarified "that in order for any area to be classified as wetland by the Service, the area must be periodically saturated or covered by shallow water, whether wetland vegetation and/or hydric soils are present or not; this hydrologic requirement is addressed in the first sentence of the definition." When considering whether an action would result in a net loss of wetlands, CDFW will extend jurisdiction to USFWS-defined wetland conditions where such conditions exist within the riparian vegetation that is associated with a stream or lake and does not depend on whether those features meet the three-parameter USACE methodology of wetland determination. If impacts to wetlands under the jurisdiction of CDFW are unavoidable, a mitigation plan will be implemented in coordination with CDFW to support the CDFW policy of "no net loss" of wetland habitat.

Appendix D – Tables

Table 1. Species Observed On-Site

Common Name	Scientific Name
Plants	
Lemon scented gum	*Corymbia citriodora*
Cheese weed	*Malva parviflora*
Peruvian pepper tree	*Schinus molle*
Nettle-leaved goosefoot	*Chenopodiastrum murale*
Short-pod mustard	*Hirschfeldia incana*
London rocket	*Sisymbrium irio*
Chinese pistache	*Pistacia chinensis*
Common fiddleneck	*Amsinckia intermedia*
Brittlebush	*Encelia farinosa*
Common stork's bill	*Erodium cicutarium*
Wall barley	*Hordeum murinum*
Stinknet	*Oncosiphon piluliferum*
Tree tobacco	*Nicotiana glauca*
Prickley lettuce	*Lactuca serriola*
Tumble weed	*Kali tragus*
Olive tree	*Olea europaea*
Dove weed	*Croton setiger*
Tamarisk	*Tamarix ssp.*
Birds	
Yellow-rumped warbler	*Setophaga coronata*
House finch	*Haemorhous mexicanus*
European starling	*Sturnus vulgaris*
House sparrow	*Passer domesticus*
White crowned sparrow	*Zonotrichia leucophrys*
Cassin's kingbird	*Tyrannus vociferans*
Killdeer	*Charadrius vociferus*
Ruby crowned kinglet	*Corthylio calendula*
Lesser goldfinch	*Spinus psaltria*
Northern mockingbird	*Mimus polyglottos*
Mourning dove	*Zenaida macroura*

Common raven	*Corvus corax*
Anna's hummingbird	*Calypte anna*
Red-tailed hawk	*Buteo jamaicensis*

Table 2 – CNDDB Potential to Occur for the *Perris and Steele Peak* Quadrangle

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Abronia villosa var. aurita	chaparral sand-verbena	None, None	G5T2?, S2, 1B.1	Chaparral, coastal scrub, desert dunes. Sandy areas. -60-1570 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Accipiter cooperii	Cooper's hawk	None, None	G5, S4, CDFW-WL	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Agelaius tricolor	tricolored blackbird	None, Threatened	G1G2, S2, CDFW-SSC	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	None, None	G5T3, S4, CDFW-WL	Resident in Southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Allium munzii	Munz's onion	Endangered, Threatened	G1, S1, 1B.1	Chaparral, coastal scrub, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland. Heavy clay soils; grows in grasslands and openings within shrublands or woodlands. 375-1040 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Anniella stebbinsi	Southern California legless lizard	None, None	G3, S3, CDFW-SSC	Generally south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County. Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Arizona elegans occidentalis	California glossy snake	None, None	G5T2, S2, CDFW-SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Artemisiospiza belli belli	Bell's sparrow	None, None	G5T2T3, S3, CDFW-WL	Nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range. Nest located on the ground beneath a shrub or in a shrub 6-18 inches above ground. Territories about 50 yds apart.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Asio otus	long-eared owl	None, None	G5, S3?, CDFW-SSC	Riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses. Require adjacent open land, productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Aspidoscelis hyperythra	orange-throated whiptail	None, None	G5, S2S3, CDFW-WL	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food: termites.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Aspidoscelis tigris stejnegeri	coastal whiptail	None, None	G5T5, S3, CDFW-SSC	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland and riparian areas. Ground may be firm soil, sandy, or rocky.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Athene cunicularia	burrowing owl	None, None	G4, S2, CDFW-SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Suitable habitat for this species does occur on-site. **Pre-Construction Surveys are required.**
Atriplex coronata var. notatior	San Jacinto Valley crownscale	Endangered, None	G4T1, S1, 1B.1	Playas, valley and foothill grassland, vernal pools. Alkaline areas in the San Jacinto River Valley. 35-460 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Atriplex parishii	Parish's brittlescale	None, None	G1G2, S1, 1B.1	Vernal pools, chenopod scrub, playas. Usually on drying alkali flats with fine soils. 4-1420 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Atriplex serenana var. davidsonii	Davidson's saltscale	None, None	G5T1, S1, 1B.2	Coastal bluff scrub, coastal scrub. Alkaline soil. 0-480 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Bombus crotchii	Crotch bumble bee	None, Candidate Endangered	G2, S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Bombus pensylvanicus	American bumble bee	None, None	G3G4, S2,	Long-tongued; forages on a wide variety of flowers including vetches (Vicia), clovers (Trifolium), thistles (Cirsium), sunflowers (Helianthus), etc. Nests above ground under long grass or underground. Queens overwinter in rotten wood or underground.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Brodiaea filifolia	thread-leaved brodiaea	Threatened, Endangered	G2, S2, 1B.1	Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools. Usually associated with annual grassland and vernal pools; often surrounded by shrubland habitats. Occurs in openings on clay soils. 15-1030 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Caulanthus simulans	Payson's jewelflower	None, None	G4, S4, 4.2	Chaparral, coastal scrub. Frequently in burned areas, or in disturbed sites such as streambeds; also on rocky, steep slopes. Sandy, granitic soils. 90-2200 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Centromadia pungens ssp. laevis	smooth tarplant	None, None	G3G4T2, S2, 1B.1	Valley and foothill grassland, chenopod scrub, meadows and seeps, playas, riparian woodland. Alkali meadow, alkali scrub; also in disturbed places. 5-1170 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None, None	G5T3T4, S3S4	Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego, Riverside, San Bernardino, and Los Angeles Counties, inclusive of Orange County. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Chorizanthe parryi var. parryi	Parry's spineflower	None, None	G3T2, S2, 1B.1	Coastal scrub, chaparral, cismontane woodland, valley and foothill grassland. Dry slopes and flats; sometimes at interface of 2 vegetation types, such as chaparral and oak woodland. Dry, sandy soils. 90-1220 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Chorizanthe polygonoides var. longispina	long-spined spineflower	None, None	G5T3, S3, 1B.2	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools. Gabbroic clay. 30-1630 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Crotalus ruber	red-diamond rattlesnake	None, None	G4, S3, CDFW-SSC	Chaparral, woodland, grassland, and desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Diadophis punctatus modestus	San Bernardino ringneck snake	None, None	G5T2T3, S2?	Most common in open, relatively rocky areas. Often in somewhat moist microhabitats near intermittent streams. Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous veg.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Dipodomys merriami parvus	San Bernardino kangaroo rat	Endangered, Candidate Endangered	G5T1, S1, CDFW-SSC	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains. Needs early to intermediate seral stages.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Dipodomys stephensi	Stephens' kangaroo rat	Threatened, Threatened	G2, S3	Primarily annual and perennial grasslands, but also occurs in coastal scrub and sagebrush with sparse canopy cover. Prefers buckwheat, chamise, brome grass and filaree. Will burrow into firm soil.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Elanus leucurus	white-tailed kite	None, None	G5, S3S4, CDFW-FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Emys marmorata	western pond turtle	Proposed Threatened, None	G3G4, S3, CDFW-SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Eremophila alpestris actia	California horned lark	None, None	G5T4Q, S4, CDFW-WL	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Eumops perotis californicus	western mastiff bat	None, None	G4G5T4, S3S4, CDFW-SSC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Euphydryas editha quino	quino checkerspot butterfly	Endangered, None	G4G5T1T2, S1S2	Sunny openings within chaparral and coastal sage shrublands in parts of Riverside and San Diego counties. Hills and mesas near the coast. Need high densities of food plants Plantago erecta, P. insularis, and Orthocarpus purpurescens.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Haliaeetus leucocephalus	bald eagle	Delisted, Endangered	G5, S3, CDFW-FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Harpagonella palmeri	Palmer's grapplinghook	None, None	G4, S3, 4.2	Chaparral, coastal scrub, valley and foothill grassland. Clay soils; open grassy areas within shrubland. 20-955 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Lasiurus xanthinus	western yellow bat	None, None	G4G5, S3, CDFW-SSC	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	None, None	G4T2, S2, 1B.1	Coastal salt marshes, playas, vernal pools. Usually found on alkaline soils in playas, sinks, and grasslands. 1-1375 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	None, None	G5T3, S3, 4.3	Chaparral, coastal scrub. Dry soils, shrubland. 4-1435 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None, None	G5T3T4, S3S4	Intermediate canopy stages of shrub habitats and open shrub / herbaceous and tree / herbaceous edges. Coastal sage scrub habitats in Southern California.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Myosurus minimus ssp. apus	little mousetail	None, None	G5T2Q, S2, 3.1	Vernal pools, valley and foothill grassland. Alkaline soils. 20-640 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Navarretia fossalis	spreading navarretia	Threatened, None	G2, S2, 1B.1	Vernal pools, chenopod scrub, marshes and swamps, playas. San Diego hardpan and San Diego claypan vernal pools; in swales and vernal pools, often surrouded by other habitat types. 15-850 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Neolarra alba	white cuckoo bee	None, None	GH, SH	Known only from localities in Southern California. Cleptoparasitic in the nests of perdita bees.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Neotoma lepida intermedia	San Diego desert woodrat	None, None	G5T3T4, S3S4, CDFW-SSC	Coastal scrub of Southern California from San Diego County to San Luis Obispo County. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops, rocky cliffs, and slopes.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Nyctinomops femorosaccus	pocketed free-tailed bat	None, None	G5, S3, CDFW-SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Onychomys torridus ramona	southern grasshopper mouse	None, None	G5T3, S3, CDFW-SSC	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover. Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Perognathus longimembris brevinasus	Los Angeles pocket mouse	None, None	G5T2, S1S2, CDFW-SSC	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin. Open ground with fine, sandy soils. May not dig extensive burrows, hiding under weeds and dead leaves instead.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Phrynosoma blainvillii	coast horned lizard	None, None	G4, S4, CDFW-SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Polioptila californica californica	coastal California gnatcatcher	Threatened, None	G4G5T3Q, S2, CDFW-SSC	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Southern Coast Live Oak Riparian Forest	Southern Coast Live Oak Riparian Forest	None, None	G4, S4	Riparian forest	This habitat type is **absent** form the Project site.
Southern Cottonwood Willow Riparian Forest	Southern Cottonwood Willow Riparian Forest	None, None	G3, S3.2	Riparian forest	This habitat type is **absent** form the Project site.
Southern Sycamore Alder Riparian Woodland	Southern Sycamore Alder Riparian Woodland	None, None	G4, S4	Riparian woodland	This habitat type is **absent** form the Project site.
Spea hammondii	western spadefoot	Proposed Threatened, None	G2G3, S3S4, CDFW-SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Taxidea taxus	American badger	None, None	G5, S3, CDFW-SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Texosporium sancti-jacobi	woven-spored lichen	None, None	G3, S2, 3	Chaparral. Open sites; in California with Adenostoma fasciculatum, Eriogonum, Selaginella. Found on soil, small mammal pellets, dead twigs, and on Selaginella. 60-870 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Scientific Name	Common Name	Federal/State Status	Other Status	Habitat	Potential to Occur
Trichocoronis wrightii var. wrightii	Wright's trichocoronis	None, None	G4T3, S1, 2B.1	Marshes and swamps, riparian forest, meadows and seeps, vernal pools. Mud flats of vernal lakes, drying river beds, alkali meadows. 5-435 m.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.
Vireo bellii pusillus	least Bell's vireo	Endangered, Endangered	G5T2, S3	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	Suitable habitat for this species does not occur on site. As such, this species is considered **absent** from the Project site.

Coding and Terms

E = Endangered T = Threatened C = Candidate FP = Fully Protected SSC = Species of Special Concern R = Rare

State Species of Special Concern: An administrative designation given to vertebrate species that appear to be vulnerable to extinction because of declining populations, limited acreages, and/or continuing threats. Raptor and owls are protected under section 3502.5 of the California Fish and Game code: "It is unlawful to take, possess or destroy any birds in the orders Falconiformes or Strigiformes or to take, possess or destroy the nest or eggs of any such bird."

State Fully Protected: The classification of Fully Protected was the State's initial effort in the 1960's to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Global Rankings (Species or Natural Community Level):

G1 = Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2 = Imperiled – At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
G3 = Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
G4 = Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5 = Secure – Common; widespread and abundant.
? = Uncertainty in the exact status of an element (could move up or down one direction from current rank)

Subspecies Level: Taxa which are subspecies or varieties receive a taxon rank (T-rank**)** attached to their G-rank. Where the G-rank reflects the condition of the entire species, the T-rank reflects the global situation of just the subspecies. For example: the Point Reyes mountain beaver, *Aplodontia rufa* ssp. *phaea* is ranked G5T2. The G-rank refers to the whole species range i.e., *Aplodontia rufa.* The T-rank refers only to the global condition of ssp. *phaea*.

State Ranking:

S1 = Critically Imperiled – Critically imperiled in the State because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the State.
S2 = Imperiled – Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the State.
S3 = Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the State.
S4 = Apparently Secure – Uncommon but not rare in the State; some cause for long-term concern due to declines or other factors.
S5 = Secure – Common, widespread, and abundant in the State.

California Rare Plant Rankings (CNPS List):

1A = Plants presumed extirpated in California and either rare or extinct elsewhere.
1B = Plants rare, threatened, or endangered in California and elsewhere.
2A = Plants presumed extirpated in California, but common elsewhere.
2B = Plants rare, threatened, or endangered in California, but more common elsewhere.
3 = Plants about which more information is needed; a review list.
4 = Plants of limited distribution; a watch list.

Threat Ranks:

.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 = Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
.3 = Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

35414 Acacia Ave.
Yucaipa, CA 92399
(909) 534-4547
www.jennings-environmental.com

June 16, 2024

Lilburn Corporation
Attn: Cheryl Tubbs
1905 Business Center Drive
San Bernardino, CA 92408
909-890-1818

RE: BURROWING OWL WESTERN RIVERSIDE MSHCP PROTOCOL SURVEY REPORT FOR THE DEVELOPMENT OF APNs: 317-260-017 and -18, IN UNINCORPORATED PERRIS, RIVERSIDE COUNTY, CALIFORNIA

Dear Ms. Tubbs:

Jennings Environmental, LLC (Jennings) is pleased to provide this letter report of findings for a pre-construction burrowing owl (BUOW) and nesting bird survey. This survey was conducted using the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) protocol for BUOW.

Summary information:

- *Date report prepared: June 16, 2024*
- *Project site location USGS – (Perris and Steele Peak 7.5 Minute Series Quadrangles) Section 13, Township 3 South, Range 4 West*
- *Assessor's Parcel Numbers: 317-260-017 and -18*
- *Owner/Applicant: Thrifty Oil*
- *Principal Investigators: Gene Jennings*
- *Name of person preparing the report: Gene Jennings*
- *Address: 35414 Acacia Ave., Yucaipa, CA 92399*
- *Phone: (909) 534-4547*
- *Report Summary: No active burrows or burrowing owl individuals were found on the site.*

Project Location

The Project is generally located within Section 13, Township 3 South, Range 4 West, and is depicted on the *Perris and Steele Peak* U.S. Geological Survey's (USGS) 7.5-minute topographic maps. More specifically the project is located within APNs 317-260-017 and -18, within unincorporated Perris, Riverside County, California. The Project site is located on the southeast corner of the intersection of Placentia Ave. and Tobacco Road. The site is surrounded by commercial development to the north, residential developments to the west and vacant land to the east and south. The Project site itself does contain one rural residence. (Figures 1 and 2 in Appendix A).

Project Understanding

The Project area is located within Western Riverside County and is subject to the Multi-Species Habitat Conservation Plan (MSHCP). The MSHCP requires that a project complies with the MSHCP policies identified in Section 6 of the MSHCP. The biological assessment completed in January 2023 determined that the site was suitable for BUOW. Therefore, Jennings has completed BUOW Protocol Surveys.

Riverside MSHCP BUOW Survey Requirements

Surveys should be conducted during weather that is conducive to observing owls outside their burrows and detecting burrowing owl sign. Surveys will not be accepted if they are conducted during rain, high winds (> 20 mph), dense fog, or temperatures over 90 °F. Subsequent surveys should be conducted in the morning one hour before sunrise to two hours after sunrise or in the early evening two hours before sunset to one hour after sunset. Count and map all burrowing owl sightings, occupied burrows, and burrows with owl sign. Record the location of all owls including numbers of pairs and juveniles and any behavior such as courtship and mating. Map the extent of all suitable habitat. It should be noted that owl sign may not be detectable if surveys are conducted within 5 days following rain. Absence of burrowing owl sign cannot be used to confirm absence of the species if the focused burrow survey is conducted within 5 days of rain.

BUOW Background

The BUOW is a small, ground-dwelling owl that is protected under the Migratory Bird Treaty Act (MBTA) and by CDFW as a Species of Special Concern. In southern California, BUOW can be found in grassland, shrub-steppe, and desert habitat types consisting of short, sparse vegetation with few shrubs, level to gentle topography, and well-drained soils. They can also be found in agricultural areas, ruderal grassy fields, vacant lots and pastures, and flood control facilities. Most importantly, BUOWs require underground burrows or other cavities for nesting, roosting, and shelter. Burrows used by the owls are usually dug by other species, termed host burrowers. In California, California ground squirrel (*Spermophilus beecheyi*) burrows are frequently used by BUOW but they may use dens or holes dug by other fossorial species or man-made structures such as pipes and culverts. They are active during the day, generally observed in the early morning hours or at twilight. The breeding season for BUOW is February 1 through August 31.

Site Characteristics

The habitat on-site consists of a mix of bare ground and *Brassica nigra – Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance (Upland Mustards or star-thistle fields). The site shows signs of vegetation management in the form of mowing or weed whacking. Additionally, there was a previous development within the northwest corner of the site that was removed sometime after 2016. Figure 5 in Appendix A shows the vegetation communities present onsite while Table 1 in Appendix D contains a list of all plants found on-site. Surrounding land uses include residential developments and commercial developments.

Methods

The first step in the assessment process is to walk the property to identify the presence of burrowing owl habitat on the project site. If habitat is found on the site, then walk a 150 meter (approximately 500 feet) buffer zone around the project boundary. If permission to access the buffer area cannot be obtained, do not trespass on adjacent property but visually inspect the adjacent habitat areas with binoculars and/or spotting scopes. Habitat assessments that do not include walking the property will not be accepted. Driving by a site and reporting it as disturbed or under agricultural/dairy use is not acceptable.

If burrowing owl habitat occurs on-site, both Step II (focused surveys, census, and mapping) and Preconstruction Surveys are required. If burrows are found during the habitat assessment then suitable habitat is present and Step II is required. However, lack of identifying burrows during the habitat assessment does not negate the need for the systematic search for burrows included as part of the Step II survey instructions. If burrowing owl habitat is not present on-site (i.e. if the site is completely covered by chaparral, cement or asphalt) Step II of the survey is not necessary. No Pre-construction surveys are necessary if there is no suitable habitat on-site.

Prior to performing the field surveys, available databases and documentation, such as the USFWS threatened and endangered species occurrence data overlay as well as the most recent versions of the California Natural Diversity Database (CNDDB) – BIOS, were reviewed for documented occurrences of BUOW in the local vicinity within the *Perris and Steele Peak* USGS 7.5-minute series quadrangles.

The field surveys were conducted by Jennings Biologist Gene Jennings, who has a degree in Biology and over 10 years of experience in conducting biological surveys throughout Riverside County. The surveys were conducted on calm weather days, during peak BUOW activity (one hour before sunrise and two hours after, and two hours before sunset and one hour after), in accordance with “Burrowing Owl Survey Instructions” required by the Western Riverside MSHCP.

Jennings Biologists conducted a comprehensive survey with complete coverage of the entire site and adjacent areas (when appropriate and feasible). The site was assessed for soil type, level of friability as well as habitat type, and habitat structure.

As per protocol, the site was systematically searched by walking transects spaced at approximately 100 feet (30 meters) which provided 100 percent visual coverage of the ground surface. Including a 500-foot buffer, where feasible. During the site visit, Jennings Biologists inspected all-natural and non-natural substrates and searched for signs of BUOW including, burrows, molted feathers, cast pellets, prey remains, and owl white-wash. They logged date time and weather conditions and used hand-held, global positioning system (GPS) units to survey straight transects, identify project boundaries, and for other pertinent information. A digital camera was used to take representative photographs, and ArcMap was accessed to provide recent aerial photographs of the project site and surrounding area.

Results

No limitations significantly affected the results and conclusions given herein. Surveys were conducted

during the appropriate season to observe the target species, in good weather conditions, by a qualified biologist who followed all pertinent protocols. The buffer area was surveyed using bionoculars as site access was not granted. Table 1 below details the conditions during the surveys and the results of each survey.

Table 1 – Non-Breeding Season BUOW Survey Results

Date	Sunrise/Sunset	Survey Time	Weather	Temperature °F	Observations
Habitat Assessment, Part A, and 1 Survey of Part B					
December 18, 2023	6:48 AM / 4:43 PM	0730 – 0830	Clear, 0 – 2 MPH wind	52 – 54	No BUOW Observed
Part B Surveys 2-4					
December 20, 2023	6:49 AM / 4:44 PM	0700 – 0800	Cloudy, 0 – 2 MPH Wind	54 – 57	No BUOW Observed
January 3, 2024	6:54 AM / 4:53 PM	0730 – 0800	Clear, No Wind	52 – 54	No BUOW Observed
January 18, 2024	6:53 AM / 5:06 PM	0700 – 0730	Clear, Light Wind, 0 – 2 MPH	45 – 47	No BUOW Observed

Table 2 – Breeding Season BUOW Survey Results

Date	Sunrise/Sunset	Survey Time	Weather	Temperature °F	Observations
Habitat Assessment, Part A, and 1 Survey of Part B					
May 27, 2024	5:41 AM / 7:52 PM	0630 – 0745	Clear, 0 – 2 MPH wind	58 – 59	No BUOW Observed
Part B Surveys 2-4					
May 30, 2024	5:40 AM / 7:54 PM	0700 – 0800	Clear, 0 – 2 MPH Wind	59 – 61	No BUOW Observed
June 2, 2024	5:39 AM / 7:56 PM	0645 – 0745	Pt. Cloudy, No Wind	60 – 61	No BUOW Observed
June 7, 2024	5:38 AM / 7:58 PM	0645 – 0745	Clear, 0 – 2 MPH wind	62 – 63	No BUOW Observed

Both non-breeding season and breeding season surveys were completed and no BUOW individuals were found on site. Additionally, no molted feathers, cast pellets, prey remains, or owl whitewash were observed.

Conclusions

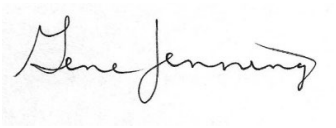
Based on the results of this Protocol survey, BUOW are absent from the site and no impacts to BUOW are anticipated to occur. Prior to construction, pre-construction surveys are warranted or recommended.

Since there is some habitat within the Project site and adjacent area that is suitable for BUOW in general, the following mitigation measure should be implemented:

A Pre-Construction Burrowing Owl Survey shall be conducted by a qualified biologist no more than 30-days prior to any ground disturbance activities. Surveys shall be completed following the recommendationsand guidelines provided within the Burrowing Owl Survey Instructions for the Western Riverside MSHCP (RCA, 2006). Surveys should be conducted during weather that is conducive to observing owls outside their burrows and detecting burrowing owl sign. Surveys will not be accepted if they are conducted during rain, high winds (> 20 mph), dense fog, or temperatures over 90 °F. Surveys should be conducted in the morning one hour before sunrise to two hours after sunrise or in the early evening two hours before sunset to one hour after sunset. Count and map all burrowing owl sightings, occupied burrows, and burrows with owl sign. Record the location of all owls including numbers of pairs and juveniles and any behavior such as courtship and mating. Map the extent of all suitable habitat. It should be noted that owl sign may not be detectable if surveys are conducted within 5 days following rain. If burrowing owls have colonized the project site prior to the initiation of ground-disturbing activities, the project proponent will need to immediately inform the RCA and the Wildlife Agencies, and will need to coordinate further with RCA and the Wildlife Agencies, including the possibility of preparing a Burrowing Owl Protection and Relocation Plan, prior to initiating ground disturbance.

Please do not hesitate to contact me at 909-534-4547 should you have any questions or require further information.

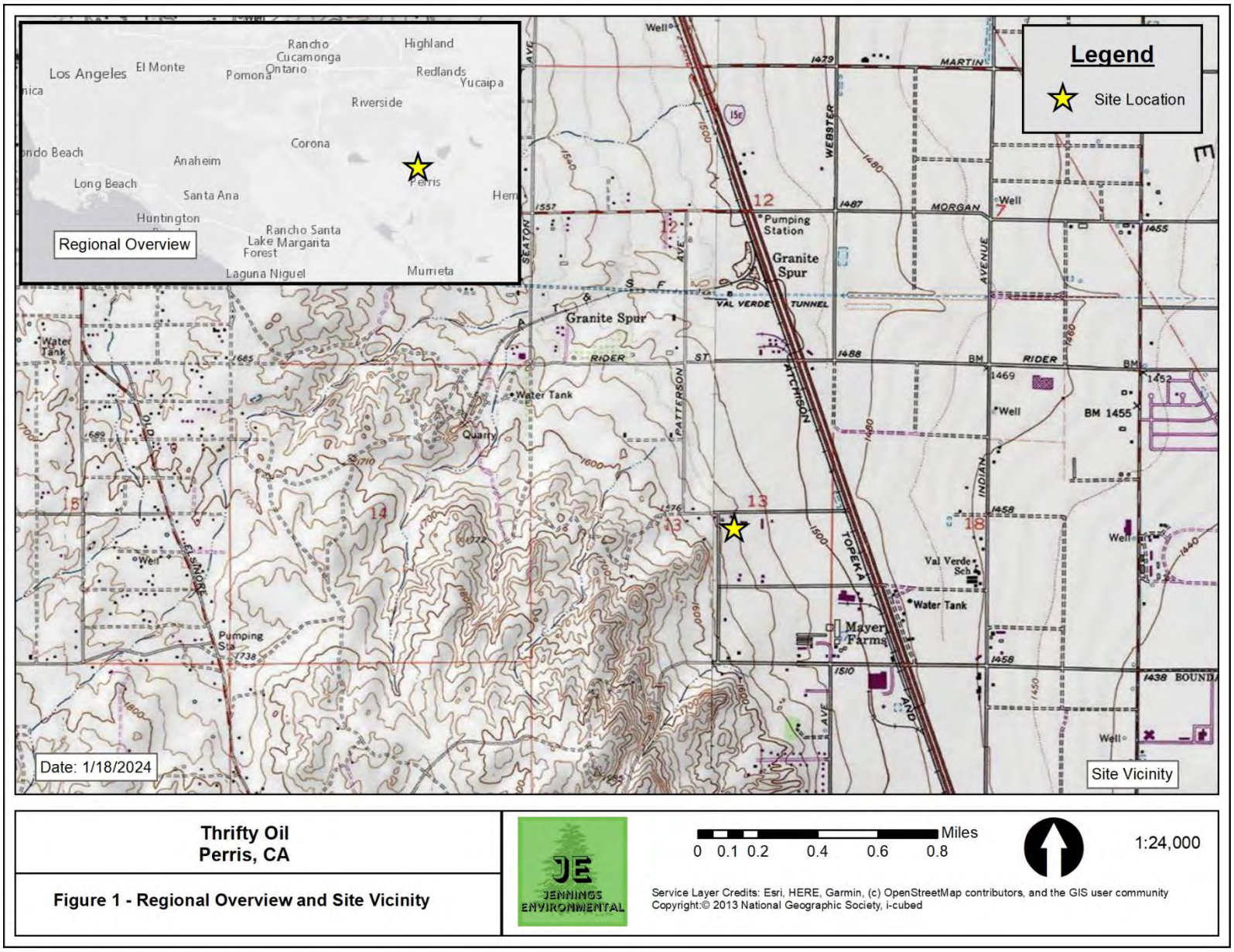
Sincerely,

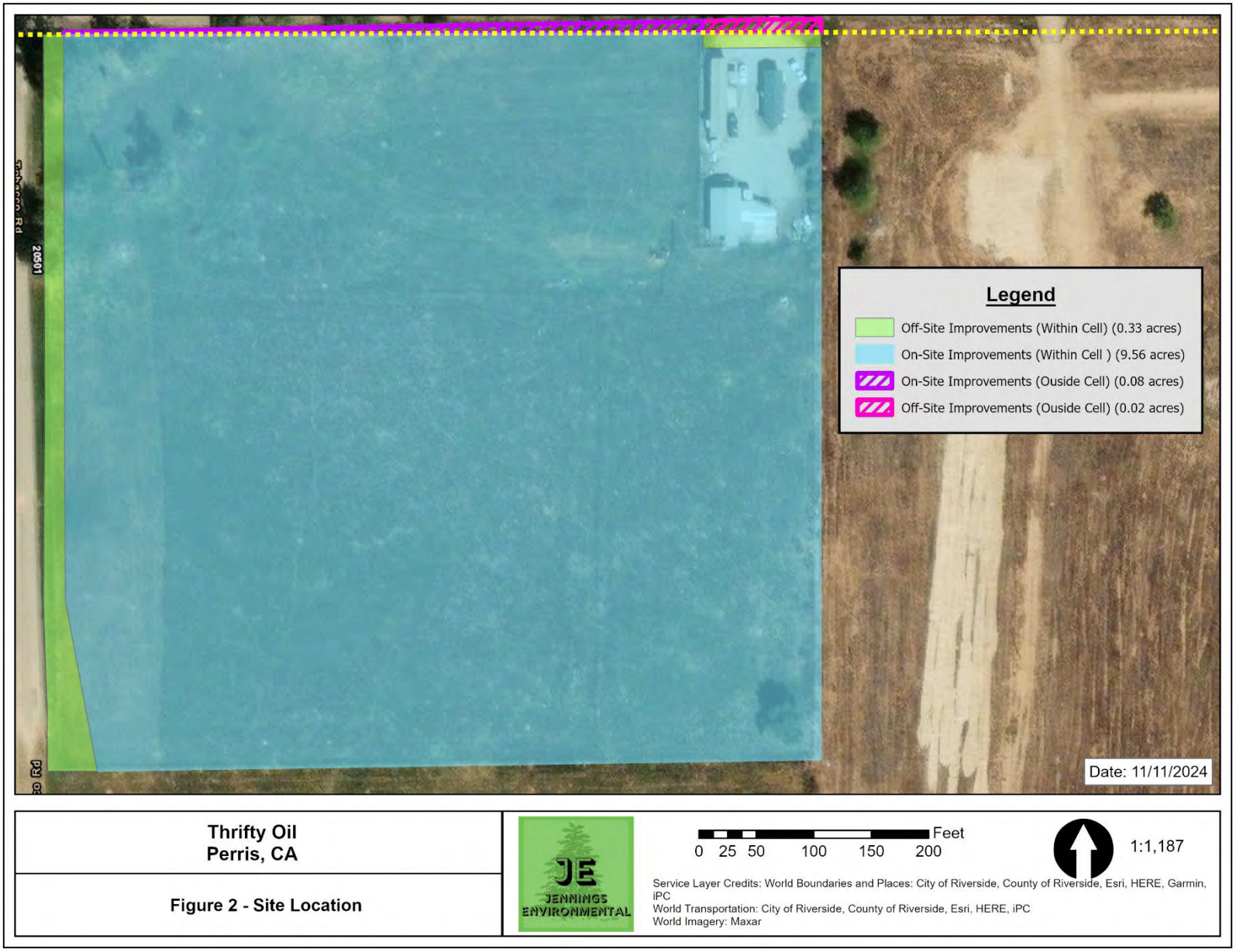


Gene Jennings,
Principal/Regulatory Specialist

Attachments:

Attachment 1 – Figures
Attachment 2 – Site Photos
Attachment 3 – Species Observed


Legend
Site Location
Regional Overview
Los Angeles
El Monte
Pomona
Rancho Cucamonga
Ontario
Highland
Redlands
Yucaipa
Riverside
Corona
Anaheim
Long Beach
Santa Ana
Perris
Huntington
Rancho Santa Lake Margarita Forest
Laguna Niguel
Murrieta
Granite Spur
Pumping Station
Water Tank
Quarry
Val Verde Sch
Mayer Farms
Well
BM 1455
Date: 1/18/2024
Site Vicinity
Thrifty Oil
Perris, CA
Figure 1 - Regional Overview and Site Vicinity
JE
JENNINGS ENVIRONMENTAL
Miles
0 0.1 0.2 0.4 0.6 0.8
1:24,000
Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Copyright:© 2013 National Geographic Society, i-cubed


Legend
Off-Site Improvements (Within Cell) (0.33 acres)
On-Site Improvements (Within Cell) (9.56 acres)
On-Site Improvements (Ouside Cell) (0.08 acres)
Off-Site Improvements (Ouside Cell) (0.02 acres)
Date: 11/11/2024
Thrifty Oil
Perris, CA
Figure 2 - Site Location
JE
JENNINGS ENVIRONMENTAL
0 25 50 100 150 200
Feet
1:1,187
Service Layer Credits: World Boundaries and Places: City of Riverside, County of Riverside, Esri, HERE, Garmin, iPC
World Transportation: City of Riverside, County of Riverside, Esri, HERE, iPC
World Imagery: Maxar

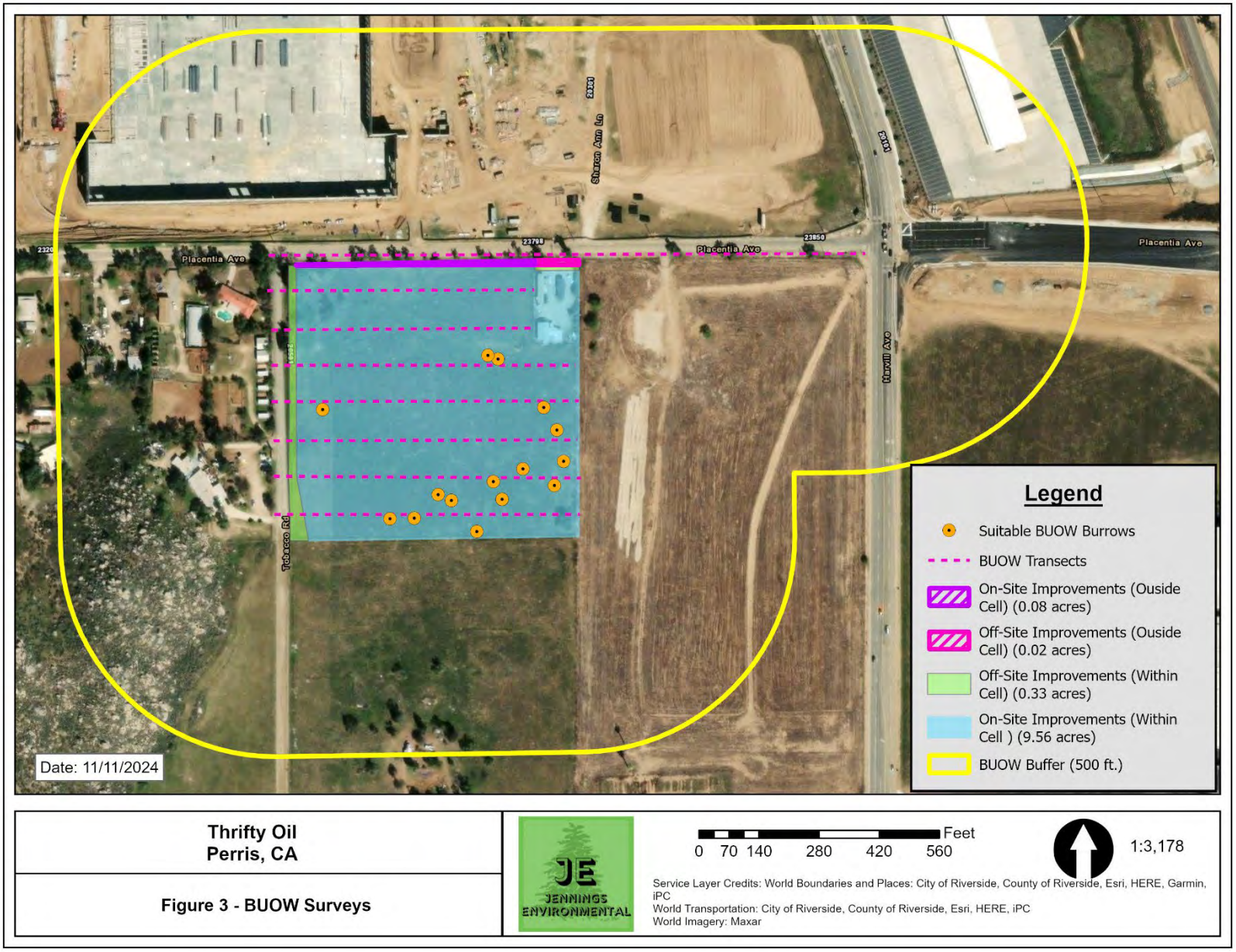
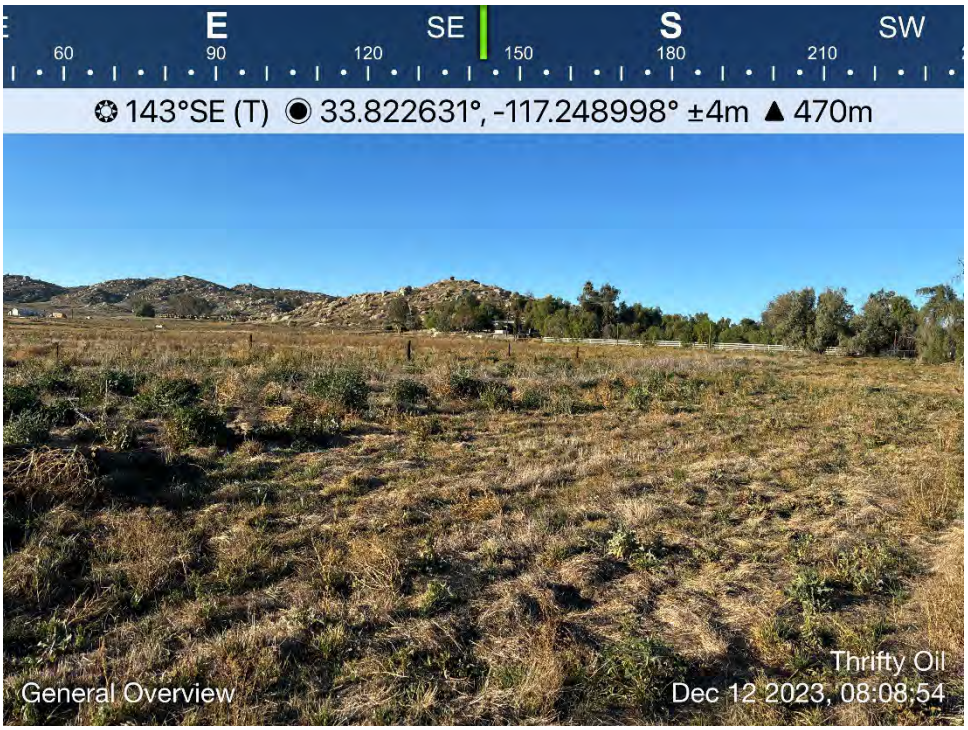
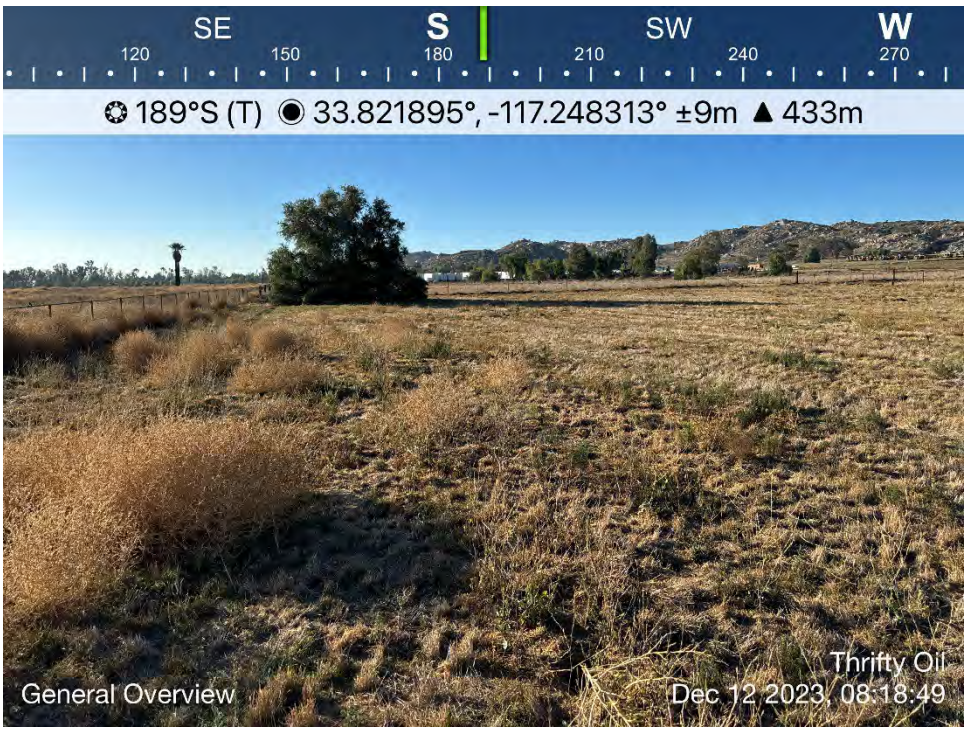

Placentia Ave
Placentia Ave
Placentia Ave
Sharon Ann Ln
Harvill Ave
Tobacco Rd
23708
23850
Date: 11/11/2024
Legend
Suitable BUOW Burrows
BUOW Transects
On-Site Improvements (Ouside Cell) (0.08 acres)
Off-Site Improvements (Ouside Cell) (0.02 acres)
Off-Site Improvements (Within Cell) (0.33 acres)
On-Site Improvements (Within Cell) (9.56 acres)
BUOW Buffer (500 ft.)
Thrifty Oil
Perris, CA
Figure 3 - BUOW Surveys
JE
JENNINGS ENVIRONMENTAL
0 70 140 280 420 560
Feet
1:3,178
Service Layer Credits: World Boundaries and Places: City of Riverside, County of Riverside, Esri, HERE, Garmin, iPC
World Transportation: City of Riverside, County of Riverside, Esri, HERE, iPC
World Imagery: Maxar

	Photo 1 – Northwest Corner
	Photo 2 – Northeast Corner

Attachment 2 - Photos

	Photo 3 – Eastern edge of site
	Photo 4 – Eastern edge of site

Attachment 2 - Photos

	Photo 5 – Southwest corner
	Photo 6 – Southwest corner

Attachment 2 - Photos



Photo 7



Photo 8

Attachment 2 - Photos



Photo 9



Photo 10

Attachment 2 - Photos

	Photo 11
	Photo 12

Attachment 2 - Photos

	Photo 13
	Photo 14

Attachment 2 - Photos

	Photo 15
	Photo 16

Attachment 2 - Photos

	Photo 17
	Photo 18

Attachment 2 - Photos

	Photo 20
	Photo 21

Attachment 2 - Photos

	Photo 22
	Photo 23

Animal Species Observed

Birds	
Yellow-rumped warbler	*Setophaga coronata*
House finch	*Haemorhous mexicanus*
European starling	*Sturnus vulgaris*
House sparrow	*Passer domesticus*
White crowned sparrow	*Zonotrichia leucophrys*
Cassin's kingbird	*Tyrannus vociferans*
Killdeer	*Charadrius vociferus*
Ruby crowned kinglet	*Corthylio calendula*
Lesser goldfinch	*Spinus psaltria*
Northern mockingbird	*Mimus polyglottos*
Mourning dove	*Zenaida macroura*
Common raven	*Corvus corax*
Anna's hummingbird	*Calypte anna*
Red-tailed hawk	*Buteo jamaicensis*

A PHASE I CULTURAL RESOURCES STUDY FOR THE THRIFTY OIL WAREHOUSE PROJECT

PPT230048, PDA 8407, OAPL2300972
RIVERSIDE COUNTY, CALIFORNIA

APN 317-260-017 and -018

Project Site Location: Section 13, Township 4 South, Range 4 West of the San Bernardino Base and Meridian, as shown on the *Perris* USGS Quadrangle Topographic Map

Prepared on Behalf of:

Lilburn Corporation
1905 Business Center Drive
San Bernardino, California 92408

Prepared for:

Riverside County Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
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Prepared by:

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January 5, 2024; Revised January 16, 2024

BFSA Environmental Services
A Perennial Company

Fieldwork Performed: December 6, 2023
Key Words: Approximately 9.5 acres; archaeological survey; negative results; monitoring of grading recommended

Archaeological Report Summary Information

Author:	Andrew J. Garrison, M.A., RPA
Prepared by:	BFSA Environmental Services, a Perennial Company 14010 Poway Road, Suite A Poway, California 92064 (858) 484-0915
Report Date:	January 5, 2024; Revised January 16, 2024
Report Title:	A Phase I Cultural Resources Study for the Thrifty Oil Warehouse Project, PPT230048, PDA 8407, OAPL2300972, Riverside County, California
Prepared on Behalf of:	Lilburn Corporation 1905 Business Center Drive San Bernardino, California 92408
Prepared for:	Riverside County Planning Department 4080 Lemon Street, 12th Floor P.O. Box 1409 Riverside, California 92502-1409 (951) 955-3200
Assessor's Parcel Numbers:	317-260-017 and -018
USGS Quadrangle:	Section 13, Township 4 South, Range 4 West, San Bernardino Base and Meridian, as shown on the *Perris* USGS Quadrangle
Study Area:	Approximately 9.5 acres
Key Words:	Archaeological survey; 9.5 acres; negative results; County of Riverside; *Perris* USGS topographic quadrangle; monitoring of grading recommended.

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**Deleted for public review and bound separately in the Confidential Appendix*

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Plate 4.2–4 Ancillary structure in the northeast corner of the project, facing south.....4.0–4

1.0 MANAGEMENT SUMMARY/ABSTRACT

The following report describes the results of the cultural resources survey conducted by BFSA Environmental Services, a Perennial Company (BFSA), for the Thrifty Oil Warehouse Project. The approximately 9.5-acre property is located southeast of the intersection of Placentia Avenue and Tobacco Road, west of the city of Perris, within unincorporated Riverside County, California. As proposed, the project includes the construction of an industrial warehouse along with associated infrastructure within the subject property (Plot Plan OAPL2300972). The project includes Assessor's Parcel Numbers (APNs) 317-260-017 and -018, which are situated within Section 13, Township 4 South, Range 4 West of the San Bernardino Baseline and Meridian, as shown on the U.S. Geological Survey (USGS) (7.5-minute) *Perris, California* topographic quadrangle map. BFSA conducted this assessment to locate and record any cultural resources identified within the project in compliance with the California Environmental Quality Act (CEQA) and following County of Riverside Cultural Resource Guidelines (Draft).

1.1 Purpose of Investigation

The purpose of this investigation was to determine if any cultural resources would be affected by the proposed land development. This study consisted of the processing of a records search of previously recorded archaeological sites on or near the property and the completion of an archaeological survey of the project. The archaeological records search results from the Eastern Information Center (EIC) at the University of California, Riverside (UCR), indicate that 88 resources are located within a one-mile radius of the current project area, none of which are recorded within the subject property. Further, the search identified 37 previous studies within one mile, none of which included the subject property. In addition, the Native American Heritage Commission (NAHC) was contacted for a Sacred Lands File (SLF) search. In accordance with the recommendations of the NAHC, BFSA contacted all Native American consultants listed in the NAHC response letter at least two weeks prior to the initiation of the field survey. BFSA specifically contacted the Pechanga Band of Indians (Pechanga) and the Soboba Band of Luiseño Indians (Soboba) to invite them to voluntarily participate in the survey. Representatives from both tribes were present during the survey.

1.2 Major Findings

The records search results and a review of historic maps and aerial photographs show that the property contained structures as early as 1938 and historically was utilized for agriculture. Structures were added to the property throughout the twentieth century. However, all but three structures, which were added after 1977, have been removed from the project. Ground visibility during the survey was characterized as fair, due to areas of dense, non-native vegetation. During the survey, impacts associated with past clearing and agricultural use were observed. Further, modern trash was noted throughout the property. No cultural resources were identified during the survey.

1.3 Recommendation Summary

The Phase I Cultural Resources Study did not identify any cultural resources within the project. However, the property is located in proximity to multiple prehistoric and historic resources and has been impacted by agricultural use, partial development, and clearing. These impacts typically remove evidence of surface scatters of cultural artifacts. Therefore, given the past impacts to the property, as well as the frequency of resources within one mile, the obstructed ground visibility during the survey, and the noted historic occupation of the property, there still remains the potential for the inadvertent discovery of archaeological resources during grading. Therefore, it is recommended that all earthwork required for development be monitored by a qualified archaeologist and a Native American representative. The recommended protocols to be followed for the mitigation monitoring of the property are presented within this report. Any archaeological sites that may be discovered during the monitoring of grading should be treated following the recommendations listed in the mitigation monitoring program. A copy of this report will be permanently filed with the EIC at UCR. All notes, photographs, and other materials related to this project will be curated at the archaeological laboratory of BFSA in Poway, California.

2.0 INTRODUCTION

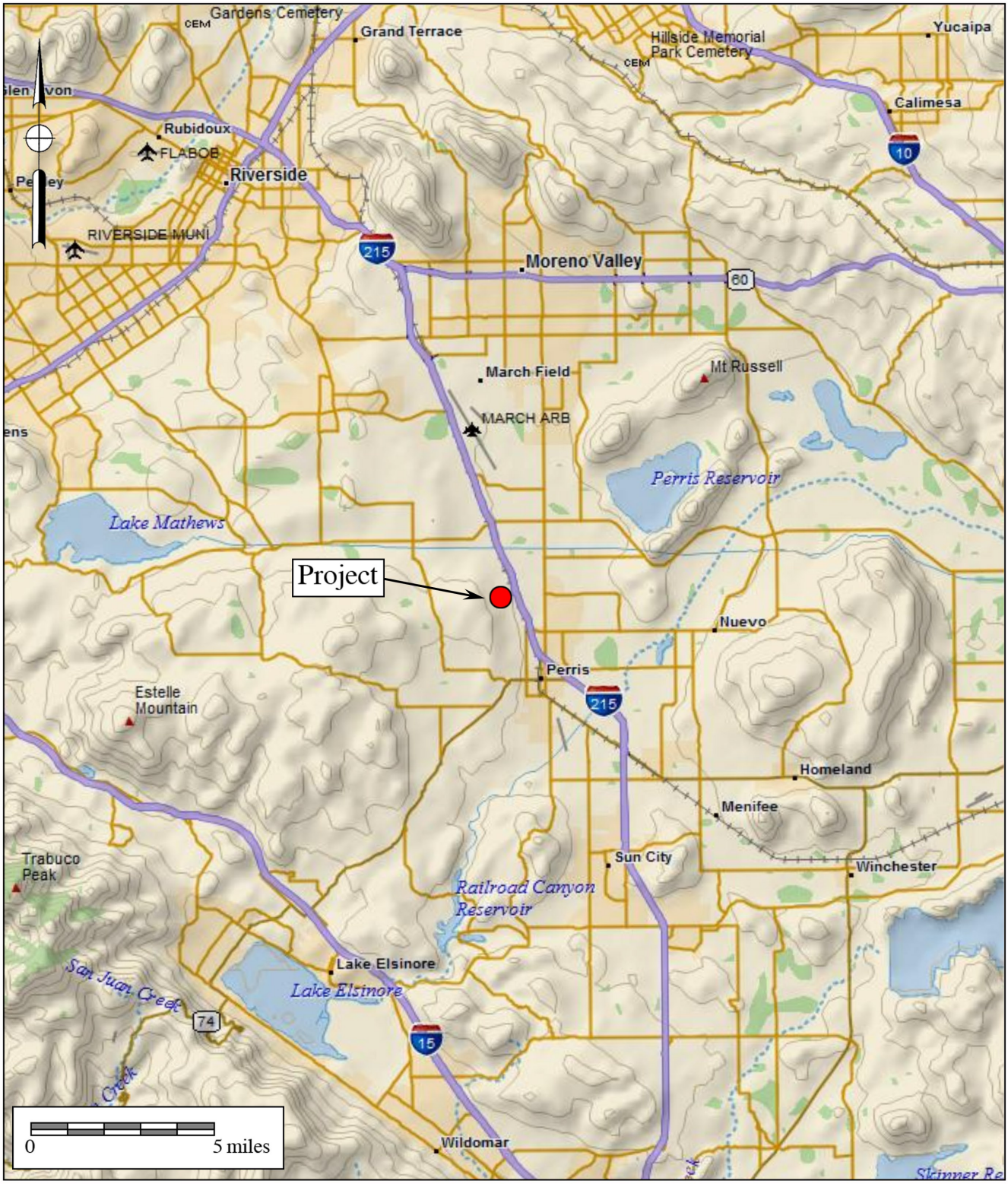
BFSA was retained by the applicant to conduct a cultural resources survey for the Thrifty Oil Warehouse Project (Plot Plan OAPL2300972). The archaeological survey was conducted in order to comply with the requirements of CEQA and County of Riverside Cultural Resource Guidelines with regard to development-generated impacts to cultural resources. The project is located in an area of moderate cultural resource sensitivity, as suggested by known site density. Sensitivity for cultural resources in a given area is usually indicated by known settlement patterns, which in Riverside County are focused around environments with accessible food and water.

The approximately 9.5-acre project (APNs 317-260-017 and -018) is located southeast of the intersection of Placentia Avenue and Tobacco Road, west of the city of Perris, within unincorporated Riverside County, California (Figure 2.0–1). The subject property is situated within Section 13, Township 4 South, Range 4 West of the San Bernardino Base and Meridian, as shown on the USGS (7.5-minute) *Perris, California* topographic quadrangle map (Figure 2.0–2). As proposed, the project includes the construction of an industrial warehouse along with associated infrastructure within the subject property (Figure 2.0–3).

Principal Investigator Tracy A. Stropes, M.A., RPA, directed the cultural resources study for the project. BFSA archaeologist Sabrina Corcoran, along with representatives from Soboba and Pechanga conducted the pedestrian survey of the project on December 6, 2023. The survey was conducted in 15-meter interval transects. Visibility of the natural ground surface was fair. Project Archaeologist Andrew J. Garrison M.A., RPA, prepared the technical report. Emily T. Soong created the report graphics and Shawna M. Krystek conducted technical editing and report production. Qualifications of key personnel are provided in Appendix A.

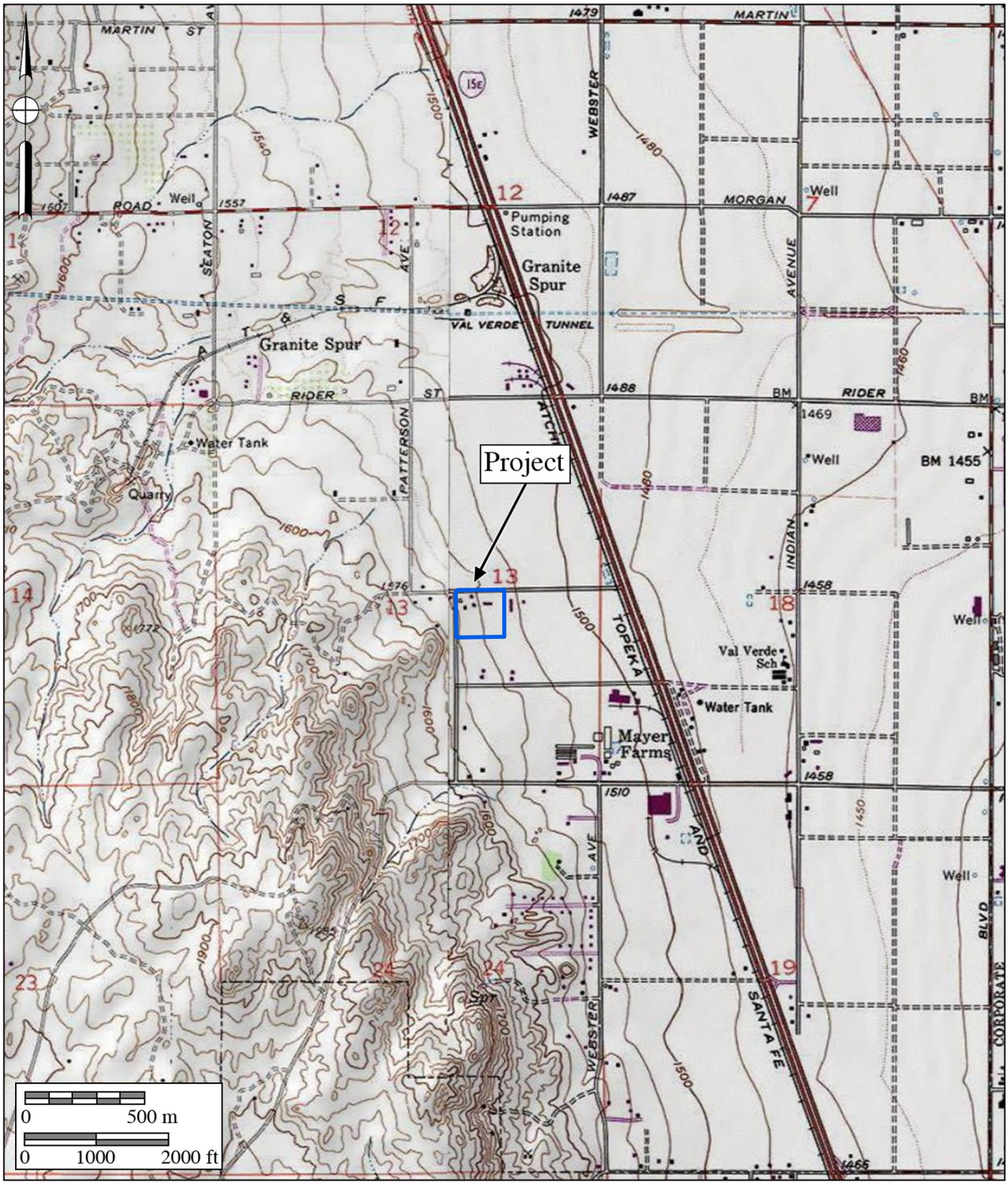
2.1 Previous Work

An archaeological records search for the project and the surrounding area within a one-mile radius was conducted by BFSA at the EIC at UCR (Appendix B). The search identified 88 resources within a one-mile radius of the current project area, none of which are recorded within the subject property. In addition, the search results identified 37 previous studies within one mile, none of which included the subject property.



BFSA Environmental Services
A Perennial Company

Figure 2.0–1
General Location Map
The Thrifty Oil Warehouse Project
DeLorme (1:250,000 series)



BFSA Environmental Services
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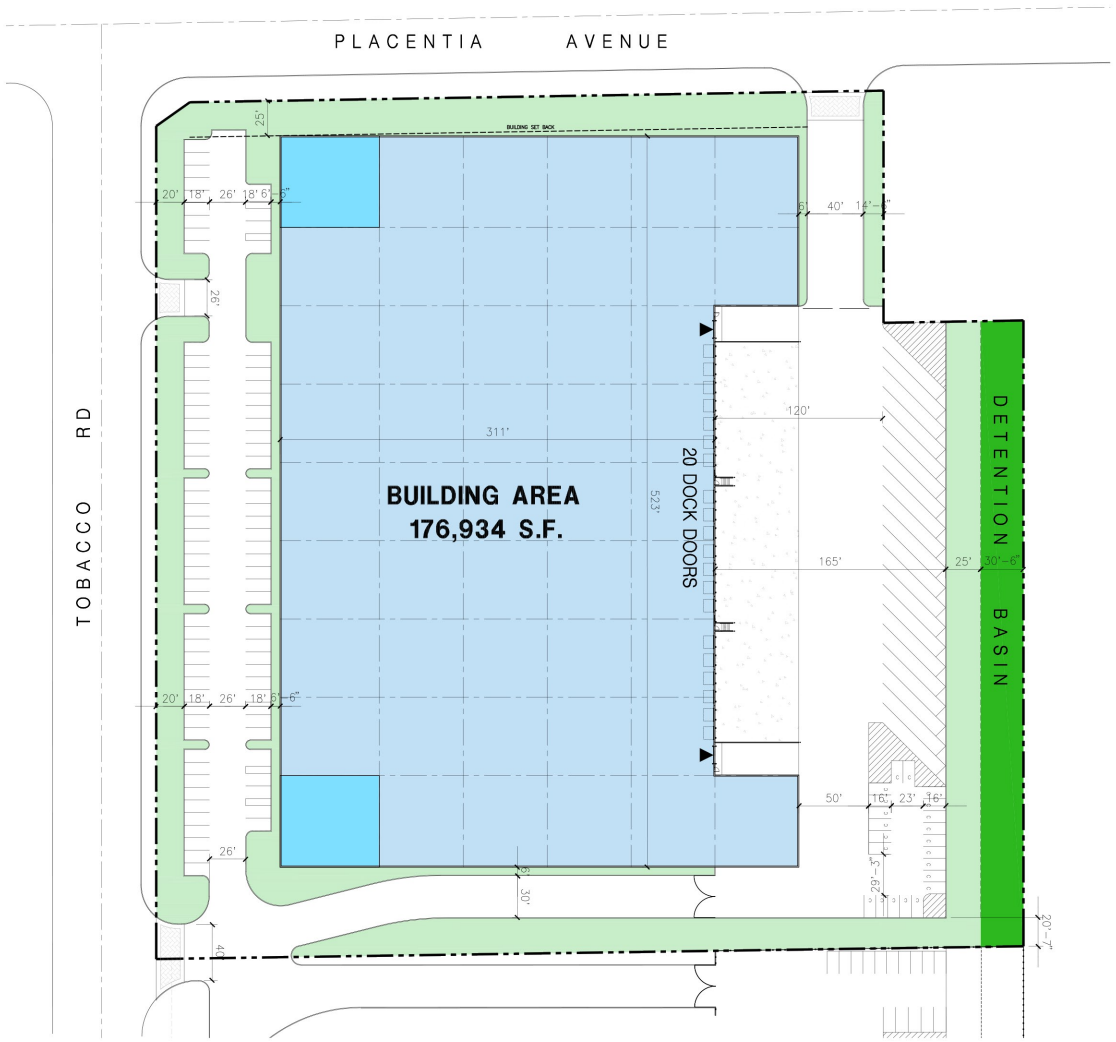
Figure 2.0–2
Project Location Map

The Thrifty Oil Warehouse Project

USGS *Perris* and *Steele Peak* Quadrangles (7.5-minute series)



Tabulation

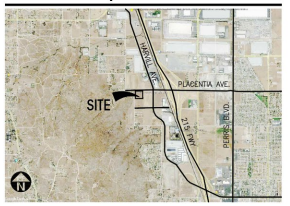
SITE AREA		
In s.f.		363,217 s.f.
In acres		8.34 ac
BUILDING AREA		
Office - 1st floor		3,000 s.f.
Office - 2nd floor		3,000 s.f.
Warehouse		170,934 s.f.
TOTAL		176,934 s.f.
FAR		0.49
COVERAGE		47.9%
CLEAR HEIGHT		30'
AUTO PARKING REQUIRED		
Office:	1/250 s.f.	24 stalls
Whse:	1/2000 s.f.	86 stalls
TOTAL		110 stalls
AUTO PARKING PROVIDED		
Standard (9' x 18')		88 stalls
Compact (8.5'x16')		22 stalls
Total		**110** stalls
TRAILER PARKING PROVIDED		
Trailer (10' x 53')		20 stalls
ZONING ORDINANCE FOR CITY		
Zoning Designation - Light Industrial		
Mead Valley Plan		
MAXIMUM BUILDING HEIGHT ALLOWED		
Height - 35' (1' additional height every 2' additional set back)		
MAXIMUM FLOOR AREA RATIO		
FAR - 0.25-0.60		
LANDSCAPE REQUIREMENT		
Percentage - 15 %		
LANDSCAPE PROVIDED		
In percentage -		19.6%
In s.f. -		71,184 s.f.
SETBACKS		
Building	Parking/Landscape	
Front -25', 50' if abuts R zone		20'
Side/Rear - 0'		0

Legend

- POTENTIAL OFFICE
- WAREHOUSE
- ▼ DRIVE THRU DOOR

Note: This is a conceptual plan. It is based on preliminary information which is not fully verified and may be incomplete. It is meant as a comparative aid in examining alternate development strategies and any quantities indicated are subject to revision as more reliable information becomes available.

Aerial Map



north

1" = 30'
0 30 60 90

BFSA Environmental Services
A Perennial Company

Figure 2.0–3
Site Plan
The Thrifty Oil Warehouse Project

2.2 Project Setting

The subject property is located west of the city of Perris, California, in the Val Verde area of Riverside County. The project lies within Riverside County, which is situated in the Peninsular Ranges Geologic Province of southern California. The mountain range, which lies in a northwest to southeast trend through the county, extends approximately 1,000 miles from the Raymond-Malibu Fault Zone in western Los Angeles County, to the southern tip of Baja California, Mexico.

Geologically, the property is within the central part of the Perris tectonic block and is underlain by lower Pleistocene (approximately 1.8 million- to perhaps 200,000- to 300,000-year-old) sandy, very old alluvial fan deposits (Wirths 2023). According to Woodford et al. (1971), the thickness of the alluvial deposits overlying the granitic bedrock basement beneath the project may be as much as 100 feet at the project's eastern boundary. The granitic basement occurs as extensive outcrops west of the project. The specific soil types within the subject property are mapped as Hanford coarse sandy loam, 2 to 8 percent slopes (HcC) and Greenfield sandy loam, 2 to 8 percent slopes, eroded (GyC2) (NRCS 2023). The property is relatively flat with elevations ranging between approximately 1,535 and 1,555 feet above mean sea level in the northwestern and southeastern corners respectively.

Vegetation on the property consists primarily of non-native weeds and grasses. In prehistoric times, the natural vegetation was likely dominated by winter annual grasses, forbs, and shrubs. Historically, mammals within the region include mule deer, coyote, bobcat, mountain lion, rabbit, hare, ground squirrel, kangaroo rat, and a variety of other small rodents. Birds include raptor, quail, mourning dove, geese and duck, heron, crow, finch, and sparrow.

2.3 Cultural Setting

The archaeological perspective seeks to reconstruct past cultures based upon the material remains left behind. This is done by using a range of scientific methodologies, almost all of which draw from evolutionary theory as the base framework. Archaeology allows one to look deeper into history or prehistory to see where the beginnings of ideas manifest via analysis of material culture, allowing for the understanding of outside forces that shape social change. Thus, the archaeological perspective allows one to better understand the consequences of the history of a given culture upon modern cultures. Archaeologists seek to understand the effects of past contexts of a given culture upon *this* moment in time, not culture in context *in* the moment.

Despite this, a distinction exists between "emic" and "etic" ways of understanding material culture, prehistoric lifeways, and cultural phenomena in general (Harris 1991). While "emic" perspectives serve the subjective ways in which things are perceived and interpreted by the participants within a culture, "etic" perspectives are those of an outsider looking in hoping to attain a more scientific or "objective" understanding of the given phenomena. Archaeologists, by definition, will almost always serve an etic perspective as a result of the very nature of their work. As indicated by Laylander et al. (2014), it has sometimes been suggested that an etic understanding and, therefore, an archaeological understanding, is an imperfect and potentially ethnocentric attempt to arrive at emic understanding. In contrast to this, however, an etic understanding of

material culture, cultural phenomena, and prehistoric lifeways can address significant dimensions of culture that lie entirely beyond the understanding or interest of those solely utilizing an emic perspective. As Harris (1991:20) appropriately points out, "Etic studies often involve the measurement and juxtaposition of activities and events that native informants find inappropriate or meaningless." This is also likely true of archaeological comparisons and juxtapositions of material culture. However, culture as a whole does not occur in a vacuum and is the result of several millennia of choices and consequences influencing everything from technology to religions, to institutions. Archaeology allows for the ability to not only see what came before, but to see how those choices, changes, and consequences affect the present. Where possible, archaeology should seek to address both emic and etic understandings to the extent that they may be recoverable from the archaeological record as manifestations of patterned human behavior (Laylander et al. 2014).

To that point, the culture history offered herein is primarily based upon archaeological (etic) and ethnographic (partially emic and partially etic) information. It is understood that the ethnographic record and early archaeological records were incompletely and imperfectly collected. In addition, in most cases, more than a century of intensive cultural change and cultural evolution had elapsed since the terminus of the prehistoric period. Coupled with the centuries and millennia of prehistoric change separating the "ethnographic present" from the prehistoric past, this has affected the emic and etic understandings of prehistoric cultural settings. Regardless, there remains a need to present the changing cultural setting within the region under investigation. As a result, both archaeological and Native American perspectives are offered when possible.

2.3.1 Introduction

Paleo Indian, Archaic Period Milling Stone Horizon, and the Late Prehistoric Takic groups are the three general cultural periods represented in Riverside County. The following discussion of the cultural history of Riverside County references the San Dieguito Complex, Encinitas Tradition, Milling Stone Horizon, La Jolla Complex, Pauma Complex, and San Luis Rey Complex, since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component present in the Riverside County area was primarily represented by the Cahuilla, Gabrielino, and Luiseño Indians.

Absolute chronological information, where possible, will be incorporated into this archaeological discussion to examine the effectiveness of continuing to interchangeably use these terms. Reference will be made to the geological framework that divides the archaeologically-based culture chronology of the area into four segments: the late Pleistocene (20,000 to 10,000 years before the present [YBP]), the early Holocene (10,000 to 6,650 YBP), the middle Holocene (6,650 to 3,350 YBP), and the late Holocene (3,350 to 200 YBP).

2.3.2 Paleo Indian Period (Late Pleistocene: 11,500 to circa 9,000 YBP)

Archaeologically, the Paleo Indian Period is associated with the terminus of the late Pleistocene (12,000 to 10,000 YBP). The environment during the late Pleistocene was cool and

moist, which allowed for glaciation in the mountains and the formation of deep, pluvial lakes in the deserts and basin lands (Moratto 1984). However, by the terminus of the late Pleistocene, the climate became warmer, which caused the glaciers to melt, sea levels to rise, greater coastal erosion, large lakes to recede and evaporate, extinction of Pleistocene megafauna, and major vegetation changes (Moratto 1984; Martin 1967, 1973; Fagan 1991). The coastal shoreline at 10,000 YBP, depending upon the particular area of the coast, was near the 30-meter isobath, or two to six kilometers further west than its present location (Masters 1983).

Paleo Indians were likely attracted to multiple habitat types, including mountains, marshlands, estuaries, and lakeshores. These people likely subsisted using a more generalized hunting, gathering, and collecting adaptation utilizing a variety of resources including birds, mollusks, and both large and small mammals (Erlandson and Colten 1991; Moratto 1984; Moss and Erlandson 1995).

2.3.3 Archaic Period (Early and Middle Holocene: circa 9,000 to 1,300 YBP)

Archaeological data indicates that between 9,000 and 8,000 YBP, a widespread complex was established in the southern California region, primarily along the coast (Warren and True 1961). This complex is locally known as the La Jolla Complex (Rogers 1939; Moriarty 1966), which is regionally associated with the Encinitas Tradition (Warren 1968) and shares cultural components with the widespread Milling Stone Horizon (Wallace 1955). The coastal expression of this complex appeared in southern California coastal areas and focused upon coastal resources and the development of deeply stratified shell middens that were primarily located around bays and lagoons. The older sites associated with this expression are located at Topanga Canyon, Newport Bay, Agua Hedionda Lagoon, and some of the Channel Islands. Radiocarbon dates from sites attributed to this complex span a period of over 7,000 years in this region, beginning over 9,000 YBP.

The Encinitas Tradition is best recognized for its pattern of large coastal sites characterized by shell middens, grinding tools that are closely associated with the marine resources of the area, cobble-based tools, and flexed human burials (Shumway et al. 1961; Smith and Moriarty 1985). While ground stone tools and scrapers are the most recognized tool types, coastal Encinitas Tradition sites also contain numerous utilized flakes, which may have been used to pry open shellfish. Artifact assemblages at coastal sites indicate a subsistence pattern focused upon shellfish collection and nearshore fishing. This suggests an incipient maritime adaptation with regional similarities to more northern sites of the same period (Koerper et al. 1986). Other artifacts associated with Encinitas Tradition sites include stone bowls, doughnut stones, discoidals, stone balls, and stone, bone, and shell beads.

The coastal lagoons in southern California supported large Milling Stone Horizon populations circa 6,000 YBP, as shown by numerous radiocarbon dates from the many sites adjacent to the lagoons. The ensuing millennia were not stable environmentally and, by 3,000 YBP, many of the coastal sites in central San Diego County had been abandoned (Gallegos 1987, 1992). The abandonment of the area is usually attributed to the sedimentation of coastal lagoons

and the resulting deterioration of fish and mollusk habitat. This is a well-documented situation at Batiquitos Lagoon, where over a 2,000-year period, dominant mollusk species occurring in archaeological middens shift from deep-water mollusks (*Argopecten* sp.) to species tolerant of tidal flat conditions (*Chione* sp.), indicating water depth and temperature changes (Miller 1966; Gallegos 1987).

This situation likely occurred for other small drainages (Buena Vista, Agua Hedionda, San Marcos, and Escondido creeks) along the central San Diego coast where low flow rates did not produce sufficient discharge to flush the lagoons they fed (Buena Vista, Agua Hedionda, Batiquitos, and San Elijo lagoons) (Byrd 1998). Drainages along the northern and southern San Diego coastline were larger and flushed the coastal hydrological features they fed, keeping them open to the ocean and allowing for continued human exploitation (Byrd 1998). Peñasquitos Lagoon exhibits dates as late as 2,355 YBP (Smith and Moriarty 1985) and San Diego Bay showed continuous occupation until the close of the Milling Stone Horizon (Gallegos and Kyle 1988). Additionally, data from several drainages in U.S. Marine Corps Base Camp Pendleton indicate a continued occupation of shell midden sites until the close of the period, indicating that coastal sites were not entirely abandoned during this time (Byrd 1998).

By 5,000 YBP, an inland expression of the La Jolla Complex is evident in the archaeological record, exhibiting influences from the Campbell Tradition from the north. These inland Milling Stone Horizon sites have been termed "Pauma Complex" (True 1958; Warren et al. 1961; Meighan 1954). By definition, Pauma Complex sites share a predominance of grinding implements (manos and metates), lack mollusk remains, have greater tool variety (including atlatl dart points, quarry-based tools, and crescentics), and seem to express a more sedentary lifestyle with a subsistence economy based upon the use of a broad variety of terrestrial resources. Although originally viewed as a separate culture from the coastal La Jolla Complex (True 1980), it appears that these inland sites may be part of a subsistence and settlement system utilized by the coastal peoples. Evidence from the 4S Ranch Project in inland San Diego County suggests that these inland sites may represent seasonal components within an annual subsistence round by La Jolla Complex populations (Raven-Jennings et al. 1996). Including both coastal and inland sites of this time period in discussions of the Encinitas Tradition, therefore, provides a more complete appraisal of the settlement and subsistence system exhibited by this cultural complex.

More recent work by Sutton has identified a more localized complex known as the Greven Knoll Complex. The Greven Knoll Complex is a redefined northern inland expression of the Encinitas Tradition first put forth by Mark Sutton and Jill Gardner (2010). Sutton and Gardner (2010:25) state that "[t]he early millingstone archaeological record in the northern portion of the interior southern California was not formally named but was often referred to as 'Inland Millingstone,' 'Encinitas,' or even 'Topanga.'" Therefore, they proposed that all expressions of the inland Milling Stone in southern California north of San Diego County be grouped together in the Greven Knoll Complex.

The Greven Knoll Complex, as postulated by Sutton and Gardner (2010), is broken into three phases and obtained its name from the type-site Greven Knoll located in Yucaipa, California.

Presently, the Greven Knoll Site is part of the Yukaipa't Site (SBR-1000) and was combined with the adjacent Simpson Site. Excavations at Greven Knoll recovered manos, metates, projectile points, discoidal cogged stones, and a flexed inhumation with a possible cremation (Kowta 1969:39). It is believed that the Greven Knoll Site was occupied between 5,000 and 3,500 YBP. The Simpson Site contained mortars, pestles, side-notched points, and stone and shell beads. Based upon the data recovered at these sites, Kowta (1969:39) suggested that "coastal Milling Stone Complexes extended to and interdigitated with the desert Pinto Basin Complex in the vicinity of the Cajon Pass."

Phase I of the Greven Knoll Complex is generally dominated by the presence of manos and metates, core tools, hammerstones, large dart points, flexed inhumations, and occasional cremations. Mortars and pestles are absent from this early phase, and the subsistence economy emphasized hunting. Sutton and Gardner (2010:26) propose that the similarity of the material culture of Greven Knoll Phase I and that found in the Mojave Desert at Pinto Period sites indicates that the Greven Knoll Complex was influenced by neighbors to the north at that time. Accordingly, Sutton and Gardner (2010) believe that Greven Knoll Phase I may have appeared as early as 9,400 YBP and lasted until about 4,000 YBP.

Greven Knoll Phase II is associated with a period between 4,000 and 3,000 YBP. Artifacts common to Greven Knoll Phase II include manos and metates, Elko points, core tools, and discoidals. Pestles and mortars are present; however, they are only represented in small numbers. Finally, there is an emphasis upon hunting and gathering for subsistence (Sutton and Gardner 2010:8).

Greven Knoll Phase III includes manos, metates, Elko points, scraper planes, choppers, hammerstones, and discoidals. Again, small numbers of mortars and pestles are present. Greven Knoll Phase III spans from approximately 3,000 to 1,000 YBP and shows a reliance upon seeds and yucca. Hunting is still important, but bones seem to have been processed to obtain bone grease more often in this later phase (Sutton and Gardner 2010:8).

The shifts in food processing technologies during each of these phases indicate a change in subsistence strategies; although people were still hunting for large game, plant-based foods eventually became the primary dietary resource (Sutton 2011a). Sutton's (2011b) argument posits that the development of mortars and pestles during the middle Holocene can be attributed to the year-round exploitation of acorns as a main dietary provision. Additionally, the warmer and drier climate may have been responsible for groups from the east moving toward coastal populations, which is archaeologically represented by the interchange of coastal and eastern cultural traits (Sutton 2011a).

2.3.4 Late Prehistoric Period (Late Holocene: 1,300 YBP to 1790)

Many Luiseño hold the worldview that, as a population, they were created in southern California. Archaeological and anthropological data, however, proposes a scientific archaeological perspective, suggesting that at approximately 1,350 YBP, Takic-speaking groups from the Great Basin region moved into Riverside County, marking the transition to the Late

Prehistoric Period. An analysis of the Takic expansion by Sutton (2009) indicates that inland southern California was occupied by "proto-Yuman" populations before 1,000 YBP. The comprehensive, multi-phase model offered by Sutton (2009) employs linguistic, ethnographic, archaeological, and biological data to solidify a reasonable argument for population replacement of Takic groups to the north by Penutians (Laylander 1985). As a result, it is believed that Takic expansion occurred starting around 3,500 YBP moving toward southern California, with the Gabrielino language diffusing south into neighboring Yuman (Hokan) groups around 1,500 to 1,000 YBP, possibly resulting in the Luiseño dialect.

Based upon Sutton's model, the final Takic expansion would not have occurred until about 1,000 YBP, resulting in Vanyume, Serrano, Cahuilla, and Cupeño dialects. The model suggests that the Luiseño did not simply replace Hokan speakers, but were rather a northern San Diego County/southern Riverside County Yuman population who adopted the Takic language. This period is characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, yet effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between A.D. 400 and 600 and the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including Cottonwood series points. Other hallmarks of the Late Prehistoric Period include extensive trade networks as far-reaching as the Colorado River Basin and cremation of the dead.

2.3.5 Protohistoric Period (Late Holocene: 1790 to Present)

Ethnohistoric and ethnographic evidence indicates that three Takic-speaking groups occupied portions of Riverside County: the Cahuilla, the Gabrielino, and the Luiseño. The geographic boundaries between these groups in pre- and proto-historic times are difficult to place, but the project is located well within the borders of ethnographic Luiseño territory. This group was a seasonal hunting and gathering people with cultural elements that were very distinct from Archaic Period peoples. These distinctions include cremation of the dead, the use of the bow and arrow, and exploitation of the acorn as a main food staple (Moratto 1984). Along the coast, the Luiseño made use of available marine resources by fishing and collecting mollusks for food. Seasonally available terrestrial resources, including acorns and game, were also sources of nourishment for Luiseño groups. Elaborate kinship and clan systems between the Luiseño and other groups facilitated a wide-reaching trade network that included trade of Obsidian Butte obsidian and other resources from the eastern deserts, as well as steatite from the Channel Islands.

According to Charles Handley (1967), the primary settlements of Late Prehistoric Luiseño Indians in the San Jacinto Plain were represented by Ivah and Soboba near Soboba Springs, Jusipah near the town of San Jacinto, Ararah in Webster's Canyon en route to Idyllwild, Pahsitha near Big Springs Ranch southeast of Hemet, and Corova in Castillo Canyon. These locations share features such as the availability of food and water resources. Features of this land use include petroglyphs and pictographs, as well as widespread milling, which is evident in bedrock and portable

implements. Groups in the vicinity of the project, neighboring the Luiseño, include the Cahuilla and the Gabrielino. Ethnographic data for the three groups is presented below.

Luiseño: An Archaeological and Ethnographic Perspective

When contacted by the Spanish in the sixteenth century, the Luiseño occupied a territory bounded on the west by the Pacific Ocean, on the east by the Peninsular Ranges mountains at San Jacinto (including Palomar Mountain to the south and Santiago Peak to the north), on the south by Agua Hedionda Lagoon, and on the north by Aliso Creek in present-day San Juan Capistrano. The Luiseño were a Takic-speaking people more closely related linguistically and ethnographically to the Cahuilla, Gabrielino, and Cupeño to the north and east rather than the Kumeyaay who occupied territory to the south. The Luiseño differed from their neighboring Takic speakers in having an extensive proliferation of social statuses, a system of ruling families that provided ethnic cohesion within the territory, a distinct worldview that stemmed from the use of datura (a hallucinogen), and an elaborate religion that included the creation of sacred sand paintings depicting the deity Chingichngish (Bean and Shipek 1978; Kroeber 1976).

Subsistence and Settlement

The Luiseño occupied sedentary villages most often located in sheltered areas in valley bottoms, along streams, or along coastal strands near mountain ranges. Villages were located near water sources to facilitate acorn leaching and in areas that offered thermal and defensive protection. Villages were comprised of areas that were publicly and privately (by family) owned. Publicly owned areas included trails, temporary campsites, hunting areas, and quarry sites. Inland groups had fishing and gathering sites along the coast that were intensively used from January to March when inland food resources were scarce. During October and November, most of the village would relocate to mountain oak groves to harvest acorns. The Luiseño remained at village sites for the remainder of the year, where food resources were within a day's travel (Bean and Shipek 1978; Kroeber 1976).

The most important food source for the Luiseño was the acorn, six different species of which were used (*Quercus californica, Quercus agrifolia, Quercus chrysolepis, Quercus dumosa, Quercus engelmannii,* and *Quercus wislizenii*). Seeds, particularly of grasses, flowering plants, and mints, were also heavily exploited. Seed-bearing species were encouraged through controlled burns, which were conducted at least every third year. A variety of other stems, leaves, shoots, bulbs, roots, and fruits were also collected. Hunting augmented this vegetal diet. Animal species taken included deer, rabbit, hare, woodrat, ground squirrel, antelope, quail, duck, freshwater fish from mountain streams, marine mammals, and other sea creatures such as fish, crustaceans, and mollusks (particularly abalone, or *Haliotis* sp.). In addition, a variety of snakes, small birds, and rodents were eaten (Bean and Shipek 1978; Kroeber 1976).

Social Organization

Social groups within the Luiseño nation consisted of patrilinear families or clans, which

were politically and economically autonomous. Several clans comprised a religious party, or nota, which was headed by a chief who organized ceremonies and controlled economics and warfare. The chief had assistants who specialized in particular aspects of ceremonial or environmental knowledge and who, with the chief, were part of a religion-based social group with special access to supernatural power, particularly that of Chingichngish. The positions of chief and assistants were hereditary, and the complexity and multiplicity of these specialists' roles likely increased in coastal and larger inland villages (Bean and Shipek 1978; Kroeber 1976; Strong 1929).

Marriages were arranged by the parents, often made to forge alliances between lineages. Useful alliances included those between groups of differing ecological niches and those that resulted in territorial expansion. Residence was patrilocal (Bean and Shipek 1978; Kroeber 1976). Women were primarily responsible for plant gathering and men principally hunted, but at times, particularly during acorn and marine mollusk harvests, there was no division of labor. Elderly women cared for children and elderly men participated in rituals, ceremonies, and political affairs. They were also responsible for manufacturing hunting and ritual implements. Children were taught subsistence skills at the earliest age possible (Bean and Shipek 1978; Kroeber 1976).

Material Culture

House structures were conical, partially subterranean, and thatched with reeds, brush, or bark. Ramadas were rectangular, protected workplaces for domestic chores such as cooking. Ceremonial sweathouses were important in purification rituals; these were round and partially subterranean thatched structures covered with a layer of mud. Another ceremonial structure was the wámkis (located in the center of the village, serving as the place of rituals), where sand paintings and other rituals associated with the Chingichngish religious group were performed (Bean and Shipek 1978; Kroeber 1976).

Clothing was minimal; women wore a cedar-bark and netted twine double apron, and men wore a waist cord. In cold weather, cloaks or robes of rabbit fur, deerskin, or sea otter fur were worn by both sexes. Footwear included deerskin moccasins and sandals fashioned from yucca fibers. Adornments included bead necklaces and pendants made of bone, clay, stone, shell, bear claw, mica, deer hooves, and abalone shell. Men wore ear and nose piercings made from cane or bone, which were sometimes decorated with beads. Other adornments were commonly decorated with semiprecious stones including quartz, topaz, garnet, opal, opalite, agate, and jasper (Bean and Shipek 1978; Kroeber 1976).

Hunting implements included the bow and arrow. Arrows were tipped with either a carved, fire-hardened wood tip or a lithic point, usually fashioned from locally available metavolcanic material or quartz. Throwing sticks fashioned from wood were used in hunting small game, while deer head decoys were used during deer hunts. Coastal groups fashioned dugout canoes for nearshore fishing and harvested fish with seines, nets, traps, and hooks made of bone or abalone shell (Bean and Shipek 1978; Kroeber 1976).

The Luiseño had a well-developed basket industry. Baskets were used in resource gathering, food preparation, storage, and food serving. Ceramic containers were shaped by paddle

and anvil and fired in shallow, open pits to be used for food storage, cooking, and serving. Other utensils included wood implements, steatite bowls, and ground stone manos, metates, mortars, and pestles (Bean and Shipek 1978; Kroeber 1976). Additional tools such as knives, scrapers, choppers, awls, and drills were also used. Shamanistic items include soapstone or clay smoking pipes and crystals made of quartz or tourmaline (Bean and Shipek 1978; Kroeber 1976).

Cahuilla: An Archaeological and Ethnographic Perspective

At the time of Spanish contact in the sixteenth century, the Cahuilla occupied territory that included the San Bernardino Mountains, Orocopia Mountain, and the Chocolate Mountains to the west, Salton Sea and Borrego Springs to the south, Palomar Mountain and Lake Mathews to the west, and the Santa Ana River to the north. The Cahuilla are a Takic-speaking people closely related to their Gabrielino and Luiseño neighbors, although relations with the Gabrielino were more intense than with the Luiseño. They differ from the Luiseño and Gabrielino in that their religion is more similar to the Mohave tribes of the eastern deserts than the Chingichngish religious group of the Luiseño and Gabrielino. The following is a summary of ethnographic data regarding this group (Bean 1978; Kroeber 1976).

Subsistence and Settlement

Cahuilla villages were typically permanent and located upon low terraces within canyons in proximity to water sources. These locations proved to be rich in food resources and also afforded protection from prevailing winds. Villages had areas that were publicly owned and areas that were privately owned by clans, families, or individuals. Each village was associated with a particular lineage and series of sacred sites that included unique petroglyphs and pictographs. Villages were occupied throughout the year; however, during a several-week period in the fall, most of the village members relocated to mountain oak groves to take part in acorn harvesting (Bean 1978; Kroeber 1976).

The Cahuilla's use of plant resources is well documented. Plant foods harvested by the Cahuilla included valley oak acorns and single-leaf pinyon pine nuts. Other important plant species included bean and screw mesquite, agave, Mohave yucca, cacti, palm, chia, quail brush, yellowray goldfield, goosefoot, manzanita, catsclaw, desert lily, mariposa lily, and several other species such as grass seed. Several agricultural domesticates were acquired from the Colorado River tribes including corn, bean, squash, and melon grown in limited amounts. Animal species taken included deer, bighorn sheep, pronghorn antelope, rabbit, hare, rat, quail, dove, duck, roadrunner, and a variety of rodents, reptiles, fish, and insects (Bean 1978; Kroeber 1976).

Social Organization

The Cahuilla was not a political nation, but rather a cultural nationality with a common language. Two non-political, non-territorial patrimoieties were recognized: the Wildcats (túktem) and the Coyotes (?ístam). Lineage and kinship were memorized at a young age among the Cahuilla, providing a backdrop for political relationships. Clans were comprised of three to 10

lineages; each lineage owned a village site and specific resource areas. Lineages within a clan cooperated in subsistence activities, defense, and rituals (Bean 1978; Kroeber 1976).

A system of ceremonial hierarchy operated within each lineage. The hierarchy included the lineage leader, who was responsible for leading subsistence activities, guarding the sacred bundle, and negotiating with other lineage leaders in matters concerning land use, boundary disputes, marriage arrangements, trade, warfare, and ceremonies. The ceremonial assistant to the lineage leader was responsible for organizing ceremonies. A ceremonial singer possessed and performed songs at rituals and trained assistant singers. The shaman cured illnesses through supernatural powers, controlled natural phenomena, and was the guardian of ceremonies, keeping evil spirits away. The diviner was responsible for finding lost objects, telling future events, and locating game and other food resources. Doctors were usually older women who cured various ailments and illnesses with their knowledge of medicinal herbs. Finally, certain Cahuilla specialized as traders, who ranged as far west as Santa Catalina and as far east as the Gila River (Bean 1978; Kroeber 1976).

Marriages were arranged by parents from opposite moieties. When a child was born, an alliance formed between the families, which included frequent reciprocal exchanges. The Cahuilla kinship system extended to relatives within five generations. Important economic decisions, primarily the distribution of goods, operated within this kinship system (Bean 1978; Kroeber 1976).

Material Culture

Cahuilla houses were dome-shaped or rectangular, thatched structures. The home of the lineage leader was the largest, located near the ceremonial house with the best access to water. Other structures within the village included the men's sweathouse and granaries (Bean 1978; Kroeber 1976).

Cahuilla clothing, like other groups in the area, was minimal. Men typically wore a loincloth and sandals; women wore skirts made from mesquite bark, animal skin, or tules. Babies wore mesquite bark diapers. Rabbit skin cloaks were worn in cold weather (Bean 1978; Kroeber 1976).

Hunting implements included the bow and arrow, throwing sticks, and clubs. Grinding tools used in food processing included manos, metates, and wood mortars. The Cahuilla were known to use long grinding implements made from wood to process mesquite beans; the mortar was typically a hollowed log buried in the ground. Other tools included steatite arrow shaft straighteners (Bean 1978; Kroeber 1976).

Baskets were made from rush, deer grass, and skunkbush. Different species and leaves were chosen for different colors in the basket design. Coiled-ware baskets were either flat (for plates, trays, or winnowing), bowl-shaped (for food serving), deep, inverted, and cone-shaped (for transporting), or rounded and flat-bottomed for storing utensils and personal items (Bean 1978; Kroeber 1976).

Cahuilla pottery was made from a thin, red-colored ceramic ware that was often painted

and incised. Four basic vessel types are known for the Cahuilla: small-mouthed jars, cooking pots, bowls, and dishes. Additionally, smoking pipes and flutes were fashioned from ceramic (Bean 1978; Kroeber 1976).

Gabrielino: An Archaeological and Ethnographic Perspective

The territory of the Gabrielino at the time of Spanish contact covers much of present-day Los Angeles and Orange counties. The southern extent of this culture area is bounded by Aliso Creek, the eastern extent is located east of present-day San Bernardino along the Santa Ana River, the northern extent includes the San Fernando Valley, and the western extent includes portions of the Santa Monica Mountains. The Gabrielino also occupied several Channel Islands including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and most populous aboriginal groups in all of southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California (Bean and Smith 1978; Kroeber 1976).

Subsistence and Settlement

The Gabrielino lived in permanent villages and occupied smaller resource-gathering camps at various times of the year depending upon the seasonality of the resource. Larger villages were comprised of several families or clans, while smaller, seasonal camps typically housed smaller family units. The coastal area between San Pedro and Topanga Canyon was the location of primary subsistence villages, while secondary sites were located near inland sage stands, oak groves, and pine forests. Permanent villages were located along rivers and streams and in sheltered areas along the coast. As previously mentioned, the Channel Islands were also the locations of relatively large settlements (Bean and Smith 1978; Kroeber 1976).

Resources procured along the coast and on the islands were primarily marine in nature and included tuna, swordfish, ray, shark, California sea lion, Stellar sea lion, harbor seal, northern elephant seal, sea otter, dolphin, porpoise, various waterfowl species, numerous fish species, purple sea urchin, and mollusks, such as rock scallop, California mussel, and limpet. Inland resources included oak acorn, pine nut, Mohave yucca, cacti, sage, grass nut, deer, rabbit, hare, rodent, quail, duck, and a variety of reptiles such as western pond turtle and numerous snake species (Bean and Smith 1978; Kroeber 1976).

Social Organization

Little is known about the social structure of the Gabrielino; however, there appears to have been at least three social classes: 1) the elite, which included the rich, chiefs, and their immediate family; 2) a middle class, which included people of relatively high economic status or long-established lineages; and 3) a class of people that included most other individuals in the society. Villages were politically autonomous units comprised of several lineages. During times of the

year when certain seasonal resources were available, the village would divide into lineage groups and move out to exploit them, returning to the village between forays (Bean and Smith 1978; Kroeber 1976).

Each lineage had its own leader, with the village chief coming from the dominant lineage. Several villages might be allied under a paramount chief. Chiefly positions were of an ascribed status, most often passed to the eldest son. Chiefly duties included providing village cohesion, leading warfare and peace negotiations with other groups, collecting tribute from the village(s) under his jurisdiction, and arbitrating disputes within the village(s). The status of the chief was legitimized by his safekeeping of the sacred bundle, a representation of the link between the material and spiritual realms and the embodiment of power (Bean and Smith 1978; Kroeber 1976).

Shamans were leaders in the spirit realm. The duties of the shaman included conducting healing and curing ceremonies, guarding the sacred bundle, locating lost items, identifying and collecting poisons for arrows, and making rain (Bean and Smith 1978; Kroeber 1976).

Marriages were made between individuals of equal social status and, in the case of powerful lineages, marriages were arranged to establish political ties between the lineages (Bean and Smith 1978; Kroeber 1976).

Men conducted the majority of the heavy labor, hunting, fishing, and trading with other groups. Women's duties included gathering and preparing plant and animal resources, and making baskets, pots, and clothing (Bean and Smith 1978; Kroeber 1976).

Material Culture

Gabrielino houses were domed, circular structures made of thatched vegetation. Houses varied in size and could house from one to several families. Sweathouses (semicircular, earth-covered buildings) were public structures used in male social ceremonies. Other structures included menstrual huts and a ceremonial structure called a yuvar, an open-air structure built near the chief's house (Bean and Smith 1978; Kroeber 1976).

Clothing was minimal; men and children most often went naked, while women wore deerskin or bark aprons. In cold weather, deerskin, rabbit fur, or bird skin (with feathers intact) cloaks were worn. Island and coastal groups used sea otter fur for cloaks. In areas of rough terrain, yucca fiber sandals were worn. Women often used red ochre upon their faces and skin for adornment or protection from the sun. Adornment items included feathers, fur, shells, and beads (Bean and Smith 1978; Kroeber 1976).

Hunting implements included wood clubs, sinew-backed bows, slings, and throwing clubs. Maritime implements included rafts, harpoons, spears, hooks and lines, and nets. A variety of other tools included deer scapulae saws, bone and shell needles, bone awls, scrapers, bone or shell flakers, wedges, stone knives and drills, metates, mullers, manos, shell spoons, bark platters, and wood paddles and bowls. Baskets were made from rush, deer grass, and skunkbush. Baskets were fashioned for hoppers, plates, trays, and winnowers for leaching, straining, and gathering. Baskets were also used for storing, preparing, and serving food, and for keeping personal and ceremonial items (Bean and Smith 1978; Kroeber 1976).

The Gabrielino had exclusive access to soapstone, or steatite, procured from Santa Catalina Island quarries. This highly prized material was used for making pipes, animal carvings, ritual objects, ornaments, and cooking utensils. The Gabrielino profited well from trading steatite since it was valued so much by groups throughout southern California (Bean and Smith 1978; Kroeber 1976).

2.3.6 Ethnohistoric Period (1769 to Present)

Traditionally, the history of the state of California has been divided into three general periods: the Spanish Period (1769 to 1821), the Mexican Period (1822 to 1846), and the American Period (1848 to present) (Caughey 1970). The American Period is often further subdivided into additional phases: the nineteenth century (1848 to 1900), the early twentieth century (1900 to 1950), and the Modern Period (1950 to present). From an archaeological standpoint, all of these phases can be referred to together as the Ethnohistoric Period. This provides a valuable tool for archaeologists, as ethnohistory is directly concerned with the study of indigenous or non-Western peoples from a combined historical/anthropological viewpoint, which employs written documents, oral narrative, material culture, and ethnographic data for analysis.

European exploration along the California coast began in 1542 with the landing of Juan Rodríguez Cabrillo and his men at San Diego Bay. Sixty years after the Cabrillo expeditions, an expedition under Sebastián Vizcaíno made an extensive and thorough exploration of the Pacific coast. Although the voyage did not extend beyond the northern limits of the Cabrillo track, Vizcaíno had the most lasting effect upon the nomenclature of the coast. Many of his place names have survived, whereas practically every one of the names created by Cabrillo have faded from use. For instance, Cabrillo named the first (now) United States port he stopped at “San Miguel”; 60 years later, Vizcaíno changed it to “San Diego” (Rolle 1969). The early European voyages observed Native Americans living in villages along the coast but did not make any substantial, long-lasting impact. At the time of contact, the Luiseño population was estimated to have ranged from 4,000 to as many as 10,000 individuals (Bean and Shipek 1978; Kroeber 1976).

The historic background of the project area began with the Spanish colonization of Alta California. The first Spanish colonizing expedition reached southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). As a result, by the late eighteenth century, a large portion of southern California was overseen by Mission San Luis Rey (San Diego County), Mission San Juan Capistrano (Orange County), and Mission San Gabriel (Los Angeles County), who began colonizing the region and surrounding areas (Chapman 1921).

Up until this time, the only known way to feasibly travel from Sonora to Alta California was by sea. In 1774, Juan Bautista de Anza, an army captain at Tubac, requested and was given permission by the governor of the Mexican State of Sonora to establish an overland route from Sonora to Monterey (Chapman 1921). In doing so, Juan Bautista de Anza passed through Riverside County and described the area in writing for the first time (Caughey 1970; Chapman 1921). In 1797, Father Fermín de Lasuén (of Mission San Diego de Alcalá), Father Norberto de

Santiago, and Corporal Pedro Lisalde (of Mission San Juan Capistrano) led an expedition through southwestern Riverside County in search of a new mission site to establish a presence between San Diego and San Juan Capistrano (Engelhardt 1921). Their efforts ultimately resulted in the establishment of Mission San Luis Rey in Oceanside, California.

Each mission gained power through the support of a large, subjugated Native American workforce. As the missions grew, livestock holdings increased and became increasingly vulnerable to theft. In order to protect their interests, the southern California missions began to expand inland to try and provide additional security (Beattie and Beattie 1939; Caughey 1970). In order to meet their needs, the Spaniards embarked upon a formal expedition in 1806 to find potential locations within what is now the San Bernardino Valley. As a result, by 1810, Father Francisco Dumetz of Mission San Gabriel had succeeded in establishing a religious site, or capilla, at a Cahuilla rancheria called Guachama (Beattie and Beattie 1939). San Bernardino Valley received its name from this site, which was dedicated to San Bernardino de Siena by Father Dumetz. The Guachama rancheria was located in present-day Bryn Mawr in San Bernardino County.

These early colonization efforts were followed by the establishment of estancias at Puente (circa 1816) and San Bernardino (circa 1819) near Guachama (Beattie and Beattie 1939). These efforts were soon mirrored by the Spaniards from Mission San Luis Rey, who in turn established a presence in what is now Lake Elsinore, Temecula, and Murrieta (Chapman 1921). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1961). Throughout this period, the Native American populations were decimated by introduced diseases, a drastic shift in diet resulting in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

Mexico achieved independence from Spain in 1822 and became a federal republic in 1824. As a result, both Baja and Alta California became classified as territories (Rolle 1969). Shortly thereafter, the Mexican Republic sought to grant large tracts of private land to its citizens to begin to encourage immigration to California and to establish its presence in the region. Part of the establishment of power and control included the desecularization of the missions circa 1832. These same missions were also located on some of the most fertile land in California and, as a result, were considered highly valuable. The resulting land grants, known as "ranchos," covered expansive portions of California and, by 1846, more than 600 land grants had been issued by the Mexican government. Rancho Jurupa was the first rancho to be established and was issued to Juan Bandini in 1838. Although Bandini primarily resided in San Diego, Rancho Jurupa was located in what is now Riverside County (Pourade 1963). A review of Riverside County place names quickly illustrates that many of the ranchos in Riverside County lent their names to present-day locations, including Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo (Gunther 1984). As was typical of many ranchos, these were all located in the valley environments within western Riverside County.

The treatment of Native Americans grew worse during the Rancho Period. Most of the

Native Americans were forced off of their land or put to work on the now privately-owned ranchos, most often as slave labor. In light of the brutal ranchos, the degree to which Native Americans had become dependent upon the mission system is evident when, in 1838, a group of Native Americans from Mission San Luis Rey petitioned government officials in San Diego to relieve suffering at the hands of the rancheros:

> We have suffered incalculable losses, for some of which we are in part to be blamed for because many of us have abandoned the Mission … We plead and beseech you … to grant us a Rev. Father for this place. We have been accustomed to the Rev. Fathers and to their manner of managing the duties. We labored under their intelligent directions, and we were obedient to the Fathers according to the regulations, because we considered it as good for us. (Brigandi 1998:21)

Native American culture had been disrupted to the point where they could no longer rely upon prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become upon the missionaries, but it also indicates a marked contrast in the way the Spanish treated the Native Americans compared to the Mexican and United States ranchers. Spanish colonialism (missions) is based upon utilizing human resources while integrating them into their society. The Mexican and American ranchers did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources, and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

By 1846, tensions between the United States and Mexico had escalated to the point of war (Rolle 1969). In order to reach a peaceful agreement, the Treaty of Guadalupe Hidalgo was put into effect in 1848, which resulted in the annexation of California to the United States. Once California opened to the United States, waves of settlers moved in searching for gold mines, business opportunities, political opportunities, religious freedom, and adventure (Rolle 1969; Caughey 1970). By 1850, California had become a state and was eventually divided into 27 separate counties. While a much larger population was now settling in California, this was primarily in the central valley, San Francisco, and the Gold Rush region of the Sierra Nevada mountain range (Rolle 1969; Caughey 1970). During this time, southern California grew at a much slower pace than northern California and was still dominated by the cattle industry that was established during the earlier rancho period. However, by 1859, the first United States Post Office in what would eventually become Riverside County was set up at John Magee's store on the Temecula Rancho (Gunther 1984).

During the same decade, circa 1852, the Native Americans of southern Riverside County, including the Luiseño and the Cahuilla, thought they had signed a treaty resulting in their ownership of all lands from Temecula to Aguanga east to the desert, including the San Jacinto Valley and the San Gorgonio Pass. The Temecula Treaty also included food and clothing provisions for the Native Americans. However, Congress never ratified these treaties, and the

promise of one large reservation was rescinded (Brigandi 1998).

With the completion of the Southern Pacific Railroad in 1869, southern California saw its first major population expansion. The population boom continued circa 1874 with the completion of connections between the Southern Pacific Railroad in Sacramento to the transcontinental Central Pacific Railroad in Los Angeles (Rolle 1969; Caughey 1970). The population influx brought farmers, land speculators, and prospective developers to the region. As the Jurupa area became more and more populated, circa 1870, Judge John Wesley North and a group of associates founded the city of Riverside on part of the former rancho.

Although the first orange trees were planted in Riverside County circa 1871, it was not until a few years later when a small number of Brazilian navel orange trees were established that the citrus industry truly began in the region (Patterson 1971). The Brazilian navel orange was well suited to the climate of Riverside County and thrived with assistance from several extensive irrigation projects. At the close of 1882, an estimated half a million citrus trees were present in California. It is estimated that nearly half of that citrus tree population was in Riverside County. Population growth and 1880s tax revenue from the booming citrus industry prompted the official formation of Riverside County in 1893 out of portions of what was once San Bernardino County (Patterson 1971).

Shortly thereafter, with the start of World War I, the United States began to develop a military presence in Riverside County with the construction of March Air Reserve Base. During World War II, Camp Anza and Camp Haan were constructed, with the former located in the western part of the city of Riverside and the latter in what is now the current location of the National Veteran's Cemetery. In the decades that followed, populations spread throughout the county into Lake Elsinore, Corona, Norco, Murrieta, and Wildomar. However, a significant portion of the county remained largely agricultural well into the 1970s (Patterson 1971). Following the 1970s, Riverside saw a period of dramatic population increase as the result of new development, more than doubling the population of the county to a population of over 1.3 million residents.

2.3.7 General History of the Val Verde Region

The project is located within an area traditionally known as Val Verde, which has historically been associated with the nearby city of Perris. In 1881, the California Southern Railroad laid the tracks for the transcontinental route of the Santa Fe Railway through the plains east of the project. At this time, the area where the railroad was placed was referred to as the San Jacinto Plains. Surveying and construction of the railroad route was led by Patrick Thomas Perris, for whom the city of Perris was named. The railroad was completed in 1882, which allowed hundreds of settlers to enter the area for homesteading, most of them settling in Pinacate to the south (City of Perris 2013).

While still part of San Diego County, Rancho San Jacinto Nuevo y Portrero was patented to T.W. Sutherland, guardian of Miguel Pedrorena's children, in 1883 (Robinson 1997). In 1885, the citizens of Pinacate gathered together to create a more conveniently located station along the

railroad route and, in 1886, after much hard work, the town site of Perris was established (City of Perris 2013). In 1911, Perris became an incorporated city, relying heavily upon dry grain farming and citrus groves (City of Perris 2013).

The Val Verde Tract was platted in 1893 about five miles northwest of Perris. One of the owners of the tract, J.R. Nance, was also instrumental in promoting the city of Perris and the Riverside Tract to the north of the current project (Gunther 1984). The community briefly flourished due to the establishment of a railway siding and station. The area was dominated by agricultural properties focused upon grain, grapes, potatoes, melons, alfalfa, and green vegetables. The community had a post office between 1894 and 1904, and again from 1918 through 1930. The post office was discontinued twice, and mail was forwarded to Perris (Gunther 1984).

A portion of the Colorado River Aqueduct was constructed in the community in 1939 to transport water from the river to nearby Lake Mathews. The alignment of the aqueduct within Val Verde was named the Val Verde Cut and the Val Verde Tunnel. The Val Verde Cut was the only portion of the aqueduct that was unlined, running for approximately one mile (Gunther 1984). Due to the aqueduct and availability of water in the region, the Val Verde community continued to be dominated by agriculture throughout the twentieth century.

2.4 Research Goals

The primary goal of the research design is to attempt to understand the way in which humans have used the land and resources within the project area through time, as well as to aid in the determination of resource significance. For the current project, the study area under investigation is the western portion of Riverside County. The scope of work for the archaeological program conducted for the Thrifty Oil Warehouse Project included an intensive pedestrian survey of the entire approximately 9.5-acre project. Given the area involved and the narrow focus of the cultural resources study, the research design for this project was necessarily limited and general in nature. Since the main objective of the investigation was to identify the presence of and potential impacts to cultural resources, the goal is not necessarily to answer wide-reaching theories regarding the development of early southern California, but to investigate the role and importance of the identified resources. Although survey-level investigations are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed cultural resources. The following research questions take into account the size and location of the project discussed above.

Research Questions:

- Can located cultural resources be associated with a specific time period, population, or individual?
- Do the types of located cultural resources allow a site activity/function to be determined from a preliminary investigation? What are the site activities? What is the site function? What resources were exploited?

- How do the located sites compare to others reported from different surveys conducted in the area?
- How do the located sites fit existing models of settlement and subsistence for valley environments of the region?

Data Needs

At the survey level, the principal research objective is a generalized investigation of changing settlement patterns in both the prehistoric and historic periods within the study area. The overall goal is to understand settlement and resource procurement patterns of the project area occupants. Therefore, adequate information on site function, context, and chronology from an archaeological perspective is essential for the investigation. The fieldwork and archival research were undertaken with these primary research goals in mind:

1) To identify cultural resources occurring within the project;
2) To determine, if possible, site type and function, context of the deposit, and chronological placement of each cultural resource identified;
3) To place each cultural resource identified within a regional perspective; and
4) To provide recommendations for the treatment of each of the cultural resources identified.

3.0 METHODOLOGY

The archaeological program for the Thrifty Oil Warehouse Project consisted of an institutional records search, a SLF search, an intensive pedestrian survey of the approximately 9.5-acre project, and the preparation of this technical study. This archaeological study conformed to County of Riverside Cultural Resource Guidelines. Statutory requirements of CEQA and subsequent legislation (Section 15064.5) were followed in evaluating the significance of cultural resources. Specific definitions for archaeological resource type(s) used in this report are those established by the State Historic Preservation Office (SHPO; March 1995).

3.1 Archaeological Records Search

An archaeological records search for the project and the surrounding area within a one-mile radius was conducted by BFSA at the EIC at UCR on December 4, 2023 (Appendix B). A detailed discussion of the records search results is presented within Section 4.1 and the complete records search results are provided in Appendix B.

BFSA also reviewed the National Register of Historic Places (NRHP) index, historic USGS data, and aerial photographs (1938 through 2023). In addition, land patent records, held by the Bureau of Land Management (BLM) and accessible through the BLM General Land Office website, were reviewed for pertinent project information and the BFSA research library was consulted for any relevant historical information.

3.2 Field Methodology

In accordance with County of Riverside CEQA review requirements, an intensive pedestrian reconnaissance was conducted that employed a series of parallel survey transects spaced at 15-meter intervals to locate archaeological sites within the project. The archaeological survey of the project was conducted on December 6, 2023. The entire project was covered by the survey process and photographs were taken to document project conditions during the survey (see Section 4.2).

3.3 Report Preparation and Recordation

This report contains information regarding previous studies, statutory requirements for the project, a brief description of the setting, research methods employed, and the overall results of the survey. The report includes all appropriate illustrations and tabular information needed to make a complete and comprehensive presentation of these activities, including the methodologies employed and the personnel involved. A copy of this report will be placed at the EIC at UCR. Any newly recorded sites, or sites requiring updated information, will be recorded on the appropriate Department of Parks and Recreation (DPR) site forms, which will be filed at the EIC.

3.4 Native American Consultation

BFSA requested a review of the SLF by the NAHC, to determine if any recorded Native American sacred sites or locations of religious or ceremonial importance are present within one mile of the project. The search was returned with positive results for the project vicinity. In accordance with previous recommendations of the NAHC, BFSA contacted all Native American consultants listed in previous NAHC response letters at least two weeks prior to the initiation of the field survey. This request is not part of any Assembly Bill 52 Native American consultation.

No responses were received during the two-week interim period. However, representatives from both Pechanga and Soboba were invited to participate in the field survey. Cameron Linton from the Pechanga Band of Indians and William Swan from the Soboba Band of Luiseño Indians accompanied BFSA during the survey process. All correspondence is provided in Appendix C.

3.5 Applicable Regulations

Resource importance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of Riverside County in history, architecture, archaeology, engineering, and culture. Criteria outlined in CEQA provide the guidance for making such a determination. Provided below is the CEQA criteria that a resource must meet in order to be determined important.

3.5.1 California Environmental Quality Act

According to CEQA (§ 15064.5a), the term "historical resource" includes the following:

1) A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the CRHR [California Register of Historical Resources (Public Resources Code [PRC] SS5024.1, Title 14 CCR. Section 4850 et seq.).
2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the PRC or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the PRC, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3) Any object, building, structure, site, area, place, record, or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR (PRC SS5024.1, Title 14, Section 4852) including the following:

a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
b) Is associated with the lives of persons important in our past;
c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
d) Has yielded, or may be likely to yield, information important in prehistory or history.

4) The fact that a resource is not listed in, or determined eligible for listing in, the CRHR, or not included in a local register of historical resources (pursuant to Section 5020.1[k] of the PRC), or not identified in an historical resources survey (meeting the criteria in Section 5024.1[g] of the PRC), does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC Section 5020.1(j) or 5024.1.

According to CEQA (§15064.5b), a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect upon the environment. CEQA defines a substantial adverse change as:

1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
2) The significance of an historical resource is materially impaired when a project:

a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR; or
b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the PRC or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the PRC, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or,
c) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

Section 15064.5(c) of CEQA applies to effects upon archaeological sites and contains the following additional provisions regarding archaeological sites:

1) When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
2) If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the PRC and Section 15126.4 of the guidelines, and the limits contained in Section 21083.2 of the PRC do not apply.
3) If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21083.2 of the PRC, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in PRC Section 21083.2 (c to f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
4) If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project upon those resources shall not be considered a significant effect upon the environment. It shall be sufficient that both the resource and the effect upon it are noted in the Initial Study or Environmental Impact Report, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Section 15064.5 (d) and (e) contain additional provisions regarding human remains. Regarding Native American human remains, paragraph (d) provides:

(d) When an Initial Study identifies the existence of, or the probable likelihood of, Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the NAHC as provided in PRC SS5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans as identified by the NAHC. Action implementing such an agreement is exempt from:

    1) The general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5).
    2) The requirement of CEQA and the Coastal Act.

4.0 RESULTS

4.1 Records Search Results

An archaeological records search for the project and the surrounding area within a one-mile radius was conducted by BFSA at the EIC at UCR (Appendix B). The archaeological records search results from the EIC identified 88 resources within a one-mile radius of the current project area, none of which are recorded within the subject property. These resources include 68 prehistoric resources, one multicomponent site, and 19 historic resources (Table 4.1–1 in Appendix D). The prehistoric resources include two pictograph sites, 65 bedrock milling sites, and one isolate. The multicomponent site is a prehistoric bedrock milling site and historic trash scatter. The historic resources are characterized as seven single family properties, four trash scatters, one ranch complex remnant, two sets of foundational remains, a railroad grade, relocated Camp Haan barracks, one quarry, and two isolates. Based upon the records search results, the most common prehistoric resources in the region are bedrock milling sites, while historic resources are primarily focused on the built environment.

The records search results also identified 37 previous studies which have been conducted within a one-mile radius of the project, none of which included the subject property (Table 4.1–2 in Appendix D).

BFSA also reviewed the following sources to help facilitate a better understanding of the historic use of the property:

- The NRHP Index
- The Office of Historic Preservation Built Environment Resources Directory
- Bureau of Land Management (BLM) General Land Office (GLO) records
- The 1901 *Elsinore, California* (30-minute) quadrangle map
- The 1942 *Perris, California* (15-minute) USGS quadrangle map
- The 1953 and 1967 *Perris, California* (7.5-minute) USGS quadrangle maps
- Historic photographs (1938 through 2023)

The BLM GLO records search identified a single 1891 patent for the property indicating the project location was originally granted to the Southern Pacific Railroad Company as part of a large 98,330.04-acre grant. The 1901 *Elsinore* 30-minute map shows structures within the project vicinity; however, at that scale it is not clear if any are located within the property. Conversely, the 1942 *Perris* 15-minute map does show structures within the northwest corner of the property. These structures are not visible on the 1953 7.5-minute map but are visible on the subsquent 1967 7.5-minute map. The aerial photographs show a ranch complex within the northwest corner of the property as early as 1938. This complex appears to be confined to the northwestern corner of the property through 1967. By 1974, additoinal ancillary structures are visible across the northern one-third of the property while the remainder of the property appears to be used for agricultural purposes. By 1977, additional structures are visible in the northern portion of the property

including a possible new residence in the northeast corner of the project. Between 1977 and 1985, two additional structures were added to the northeast corner of the property. Starting in 2003, structures start being removed form the property, with subsquent photographs showing the removal of all structures by 2018, except for three located within the northeast corner.

BFSA also requested a SLF search from the NAHC. The SLF search results were positive for Native American sacred sites or locations of religious or ceremonial importance within the vicinity of the project. In accordance with the recommendations of the NAHC, BFSA contacted all Native American consultants listed in the NAHC response letter at least two weeks prior to the initiation of the field survey. In addition, representatives from the Pechanga Band of Indians and the Soboba Band of Luiseño Indians were invited to participate in the survey process. All correspondence is provided in Appendix C.

4.2 Results of the Field Survey

BFSA archaeologist Sabrina Corcoran conducted the pedestrian survey of the project on December 6, 2023. Aerial photographs, maps, and a compass facilitated the orientation and location of project boundaries. Cameron Linton from the Pechanga Band of Indians and William Swan from the Soboba Band of Luiseño Indians actively participated in the survey. The entire property was surveyed in 15-meter transects. All exposed ground surfaces were carefully inspected, including rodent burrows and disturbed areas. A survey form, field notes, and photographs documented the survey work undertaken.

During the survey, ground visibility was fair due to areas of dense vegetation. The vegetation found within the property consisted primarily of non-native weeds and grasses, although various trees, primarily eucalyptus and pepper, were observed in the northwest corner of the property (Plates 4.2–1 and 4.2–2). Further, limited residential landscaping was observed in the northeast corner within APN 317-260-018. The property appears to have been previously impacted by past development and subsequent clearing, which was observed on the aerial photographs. During the survey, impacts associated with this clearing and agricultural use were observed. Further, modern trash was noted throughout the property. A residence, a prefabricated manufactured home, and a corrugated metal ancillary structure were located within the northeastern corner of the property at APN 317-260-018 (Plates 4.2–3 and 4.2–4). However, all existing structures and improvements within the project correspond with additions to the property which occurred after 1977 and, therefore, do not qualify as eligible for CRHR evaluation. The survey did not identify any cultural resources within the project.



Plate 4.2–1: Overview of the property, facing northeast.



Plate 4.2–2: Overview of the property, facing southwest.



Plate 4.2–3: The residence and prefabricated manufactured home located in the northeast corner of the project, facing southwest.



Plate 4.2–4: Ancillary structure in the northeast corner of the project, facing south.

5.0 RECOMMENDATIONS

The Phase I cultural resources assessment for the Thrifty Oil Warehouse Project did not identify any cultural resources. However, the property is located in proximity to multiple prehistoric and historic resources and has been impacted by agricultural use, partial development, and clearing. These impacts typically remove evidence of surface scatters of cultural artifacts. Therefore, given the past impacts to the property coupled with the frequency of resources within the one mile, the obstructed ground visibility during the survey, and the noted historic occupation of the property, there still remains potential for the inadvertent discovery of archaeological resources during grading. As such, a cultural resources Mitigation Monitoring and Reporting Program (MMRP) is recommended as a condition of approval for this property, which should include the monitoring of all ground-disturbing activities within the property by an archaeologist and Native American monitor.

Recommended Mitigation Monitoring and Reporting Program

As a condition of project approval, a MMRP is recommended to identify any cultural resources that may be uncovered during grading and, subsequently, to mitigate potential impacts to any discovered archaeological resources evaluated as significant. This program shall include, but not be limited to, the following actions:

1) Prior to issuance of a grading permit, the applicant shall provide written verification that a certified archaeologist has been retained to implement the monitoring program. This verification shall be presented in a letter from the project archaeologist to Riverside County.
2) The project applicant shall contact the appropriate Native American tribe to conduct monitoring in conjunction with the archaeological observation of grading. A preconstruction agreement with the Native American tribe shall be forwarded to the County. The certified cultural resources consultant and Native American monitor shall attend the pregrading meeting with the contractors to explain and coordinate the requirements of the monitoring program.
3) During the original cutting of previously undisturbed deposits, the archaeological and Native American monitors shall be on-site full time to perform periodic inspections of the excavations. The frequency of inspections will depend on the rate of excavation, the materials excavated, and the presence and abundance of artifacts and features.
4) Isolates and clearly non-significant deposits will be minimally documented in the field so the monitored grading can proceed.
5) In the event that previously unidentified cultural resources are discovered, the archaeologist shall have the authority to divert or temporarily halt ground disturbance in the area of discovery to allow for the evaluation of potentially significant cultural resources. The archaeologist shall contact the lead agency at the time of discovery.

The archaeologist, in consultation with the lead agency and the Native American representative, shall determine the significance of the discovered resources. The lead agency must concur with the evaluation before construction activities will be allowed to resume in the affected area. For significant cultural resources, a Research Design and Data Recovery Program to mitigate impacts shall be prepared by the consulting archaeologist and approved by the lead agency before being carried out using professional archaeological methods. If any human remains are discovered, the County coroner and lead agency shall be contacted. In the event that the remains are determined to be of Native American origin, the most likely descendant, as identified by the NAHC, shall be contacted in order to determine proper treatment and deposition of the remains.

6) Before construction activities are allowed to resume in the affected area, the artifacts shall be recovered and features recorded using professional archaeological methods. The archaeological monitor(s) shall determine the amount of material to be recovered for an adequate artifact sample for analysis.
7) In the event cultural resources are identified during ground disturbing activities, the landowner(s) shall relinquish ownership of all cultural resources, (with the exception of sacred items, burial goods, and human remains) and provide evidence to the satisfaction of the County Archaeologist that all archaeological materials recovered during the archaeological investigations (this includes collections made during an earlier project, such as testing of archaeological sites that took place years ago), have been handled through one of the following methods:

    a. A fully executed reburial agreement with the appropriate culturally affiliated Native American tribe(s) or band(s). This shall include measures and provisions to protect the reburial area from any future impacts. Reburial shall not occur until all cataloging, analysis and special studies have been completed on the cultural resources. Details of contents and location of the reburial shall be included in the Phase IV Report.
    b. Curation at a Riverside County Curation facility that meets federal standards per 36 CFR [Code of Federal Regulations] Part 79 and therefore will be professionally curated and made available to other archaeologists/researchers and tribal members for further study. The collection and associated records shall be transferred, including title, and are to be accompanied by payment of the fees necessary for permanent curation. Evidence shall be in the form of a letter from the curation facility identifying that archaeological materials have been received and that all fees have been paid.
    c. If more than one Native American Group is involved with the project and cannot come to a consensus as to the disposition of cultural resources, the landowner(s) shall then proceed with curation at the Western Science Center.

The details of any disposition of artifacts shall be documented in the Phase IV report.

8) A report documenting the field and analysis results and interpreting the artifact and research data within the research context shall be completed and submitted to the satisfaction of the lead agency prior to the issuance of any building permits. The report will include DPR Primary and Archaeological Site Forms, if any are required.

6.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



January 16, 2024

Tracy A. Stropes, M.A., RPA
Principal Investigator
County of Riverside Registration #257

Date

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APPENDIX A

Qualifications of Key Personnel

Andrew J. Garrison, M.A., RPA

Project Archaeologist

BFSA Environmental Services, a Perennial Company
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: agarrison@bfsa.perennialenv.com

Education

Master of Arts, Public History, University of California, Riverside **2009**

Bachelor of Science, Anthropology, University of California, Riverside **2005**

Bachelor of Arts, History, University of California, Riverside **2005**

Professional Memberships

Register of Professional Archaeologists
Society for California Archaeology
Society for American Archaeology
California Council for the Promotion of History
Society of Primitive Technology
Lithic Studies Society
California Preservation Foundation
Pacific Coast Archaeological Society

Experience

Project Archaeologist **June 2017–Present**
BFSA Environmental Serives, A Perennial Company **Poway, California**

Project management of all phases of archaeological investigations for local, state, and federal agencies including National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) level projects interacting with clients, sub-consultants, and lead agencies. Supervise and perform fieldwork including archaeological survey, monitoring, site testing, comprehensive site records checks, and historic building assessments. Perform and oversee technological analysis of prehistoric lithic assemblages. Author or co-author cultural resource management reports submitted to private clients and lead agencies.

Senior Archaeologist and GIS Specialist **2009–2017**
Scientific Resource Surveys, Inc. **Orange, California**

Served as Project Archaeologist or Principal Investigator on multiple projects, including archaeological monitoring, cultural resource surveys, test excavations, and historic building assessments. Directed projects from start to finish, including budget and personnel hours proposals, field and laboratory direction, report writing, technical editing, Native American consultation, and final report submittal. Oversaw all GIS projects including data collection, spatial analysis, and map creation.

Preservation Researcher **2009**
City of Riverside Modernism Survey **Riverside, California**

Completed DPR Primary, District, and Building, Structure and Object Forms for five sites for a grant-funded project to survey designated modern architectural resources within the City of Riverside.

Information Officer **2005, 2008–2009**
Eastern Information Center (EIC), University of California, Riverside **Riverside, California**

Processed and catalogued restricted and unrestricted archaeological and historical site record forms. Conducted research projects and records searches for government agencies and private cultural resource firms.

Reports/Papers

2019 A Class III Archaeological Study for the Tuscany Valley (TM 33725) Project National Historic Preservation Act Section 106 Compliance, Lake Elsinore, Riverside County, California. Contributing author. Brian F. Smith and Associates, Inc.

2019 A Phase I and II Cultural Resources Assessment for the Jack Rabbit Trail Logistics Center Project, City of Beaumont, Riverside County, California. Brian F. Smith and Associates, Inc.

2019 A Phase I Cultural Resources Assessment for the 10575 Foothill Boulevard Project, Rancho Cucamonga, California. Brian F. Smith and Associates, Inc.

2019 Cultural Resources Study for the County Road and East End Avenue Project, City of Chino, San Bernardino County, California. Brian F. Smith and Associates, Inc.

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2018 A Phase I Cultural Resources Assessment for the Seaton Commerce Center Project, Riverside County, California. Brian F. Smith and Associates, Inc.

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2016 Historic Resource Assessment for 220 South Batavia Street, Orange, CA 92868 Assessor's Parcel Number 041-064-4. Scientific Resource Surveys, Inc. Submitted to the City of Orange as part of Mills Act application.

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2012 Bolsa Chica Archaeological Project Volume 7, Technological Analysis of Stone Tools, Lithic Technology at Bolsa Chica: Reduction Maintenance and Experimentation. Scientific Resource Surveys, Inc.

Presentations

2017 "Repair and Replace: Lithic Production Behavior as Indicated by the Debitage Assemblage from CA-MRP-283 the Hackney Site." Presented at the Society for California Archaeology Annual Meeting, Fish Camp, California.

2016 "Bones, Stones, and Shell at Bolsa Chica: A Ceremonial Relationship?" Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2016 "Markers of Time: Exploring Transitions in the Bolsa Chica Assemblage." Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2016 "Dating Duress: Understanding Prehistoric Climate Change at Bolsa Chica." Presented at the Society for California Archaeology Annual Meeting, Ontario, California.

2014 "New Discoveries from an Old Collection: Comparing Recently Identified OGR Beads to Those Previously Analyzed from the Encino Village Site." Presented at the Society for California Archaeology Annual Meeting, Visalia, California.

2012 Bolsa Chica Archaeology: Part Seven: Culture and Chronology. Lithic demonstration of experimental manufacturing techniques at the April meeting of The Pacific Coast Archaeological Society, Irvine, California.

Tracy A. Stropes, MA, RPA

Director/Principal Investigator

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Education

Master of Arts, Anthropology, San Diego State University, California **2007**

Bachelor of Science, Anthropology, University of California, Riverside **2000**

Professional Memberships

Register of Professional Archaeologists
Society for California Archaeology
Archaeological Institute of America

Experience

Director/Principal Investigator **March 2009–Present**
BFSA Environmental Services, a Perennial Company **Poway, California**

Project Management of all phases of archaeological investigations for local, state, and federal agencies, field supervision, lithic analysis, National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations, and authoring/coauthoring of cultural resource management reports.

Archaeological Principal Investigator **June 2008–February 2009**
TRC Solutions **Irvine, California**

Cultural resource segment of Natural Sciences and Permitting Division; management of archaeological investigations for private companies and local, state, and federal agencies, personnel management, field and laboratory supervision, lithic analysis, Native American consultation and reporting, MRHP and CEQA site evaluations, and authoring/coauthoring cultural resource management reports.

Principal Investigator and Project Archaeologist **June 2006–May 2008**
Archaeological Resource Analysts **Oceanside, California**

As a sub consultant, served as Principal Investigator and Project Archaeologist for several projects for SRS Inc., including field direction, project and personnel management, lab analysis, and authorship of company reports.

Project Archaeologist **September 1996–June 2006**
Gallegos & Associates **Carlsbad, California**

Project management, laboratory management, lithic analysis, field direction, Native American consultation, report authorship/technical editing, and composition of several data recovery/preservation programs for both CEQA and NEPA level compliance.

Project Archaeologist **September 1993–September 1996**
Macko Inc. **Santa Ana, California**

Project management, laboratory management, lithic analysis, field supervision, and report authorship/technical editing.

Archaeological Field Technician **January 1993–September 1993**
Chambers Group Inc. **Irvine, California**

Archaeological excavation, surveying, monitoring, wet screen facilities management, and project logistics.

Archaeological Field Technician **May 1992–September 1992**
John Minch and Associates **San Juan Capistrano, California**

Archaeological excavation, surveying, monitoring, wet screen facilities management, and project logistics.

Professional Accomplishments

Mr. Stropes is a professional archaeologist with over 30 years of experience in cultural resource management. His experience includes over ten years in project management, report authorship, lithic analysis, laboratory management, Native American consultation, and editing for several technical reports for numerous projects throughout southern California. Mr. Stropes has conducted cultural resource surveys, archaeological site testing and evaluations for National Register eligibility and California Environmental Quality Act (CEQA) compliance, mitigation of resources through data recovery for archaeological sites, budget and report preparation, and direction of crews of all sizes for projects ranging in duration from a single day site visit to one year. Mr. Stropes is a Registered Professional Archaeologist and on the list of archaeological consultants qualified to conduct archaeological investigations southern California and the County of San Diego. He has served as project archaeologist for numerous projects and composed data recovery and preservation programs for sites throughout California for both CEQA and NEPA level compliance. He has acted as teaching assistant for archaeological field classes at several sites in Orange (Cypress College), Los Angeles (Cypress College), and San Diego Counties (San Diego State University). In addition, Mr. Stropes was employed to teach discussion sessions for introduction to cultural anthropology classes at SDSU. Internationally, Mr. Stropes has acted as field surveyor for the Natural History Foundation of Orange County & Institucion Nacional de Antropologia y Historia surveying and relocating several sites in northern Baja California. Mr. Stropes has served as the senior project archaeologist on the following select projects.

1900 and 1912 Spindrift Drive: An extensive data recovery and mitigation monitoring program at the Spindrift Site, an important prehistoric archaeological habitation site stretching across the La Jolla area. The project resulted in the discovery of over 20,000 artifacts and nearly 100,000 grams of bulk faunal remains and marine shell, indicating a substantial occupation area (2013-2014).

Ocean Breeze Ranch: An extensive CEQA and Section 106 archaeological investigation of 1,400 acres and 20 cultural resources, both prehistoric and historic, within the Bonsall neighborhood of the county of San Diego. The project included an assessment of sites for eligibility for listing on the California Register of Historical Resources, the County of San Diego Resource Protection Ordinance, and the National Register of Historic Places, which resulted in the identification of four CRHR-eligible, RPO-significant, and NRHP-eligible sites.

Citracado Parkway Extension: An ongoing project in the city of Escondido to mitigate impacts to an important archaeological occupation site. Various archaeological studies have been conducted by BFSA, including CEQA-level survey and testing programs and Section 106 historic resources studies, resulting in the identification of a significant cultural deposit within the project area (2009-present).

Otay Ranch Village 13: An extensive archaeological investigation of nearly 2,000 acres and 84 archaeological sites, both prehistoric and historic, within the county of San Diego, which included prehistoric habitation sites, quarry sites, resource processing sites, and extensive lithic scatters. The project included an assessment of sites for eligibility for listing on the National Register of Historic Places (2016-2018).

Westin Hotel and Timeshare (Grand Pacific Resorts): Data recovery and mitigation monitoring program in the city of Carlsbad consisted of the excavation of 176 one-square-meter archaeological data recovery units which produced thousands of prehistoric artifacts and ecofacts, and resulted in the preservation of a significant prehistoric habitation site. The artifacts recovered from the site presented important new data about the prehistory of the region and Native American occupation in the area (2017).

Cantarini Ranch: A Section 106 archaeological assessment and evaluation for the NRHP of 15 archaeological sites and three isolates, including NRHP-significant prehistoric temporary camp/habitation sites, in the city of Carlsbad (2015-2017).

Citracado Business Park West: An archaeological survey and testing program at a significant prehistoric archaeological site and historic building assessment for a 17-acre project in the city of Escondido. The project resulted in the identification of 82 bedrock milling features, two previously recorded loci and two additional and distinct loci, and approximately 2,000 artifacts (2018).

College Boulevard: A Section 106 archaeological assessment and evaluation for the NRHP of seven archaeological sites, including prehistoric temporary camp/habitation sites, bedrock milling feature sites, and both prehistoric and historic artifact scatters in the city of Carlsbad (2015).

The Everly Subdivision Project: Data recovery and mitigation monitoring program in the city of El Cajon resulted in the identification of a significant prehistoric occupation site from both the Late Prehistoric and Archaic Periods, as well as producing historic artifacts that correspond to the use of the property since 1886. The project produced an unprecedented quantity of artifacts in comparison to the area encompassed by the site, but lacked characteristics that typically reflect intense occupation, indicating that the site was used intensively for food processing (2014-2015).

APPENDIX B

Archaeological Records Search Results

(Deleted for Public Review; Bound Separately)

APPENDIX C

NAHC Sacred Lands File Search Results

(Deleted for Public Review; Bound Separately)

APPENDIX D

Tables 4.1–1 and 4.1–2

Table 4.1–1

Cultural Resources Located Within One Mile of the Thrifty Oil Warehouse Project

Site	Description	Distance from the Project (m)
P-33-000114	Prehistoric pictographs, rock shelters, lithic scatter, and bedrock milling features	1,154.09
P-33-000984	Prehistoric pictograph and rock shelter	1,379.99
P-33-000990	Prehistoric bedrock milling feature site	977.93
P-33-016382		60.91
P-33-016383		153.45
P-33-016385		399.99
P-33-016386		515.32
P-33-016387		535.54
P-33-016389		717.17
P-33-016390		661.56
P-33-016391		653.96
P-33-016392		670.33
P-33-016394		671.43
P-33-016395		570.78
P-33-016396		436.15
P-33-016398		344.20
P-33-016399		318.44
P-33-016400		266.57
P-33-016401		233.61
P-33-016402		220.21
P-33-016403		772.94
P-33-016404		769.19
P-33-016405		364.09
P-33-016406		425.71
P-33-016407		432.81
P-33-016409		612.05
P-33-016410		850.39
P-33-016411		831.04
P-33-016412		797.71
P-33-016413		761.24
P-33-016414		842.14
P-33-016415		870.01

Site	Description	Distance from the Project (m)
P-33-016416	Prehistoric bedrock milling feature site	927.48
P-33-016417		1,216.39
P-33-016419		1,605.98
P-33-016420		1,600.04
P-33-016433		1,544.11
P-33-016434		1,568.21
P-33-016436		1,461.13
P-33-016437		1,435.07
P-33-016448		1,131.83
P-33-016449		1,156.61
P-33-016452		1,555.82
P-33-016454		1,505.50
P-33-016455		1,538.70
P-33-016456		1,467.84
P-33-016457		1,491.67
P-33-016458		1,537.73
P-33-016459		1,493.23
P-33-016460		1,105.05
P-33-016462		1,287.90
P-33-016463		1,494.17
P-33-016464		1,511.80
P-33-016465		1,417.76
P-33-016472		850.09
P-33-016473		817.90
P-33-016474		689.50
P-33-016475		715.54
P-33-016509		1,473.09
P-33-016527		1,608.51
P-33-016530		1,544.74
P-33-016528		1,495.20
P-33-016532		1,454.57
P-33-016535		1,559.25
P-33-016679		1,377.22
P-33-017924		648.79
P-33-016680		617.22
P-33-029765	Prehistoric isolate	960.55

Site	Description	Distance from the Project (m)
P-33-016408	Multicomponent site with prehistoric bedrock milling features, a prehistoric lithic scatter, and a historic trash scatter	605.19
P-33-007628	Historic single-family property	647.74
P-33-007629		1,199.85
P-33-007640		1,550.58
P-33-007646		985.36
P-33-007676		714.81
P-33-029195		663.58
P-33-029196		477.26
P-33-007648	Historic Camp Haan Barracks	1,353.61
P-33-016529	Historic railroad grade	1,446.55
P-33-016388	Historic trash scatter	371.06
P-33-016397		392.57
P-33-019869		980.50
P-33-016461		1,043.10
P-33-016041	Historic isolate	890.42
P-33-026720		427.57
P-33-016531	Historic foundational remnants	1,607.47
P-33-029857		10.00
P-33-029443	Historic ranch complex remnants	585.90
P-33-016466	Historic quarry	1,382.53

Table 4.1–2

Previous Studies Conducted Within One Mile
of the Thrifty Oil Warehouse Project

Belcourt, Tria

2017 Phase I Cultural Resources Assessment: Cado Industrial Center Project Unincorporated Riverside County, California. Material Cultural Consulting, Inc. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Brunzell, David

2019a Phase I Cultural Resources Assessment for the Star Milling Project, Unincorporated Riverside County, California. BCR Consulting, LLC. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

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2019c Phase I Cultural Resources Assessment, Baker East Project, Unincorporated Riverside County, California. BCR Consulting, LLC. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

2022 Phase IV Cultural Resources Monitoring Report, Star Milling Project, Assessor Parcel Number 317-270-017-6, Unincorporated Riverside County, California. BCR Consulting, LLC. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Clifford, James

2005 A Cultural Resources Survey for the Meehan Project, Riverside County, California. Brian F. Smith and Associates, Inc., Poway, California. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Daly, Ken

1980 Environmental Impact Evaluation: An Archaeological Assessment of 20 Acres of Land Located in the SE 1/4 of Section 13, T4S, R4W, SBBM, Val Verde of Riverside County, California. Archaeological Research Unit, University of California at Riverside. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

De Munck, Victor

1987 An Archaeological Assessment of TP 22539 Located in the Perris Area of Riverside County, California. Archaeological Research Unit, University of California at Riverside. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Demcak, Carol R.
1991 Archaeological Assessment of Tentative Parcel 26672, A 26.07 Acre Property Located Near Perris (Perris Quadrangle), County of Riverside. Archaeological Resource Management Corp., Fullerton, CA. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Fulton, Phil
2014 Discovery and Monitoring Plan for the Mid County Parkway. LSA Associates, Inc. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Garrison, Andrew J. and Brian F. Smith
2020 A Phase I Cultural Resources Assessment for the Harvill and Rider Project, Riverside County, California. Brian F. Smith and Associates, Inc. Poway, California. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Gillette, Donna, Nadra McClain, David Mottola, Laurie Pares, and Richard Shepard
1991 Motte Rimrock Reserve, CA-RIV-114, A Possible Luiseno Girls' Puberty Rite Site. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Goodwin, Riordan
2013 Cultural Resources Record Search, Site Survey, and Native American Scoping Assistance for the Riverside County Transportation Yard Complex, Riverside County, California (LSA Project No. RCT1303). LSA Associates, Inc. Irvine, California. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Greenwood, Roberta S. and Michael J. McIntyre
1979 Cultural Resource Reconnaissance Tentative Parcel Map 13788 Near Perris Valley, Riverside County, California. Greenwood and Associates, Pacific Palisades, California. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Hammond, Stephen R.
1977 Cultural Resources Survey of the Proposed Freeway Conversion of Route 194 (15E) Between Nuevo Road and Van Buren Boulevard in Riverside County. Department of Transportation. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Harrison, Jim

2003 Letter Report: Biological and Cultural Resources Due Diligence Regarding the 500-Acre Watson Land Company-Perris Property in Riverside County, California. LSA Associates, Inc., Irvine, Ca. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Jones and Stokes Associates, Inc.

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Keller, Jean A.

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1992a An Archaeological Assessment of Tentative Tract Map 27098, 4.94 Acres of Land Near Perris, Riverside County, California. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

1992b An Archaeological Assessment of Tentative Tract Map 27098, 4.95 Acres of Land Near Perris, Riverside County, California. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

1994 A Phase I Cultural Resource Assessment of Tentative Tract Map 27997, 19.75 Acres of Land near Perris, Riverside County, California. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

McCarthy, Daniel F.

1981 Archaeological Survey of the Motte Rimrock Reserve, Riverside County, California. Archaeological Research Unit, University of California at Riverside. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

McLean, Roderic

2006 Letter Report: Cultural Resources Study for the Replacement of Four Deteriorated Southern California Edison Wooden Utility Poles on the Corsair 12 kV Circuit, the Sprague 12 kV Ciscuit, and the Carbine 12 kV Circuit, California. LSA Associates, Inc. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Momyer, George R.
1937 Indian Picture Writing in Southern California (COPY). Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Pallette, Drew M.
1987 Two Luiseno Rock Art Sites. Anthropology Department at the California State University at Long Beach, California. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Peak and Associates
1990 Part III, Addendum To: Cultural Resources Assessment of AT&T's Proposed San Bernardino To San Diego Fiber Optic Cable, San Bernardino, Riverside, and San Diego Counties, California. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Peak and Associates and Brian F. Mooney Associates
1990 Cultural Resources Assessment of AT&T's Proposed San Bernardino to San Diego Fiber Optic Cable, San Bernardino, Riverside and San Diego Counties, California. Peak and Associates & Brian F. Mooney Associates. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Shepard, Richard Starr
1996 Luiseno Rock Art and Sacred Landscape in Late Prehistoric Southern California. University of California, Los Angeles. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Smith, Brian F. and James Clifford
2007 Cultural Resources Survey for the Patterson Avenue Project, Riverside County, California, APNs 317-140-016 and -047. Brian F. Smith and Associates, Inc. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Swope, Karen K.
1989 An Archaeological Assessment of a 32 Acre Parcel (AP# 317-240-001) Located Near Perris in Riverside County, California. Archaeological Research Unit. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Tang, Bai "Tom," Michael Hogan, Casey Tibbet, and Daniel Ballester
2004 Historical/Archaeological Resources Survey Report: Harvill Distribution Center, Assessor's Parcel Numbers 317-260-007 and -033, near the City of Perris, Riverside County, California. CRM Tech. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Tang, "Tom" Bai, Michael Hogan, Clarence Bodmer, Josh Smallwood, and Melissa Hernandez
2007 Cultural Resources Technical Report, North Perris Industrial Specific Plan, City of Perris, Riverside County, California. CRM Tech. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Tang, "Tom" Bai, Michael Hogan, Thomas Shackford, and John J. Eddy
2006 Historical/Archaeological Resources Survey Report, Rados-Perris Distribution Center, Assessor's Parcel No. 30-050-002, in the City of Perris, Riverside County, California. CRM Tech. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Tang, "Tom" Bai, Thomas Shackford, Terri Jacquemain, and John Eddy
2010 Historical / Archaeological Resources Survey Report: Rados-Perris Distribution Center, Assessor's Parcel Number 303-050-002, in the City of Perris, County of Riverside, California. CRM TECH. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Taniguchi, Christeen
2004 Letter Report: Records Search and Site Visit Results for Cingular Telecommunications Facility Candidate SC-248-02 (Harvill Avenue), 20281 Harvill Avenue, Perris, Riverside County, CA. Michael Brandman Associates. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

Wells, Helen
1975 Archaeological Impact Report: Eastern Municipal Water District, Riverside County, California: PL 984 Water Systems Addition. Archaeological Research Unit, University of California, Riverside. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

White, Robert S. and Laura S. White
2006 A Cultural Resources Assessment of the 12.35-Acre Expo, Industrial Park Site as Shown on TPM 34128 Located Adjacent to Harvill Avenue, Near Perris, Incorporated Riverside County. Archaeological Associates, Sun City, Inc. Unpublished report on file at the Eastern Information Center at the University of California at Riverside, Riverside, California.

PALEONTOLOGICAL RESOURCES ASSESSMENT FOR THE THRIFTY OIL WAREHOUSE PROJECT

PAR230068
RIVERSIDE COUNTY, CALIFORNIA

APNs 317-260-017 and -018

Prepared on Behalf of:

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Prepared for:

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January 5, 2024

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Paleontological Database Information

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Report Date:	January 5, 2024
Report Title:	Paleontological Resources Assessment for the Thrifty Oil Warehouse Project, Riverside County, California, PAR230068
Prepared on Behalf of:	Lilburn Corporation 1905 Business Center Drive San Bernardino, California 92408 (909) 890-1818
Prepared for:	Riverside County Planning Department 4080 Lemon Street, 12th Floor Riverside, California 92501 (951) 955-3200
USGS Quadrangle:	Section 13, Township 4 South, Range 4 West, USGS *Steele Peak, California* (7.5 minute) topographic quadrangle.
Assessor's Parcel Numbers:	317-260-017 and -018
Study Area:	197 acres
Key Words:	High paleontological resource sensitivity; Pleistocene alluvial deposits; vertebrate fossils; monitoring recommended.

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I. INTRODUCTION AND LOCATION

This paleontological resources assessment report has been completed for the Thrifty Oil Warehouse Project located southeast of the intersection of Tobacco Road and Placentia Avenue, in an unincorporated area west of Perris in Riverside County, California (Figures 1 and 2). The project is situated within Section 13, Township 4 South, Range 4 West on the U.S. Geological Survey (USGS) (7.5-minute) *Steele Peak, California* topographic quadrangle map (see Figure 2). The project consists of one 8.72-acre parcel (Assessor's Parcel Number [APN] 317-260-017). The project may also include the 0.4-acre easterly neighboring residential property (APN 317-260-018), so it is also included in this assessment. A 171,270-square-foot warehouse facility is being proposed for construction.

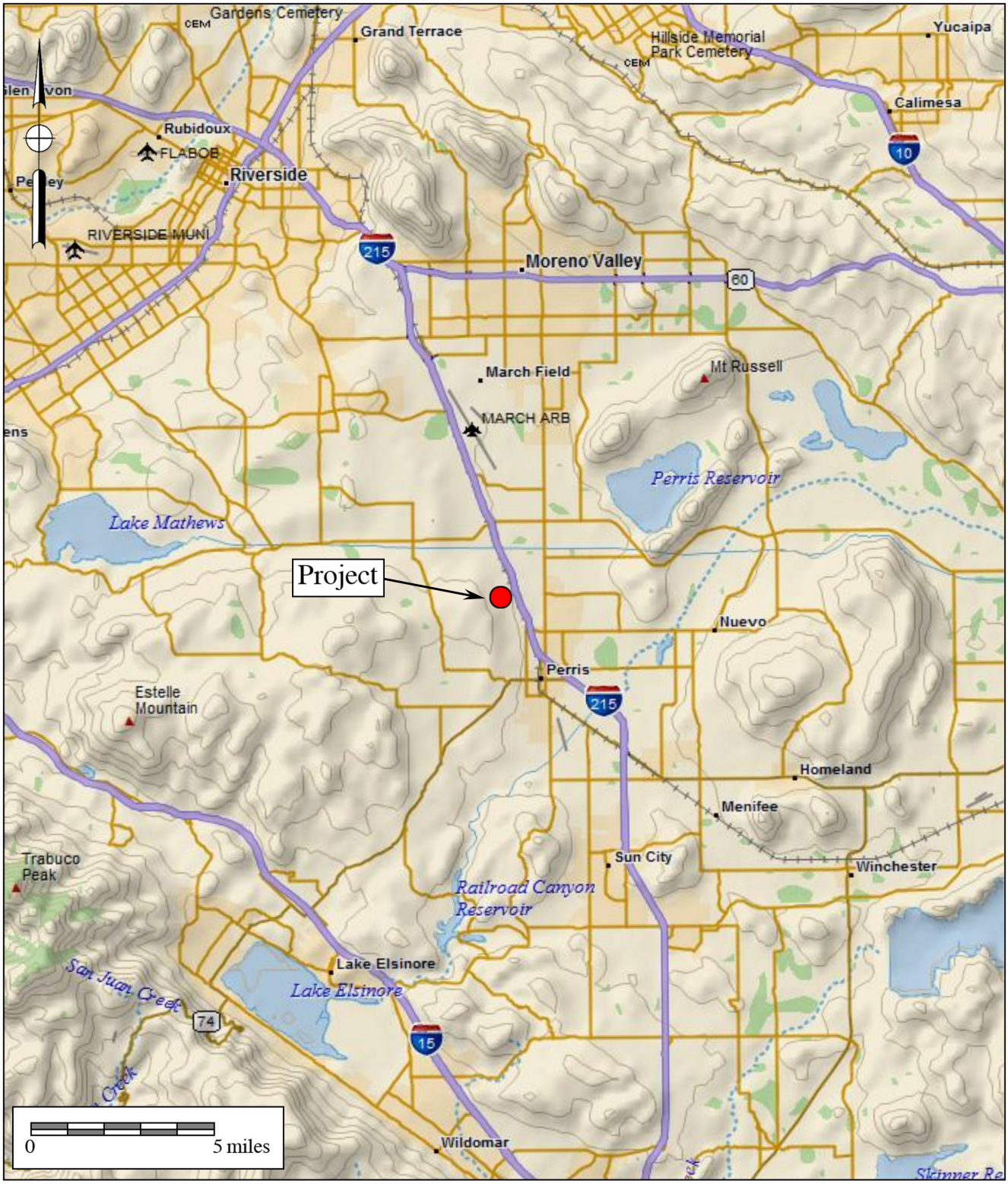
As the lead agency, the County of Riverside has required the preparation of a paleontological assessment to evaluate the project's potential to yield paleontological resources. The paleontological assessment of the project included a review of paleontological literature and fossil locality records for a previous project in the area, a review of the underlying geology, and recommendations to mitigate impacts to potential paleontological resources, if necessary.

II. REGULATORY SETTING

The California Environmental Quality Act (CEQA), which is patterned after the National Environmental Policy Act, is the overriding environmental regulation that sets the requirement for protecting California's paleontological resources. CEQA mandates that governing permitting agencies (lead agencies) set their own guidelines for the protection of nonrenewable paleontological resources under their jurisdiction.

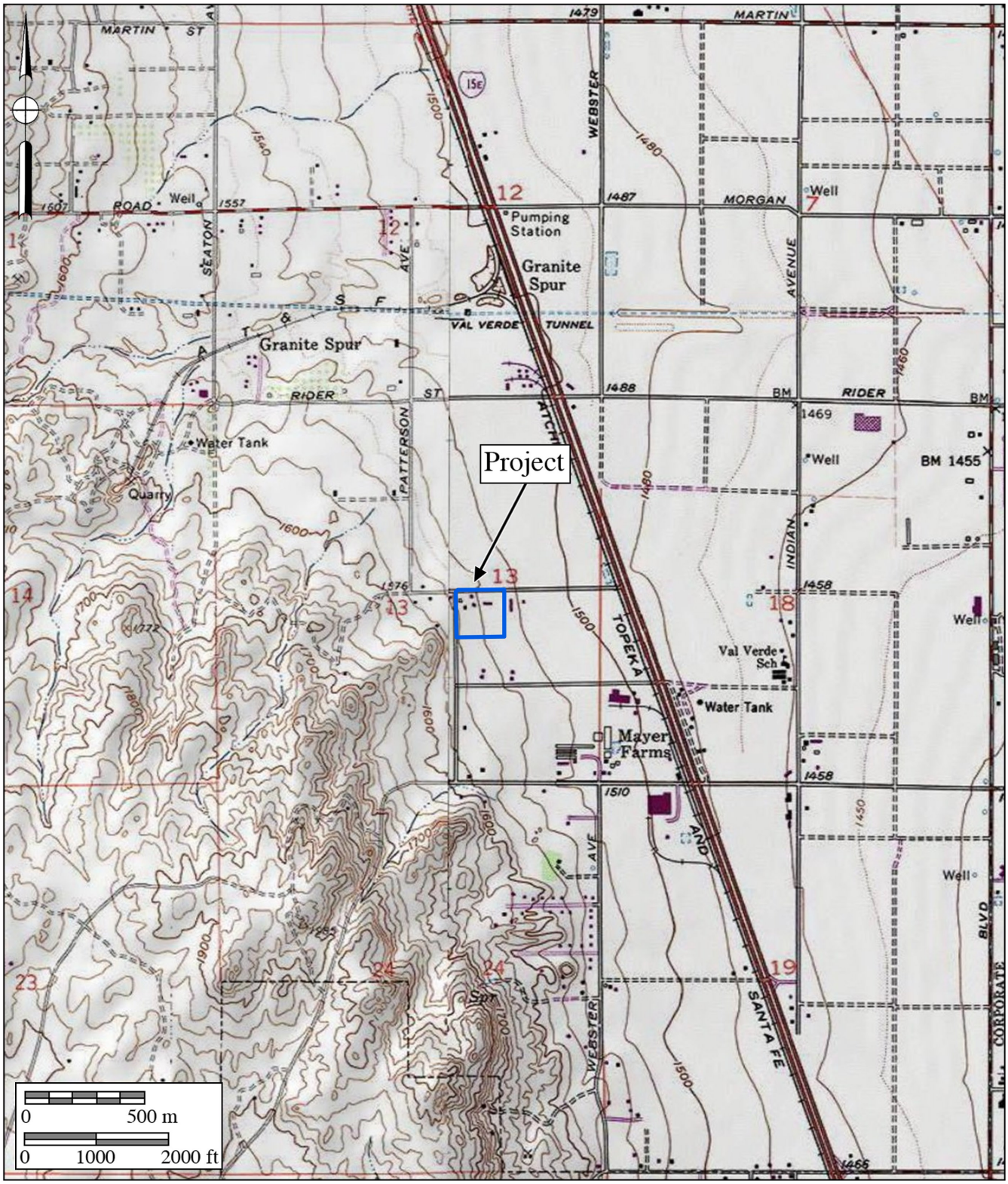
State of California

Under "Guidelines for Implementation of the California Environmental Quality Act," as amended in December 2018 (California Code of Regulations [CCR] Title 14, Division 6, Chapter 3, Sections 15000 et seq.), procedures define the types of activities, persons, and public agencies required to comply with CEQA. Section 15063 of the CCR provides a process by which a lead agency may review a project's potential impact to the environment, whether the impacts are significant, and provide recommendations, if necessary.



BFSA Environmental Services
A Perennial Company

Figure 1
General Location Map
The Thrifty Oil Warehouse Project
DeLorme (1:250,000 series)



BFSA Environmental Services
A Perennial Company

Figure 2
Project Location Map

The Thrifty Oil Warehouse Project

USGS *Perris and Steele Peak* Quadrangles (7.5-minute series)

In CEQA's Environmental Checklist Form, a question to respond to is, "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (Appendix G, Section VII, Part f). This is to ensure compliance with California Public Resources Code Section 5097.5, the law that protects nonrenewable resources including fossils, which is shown below:

a) A person shall not knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands.
b) As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.
c) A violation of this section is a misdemeanor.

County of Riverside Guidelines

For Riverside County, policies concerning paleontological resources are addressed under the 2015 Multipurpose Open Space Element of the Riverside County General Plan, and are as follows:

OS 19.6 Whenever existing information indicates that a site proposed for development has high paleontological sensitivity as shown on Figure OS-8, a paleontological resource impact mitigation program (PRIMP) shall be filed with the County Geologist prior to site grading. The PRIMP shall specify the steps to be taken to mitigate impacts to paleontological resources.

OS 19.7 Whenever existing information indicates that a site proposed for development has low paleontological sensitivity as shown on Figure OS-8, no direct mitigation is required unless a fossil is encountered during site development. Should a fossil be encountered, the County Geologist shall be notified and a paleontologist shall be retained by the project proponent. The paleontologist shall document the extent and potential significance of the paleontological resources on the site and establish appropriate mitigation measures for further site development.

OS 19.8 Whenever existing information indicates that a site proposed for development has undetermined paleontological sensitivity as shown on Figure OS-8, a report shall be filed with the County Geologist documenting the extent and potential significance of the paleontological resources on site and identifying mitigation measures for the fossil and for impacts to significant paleontological resources prior to approval of that department.

OS 19.9 Whenever paleontological resources are found, the County Geologist shall direct them to a facility within Riverside County for their curation, including the Western Science Center in the City of Hemet. (County of Riverside 2015a)

A comprehensive review of paleontological resources, including regulatory background, permitting conditions, significance thresholds, and procedures for the treatment of discovered resources, can be found in the County's Draft Environmental Impact Report (County of Riverside 2015b).

III. GEOLOGY

Geomorphically, the project is mostly flat with a gentle eastward gradient, situated along the western edge of the Perris Valley, on the eastern slopes of the northern part of the Peninsular Ranges. The geology of the project and immediate vicinity is shown on Figure 3 (after Morton 2001, 2003). The maps show that the project is within the central part of the Perris tectonic block and is underlain by lower Pleistocene (approximately 1.8 million- to perhaps 200,000- to 300,000-year-old) sandy, very old alluvial fan deposits (brown areas labeled "$Qvof_a$" on Figure 3). According to Woodford et al. (1971), the thickness of the alluvial deposits overlying the granitic bedrock basement beneath the project may be as much as 100 feet at the project's eastern boundary. The granitic basement occurs as extensive outcrops west of the project (light gray areas labeled "Kvt" on Figure 3).

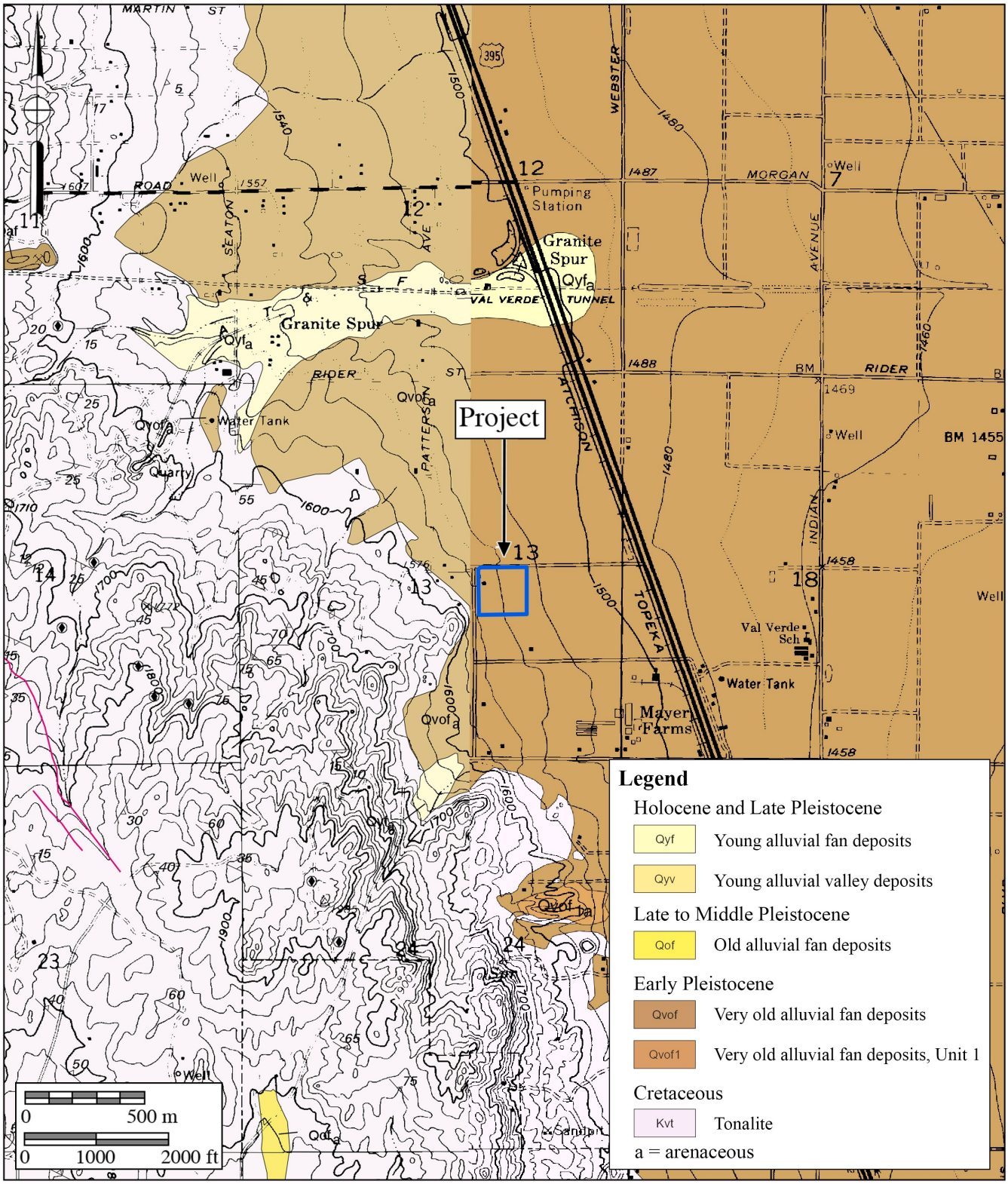


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Figure 3
Geologic Map
The Thrifty Oil Warehouse Project
Geology after Morton (2001 and 2003)

IV. PALEONTOLOGICAL RESOURCES

Definition

Paleontological resources are the remains of prehistoric life that have been preserved in geologic strata. These remains are called fossils and include bones, shells, teeth, and plant remains (including their impressions, casts, and molds) in the sedimentary matrix, as well as trace fossils such as footprints and burrows. Fossils are considered older than 5,000 years of age (Society of Vertebrate Paleontology [SVP] 2010) but may include younger remains (subfossils) when viewed in the context of local extinction of the organism or habitat, for example. Fossils are considered a non-renewable resource under state and local guidelines (Section II of this report).

Paleontological Locality Records Search

A paleontological locality records search was recently conducted for another, nearby project by the Western Science Center (WSC) in Hemet, called the Harvest Landing Specific Plan Amendment Project (Stoneburg 2023; attached). The Harvest Landing Specific Plan Amendment Project is located approximately one-half mile southeast of the current project, in the city of Perris, across Interstate 215, and is geologically mapped with the same very old alluvial fan deposits as the Thrifty Oil Warehouse Project. The records search found that no fossil localities are known by the WSC in the area of the either project, however, "Pleistocene alluvial units are considered to be highly paleontologically sensitive." In addition, Stoneburg (2023) indicated "Any fossils recovered from the Harvest Landing Specific Plan Project area would be scientifically significant. Excavation activity associated with development of the area has the potential to impact the paleontologically sensitive Pleistocene sediments and it is the recommendation of the Western Science Center that a paleontological resource mitigation plan be put in place to monitor, salvage, and curate any recovered fossils associated with the current study area."

From prior projects by BFSA Environmental Services, a Perennial Company (BFSA; formerly Brian F. Smith and Associates, Inc.), the nearest-known fossil localities housed by the San Bernardino County Museum (SBCM) are located approximately five miles to the east in the Lakeview Hot Springs area, consisting of the fossil remains of mammoths, horses, and bison from late Pleistocene old alluvial deposits (Scott 2013). The closest fossils held by the Los Angeles County Museum of Natural History from Pleistocene alluvial deposits are located east of Lake Elsinore, far to the south.

Project Survey

On December 6, 2023, BFSA staff, under the supervision of Principal Investigator Todd A. Wirths, conducted an intuitive review of the property to determine if any paleontological resources were visible. The field methodology employed for the project consisted of a series of parallel transects spaced at approximately 15-meter intervals that covered all areas of the project.

Approximately 80 percent of the project area consisted of a plowed or tilled surface that was densely overgrown with weeds, while the remainder was of developed structures and associated driveway pavement. No paleontological resources, or evidence of the presence of paleontological resources, were observed.

V. PALEONTOLOGICAL SENSITIVITY

Overview

The degree of paleontological sensitivity of any particular area is based upon a number of factors which include: the documented presence of fossiliferous resources on a site or in nearby areas, the presence of documented fossils within a particular geologic formation or lithostratigraphic unit, and whether or not the original depositional environment of the sediments may have been conducive to the accumulation and fossilization of organic remains over time. Holocene alluvium is generally considered to be geologically too young to contain significant nonrenewable paleontological resources (*i.e.,* fossils), and is therefore typically assigned a low paleontological sensitivity. Pleistocene (greater than 11,700 years old) alluvial and alluvial fan deposits in western Riverside County and the Inland Empire can yield important Ice Age terrestrial vertebrate fossils, such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, and camel, saber-toothed cats, and others (Jefferson 1991). Therefore, these Pleistocene sediments are accorded a high paleontological resource sensitivity.

Professional Standards

The SVP (2010) has drafted guidelines that include four categories of paleontological sensitivity for geologic units (formations) that might be impacted by a proposed project, as listed below:

- *High Potential:* Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered.
- *Undetermined Potential:* Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment, and that further study is needed to determine the potential of the rock unit.
- *Low Potential:* Rock units that are poorly represented by fossil specimens in institutional collections or based upon a general scientific consensus that only preserve fossils in rare circumstances.
- *No Potential:* Rock units that have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks and plutonic igneous rocks.

Using these criteria, based upon the fossil record of the geologic formation at the project and the distribution of nearby fossil localities, the project can be considered to have an undetermined to high potential to yield significant paleontological resources.

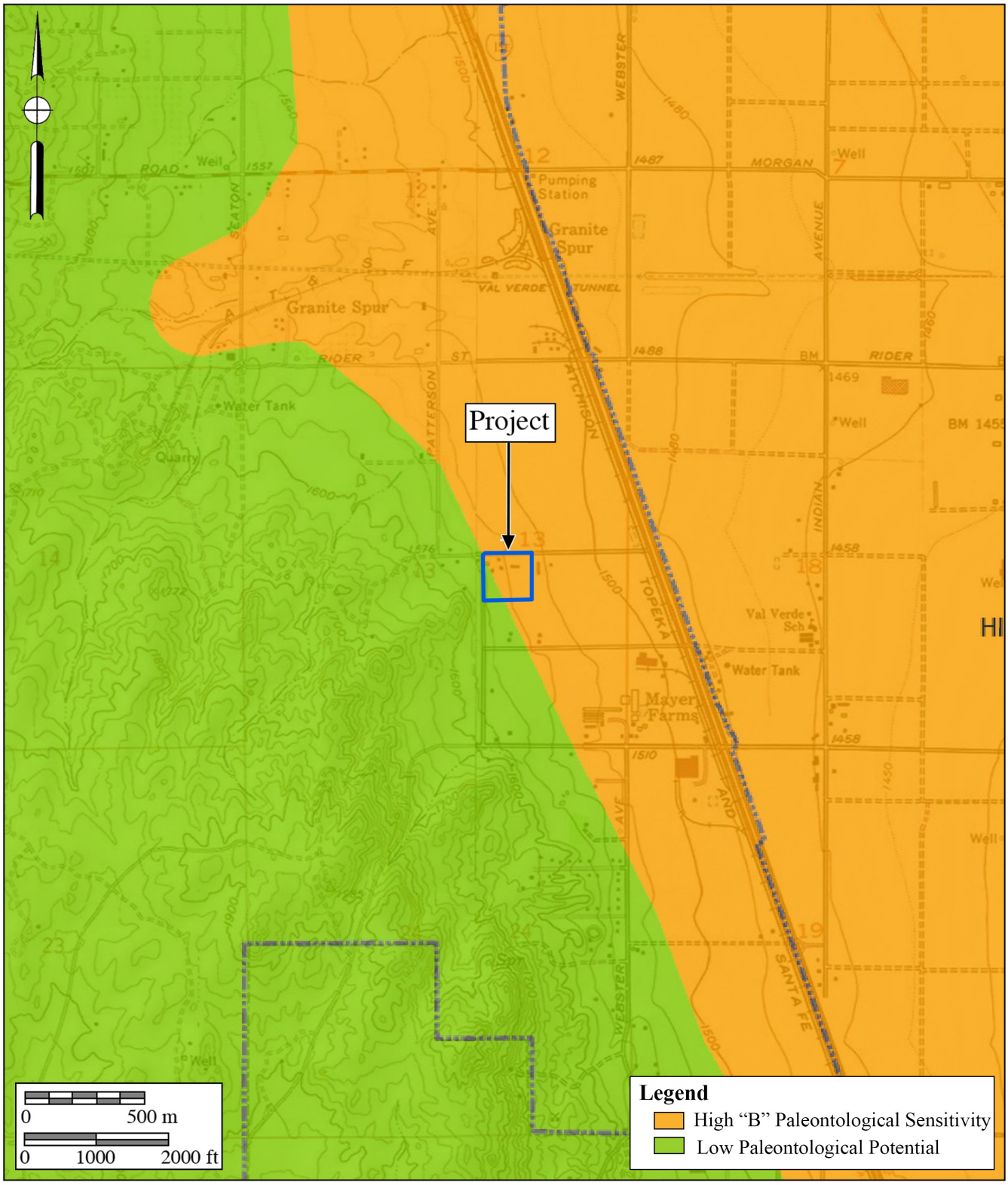
Riverside County Sensitivity

A paleontological sensitivity map generated by the County of Riverside Land Information System ranks the lower Pleistocene-aged very old alluvial fan deposits at most of the project as having a "High B" paleontological sensitivity (shown in yellow tint on Figure 4). Riverside County defines geologic formations with a "High B" potential to yield paleontological resources as:

> [E]quivalent to High A, but is based on the occurrence of fossils at a specified depth below the surface. The category High B indicates that fossils are likely to be encountered at or below four feet of depth, and may be impacted during excavation by construction activities. (County of Riverside Land Information System 2023)

The category "High B" indicates that fossils are likely to be encountered four feet below the surface and may be impacted during excavation by construction activities. Typically, sediments mapped as Pleistocene older alluvial fan sediments in western Riverside County are assigned a high ("High A" or "High B") paleontological sensitivity, based on the well documented record of yielding important Pleistocene-age fossils, such as bison, mammoth, mastodon, horse, camel, giant ground sloth, short-faced bear, saber-toothed cat, and others (Jefferson 1991). The WSC regards Pleistocene very old alluvial fan sediments, such as those that underlie the project, as having a high potential to contain significant paleontological resources and, therefore, typically recommends that a monitoring program be implemented to mitigate impacts to potential nonrenewable paleontological resources.

The southwestern area of the project is indicated in a green tint, indicating a low paleontological potential. This is an error, as this designation is usually applied to Holocene-aged sediments, which rarely yield fossils, and plutonic igneous rocks, which never contain fossils.



BFSA Environmental Services
A Perennial Company

Figure 4

Paleontological Sensitivity Map

The Thrifty Oil Warehouse Project

After County of Riverside Land Information System (2024)

VI. CONCLUSION AND RECOMMENDATIONS

Research has confirmed the existence of potentially fossiliferous Pleistocene very old alluvial fan deposits mapped across the project ("$Qvof_a$" on Figure 3). Although the paleontological locality search did not indicate the presence of any known fossil localities within the project, the occurrence of terrestrial vertebrate fossils at shallow depths from Pleistocene older alluvial fan sediments across the Inland Empire of western Riverside County is well documented. These Pleistocene older alluvial fan sediments are typically assigned a "High" paleontological sensitivity rating for yielding paleontological resources. Full-time monitoring of undisturbed Pleistocene very old alluvial fan deposits at the project is recommended starting at four feet below the surface (County of Riverside 2015b). Monitoring of artificial fill or disturbed soils is not warranted.

The submittal and approval of a Paleontological Resource Impact Mitigation Program (PRIMP) is required prior to the issuance of grading permits when requested by the Riverside County Planning Department. The requirement for the submittal and approval of a PRIMP would be based upon the conclusions stated above. The specific guidelines contained within a PRIMP are listed below, which are consistent with the provisions of CEQA, the County of Riverside, and the guidelines of the Society of Vertebrate Paleontology (2010) for any mass grading and excavation-related activities, including utility trenching, during construction within the project. Paleontological monitoring may be reduced based upon the observations and recommendations of the County-approved project paleontologist. The following list provides the required items typically expanded upon in PRIMPs submitted to the County of Riverside:

1. Description of the proposed site and planned grading operations.
2. Description of the level of monitoring required for all earthmoving activities in the project area.
3. Identifications and qualifications of the qualified paleontological monitor to be employed for grading operations monitoring.
4. Identification of personnel with authority and responsibility to temporarily halt or divert grading equipment to allow for the recovery of large specimens.
5. Direction for any fossil discoveries to be immediately reported to the property owner, who in turn, will immediately notify the County of Riverside of the discovery.
6. Means and methods to be employed by the paleontological monitor to quickly salvage fossils as they are unearthed to avoid construction delays.
7. Sampling of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates.
8. Procedures and protocol for collecting and processing samples and specimens.
9. Fossil identification and curation procedures to be employed.
10. Identification of the permanent repository to receive any recovered fossil material.
11. All pertinent exhibits, maps, and references.

12. Procedures for reporting findings.
13. Identification and acknowledgement of the developer for the content of the PRIMP, as well as acceptance of financial responsibility for monitoring, reporting, and curation fees.
14. All reports shall be signed by the project paleontologist.

VII. CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this paleontological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief and have been compiled in accordance with CEQA criteria.



January 5, 2024

Todd A. Wirths
Senior Paleontologist
California Professional Geologist No. 7588

Date

VIII. REFERENCES

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APPENDIX A

Qualifications of Key Personnel

Todd A. Wirths, MS, PG No. 7588

Senior Paleontologist

BFSA Environmental Services, A Perennial Company
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: twirths@bfsa.perennialenv.com

BFSA Environmental Services
A Perennial Company

Education

Master of Science, Geological Sciences, San Diego State University, California **1995**

Bachelor of Arts, Earth Sciences, University of California, Santa Cruz **1992**

Professional Certifications

California Professional Geologist #7588, 2003
Riverside County Approved Paleontologist
San Diego County Qualified Paleontologist
Orange County Certified Paleontologist
OSHA HAZWOPER 40-hour trained; current 8-hour annual refresher

Professional Memberships

Board member, San Diego Geological Society
San Diego Association of Geologists; past President (2012) and Vice President (2011)
South Coast Geological Society
Southern California Paleontological Society

Experience

Mr. Wirths has more than a dozen years of professional experience as a senior-level paleontologist throughout southern California. He is also a certified California Professional Geologist. At BFSA, Mr. Wirths conducts on-site paleontological monitoring, trains and supervises junior staff, and performs all research and reporting duties for locations throughout Los Angeles, Ventura, San Bernardino, Riverside, Orange, San Diego, and Imperial Counties. Mr. Wirths was formerly a senior project manager conducting environmental investigations and remediation projects for petroleum hydrocarbon-impacted sites across southern California.

Selected Recent Reports

2019 *Paleontological Assessment for the 10575 Foothill Boulevard Project, City of Rancho Cucamonga, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Assessment for the MorningStar Marguerite Project, Mission Viejo, Orange County, California.* Prepared for T&B Planning. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Monitoring Report for the Nimitz Crossing Project, City of San Diego.* Prepared for Voltaire 24, LP. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Resource Impact Mitigation Program (PRIMP) for the Jack Rabbit Trail Logistics Center Project, City of Beaumont, Riverside County, California.* Prepared for JRT BP 1, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Oceanside Beachfront Resort Project, Oceanside, San California.* Prepared for S.D. Malkin Properties. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Nakase Project, Lake Forest, Orange County, San California.* Prepared for Glenn Lukos Associates, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Sunset Crossroads Project, Banning, Riverside County*. Prepared for NP Banning Industrial, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Ortega Plaza Project, Lake Elsinore, Riverside County*. Prepared for Empire Design Group. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Record Search Update for the Green River Ranch III Project, Green River Ranch Specific Plan SP00-001, City of Corona, California*. Prepared for Western Realco. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Cypress/Slover Industrial Center Project, City of Fontana, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Imperial Landfill Expansion Project (Phase VI, Segment C-2), Imperial County, California*. Prepared for Republic Services, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Manitou Court Logistics Center Project, City of Jurupa Valley, Riverside County, California*. Prepared for Link Industrial. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Resource Impact Mitigation Program for the Del Oro (Tract 36852) Project, Menifee, Riverside County*. Prepared for D.R. Horton. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Alessandro Corporate Center Project (Planning Case PR-2020-000519), City of Riverside, Riverside County, California*. Prepared for OZI Alessandro, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Monitoring Report for the Boardwalk Project, La Jolla, City of San Diego*. Prepared for Project Management Advisors, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

APPENDIX B

Paleontological Records Search Letter

WESTERN SCIENCE CENTER

December 5th, 2023

BFSA Environmental Services
Todd Wirths
14010 Poway Road, Suite A
Poway, California 92064

Dear Mr. Wirths,

This letter presents the results of a record search conducted for the Harvest Landing Specific Plan Project located in the City of Perris, Riverside County, California. The project site is located between Interstate 215 and N Perris Blvd in Township 4 South, Range 3 West, Sections 18 and 19 on the *Perris, CA* USGS 7.5 minute quadrangle.

The geologic units underlying this project are mapped primarily as very old Pleistocene-aged alluvial fan deposits (Morton, 2003). Pleistocene alluvial units are considered to be highly paleontologically sensitive. The Western Science Center does not have any localities within one mile of the project area.

Any fossils recovered from the Harvest Landing Specific Plan Project area would be scientifically significant. Excavation activity associated with development of the area has the potential to impact the paleontologically sensitive Pleistocene sediments and it is the recommendation of the Western Science Center that a paleontological resource mitigation plan be put in place to monitor, salvage, and curate any recovered fossils associated with the current study area.

If you have any questions, or would like further information, please feel free to contact me at bstoneburg@westerncentermuseum.org.

Sincerely,

Brittney Elizabeth Stoneburg, MSc
Collections Manager

Thrifty Oil Warehouse Project
(PPT230048, PDA 8407, OAPL2300972)
ENERGY ANALYSIS
COUNTY OF RIVERSIDE

PREPARED BY:

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Alyssa Barnett
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JANUARY 24, 2024

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LIST OF ABBREVIATED TERMS

%	Percent
(1)	Reference
AQIA	*Thrifty Oil Warehouse Project Air Quality Impact Analysis*
BACM	Best Available Control Measures
BTU	British Thermal Units
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
County	County of Riverside
CPEP	Clean Power and Electrification Pathway
CPUC	California Public Utilities Commission
DMV	Department of Motor Vehicles
EIA	Energy Information Administration
EPA	Environmental Protection Agency
EMFAC	EMissions FACtor
FERC	Federal Energy Regulatory Commission
Final EIR	Renaissance Specific Plan Final Environmental Impact Report
GHG	Greenhouse Gas
GWh	Gigawatt Hour
HHD	Heavy-Heavy Duty Trucks
hp-hr-gal	Horsepower Hours Per Gallon
IEPR	Integrated Energy Policy Report
ISO	Independent Service Operator
ISTEA	Intermodal Surface Transportation Efficiency Act
ITE	Institute of Transportation Engineers
kBTU	Thousand-British Thermal Units
kWh	Kilowatt Hour
LDA	Light Duty Auto
LDT1/LDT2	Light-Duty Trucks
LHD1/LHD2	Light-Heavy Duty Trucks
MDV	Medium Duty Trucks
MHD	Medium-Heavy Duty Trucks

MMcfd	Million Cubic Feet Per Day
mpg	Miles Per Gallon
MPO	Metropolitan Planning Organization
PG&E	Pacific Gas and Electric
Project	Thrifty Oil Warehouse Project
PV	Photovoltaic
RSP	Renaissance Specific Plan
SCAB	South Coast Air Basin
SCE	Southern California Edison
SDAB	San Diego Air Basin
sf	Square Feet
SoCalGas	Southern California Gas
TEA-21	Transportation Equity Act for the 21st Century
U.S.	United States
VMT	Vehicle Miles Traveled

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EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *Thrifty Oil Warehouse Project Energy Analysis* is summarized below based on the significance criteria in Section 5 of this report consistent with Appendix G of the *CEQA Guidelines* (*CEQA Guidelines*) (1). Table ES-1 shows the findings of significance for potential energy impacts under CEQA.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Energy Impact #1: Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	5.0	*Less Than Significant*	*n/a*
Energy Impact #2: Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	5.0	*Less Than Significant*	*n/a*

ES.2 PROJECT REQUIREMENTS

The Project would be required to comply with regulations imposed by the federal and state agencies that regulate energy use and consumption through various means and programs. Those that are directly and indirectly applicable to the Project and that would assist in the reduction of energy usage include:

- Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)
- The Transportation Equity Act for the 21st Century (TEA-21
- Integrated Energy Policy Report (IEPR)
- State of California Energy Plan
- California Code Title 24, Part 6, Energy Efficiency Standards
- California Code Title 24, Part 11, California Green Building Standards Code (CALGreen)
- AB 1493 Pavley Regulations and Fuel Efficiency Standards
- California's Renewable Portfolio Standard (RPS)
- Clean Energy and Pollution Reduction Act of 2015 (SB 350)
- County of Riverside Climate Action Plan (CAP) Measure R2-CE1

Consistency with the above regulations is discussed in detail in section 5 of this report.

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1 INTRODUCTION

This report presents the results of the energy analysis prepared by Urban Crossroads, Inc., for the proposed Thrifty Oil Warehouse Project Project (Project). The purpose of this report is to ensure that energy implication is considered by the County of Riverside (Lead Agency), as the lead agency, and to quantify anticipated energy usage associated with construction and operation of the proposed Project, determine if the usage amounts are efficient, typical, or wasteful for the land use type, and to emphasize avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

1.1 SITE LOCATION

The proposed project is located on the southeast corner of Tobacco Road and Placentia Avenue at 23641 Placentia Avenue in the County of Riverside, as shown on Exhibit 1-A.

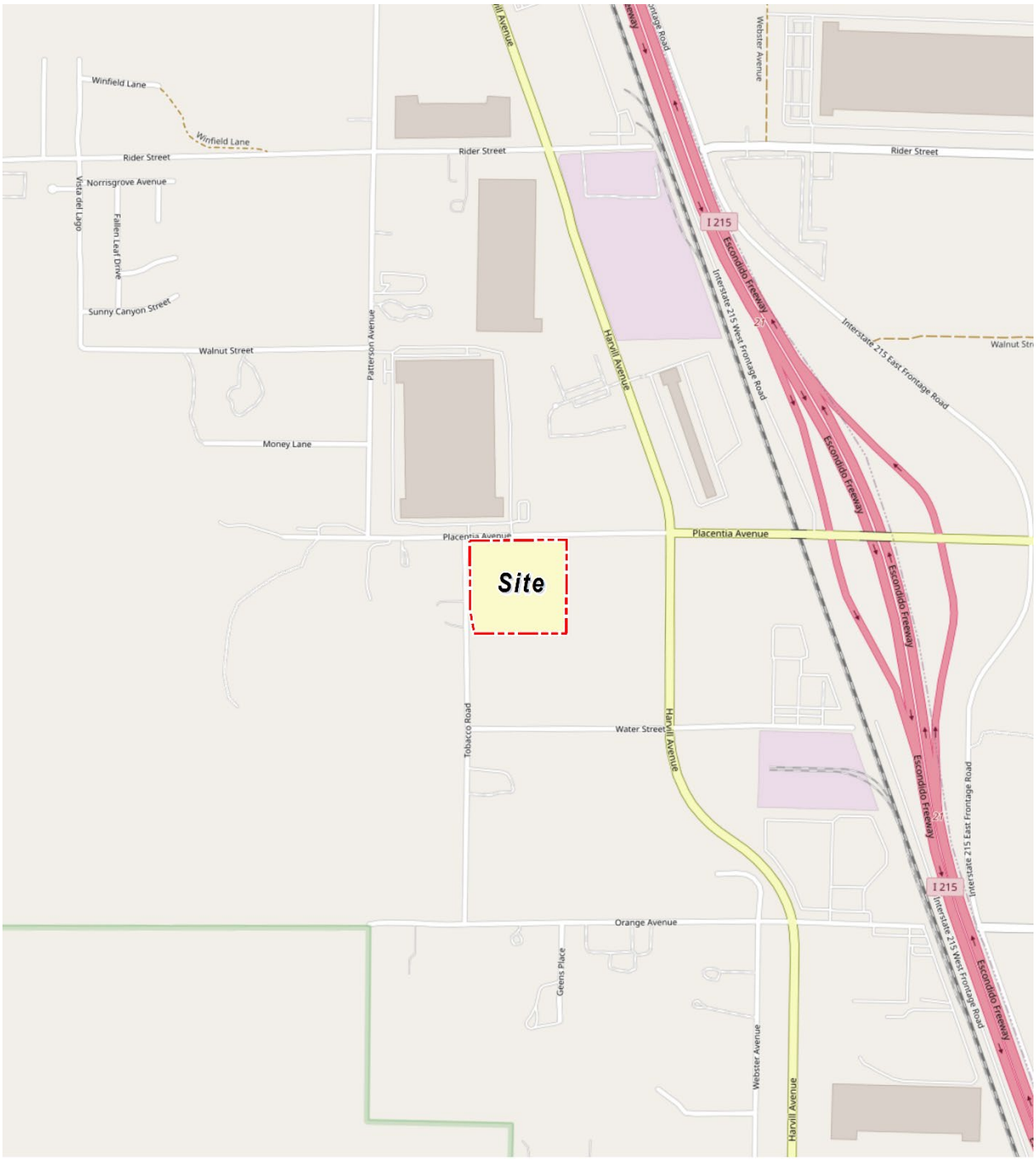
1.2 PROJECT DESCRIPTION

The Project consists of the development of a 185,785-sf warehouse building with 167,785 sf of warehousing use and 18,000 sf of office space (9,000 sf on first and second floors). The total Project site is 8.72 acres on APNs 317-260-017 and 317-261-018. A preliminary site plan for the proposed Project is shown on Exhibit 1-B. The Project is anticipated to have an Opening Year of 2026.

Construction is expected to commence in January 2025 and would last through January 2026. Construction activities will include demolition, site preparation, grading, building construction, paving, and architectural coating. To support the Project development, there will be frontage street improvements as well as offsite sewer improvements for the Project.

The Project site is located within an unincorporated portion of the County of Riverside. As per the General Plan, the unincorporated portions of the County are divided into 19 area plans. These area plans provide more detailed land use and policy direction regarding local issues such as land use, circulation, open space, and other topical areas (2). Per the General Plan, the Project site is located within the Mead Valley Area Plan and is designated for Business Park uses. The Business Park land use designation allows for employee-intensive uses, including research and development, technology centers, corporate and support office uses, clean industry and supporting retail uses (2).

EXHIBIT 1-A: LOCATION MAP



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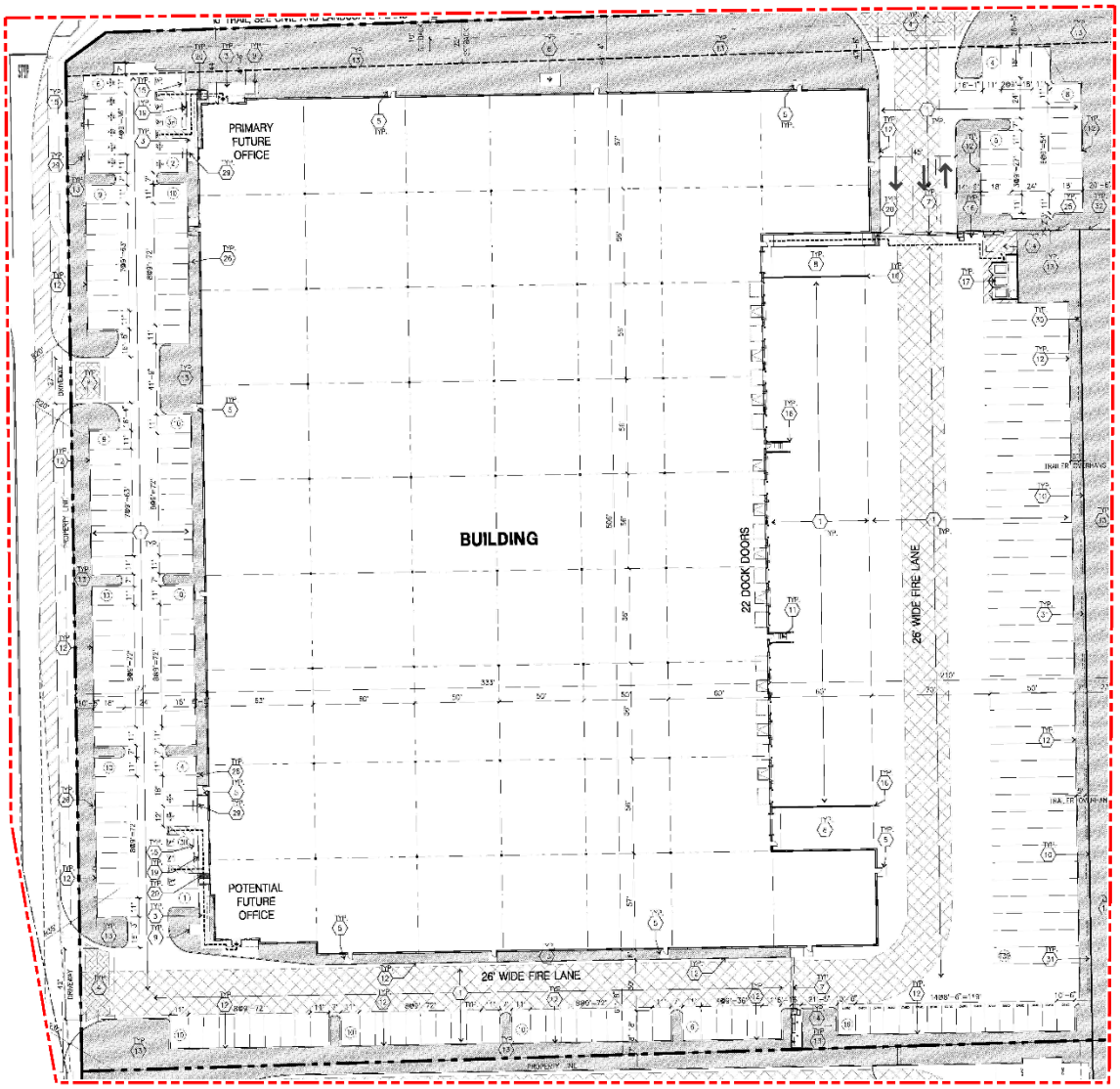
LEGEND:

Site Boundary

EXHIBIT 1-B: SITE PLAN



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2 EXISTING CONDITIONS

This section provides an overview of the existing energy conditions in the Project region.

2.1 OVERVIEW

The most recent data for California's estimated total energy consumption and natural gas consumption is from 2021, released by the United States (U.S.) Energy Information Administration's (EIA) California State Profile and Energy Estimates in 2021 and included (3):

- As of 2021, approximately 7,359 trillion British Thermal Unit (BTU) of energy was consumed
- As of 2021, approximately 605 million barrels of petroleum
- As of 2021, approximately 2,101 billion cubic feet of natural gas
- As of 2021, approximately 1 million short tons of coal

According to the EIA, in 2022 the U.S. petroleum consumption comprised about 90% of all transportation energy use, excluding fuel consumed for aviation and most marine vessels (4). In 2022, about 251,923 million gallons (or about 5.99 million barrels) of finished petroleum products were consumed in the U.S., an average of about 690 million gallons per day (or about 16.4 million barrels per day) (5). In 2021, California consumed approximately 12,157 million gallons in motor gasoline (33.31 million per day) and approximately 3,541 million gallons of diesel fuel (9.7 million per day) (6).

The most recent data provided by the EIA for energy use in California is reported from 2021 and provided by demand sectors as follows:

- Approximately 37.8% transportation sector
- Approximately 23.2% industrial sector
- Approximately 20.0% residential sector
- Approximately 19.0% commercial sector (7)

According to the EIA, California used approximately 247,250 gigawatt hours of electricity in 2021 (8). By sector in 2021, residential uses utilized 36.5% of the state's electricity, followed by 43.9% for commercial uses, 19.2% for industrial uses, and 0.3% for transportation. Electricity usage in California for differing land uses varies substantially by the type of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building (8).

According to the EIA, California used approximately 200,871 million therms of natural gas in 2021 (9). In 2021 (the most recent year for which data is available), by sector, industrial uses utilized 33% of the state's natural gas, followed by 30% used as fuel in the electric power sector, 21% from residential, 11% from commercial, 1% from transportation uses and the remaining 3% was utilized for the operations, processing and production of natural gas itself (9). While the supply of natural gas in the United States and production in the lower 48 states has increased greatly since 2008, California produces little, and imports 90% of its supply of natural gas (9).

In 2022, total system electric generation for California was 287,220 gigawatt hours (GWh). California's massive electricity in-state generation system generated approximately 203,257 GWh which accounted for approximately 71% of the electricity it uses; the rest was imported from the Pacific Northwest (12%) and the U.S. Southwest (17%) (10). Natural gas is the main source for electricity generation at 47.46% of the total in-state electric generation system power as shown in Table 2-1.

An updated summary of, and context for energy consumption and energy demands within the State is presented in "U.S. Energy Information Administration, California State Profile and Energy Estimates, Quick Facts" excerpted below (11):

- In 2022, California was the seventh-largest producer of crude oil among the 50 states, and, as of January 2022, the state ranked third in crude oil refining capacity.
- California is the largest consumer of jet fuel and second-largest consumer of motor gasoline among the 50 states.
- In 2020, California was the second-largest total energy consumer among the states, but its per capita energy consumption was less than in all but three other states.
- In 2022, renewable resources, including hydroelectric power and small-scale, customer-sited solar power, accounted for 49% of California's in-state electricity generation. Natural gas fueled another 42%. Nuclear power supplied almost all the rest.
- In 2022, California was the fourth-largest electricity producer in the nation. The state was also the nation's third-largest electricity consumer, and additional needed electricity supplies came from out-of-state generators.

As indicated below, California is one of the nation's leading energy-producing states, and California's per capita energy use is among the nation's most efficient. Given the nature of the Project, the remainder of this discussion will focus on the three sources of energy that are most relevant to the Project—namely, electricity, natural gas, and transportation fuel for vehicle trips associated with the uses planned for the Project.

TABLE 2-1: TOTAL ELECRICITY SYSTEM POWER (CALIFORNIA 2022)

Fuel Type	California In-State Generation (GWh)	% of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	Total Imports (GWh)	Total California Energy Mix (GWh)	Total California Power Mix
Coal	273	0.13%	181	5,716	5,897	6,170	2.15%
Natural Gas	96,457	47.46%	44	7,994	8,038	104,495	36.38%
Oil	65	0.03%	-	-	-	65	0.2%
Other (Waste Heat/Petroleum Coke)	315	0.15%	-	-	-	315	0.11%
Unspecified	-	0.0%	12,485	7,943	20,428	20,428	7.11%
Total Thermal and Unspecified	**97,110**	**47.78%**	**12,710**	**21,653**	**34,363**	**121,473**	**45.77%**
Nuclear	17,627	8.67%	397	8,342	8,739	26,366	9.18%
Large Hydro	14,607	7.19%	10,803	1,118	11,921	26,528	9.24%
Biomass	5,366	2.64%	771	25	797	6,162	2.15%
Geothermal	11,110	5.47%	253	2,048	2,301	13,412	4.67%
Small Hydro	3,005	1.48%	211	13	225	3,230	1.12%
Solar	40,494	19.92%	231	8,225	8,456	48,950	17.04%
Wind	13,938	6.86%	8,804	8,357	17,161	31,099	10.83%
Total Non-GHG and Renewables	**106,147**	**52.22%**	**21,471**	**28,129**	**49,599**	**155,747**	**54.23%**
SYSTEM TOTALS	***203,257***	***100.0%***	***34,180***	***49,782***	***83,962***	***287,220***	***100.0%***

Source: CECs 2022 Total System Electric Generation

2.2 ELECTRICITY

The usage associated with electricity use were calculated using CalEEMod Version 2022.1.1.12. The Southern California region's electricity reliability has been of concern for the past several years due to the planned retirement of aging facilities that depend upon once-through cooling technologies, as well as the June 2013 retirement of the San Onofre Nuclear Generating Station (San Onofre). While the once-through cooling phase-out has been ongoing since the May 2010 adoption of the State Water Resources Control Board's once-through cooling policy, the retirement of San Onofre complicated the situation. California Independent Service Operator (ISO) studies revealed the extent to which the South Coast Air Basin (SCAB) and the San Diego Air Basin (SDAB) region were vulnerable to low-voltage and post-transient voltage instability concerns. A preliminary plan to address these issues was detailed in the 2013 Integrative Energy Policy Report (IEPR) after a collaborative process with other energy agencies, utilities, and air districts (12). Similarly, the subsequent 2022 IEPR's provides information and policy recommendations on advancing a clean, reliable, and affordable energy system.

California's electricity industry is an organization of traditional utilities, private generating companies, and state agencies, each with a variety of roles and responsibilities to ensure that electrical power is provided to consumers. The California ISO is a nonprofit public benefit corporation and is the impartial operator of the State's wholesale power grid and is charged with maintaining grid reliability, and to direct uninterrupted electrical energy supplies to California's homes and communities. While utilities still own transmission assets, the ISO routes electrical power along these assets, maximizing the use of the transmission system and its power generation resources. The ISO matches buyers and sellers of electricity to ensure that enough power is available to meet demand. To these ends, every five minutes the ISO forecasts electrical demands, accounts for operating reserves, and assigns the lowest cost power plant unit to meet demands while ensuring adequate system transmission capacities and capabilities (13).

Part of the ISO's charge is to plan and coordinate grid enhancements to ensure that electrical power is provided to California consumers. To this end, utilities file annual transmission expansion/modification plans to accommodate the State's growing electrical needs. The ISO reviews and either approves or denies the proposed additions. In addition, and perhaps most importantly, the ISO works with other areas in the western United States electrical grid to ensure that adequate power supplies are available to the State. In this manner, continuing reliable and affordable electrical power is assured to existing and new consumers throughout the State.

Electricity is currently provided to the Project site by Southern California Edison (SCE). SCE provides electric power to more than 15 million persons in 15 counties and in 180 incorporated cities, within a service area encompassing approximately 50,000 square miles. Based on SCE's 2022 Power Content Label Mix, SCE derives electricity from varied energy resources including: fossil fuels, hydroelectric generators, nuclear power plants, geothermal power plants, solar power generation, and wind farms. SCE also purchases from independent power producers and utilities, including out-of-state suppliers (14).

Table 2-2, SCE's specific proportional shares of electricity sources in 2022. As indicated in Table 2-2, the 2022 SCE Power Mix has renewable energy at 33.2% of the overall energy resources.

Geothermal resources are at 5.7%, wind power is at 9.8%, large hydroelectric sources are at 3.4%, solar energy is at 17.0%, and coal is at 0% (15).

TABLE 2-2: SCE 2022 POWER CONTENT MIX

Energy Resources	2022 SCE Power Mix
Eligible Renewable	**33.2%**
Biomass & Waste	0.1%
Geothermal	5.7%
Eligible Hydroelectric	0.5%
Solar	17.0%
Wind	9.8%
Coal	**0.0%**
Large Hydroelectric	**3.4%**
Natural Gas	**24.7%**
Nuclear	**8.3%**
Other	**0.1%**
Unspecified Sources of power*	30.3%
Total	**100%**

* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources

2.3 NATURAL GAS

The following summary of natural gas customers and volumes, supplies, delivery of supplies, storage, service options, and operations is excerpted from information provided by the California Public Utilities Commission (CPUC).

> *"The CPUC regulates natural gas utility service for approximately 10.8 million customers that receive natural gas from Pacific Gas and Electric (PG&E), Southern California Gas (SoCalGas), San Diego Gas & Electric (SDG&E), Southwest Gas, and several smaller natural gas utilities. The CPUC also regulates independent storage operators: Lodi Gas Storage, Wild Goose Storage, Central Valley Storage and Gill Ranch Storage.*
>
> *California's natural gas utilities provide service to over 11 million gas meters. SoCalGas and PG&E provide service to about 5.9 million and 4.3 million customers, respectively, while SDG&E provides service to over 800, 000 customers. In 2018, California gas utilities forecasted that they would deliver about 4740 million cubic feet per day (MMcfd) of gas to their customers, on average, under normal weather conditions.*
>
> *The overwhelming majority of natural gas utility customers in California are residential and small commercials customers, referred to as "core" customers. Larger volume gas customers, like electric generators and industrial customers, are called "noncore" customers. Although very small in number relative to core customers, noncore customers*

consume about 65% of the natural gas delivered by the state's natural gas utilities, while core customers consume about 35%.

A significant amount of gas (about 19%, or 1131 MMcfd, of the total forecasted California consumption in 2018) is also directly delivered to some California large volume consumers, without being transported over the regulated utility pipeline system. Those customers, referred to as "bypass" customers, take service directly from interstate pipelines or directly from California producers.

SDG&E and Southwest Gas' southern division are wholesale customers of SoCalGas, i.e., they receive deliveries of gas from SoCalGas and in turn deliver that gas to their own customers. (Southwest Gas also provides natural gas distribution service in the Lake Tahoe area.) Similarly, West Coast Gas, a small gas utility, is a wholesale customer of PG&E. Some other wholesale customers are municipalities like the cities of Palo Alto, Long Beach, and Vernon, which are not regulated by the CPUC.

Natural gas from out-of-state production basins is delivered into California via the interstate natural gas pipeline system. The major interstate pipelines that deliver out-of-state natural gas to California gas utilities are Gas Transmission Northwest Pipeline, Kern River Pipeline, Transwestern Pipeline, El Paso Pipeline, Ruby Pipeline, Mojave Pipeline, and Tuscarora. Another pipeline, the North Baja - Baja Norte Pipeline takes gas off the El Paso Pipeline at the California/Arizona border and delivers that gas through California into Mexico. While the Federal Energy Regulatory Commission (FERC) regulates the transportation of natural gas on the interstate pipelines, and authorizes rates for that service, the California Public Utilities Commission may participate in FERC regulatory proceedings to represent the interests of California natural gas consumers.

The gas transported to California gas utilities via the interstate pipelines, as well as some of the California-produced gas, is delivered into the PG&E and SoCalGas intrastate natural gas transmission pipelines systems (commonly referred to as California's "backbone" pipeline system). Natural gas on the utilities' backbone pipeline systems is then delivered to the local transmission and distribution pipeline systems, or to natural gas storage fields. Some large volume noncore customers take natural gas delivery directly off the high-pressure backbone and local transmission pipeline systems, while core customers and other noncore customers take delivery off the utilities' distribution pipeline systems. The state's natural gas utilities operate over 100,000 miles of transmission and distribution pipelines, and thousands more miles of service lines.

Bypass customers take most of their deliveries directly off the Kern/Mojave pipeline system, but they also take a significant amount of gas from California production.

PG&E and SoCalGas own and operate several natural gas storage fields that are located within their service territories in northern and southern California, respectively. These storage fields, and four independently owned storage utilities - Lodi Gas Storage, Wild Goose Storage, Central Valley Storage, and Gill Ranch Storage - help meet peak seasonal and daily natural gas demand and allow California natural gas customers to secure

natural gas supplies more efficiently. PG&E is a 25% owner of the Gill Ranch Storage field. These storage fields provide a significant amount of infrastructure capacity to help meet California's natural gas requirements, and without these storage fields, California would need much more pipeline capacity in order to meet peak gas requirements .

Prior to the late 1980s, California regulated utilities provided virtually all natural gas services to all their customers. Since then, the Commission has gradually restructured the California gas industry in order to give customers more options while assuring regulatory protections for those customers that wish to, or are required to, continue receiving utility-provided services.

The option to purchase natural gas from independent suppliers is one of the results of this restructuring process. Although the regulated utilities procure natural gas supplies for most core customers, core customers have the option to purchase natural gas from independent natural gas marketers, called "core transport agents" (CTA). Contact information for core transport agents can be found on the utilities' web sites. Noncore customers, on the other hand, make natural gas supply arrangements directly with producers or with marketers.

Another option resulting from the restructuring process occurred in 1993, when the Commission removed the utilities' storage service responsibility for noncore customers, along with the cost of this service from noncore customers' transportation rates. The Commission also encouraged the development of independent storage fields, and in subsequent years, all the independent storage fields in California were established. Noncore customers and marketers may now take storage service from the utility or from an independent storage provider (if available), and pay for that service, or may opt to take no storage service at all. For core customers, the Commission assures that the utility has adequate storage capacity set aside to meet core requirements, and core customers pay for that service.

In a 1997 decision, the Commission adopted PG&E's "Gas Accord", which unbundled PG&E's backbone transmission costs from noncore transportation rates. This decision gave customers and marketers the opportunity to obtain pipeline capacity rights on PG&E's backbone transmission pipeline system, if desired, and pay for that service at rates authorized by the Commission. The Gas Accord also required PG&E to set aside a certain amount of backbone transmission capacity in order to deliver gas to its core customers. Subsequent Commission decisions modified and extended the initial terms of the Gas Accord. The "Gas Accord" framework is still in place today for PG&E's backbone and storage rates and services and is now simply referred to as PG&E Gas Transmission and Storage (GT&S).

In a 2006 decision, the Commission adopted a similar gas transmission framework for Southern California, called the "firm access rights" system. SoCalGas and SDG&E implemented the firm access rights (FAR) system in 2008, and it is now referred to as the backbone transmission system (BTS) framework. As under the PG&E backbone transmission system, SoCalGas backbone transmission costs are unbundled from noncore

transportation rates. Noncore customers and marketers may obtain, and pay for, firm backbone transmission capacity at various receipt points on the SoCalGas system. A certain amount of backbone transmission capacity is obtained for core customers to assure meeting their requirements.

Many if not most noncore customers now use a marketer to provide for several of the services formerly provided by the utility. That is, a noncore customer may simply arrange for a marketer to procure its supplies, and obtain any needed storage and backbone transmission capacity, in order to assure that it will receive its needed deliveries of natural gas supplies. Core customers still mainly rely on the utilities for procurement service, but they have the option to take procurement service from a CTA. Backbone transmission and storage capacity is either set aside or obtained for core customers in amounts to assure very high levels of service.

In order properly operate their natural gas transmission pipeline and storage systems, PG&E and SoCalGas must balance the amount of gas received into the pipeline system and delivered to customers or to storage fields. Some of these utilities' storage capacity is dedicated to this service, and under most circumstances, customers do not need to precisely match their deliveries with their consumption. However, when too much or too little gas is expected to be delivered into the utilities' systems, relative to the amount being consumed, the utilities require customers to more precisely match up their deliveries with their consumption. And, if customers do not meet certain delivery requirements, they could face financial penalties. The utilities do not profit from these financial penalties - the amounts are then returned to customers as a whole. If the utilities find that they are unable to deliver all the gas that is expected to be consumed, they may even call for a curtailment of some gas deliveries. These curtailments are typically required for just the largest, noncore customers. It has been many years since there has been a significant curtailment of core customers in California." (16)

As indicated in the preceding discussions, natural gas is available from a variety of in-state and out-of-state sources and is provided throughout the state in response to market supply and demand. Complementing available natural gas resources, biogas may soon be available via existing delivery systems, thereby increasing the availability and reliability of resources in total. The CPUC oversees utility purchases and transmission of natural gas to ensure reliable and affordable natural gas deliveries to existing and new consumers throughout the State.

Based on information provided by the Project applicant, no natural gas would be used as a result of the Project, and as such use of natural gas is not considered in the analysis.

2.4 TRANSPORTATION ENERGY RESOURCES

The Project would generate additional vehicle trips with resulting consumption of energy resources, predominantly gasoline and diesel fuel. The Department of Motor Vehicles (DMV) identified 36.2 million registered vehicles in California (7), and those vehicles consume an

estimated 17.2 billion gallons of fuel each year[1]. Gasoline (and other vehicle fuels) are commercially provided commodities and would be available to the Project patrons and employees via commercial outlets.

California's on-road transportation system includes 396,616 lane miles, more than 26.6 million passenger vehicles and light trucks, and almost 9.0 million medium- and heavy-duty vehicles (7). While gasoline consumption has been declining since 2008 it is still by far the dominant fuel. California is the second-largest consumer of petroleum products, after Texas, and accounts for 8% of the nation's total consumption. The State is the largest U.S. consumer of motor gasoline and jet fuel, and 83% of the petroleum consumed in California is used in the transportation sector (17).

California accounts for less than 1% of total U.S. natural gas reserves and production. As with crude oil, California's natural gas production has experienced a gradual decline since 1985. In 2021, about 33% of the natural gas delivered to consumers went to the State's industrial sector, and about 31% was delivered to the electric power sector. Natural gas fueled more than two-fifths of the State's utility-scale electricity generation in 2021. The residential sector, where three-fifths of California households use natural gas for home heating, accounted for 22% of natural gas deliveries. The commercial sector received 12% of the deliveries to end users and the transportation sector consumed the remaining 1% (17).

[1] Fuel consumptions estimated utilizing information from EMFAC2021.

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3 REGULATORY BACKGROUND

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the United States Department of Transportation, the United States Department of Energy, and the United States Environmental Protection Agency (EPA) are three federal agencies with substantial influence over energy policies and programs. On the state level, the CPUC and the CEC are two agencies with authority over different aspects of energy. Relevant federal and state energy-related laws and plans are summarized below.

3.1 FEDERAL REGULATIONS

3.1.1 INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT OF 1991 (ISTEA)

The ISTEA promoted the development of inter-modal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that Metropolitan Planning Organizations (MPOs) were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions.

3.1.2 THE TRANSPORTATION EQUITY ACT FOR THE 21ST CENTURY (TEA-21)

The TEA-21 was signed into law in 1998 and builds upon the initiatives established in the ISTEA legislation, discussed above. TEA-21 authorizes highway, highway safety, transit, and other efficient surface transportation programs. TEA-21 continues the program structure established for highways and transit under ISTEA, such as flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. TEA-21 also provides for investment in research and its application to maximize the performance of the transportation system through, for example, deployment of Intelligent Transportation Systems, to help improve operations and management of transportation systems and vehicle safety.

3.2 CALIFORNIA REGULATIONS

3.2.1 INTEGRATED ENERGY POLICY REPORT (IEPR)

Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires the CEC to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety (Public Resources Code § 25301[a]). The CEC prepares these assessments and associated policy recommendations every two years, with updates in alternate years, as part of the Integrated Energy Policy Report.

The 2022 IEPR was adopted February 2023, and continues to work towards improving electricity, natural gas, and transportation fuel energy use in California. The 2022 IEPR introduces a new

framework for embedding equity and environmental justice at the CEC and the California Energy Planning Library which allows for easier access to energy data and analytics for a wide range of users. Additionally, energy reliability, western electricity integration, gasoline cost factors and price spikes, the role of hydrogen in California's clean energy future, fossil gas transition and distributed energy resources are topics discussed within the 2022 IEPR (18).

3.2.2 STATE OF CALIFORNIA ENERGY PLAN

The CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies several strategies, including assistance to public agencies and fleet operators and encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

3.2.3 CALIFORNIA CODE TITLE 24, PART 6, ENERGY EFFICIENCY STANDARDS

California Code of Regulations (CCR) Title 24 Part 6: The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on August 1, 2009, and is administered by the California Building Standards Commission.

CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2022 California Green Building Code Standards that became effective on January 1, 2023. The CEC anticipates that the 2022 energy code will provide $1.5 billion in consumer benefits and reduce GHG emissions by 10 million metric tons (19). The Project would be required to comply with the applicable standards in place at the time building permit document submittals are made. These require, among other items (20):

NONRESIDENTIAL MANDATORY MEASURES

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking for clean air vehicles. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).

- EV charging stations. New construction shall facilitate the future installation of EV supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. The number of spaces to be provided for is contained in Table 5.106. 5.3.3 (5.106.5.3). Additionally, Table 5.106.5.4.1 specifies requirements for the installation of raceway conduit and panel power requirements for medium- and heavy-duty electric vehicle supply equipment for warehouses, grocery stores, and retail stores.
- Outdoor light pollution reduction. Outdoor lighting systems shall be designed to meet the backlight, uplight and glare ratings per Table 5.106.8 (5.106.8).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1. 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reuse or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
    - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
    - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor- mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
    - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
    - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor potable water uses in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent (5.304.1).

- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gallons per day (GPD) (5.303.1.1 and 5.303.1.2).
- Outdoor water uses in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2)

3.2.4 AB 1493 PAVLEY REGULATIONS AND FUEL EFFICIENCY STANDARDS

California AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Under this legislation, CARB adopted regulations to reduce GHG emissions from non-commercial passenger vehicles (cars and light-duty trucks). Although aimed at reducing GHG emissions, specifically, a co-benefit of the Pavley standards is an improvement in fuel efficiency and consequently a reduction in fuel consumption.

3.2.5 CALIFORNIA'S RENEWABLE PORTFOLIO STANDARD (RPS)

First established in 2002 under Senate Bill (SB) 1078, California's Renewable Portfolio Standards (RPS) requires retail sellers of electric services to increase procurement from eligible renewable resources to 44% of total retail sales by 2024 (21).

3.2.6 CLEAN ENERGY AND POLLUTION REDUCTION ACT OF 2015 (SB 350)

In October 2015, the legislature approved, and the Governor signed SB 350, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33% to 50% by 2030, with interim targets of 40% by 2024, and 25% by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the CEC, and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

3.2.7 COUNTY OF RIVERSIDE CAP

The Project is subject to the County of Riverside CAP, as shown in the Project's Greenhouse Gas Analysis, the Project would comply with the County's CAP and result in a less than significant

impact. The County's CAP is intended to reduce energy consumption through increasing energy efficiency and using alternative sustainable sources of energy. The Project does not conflict with any applicable CAP measures.

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4 PROJECT ENERGY DEMANDS AND ENERGY EFFICIENCY MEASURES

4.1 EVALUATION CRITERIA

Appendix F of the *State CEQA Guidelines* (22), states that the means of achieving the goal of energy conservation includes the following:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas, and oil; and
- Increasing reliance on renewable energy sources.

In compliance with Appendix G of the *State CEQA Guidelines* (23), this report analyzes the Project's anticipated energy use during construction and operations to determine if the Project would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

4.2 METHODOLOGY

Information from the CalEEMod Version 2022 outputs for the *Thrifty Oil Warehouse Project (PPT220047) Air Quality Impact Analysis* (AQIA) (24) was utilized in this analysis, detailing Project related construction equipment, transportation energy demands, and facility energy demands.

4.2.1 CALEEMOD

In May 2022, the SCAQMD, in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the CalEEMod Version 2022.1. The purpose of this model is to calculate construction-source and operational-source criteria pollutants and GHG emissions from direct and indirect sources as well as energy usage (25). Accordingly, the latest version of CalEEMod has been used to determine the proposed Project's anticipated transportation and facility energy demands. Outputs from the annual model runs are provided in Appendices 4.1 through 4.3.

4.2.2 EMISSION FACTORS MODEL

On May 2, 2022, the EPA approved the 2021 version of the EMissions FACtor model (EMFAC2021) web database for use in State Implementation Plan and transportation conformity analyses. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources (26). This energy study utilizes the different fuel types for each vehicle class from the annual EMFAC2021 emission inventory in order to derive the average vehicle fuel economy which is then used to determine the estimated annual fuel consumption associated with vehicle usage during Project construction and operational activities. For purposes of

analysis, the 2025 and 2026 analysis years were utilized to determine the average vehicle fuel economy used throughout the duration of the Project. Outputs from the EMFAC2021 model run is provided in Appendix 4.4.

4.3 CONSTRUCTION ENERGY DEMANDS

The focus within this section is the energy implications of the construction process, specifically the power cost from on-site electricity consumption during construction of the proposed Project.

4.3.1 CONSTRUCTION POWER COST

The total Project construction power costs is the summation of the products of the area (sf) by the construction duration and the typical power cost.

CONSTRUCTION DURATION

For purposes of analysis, construction of Project is expected to commence in January 2025 and would last through February 2026 (24). The construction schedule utilized in the analysis, shown in Table 4-1, represents a "worst-case" analysis scenario. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per *CEQA Guidelines* (27).

TABLE 4-1: CONSTRUCTION DURATION

Construction Activity	Start Date	End Date	Working Days
Demolition	1/7/2025	2/4/2025	20
Site Preparation	2/5/2025	2/19/2025	10
Grading	2/20/2025	3/20/2025	20
Building Construction	3/21/2025	2/6/2026	230
Paving	1/10/2026	2/6/2026	20
Architectural Coating	1/10/2026	2/6/2026	20

PROJECT CONSTRUCTION POWER COST

The *2024 National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of $2.66, which was used to calculate the Project's total construction power cost (28).

As shown on Table 4-2, the total power cost of the on-site electricity usage during the construction of the Project is estimated to be approximately $11,163.18.

TABLE 4-2: CONSTRUCTION POWER COST

Land Use	**Power Cost** (per 1,000 SF of construction per month)	**Size** (1,000 SF)	**Construction Duration** (months)	**Project Construction Power Cost**
Warehousing	$2.66	185.785	13	$6,424.45
Parking	$2.66	46.414	13	$1,605.00
Other Asphalt Surfaces	$2.66	90.623	13	$3,133.74
CONSTRUCTION POWER COST				***$11,163.18***

4.3.2 CONSTRUCTION ELECTRICITY USAGE

The total Project construction electricity usage is the summation of the products of the power cost (estimated in Table 4-2) by the utility provider cost per kilowatt hour (kWh) of electricity.

PROJECT CONSTRUCTION ELECTRICITY USAGE

The SCE's general service rate schedule was used to determine the Project's electrical usage. As of January 1, 2024, SCE's general service rate is $0.14 per kilowatt hours (kWh) of electricity for industrial services (29). As shown on Table 4-3, the total electricity usage from on-site Project construction related activities is estimated to be approximately 77,444 kWh.

TABLE 4-3: CONSTRUCTION ELECTRICITY USAGE

Land Use	Cost per kWh	Project Construction Electricity Usage (kWh)
Warehousing	$0.14	44,569
Parking	$0.14	11,135
Other Asphalt Surfaces	$0.14	21,740
CONSTRUCTION ELECTRICITY USAGE		***77,444***

4.3.3 CONSTRUCTION EQUIPMENT FUEL ESTIMATES

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Project construction.

CONSTRUCTION EQUIPMENT

A summary of construction equipment by phase is provided at Table 4-4. Consistent with industry standards and typical construction practices, each piece of equipment listed in Table 4-4 would operate up to a total of eight (8) hours per day, or more than two-thirds of the period during which construction activities are allowed pursuant to the County Code. In accordance with the County of Riverside Good Neighbor Policy for Logistics and Warehouse/Distribution uses, it was assumed that equipment greater than 50 horsepower would meet at least CARB Tier 4 Interim emissions standards.

TABLE 4-4: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Construction Activity	Equipment	Amount	Hours Per Day
Demolition	Rubber Tired Dozers	2	8
	Excavators	3	8
	Concrete/Industrial Saws	1	8
Site Preparation	Rubber Tired Dozers	3	8
	Crawler Tractors	4	8
Grading	Graders	1	8
	Excavators	1	8
	Rubber Tired Dozers	1	8
	Crawler Tractors	3	8
Building Construction	Forklifts	3	8
	Generator Sets	1	8
	Cranes	1	8
	Welders	1	8
	Tractors/Loaders/Backhoes	3	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8

PROJECT CONSTRUCTION EQUIPMENT FUEL CONSUMPTION

Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in Table 4-5. The aggregate fuel consumption rate for all equipment is estimated at 18.5 horsepower hour per gallon (hp-hr-gal.), obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines (30). For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered, which is consistent with industry standards.

TABLE 4-5: CONSTRUCTION EQUIPMENT FUEL CONSUMPTION ESTIMATES

Construction Activity	Duration (Days)	Equipment	HP Rating	Quantity	Usage Hours	Load Factor	HP-hrs/day	Total Fuel Consumption
Demolition	20	Rubber Tired Dozers	367	2	8	0.40	2,349	2,539
		Excavators	36	3	8	0.38	328	355
		Concrete/Industrial Saws	33	1	8	0.73	193	208
Site Preparation	10	Rubber Tired Dozers	367	3	8	0.40	3,523	1,904
		Crawler Tractors	87	4	8	0.43	1,197	647
Grading	20	Graders	148	1	8	0.41	485	525
		Excavators	36	1	8	0.38	109	118
		Rubber Tired Dozers	367	1	8	0.40	1,174	1,270
		Crawler Tractors	87	3	8	0.43	898	971
Building Construction	230	Forklifts	82	3	8	0.20	394	4,893
		Generator Sets	14	1	8	0.74	83	1,030
		Cranes	367	1	8	0.29	851	10,585
		Welders	46	1	8	0.45	166	2,059
		Tractors/Loaders/Backhoes	84	3	8	0.37	746	9,274
Paving	20	Pavers	81	2	8	0.42	544	588
		Paving Equipment	89	2	8	0.36	513	554
		Rollers	36	2	8	0.38	219	237
Architectural Coating	20	Air Compressors	37	1	8	0.48	142	154
CONSTRUCTION FUEL DEMAND (GALLONS FUEL)								***37,912***

Diesel fuel would be supplied by existing commercial fuel providers serving the Project area and region[2]. As previously presented in Table 4-5, Project construction activities would consume an estimated 37,912 gallons of diesel fuel. Project construction would represent a "single-event" diesel fuel demand and would not require ongoing or permanent commitment of diesel fuel resources for this purpose.

4.3.4 CONSTRUCTION TRIPS AND VMT

Construction generates on-road vehicle emissions from vehicle usage for workers, vendors, and haul truck commuting to and from the site. The number of workers, vendor, and haul trips are presented below in Table 4-6. It should be noted that for vendor trips, specifically, CalEEMod only assigns vendor trips to the Building Construction phase. Vendor trips would likely occur during all phases of construction. As such, the CalEEMod defaults for vendor trips have been adjusted based on a ratio of the total vendor trips to the number of days of each subphase of activity.

TABLE 4-6: CONSTRUCTION TRIPS AND VMT

Construction Activity	Worker Trips Per Day	Vendor Trips Per Day	Hauling Trips Per Day
Demolition	15	3	2
Site Preparation	18	2	0
Grading	15	3	388
Building Construction	78	24	0
Paving	15	0	0
Architectural Coating	16	0	0

4.3.5 CONSTRUCTION WORKER FUEL ESTIMATES

With respect to estimated VMT for the Project, the construction worker trips (personal vehicles used by workers commuting to the Project from home) would generate an estimated 363,340 VMT during the 13 months of construction (24). Based on CalEEMod methodology, it is assumed that 50% of all construction worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1[3]), and 25% are from light-duty-trucks (LDT2[4]). Data regarding Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA.

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources (26). EMFAC2021 was

[2] Based on Appendix A of the CalEEMod User's Guide, Construction consists of several types of off-road equipment. Since the majority of the off-road construction equipment used for construction projects are diesel fueled, CalEEMod assumes all of the equipment operates on diesel fuel.

[3] Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

[4] Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.

run for the LDA, LDT1, and LDT2 vehicle class within the Riverside (SC) sub-area for the 2025 and 2026 calendar years. Data from EMFAC2021 is shown in Appendix 4.4.

TABLE 4-7: CONSTRUCTION WORKER FUEL CONSUMPTION ESTIMATES

Year	Construction Activity	Duration (Days)	Worker Trips/Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2025	LDA						
	Demolition	20	8	18.5	2,960	32.49	91
	Site Preparation	10	9	18.5	1,665	32.49	51
	Grading	20	8	18.5	2,960	32.49	91
	Building Construction	203	39	18.5	146,465	32.49	4,508
	LDT1						
	Demolition	20	4	18.5	1,480	25.14	59
	Site Preparation	10	5	18.5	925	25.14	37
	Grading	20	4	18.5	1,480	25.14	59
	Building Construction	203	20	18.5	75,110	25.14	2,988
	LDT2						
	Demolition	20	4	18.5	1,480	25.29	59
	Site Preparation	10	5	18.5	925	25.29	37
	Grading	20	4	18.5	1,480	25.29	59
	Building Construction	203	20	18.5	75,110	25.29	2,970
2026	LDA						
	Building Construction	27	39	18.5	19,481	33.43	583
	Paving	20	8	18.5	2,960	33.43	89
	Architectural Coating	20	8	18.5	2,960	33.43	89
	LDT1						
	Building Construction	27	20	18.5	9,990	25.70	389
	Paving	20	4	18.5	1,480	25.70	58
	Architectural Coating	20	4	18.5	1,480	25.70	58
	LDT2						
	Building Construction	27	20	18.5	9,990	26.01	384
	Paving	20	4	18.5	1,480	26.01	57
	Architectural Coating	20	4	18.5	1,480	26.01	57
TOTAL CONSTRUCTION WORKER FUEL CONSUMPTION							***12,769***

As previously shown in Table 4-7, the estimated annual fuel consumption resulting from Project construction worker trips is 12,769 gallons during full construction of the Project. It should be noted that construction worker trips would represent a "single-event" gasoline fuel demand and would not require ongoing or permanent commitment of fuel resources for this purpose.

4.3.6 CONSTRUCTION VENDOR/HAULING FUEL ESTIMATES

With respect to estimated VMT, the construction vendor trips (vehicles that deliver materials to the site during construction) would generate an estimated 214,140 VMT along area roadways for the Project over the duration of construction activity (24). It is assumed that 50% of all vendor trips are from medium-heavy duty trucks (MHD), 50% of all vendor trips are from heavy-heavy duty trucks (HHD), and 100% of all hauling trips are from HHDs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA (24). Vehicle fuel efficiencies for MHDs and HHDs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHD and HHD vehicle classes within the Riverside (SC) sub-area for the 2025 and 2026 calendar years. Data from EMFAC2021 is shown in Appendix 4.4.

Based on Table 4-8, it is estimated that 33,138 gallons of fuel will be consumed related to construction vendor trips during full construction of the Project. It should be noted that Project construction vendor trips would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

TABLE 4-8: CONSTRUCTION VENDOR FUEL CONSUMPTION ESTIMATES

Year	Construction Activity	Duration (Days)	Vendor Trips/Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2025	MHD						
	Demolition	20	2	10.2	408	8.58	48
	Site Preparation	10	1	10.2	102	8.58	12
	Grading	20	2	10.2	408	8.58	48
	Building Construction	203	12	10.2	24,847	8.58	2,896
	HHD (Vendor)						
	Demolition	20	2	10.2	408	6.22	66
	Site Preparation	10	1	10.2	102	6.22	16
	Grading	20	2	10.2	408	6.22	66
	Building Construction	203	12	10.2	24,847	6.22	3,996
	HHD (Hauling)						
	Demolition	20	2	20	800	6.22	129
	Grading	20	388	20	155,200	6.22	24,961

Year	Construction Activity	Duration (Days)	Vendor Trips/Day	Trip Length (miles)	VMT	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)
2026	MHD						
	Building Construction	27	12	10.2	3,305	8.71	380
	HHD (Vendor)						
	Building Construction	27	12	10.2	3,305	6.33	522
TOTAL CONSTRUCTION VENDOR FUEL CONSUMPTION							***33,138***

4.3.7 CONSTRUCTION ENERGY EFFICIENCY/CONSERVATION MEASURES

Starting in 2014, CARB adopted the nation's first regulation aimed at cleaning up off-road construction equipment such as bulldozers, graders, and backhoes. These requirements ensure fleets gradually turnover the oldest and dirtiest equipment to newer, cleaner models and prevent fleets from adding older, dirtier equipment. As such, the equipment used for Project construction would conform to CARB regulations and California emissions standards. It should also be noted that there are no unusual Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

Construction contractors would be required to comply with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additional construction-source energy efficiencies would occur due to required California regulations and best available control measures (BACM). For example, CCR Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. Section 2449(d)(3) requires that grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling." In this manner, construction equipment operators are required to be informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

A full analysis related to the energy needed to form construction materials is not included in this analysis due to a lack of detailed Project-specific information on construction materials. At this

time, an analysis of the energy needed to create Project-related construction materials would be extremely speculative and thus has not been prepared.

In general, construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing, and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

4.4 OPERATIONAL ENERGY DEMANDS

Energy consumption in support of or related to Project operations would include transportation fuel demands (fuel consumed by passenger car and truck vehicles accessing the Project site), fuel demands from operational equipment, and facilities energy demands (energy consumed by building operations and site maintenance activities).

4.4.1 TRANSPORTATION FUEL DEMANDS

Energy that would be consumed by Project-generated traffic is a function of total VMT and estimated vehicle fuel economies of vehicles accessing the Project site. The VMT per vehicle class can be determined by evaluated in the vehicle fleet mix and the total VMT.

As with worker and vendors trips, operational vehicle fuel efficiencies were estimated using information generated within EMFAC2021 developed by CARB (26). EMFAC2021 was run for the Riverside (SC) sub-area for the 2025 and 2026 calendar years. Data from EMFAC2021 is shown in Appendix 4.4.

The estimated transportation energy demands were previously summarized on Table 4-9. As summarized on Table 4-9 the Project would result in a 1,797,520 annual VMT and an estimated annual fuel consumption of 151,903 gallons of fuel.

TABLE 4-9: TOTAL PROJECT-GENERATED TRAFFIC ANNUAL FUEL CONSUMPTION

Vehicle Type	**Average Vehicle Fuel Economy** (mpg)	**Annual VMT**	**Estimated Annual Fuel Consumption** (gallons)
LDA	33.43	473,771	14,170
LDT1	25.70	36,302	1,412
LDT2	26.01	195,661	7,523
MDV	20.88	151,185	7,241
LHDT1	16.89	125,381	7,422
LHDT2	16.01	35,731	2,232
MHDT	8.71	193,352	22,210
HHDT	6.33	564,075	89,168

Vehicle Type	Average Vehicle Fuel Economy (mpg)	Annual VMT	Estimated Annual Fuel Consumption (gallons)
MCY	42.07	22,062	524
TOTAL (ALL VEHICLES)		***1,797,520***	***151,903***

4.4.2 ON-SITE CARGO HANDLING EQUIPMENT FUEL DEMANDS

It is common for industrial buildings to require the operation of exterior cargo handling equipment in the building's truck court areas. For this particular Project, on-site modeled operational equipment includes up to two (2) 75 horsepower (hp), electric-powered cargo handling equipment – port tractors operating at 4 hours a day[5] for 365 days of the year. Per County of Riverside Good Neighbor Guidelines, all on-site equipment (cargo handling equipment, yard goats, forklifts) utilized for the operation of the proposed Project will be electrically powered and charging stations will be provided on-site.

4.4.3 FACILITY ENERGY DEMANDS

Project building operations activities would result in the consumption of electricity, which would be supplied to the Project by SCE. Electricity usage associated with the Project was calculated based on CalEEMod defaults. As summarized on Table 4-10 the Project would result in 724,868 kWh/year of electricity.

Based on information provided by the Project Applicant, the Project would not use natural gas for the building envelope. As such, natural gas consumption has not been analyzed in this study.

TABLE 4-10: PROJECT ANNUAL OPERATIONAL ENERGY DEMAND SUMMARY

Land Use	Electricity Demand (kWh/year)
Warehousing	684,038
Parking	40,830
Other Asphalt Surfaces	0
TOTAL PROJECT ENERGY DEMAND	***724,868***

4.4.4 OPERATIONAL ENERGY EFFICIENCY/CONSERVATION MEASURES

Energy efficiency/energy conservation attributes of the Project would be complemented by increasingly stringent state and federal regulatory actions addressing vehicle fuel economies and vehicle emissions standards; and enhanced building/utilities energy efficiencies mandated under California building codes (e.g., Title 24, California Green Building Standards Code).

ENHANCED VEHICLE FUEL EFFICIENCIES

[5] Based on Table II-3, Port and Rail Cargo Handling Equipment Demographics by Type, from CARB's Technology Assessment: Mobile Cargo Handling Equipment document, a single piece of equipment could operate up to 2 hours per day (Total Average Annual Activity divided by Total Number Pieces of Equipment). As such, the analysis conservatively assumes that the tractor/loader/backhoe would operate up to 4 hours per day.

Project annual fuel consumption estimates presented previously in Table 4-9 represent likely potential maximums that would occur for the Project. Under subsequent future conditions, average fuel economies of vehicles accessing the Project site can be expected to improve as older, less fuel-efficient vehicles are removed from circulation, and in response to fuel economy and emissions standards imposed on newer vehicles entering the circulation system.

Enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of vehicles to alternative energy sources (e.g., electricity, natural gas, biofuels, hydrogen cells) would likely decrease future gasoline fuel demands per VMT. Location of the Project proximate to regional and local roadway systems tends to reduce VMT within the region, acting to reduce regional vehicle energy demands.

4.5 SUMMARY

4.5.1 CONSTRUCTION ENERGY DEMANDS

The estimated power cost of on-site electricity usage during the construction of the Project is assumed to be approximately $11,163.18. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Project buildout, is calculated to be approximately 77,444 kWh.

Construction equipment used by the Project would result in single event consumption of approximately 37,704 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Project's proposed construction process that are unusual or energy-intensive, and Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

CCR Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than 5 minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Project would result in the estimated fuel consumption of 12,769 gallons of fuel. Additionally, fuel consumption from construction vendor and hauling trips (MHDs and HHDs) will total approximately 33,138 gallons. Diesel fuel would be supplied by County and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements (18). As supported by the preceding discussions, Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

4.5.2 OPERATIONAL ENERGY DEMANDS

TRANSPORTATION ENERGY DEMANDS

Annual vehicular trips and related VMT generated by the operation of the Project would result in a fuel demand of 151,903 gallons of fuel.

Fuel would be provided by current and future commercial vendors. Trip generation and VMT generated by the Project are consistent with other industrial uses of similar scale and configuration, as reflected respectively in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Ed., 2021); and CalEEMod. As such, Project operations would not result in excessive and wasteful vehicle trips and VMT, nor excess and wasteful vehicle energy consumption compared to other industrial uses.

It should be noted that the state strategy for the transportation sector for medium and heavy-duty trucks is focused on making trucks more efficient and expediting truck turnover rather than reducing VMT from trucks. This is in contrast to the passenger vehicle component of the transportation sector where both per-capita VMT reductions and an increase in vehicle efficiency are forecasted to be needed to achieve the overall state emissions reductions goals.

Heavy duty trucks involved in goods movements are generally controlled on the technology side and through fleet turnover of older trucks and engines to newer and cleaner trucks and engines. The first battery-electric heavy-heavy duty trucks are being tested this year and SCAQMD is looking to integrate this new technology into large-scale truck operations. The following state strategies reduce GHG emissions from the medium and heavy-duty trucks:

- CARB's Mobile Source Strategy focuses on reducing GHGs through the transition to zero and low emission vehicles and from medium-duty and heavy-duty trucks.
- CARB's Sustainable Freight Action Plan establishes a goal to improve freight efficiency by 25% by 2030, deploy over 100,000 freight vehicles and equipment capable of zero emission operation and maximize both zero and near-zero emission freight vehicles and equipment powered by renewable energy by 2030.
- CARB's Emissions Reduction Plan for Ports and Goods Movement (Goods Movement Plan) in California focuses on reducing heavy-duty truck-related emissions focus on establishment of emissions standards for trucks, fleet turnover, truck retrofits, and restriction on truck idling (CARB 2006). While the focus of Goods Movement Plan is to reduce criteria air pollutant and air toxic emissions, the strategies to reduce these pollutants would also generally have a beneficial effect in reducing GHG emissions.
- CARB's On-Road Truck and Bus Regulation (2010) requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet particulate matter filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent (31).
- CARB's Heavy-Duty (Tractor-Trailer) GHG Regulation requires SmartWay tractor trailers that include idle-reduction technologies, aerodynamic technologies, and low-rolling resistant tires that would reduce fuel consumption and associated GHG emissions.

Enhanced fuel economies realized pursuant to federal and state regulatory actions, and related transition of vehicles to alternative energy sources (e.g., electricity, natural gas, biofuels, hydrogen cells) would likely decrease future gasoline fuel demands per VMT. Location of the Project proximate to regional and local roadway systems tends to reduce VMT within the region, acting to reduce regional vehicle energy demands. The Project would implement sidewalks, facilitating and encouraging pedestrian access. Facilitating pedestrian and bicycle access would reduce VMT and associated energy consumption. In compliance with the California Green Building Standards Code and County requirements, the Project would promote the use of bicycles as an alternative mean of transportation by providing short-term and/or long-term bicycle parking accommodations. As supported by the preceding discussions, Project transportation energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary.

ON-SITE CARGO HANDLING EQUIPMENT FUEL DEMANDS

As previously stated, it is common for industrial buildings to require the operation of exterior cargo handling equipment in the building's truck court areas. On-site cargo handling equipment used by the Project would be electric powered, pursuant to the County of Riverside Good Neighbor Guidelines.

FACILITY ENERGY DEMANDS

Project facility operational energy demands are estimated to be: 724,868 kWh/year of electricity which would be supplied by SCE. Based on information provided by the Project Applicant, the Project would not use natural gas. As such, natural gas consumption has not been analyzed in this study. The Project proposes conventional industrial uses reflecting contemporary energy efficient/energy conserving designs and operational programs. The Project does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other industrial uses of similar scale and configuration.

Implementation of the Project would increase the demand for electricity at the Project site and petroleum consumption in the region during operation. However, the electrical consumption demands of the Project during operation would conform to the state's Title 24 and to CALGreen standards, which implement conservation measures. Further, the proposed Project would not directly require the construction of new energy generation or supply facilities and providers of electricity are in compliance with regulatory requirements that assist in conservation, including requirements that electrical providers achieve state-mandated renewal energy production requirements. With compliance with Title 24 conservation standards and other regulatory requirements, the Project would not be wasteful or inefficient or unnecessarily consume energy resources during construction or operation and would result in a less-than-significant impact with respect to consumption of energy resources. Lastly, the Project will comply with the applicable 2022 Title 24 standards. Compliance with applicable Title 24 standards will ensure that the Project energy demands would not be inefficient, wasteful, or otherwise unnecessary.

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5 CONCLUSIONS

5.1 ENERGY IMPACT 1

Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Impact Analysis

A significant impact would occur if the proposed Project would result in the inefficient, wasteful, or unnecessary use of energy.

Construction

Based on CalEEMod estimations within the modeling output files used to estimate GHG emissions associated with future development projects, construction-related vehicle trips would result in approximately 577,480 VMT and consume an estimated 45,907 gallons of gasoline and diesel combined during future development projects construction phases. Limitations on idling of vehicles and equipment and requirements that equipment be properly maintained would result in fuel savings. California Code of Regulations, Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel- powered equipment and are enforced by the ARB. Additionally, given the cost of fuel, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Due to the temporary nature of construction and the financial incentives for developers and contractors to use energy-consuming resources in an efficient manner, the construction phase of the proposed project would not result in wasteful, inefficient, and unnecessary consumption of energy. Therefore, the construction-related impacts related to electricity and fuel consumption would be less than significant.

Operation

Electricity and Natural Gas

Operation of the proposed project would consume energy as part of building operations and transportation activities. Building operations would involve energy consumption for multiple purposes including, but not limited to, building heating and cooling, refrigeration, lighting, and electronics. Based on client provided energy use estimations, operations for the Project would result in approximately 724,868 kWh of electricity.

Future development projects would be designed and constructed in accordance with the City's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely

regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Fuel

Operational energy would also be consumed during vehicle trips associated with future development projects envisioned under the proposed project. Fuel consumption would be primarily related to vehicle use by residents, visitors, and employees associated with future development projects. Based on CalEEMod energy use estimations, project-related vehicle trips would result in approximately 1.80 million VMT and consume an estimated 151,903 gallons of gasoline and diesel combined, annually (see Appendix 4.2).

The Project is located on an infill site that is surrounded by existing urban uses, the existing transportation facilities and infrastructure would provide future residents, visitors, and employees associated with the Project access to a mix of land uses in close proximity to the Project, thus further reducing fuel consumption demand. Additionally, the Project will also be providing parking and EV infrastructure that would further promote fuel efficient vehicles. For these reasons, operational-related transportation fuel consumption would not result in a significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, the operational impact related to vehicle fuel consumption would be less than significant.

5.2 ENERGY IMPACT 2

Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Impact Analysis

A significant impact would occur if the proposed Project would conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Construction

As discussed in Section 5.1, above, the proposed project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on- road and off-road diesel-powered equipment and are enforced by the ARB. The proposed project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation

California's Renewable Portfolio Standard (RPS) establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan greenhouse gas emissions reductions. As discussed in Section 5.1, above, the Project would result in approximately 724,868 kWh of electricity.

Future development projects would be designed and constructed in accordance with the City's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development projects would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

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7 CERTIFICATIONS

The contents of this energy analysis report represent an accurate depiction of the environmental impacts associated with the proposed Thrifty Oil Warehouse Project. The information contained in this energy analysis report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at hqureshi@urbanxroads.com.

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EDUCATION

Master of Science in Environmental Studies
California State University, Fullerton • May 2010

Bachelor of Arts in Environmental Analysis and Design
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PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Planned Communities and Urban Infill – Urban Land Institute • June 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August 2007
AB2588 Regulatory Standards – Trinity Consultants • November 2006
Air Dispersion Modeling – Lakes Environmental • June 2006

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APPENDIX 4.1:

CALEEMOD PROJECT CONSTRUCTION EMISSIONS MODEL OUTPUTS

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APPENDIX 4.2:

CALEEMOD PROJECT OPERATIONAL EMISSIONS MODEL OUTPUTS

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APPENDIX 4.3:

EMFAC2021

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Geotechnical Engineering Exploration and Analysis

Proposed Commercial Building
23641 Placentia Avenue
Perris, CA

Prepared For:

The Orden Company
Santa Fe Springs, CA

Project No. G-012424-1
February 8, 2024

GEO ENVIRONMENTAL RESOURCES INC
GEOTECHNICAL
ENVIRONMENTAL
CONSULTANTS

GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

February 8, 2024

The Orden Company
Santa Fe Springs, California

Attention: Ms. Jamie Jones
Project Manager

Subject: Geotechnical Engineering Exploration and Analysis
Proposed Commercial Building
23641 Placentia Street, Perris, California

Project No. G-012424-1 APN: 317-260-017

Dear Ms. Jones:

In accordance with your request and authorization, **Geotechnical Engineering Exploration and Analysis** has been conducted for the above referenced site. Conclusions and recommendations developed from the exploration and analysis are discussed in the accompanying report.

We appreciate the opportunity to be of service on this project. If we may be of additional assistance, should geotechnical related problems occur or to provide observation and testing services during construction, please do not hesitate to call at any time.

Very truly yours,
GEO ENVIRONMENTAL RESOURCES, INC.

A. Rastegar

Alexander A. Rastegar
Project Engineer

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1.0 PROPOSED DEVELOPMENT

Based on the review of the CONCEPTUAL GRADING PLAN (SHEET 1) which we have received via email, the proposed development consists of construction of 185,785 S.F. of commercial (concrete tilt-up) building within the above subject property.

Based on the information obtained during our site reconnaissance and subsurface exploration, the subject property is a vacant parcel located within the southeast corner of Tobacco Road & Placentia Avenue. It appears that the subject property used to be part of a larger parcel, which was bordered by Water Street to the south, Placentia Avenue to the north, Harvill Avenue to the east and Tobacco Road to the west.

The property is rectangular in shape, is covered with vegetation, and assorted sizes of trees. According to the proposed grading plan the western portion of the site is 3-4 feet higher than the east side. The proposed general parking areas will be located along the west and south side of the subject property. As part of our exploration, we have conducted a percolation test for the proposed Infiltration basin, which will be constructed within the northeast corner of the subject property, which will be designed as landscape area.

2.0 SCOPE OF SERVICES

This report provides the results of a Percolation test and geotechnical engineering exploration and analysis for the construction of the proposed commercial building and other related improvements. We performed a visual site reconnaissance, subsurface exploration, field and laboratory testing, and geotechnical engineering analysis in order to provide geotechnical grading and design recommendations for the proposed commercial building and other related improvement.

3.0 SITE LOCATION

The property is located at 23641 Placentia Avenue in Perris California. The property is bordered by an existing vacant parcel to the east, south, Placentia Avenue to the east and Tobacco Road to the west.

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4.0 SUBSURFACE EXPLORATION

4.1 Subsurface Exploration

Total of five (5) Borings were excavated within the area of the proposed developments to the depths ranging from of 7 to 30½ feet below existing backyard grade. The approximate boring locations are shown on the boring location plan **(Figure 1, Appendix C).** The Borings was advanced by the drilling rig. Borings No. 5 was also utilized for a perc test for retention basin design.

The relatively undisturbed soil sample was collected at approximate every 1½-3 ½ ft. Soil sampling was conducted in accordance with ASTM D1587 and D3550 Standard Specifications. Soil sample was visually reviewed and classified in the field pursuant to ASTM D2488, placed in sealed containers and transported to our laboratory for further review and testing. **Field and laboratory testing is enclosed in Appendix B**. The terms and symbols on the test boring logs are defined in the **General Notes in Appendix D**.

4.2 Local Geology

Based on review of the **GEOLOGIC MAP OF THE PERRIS QUADRANGLE BY THOMAS W. DIBBLEE, JR., 2003,** the native material was identified as **Alluvial Fan Gravel & Sand Deposits (Qoa) See FIGURE NO.2.**

4.3 Earth Material

The subsurface soil profile at test boring No.1 consists of Silty fine to coarse Sand with Caliche, Gray brown in color, damp to moist and loose to very dense extended to the maximum explored depth of 30 ½ feet below existing grade.

4.4 Top Soil (Ts)

The encountered soil within the top 12-to-18 inches were identified as Topsoil (Ts). The topsoil was classified as brown Silty fine to medium Sand, trace roots.

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4.5 Native Soil (Ns)

Native materials were encountered below depth of topsoils within all five (5) boring locations. The native soils (Ns) were identified as Alluvial Gravel, Sand & Silt **(Qoa)** deposits.

4.6 Groundwater

Ground water was not encountered during our sub surface exploration. However, it is not uncommon for groundwater or seepage conditions to develop where none previously existed. Groundwater elevations are dependent on seasonal precipitation, irrigation, land use, among other factors, and vary as a result. Based on review of some of the nearest well(s) to the subject property the approximate depth of ground water is between 75-to-85 feet below Ground Surface Elevation **see (Figure No.3)**

4.7 Expansive Potential

Expansion Index (EI) test was conducted according to the ASTM (D-2429) on bulk samples (1-4 feet) from Boring No. 2 of the near-surface materials. Results indicated that the near-surface material are low expansive with in expansion potential of (EI = 4).

4.8 Laboratory Testing

The relatively undisturbed soil samples were subjected to various laboratory tests such as Water-Content Determination (ASTM D2216), Moisture-Unit Weight Relationships (ASTM D-1557), Consolidation Test (ASTM D-2435) and Direct-Shear Test (ASTM D-3080).

4.9 Sulfate Potential

Based on our review of laboratory testing result, the water-soluble sulfate (SO4) content is (56.7 mg/kg), according to ACI 318 Section 4.3.1 (type V) concrete is not required to be utilized for the proposed project.

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4.10 Corrosion Potential

Based on the review of laboratory test results the on- site soil possess a PH of **6.6** (EPA 9045B) and Resistivity of 3000 (Ohm-cm). Therefore, the on-site soil has been classified as having "**Corrosive"** potential. And the project Structural Engineer should provide specific recommendations for mitigation and protection, as necessary.

5.0 PERCOLATION FEASIBILITY STUDY

Percolation feasibility study for design of retention basin has been conducted. Our exploration consisted of a site inspection, subsurface exploration and percolation test. The purpose of this test was to determine the permeability rate of subsurface materials for retention basin design for onsite water runoffs.

Percolation test holes were excavated to a depth of about 5-feet below existing grades using a field equipment's hand auger. Two inches of gravel was place at the bottom of the hole. A 3-inch in diameter PVC pipe was placed into the hole and extended to the gravel layer. The test locations were pre-saturated prior to testing. Percolation testing began about 24 hours after the holes were pre-saturated. Percolation data sheets are presented in **APPENDIX F** of this report. Calculations to convert the percolation test rate to infiltration test rates are presented in Table 5. A factor of safety should be applied to the infiltration rates below per the Handbook.

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TABLE 5
INFILTRATION TEST RATES FOR PERCOLATION AREAS

Parameter	P-1
Depth (inches)	60
Test Type	Falling Head
Change in head over time: ΔH (inches)	1.5
Average head: Havg (inches)	20.
Time Interval (minutes): Δt (minutes)	10
Radius of test hole: r (inches)	4
Tested Infiltration Rate: It (inches/hour per square inch)	2.4

The in-situ field percolation tests performed provide short-term infiltration rates, which apply mainly to the initiation of the infiltration process due to the short time frame of the test (hours instead of days) and the amount of water used. Where appropriate, the short-term infiltration rates should be converted to long-term infiltration rates using reduction factors depending upon the degree of infiltrate quality, maintenance access and frequency, site variability, subsurface stratigraphy variation, and other factors, as determined by the project civil engineer. The small-scale percolation testing cannot model the complexity of the effect of interbedded layers of different soil composition, and our test results should be considered only as index values of infiltration rates.

Landscaping adjacent to newly paved areas is not recommended due to the potential of irrigation water infiltrating beneath the pavement's subgrade and base course and cause pavement failure. Where landscaping are planned adjacent to the new pavement, construction of a cutoff wall along the edge of the new pavement is necessary.

The cutoff wall should extend at minimum 6-inch below the bottom of the Aggregate Base Course Material. Finally, if not properly constructed, there is a potential for distress to improvements and properties located in down gradient or adjacent to infiltration areas.

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6.0 GEOLOGIC AND SEISMICITY

5.1 Seismic Design Parameters

The site is located at approximately 33.8226 Latitude and -117.2501 longitudes. Any new structural related construction must be designed in accordance with the requirements of the latest edition of the California Uniform Building Code (CBC).

The CBC provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, seismic zoning, occupancy, and the seismic design parameters.

The Site Seismic Parameters presented below are based on the Mapped Acceleration Parameters (Ss and S1) as well as the Site Coefficients and Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameters. Based on the California Building Code, the site have been identified as Category II and classified as **SITE CLASS D (STIFF SOIL)** based on Table 1613.5.2 (Site Class definitions). The following parameters may be utilized for the subject site. In addition, copies of most current USGS Design Maps Summary is in Appendix E of this report.

SITE SEISMIC PARAMETERS	
Mapped 0.2 second Period Spectral Acceleration, Ss	1.488
Mapped 1.0 second Period Spectral Acceleration, S1	0.551
Site Coefficient for Site Class “D”, Fa	1.0
Site Coefficient for Site Class “D”, Fv	Null-See Section 11.4.8
Maximum Considered Earthquake Spectral Response Acceleration Parameters at 0.2 second, SMS	1.488
Maximum Considered Earthquake Spectral Response Acceleration Parameters at 1 second, SM1	Null-See Section 11.4.8
Design Spectral Response Acceleration parameter for 0.2 Second, SDS	0.992
Design Spectral Response Acceleration parameter for 0.2 Second, SD1	Null-See Section 11.4.8

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5.2 Geological Hazards

It is our judgment, that based on the specific data and information contained or referenced in this report, the construction of the proposed commercial building will be safe against hazards from landslides, settlement or slippage, and they would not adversely affect the stability of the existing and adjacent structures, provided the recommendations presented herein are properly interpreted and implemented.

6.0 SECONDARY SEISMIC EFFECTS

The primary geologic hazard at the sites is moderate to strong ground shaking caused by an earthquake on any of the local or regional faults. The subject property is 16 and 10 miles east and west of active faults, respectively **see (FIGURE-5).** The potential for secondary geologic hazards was also evaluated including, liquefaction, dynamic settlement.

6.1 Liquefaction

Liquefaction is the loss of strength in generally cohesion less, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors in which influence the potential for liquefaction include groundwater table elevation, soil type and grain size characteristics, and relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface.

However, based on the review of **"CGS Seismic Zonation Program"** as well as the **GEOLOGIC MAP OF PERRIS QUADRANGLE BY THOMAS W. DIBBLEE, JR., 2005**, the subject property is NOT located within "Liquefiable" area. In addition, review of the Susceptibility map of Riverside County revealed that the subject property is within an area with **LOW LIQUEFACTION SUSCEPTIBILTY see (FIGURE-7).**

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6.2 Surface Rupture

Based on research of available literature and results of site reconnaissance, no known active or potentially active faults underlie the subject site. In addition, the subject site is not located within any **Alquist-Priolo** Earthquake Fault Zone. Based on these considerations, the potential for surface ground rupture at the subject site is considered moderate.

6.3 Landslide

As indicated previously, the subject property is relatively flat. In addition, based on review of "CGS Seismic Hazards Zonation "the subject property is NOT located within potential "Landslide" area.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the result of sub-surface exploration, laboratory testing, and research, it is the finding of this firm that the construction of the proposed commercial building is considered feasible from a geotechnical engineering standpoint provided the advice and recommendations presented herein are followed and implemented during construction.

Results of moisture-density testing revealed that the majority of the near-surface materials are in damp condition. In addition, results of Consolidation tests, which were conducted on the randomly selected soil samples at various depths also indicated excessive consolidation under potential building pressure.

Therefore, we are recommending that in order to develop a uniform sub-surface layer with increased support characteristics with proper in-situ moisture content, following completion of the existing vegetation and tree removal, the proposed building pad area should be over-excavated to approximate depth of **four (4) feet below bottom of proposed parameter and column footings. The lateral extend of the proposed over-excavations should be 3-feet beyond the edge of the proposed parameter and column footings.**

The foundation system may consist of either independently poured spread footings or a monolithically poured foundation and floor slab thereby using a turned-down slab

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construction technique. The proposed continuous and column pad footings should be designed by the project structural engineer. However, at the minimum, the parameter and column pad footings should be embedded at least 30-to-24 inches into the newly placed and compacted structural fill material, respectively. The proposed column and continuous footings may be designed for a maximum, allowable soil bearing strength of 2,500 pounds per square foot (psf).

7.1 Site Preparation and Grading

Subgrade Preparation within the Building pad Area

As indicated in section 7.0, we are recommending that in order to develop a uniform sub-surface layer with increased support characteristics, following completion of the trees and vegetation removal, the proposed building area to be over-excavated to approximate depth of eight (8) feet below its proposed Rough Finished Grade (RFG) elevation or an equivalent of four (4) feet below the proposed foundation subgrade (whichever is lower in elevation).

Upon completion of over-excavation, the exposed subgrade within the entire pad area should be scarified to depth of 12-inch, moisture conditioned as necessary and compacted to 90 percent of Maximum Laboratory Dry Density, as determined by (ASTM D-1557) Test Method. **It should be noted that the upper 12-inch should be compacted to 95 percent of its Maximum Laboratory Dry Density.**

Any loose or otherwise unsuitable soil that is encountered during compaction and proof rolling should be removed to depth of firm subgrade, which should be determined and confirmed by a representative from this office.

The entire grading operation should be conducted in the presence of a representative from this office. And the ultimate depth of removal as well as bottom scarification and compacting should be verified and confirmed by our representative as well.

7.2 Pavement Grading Recommendation

Following removal of all the grass, vegetation and trees and necessary cuts. We are recommending that the entire new pavement area to be over-excavated to depth of 24-inch below its Proposed Rough Finished Grade (RFG). Upon completion, the exposed

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subgrade should be scarified to depth of 12-inch, moisture conditioned, and compacted to at least 90 percent of its Maximum Dry Density as Determined by the (ASTM D 1557-12) Test Method.

7.3 Fill Placement

All the new fill soils should be placed in 8-10 inches thick loose lift and each lift should be Moisture conditioned to the suitable moisture content and compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D 1557-12) Test Method.

On-site soil may be utilized as structural fill provided they are free of debris and moisture conditioned as necessary to the satisfaction of our field representative.

All grading and fill placement activities should be completed in accordance with the requirements of the City of Perris and/or County of Riverside Grading Guidelines. All fill soils should be compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D 1557-12).

Compaction tests should be performed periodically by a representative from this office as random verification of compaction and moisture content. These tests are intended to aid the contractor. Since the tests are taken at random locations and depths, they may not be indicative of the entire fill and therefore should not relieve the contractor of his responsibility to meet the project specification.

7.4 Imported Structural Fill

In general, all imported structural fill soils (If needed) should consist of low to non-expansive (EI<20), well-graded soil. Imported soils should be evaluated by a geotechnical engineer or his representative prior to placement.

7.5 Utility Trench Backfill

In general, all the new utility trench backfill should also be compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D- 1557-12). Compacted trench backfill should be performed to the requirement of the local grading guidelines. The trench backfill soils should be compaction tested where possible, probed

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and visually evaluated elsewhere. Temporary Excavation In general, temporary excavation higher than four (4) feet should be sloped back to 1:1(Vertical: Horizontal).

8.0 CONSTRUCTION CONSIDERATION

8.1 Excavation Difficulties

In general, the encountered sub-surface material was identified to be in dense to very dense condition. Therefore, some excavation difficulties should be anticipated.

8.2 Over-Sized Partials

During the grading process, if "over-sized" particles encountered in excessive quantities, proper segregation should be conducted in order to make the excavated materials suitable for fill placement or remove them from the excavation area.

9.0 FOUNDATION DESIGN AND CONSTRUCTION

9.1 Shallow Foundation Parameters for the Building (Structural Fill)

1- An allowable Soil Bearing pressure of 2,000 (psf)
2- An allowable At-Rest pressure of 57.5 (psf) **USE 57** (psf)
3- An allowable Active pressure of 38.3 (psf) **USE 40** (psf)
4- An allowable passive pressure of 345.0 (psf) **USE 300** (psf)
5- Friction angle of 30 degree
6- The proposed footing dimension should be provided by the project structural engineer, however, at the minimum the proposed continuous and column pad footing should be embedded at least 36 and 24 inches into newly placed and compacted structural fill soil, respectively.
7- Soil Density 115.2 (psf)
8- Kh =0.25
9- (Delta)(KAE) =0.19
10- (seismic Increment) =21.5 (pcf)
11- Utilize 0.4 for recommended coefficient of friction for sliding

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9.2 Footing Reinforcement

The minimum longitudinal steel reinforcing within proposed wall and column pad footing should be performed by the project structural engineer. The Bearing suitability of the exposed subgrade within the footing excavation should be evaluated by a representative from this office prior to placement of the reinforcement.

9.3 Floor Slab Design and Construction for Commercial Building

Based on the recommended subgrade preparation and the anticipated live floor loading, a 7-inch-thick concrete slab over the newly placed and structural fill soil which have been moisture conditioned and compacted to 90 percent (with exception of the top 12-inch which should compacted to 95 percent). It is recommended that the Concrete control joints at 30 times slab thickness (per foot) be provided to lower the potential of concrete slab shrinkage.

9.4 Foundation Static Settlement

Most of the settlement will occur during the initial application of the load, which is during the construction of the new tilt-up building. Following completion of the tilt-up Construction, we expect no more than 1-inch total and ¾ -inch differential for the static settlement over span 100 feet.

9.5 Drainage

All the site drainage should be collected and transferred to the street in non-erosive drainage devices. The proposed tilt-up building should be provided with roof drainage as well.

Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation. The ground immediately adjacent to the foundation shall be sloped away from the new structure at a slope of not less than one-unit vertical in 20 units horizontal (5 percent slope) for a minimum distance of 10 feet of horizontal distance measured perpendicular to the face of the wall.

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If physical obstructions or lot lines prohibit 10 feet of horizontal distance, a 5-percent slope shall be provided to an approved alternative method of diverting water away from the foundation.

9.11 Grading and Foundation Plan Review

It is recommended that proposed grading and foundation plans be reviewed by this office prior to finalization to verify that the plans have been prepared in conformance with the geotechnical recommendations presented in this report and if necessary to provide additional analyses or recommendations.

10.0 RETAINING WALL DESIGN

10.1 Wall Design

For simplicity and ease of report interpretation the following chart had been prepared to show the at rest, active and passive lateral pressures for the proposed retaining walls up to 10 feet high. The design is based on the compacted soil parameters, assuming level-backfill.

ITEM	VALUE1
At-Rest Case	57.5psf/ft (use 58) psf/ft
Active Case	38.3 psf/ft (use 40) psf/ft
Passive Case	345.0 (use 300) psf/ft
*Note: The values are based on Compacted Soil.	

Retaining walls greater than 6 feet in height should be designed for seismic lateral earth pressures. The "**Total seismic earth pressure",** which is a combination of "static earth pressure' and "**incremental seismic pressure".** The pressure distribution may be considered to be a triangle with the maximum pressure at the bottom. The resultant of this force may be assumed to be at 1/3 the height of the wall from the bottom of the wall.

The **"incremental seismic pressure"** can be calculated as the difference of "total seismic earth pressure" and "static earth pressure. Note**, Any computed seismic increment of**

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lateral earth pressure should not be added to the static (at-rest) lateral earth pressures". The Seismic increment of 21.5 (pcf) should be used for design of the wall greater than 6 feet.

10.2 Retaining Wall Drainage

Retaining walls should be provided with a drainage system at the base of the walls. The drainage should consist of a 4-inch in diameter-perforated pipe, embedded within a 12-inch thick, clean gravel wrapped in a geosynthetic filtration fabric.

10.3 Retaining Wall Backfill

The following is our general guidelines for the backfill within all the proposed retaining wall (s) regardless of their heights. Following placement of the drainage system the on-site soils may be utilized as backfill material behind the proposed retaining walls. The backfill material should be free of any debris as well as the over-sized particles to satisfactory of the project geotechnical engineer.

If needed, the fill material should be moisture conditioned as necessary, placed in thin lifts (8-to-10 inches) and each lift should be compacted with grading equipment to 90 percent of its Maximum Laboratory Dry Density.

As an alternative, the proposed retaining walls may be backfilled with import material with low expansion (EI<20). The imported soil should be evaluated and confirmed by the Geotechnical engineer prior to usage.

11.0 PAVEMENT RECOMMENDATION

11.1 Asphalt Pavement

Based on these findings and assuming traffic index (TI=7) the following table presents the recommended thickness for the new flexible pavement structure consisting of asphaltic concrete over a granular base, along with the appropriate CALTRANS specifications for proper materials and placement procedures.

Preliminary Pavement Recommendations

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	Parking Spots (Light Traffic Area)	**Driveways and aprons (Heavy Traffic Areas)**
PCC Section: Portland Cement Concrete	6.0-Inch Thick PCC over 6.0-Inch thick Layer of Aggregate Base Course, which had been reinforced	8.0-Inch Thick over 6.0-inch Thick Layer of Aggregate Base Course, which had been reinforced
Asphalt Section Asphaltic Concrete	4-Inch Thick AC over 8-Inch thick layer of Aggregate Base Course	4-Inch Thick AC over 12-Inch Thick Layer of Aggregate Base Course

The underlying recently compacted subgrade should be scarified to depth of 6-inch, moisture conditioned as necessary and compacted to at least 90 percent of Maximum Laboratory Dry Density as Determined by (ASTM D-1557-12) Test Method.

The new Aggregate Base Course material should be moisture conditioned as necessary and compacted to at least 95 percent of the Maximum Laboratory Dry Density as determined by (ASTM D-1557-12) test method. Asphalt Concrete (AC) should be compacted to a minimum of 95 percent of the laboratory Marshall Density.

11.2 Exterior Concrete Flat Work

The preparation of the subgrade soils within the flat work area such as side walk is as follows, the upper 6-inch of pavement over subgrade soils, which had been scarified to depth of 12-inch, moisture conditioned as necessary and compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D 1557-12) test method.

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12.0 EXPLORATION LIMITATIONS

The conclusions and recommendations presented in this report are based on the findings and observations in the field and the results of laboratory tests performed on representative samples. The soils encountered in the boreholes are believed to be representative of the investigated area; however, soil characteristics can vary throughout the site. Geo Environmental Resources Inc. should be notified if subsurface conditions are encountered which differ from those described in this report.

This report has not been prepared for use by parties or projects other than those named and described above. It may not contain sufficient information for other parties or other purposes.

The conclusions and recommendations presented in this report are professional opinions. These opinions have been derived in accordance with current standards of geotechnical engineering and engineering geology practice, field observations and laboratory test results. No other warranty is expressed or implied.

Samples secured for this investigation will be retained in our laboratory for a period of thirty (30) days from the date of this report and will be disposed after this period unless other arrangements are made.

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13.0 REFERENCES

a) United States Geologic Survey (USGS),

b) 2008b, National Seismic Hazards Maps-Fault Parameters

C) California Building Code (CBC) latest addition

d) Geologic Map of the Perris Quadrangle

e) Perris Quadrangle by (Thomas W. Dibblee, Jr., 2003)

f) California Geological Survey (Cgs Seismic Zonation)

g) County of Riverside Liquefaction susceptibility Map

h) Nearby Wells (Ground water Information)

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APPENDIX A

BORING LOGS

LOG OF BORING

B-1

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1	SM	TOP SOIL: Light gray-brown Silty to medium Sand, trace roots, damp, loose	-1	S	10	3.1	
3	SM	Natural Soil: (Ns) Brown, Silty fine to medium Sand, trace Clay, damp, firm	-3	D	30	3.3	115.2
4.5							
5	SM/SC	Natural Soil: (Ns) Light brown, Silty to Clayey fine to coarse Sand, damp, dense	-5	D	38	3.6	116.9
7	SM/SC	Same	-7	S	43	4.2	
8.5							
9.5							
10	SM	Natural Soil: Brown, Silty fine to coarse Sand, damp to moist, very dense	-10	D	53	4.6	121.9
15	SM	Same	-15	D	4"/60	5.3	123.8
19.5							

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D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-1

Project Location 23641 Placentia Avenue, perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-032522

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Dry Unit Wt. (pcf)
20	SM	Natural Soil: Brown, Silty fine to coarse Sand, damp to moist, very dense	-20	D	62	5.9	127.9
24.5 25	SM	Light gray-brown, Silty fine to Course Sand with Caliche, damp to moist, very dense	-25	S	5"/69	5.2	
30		Terminated at depth of 30.0 feet. Groundwater not encountered. Boring backfilled on 1-21- 2024.					
35							

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D =Drive sample
S = SPT sample

Plate A-2

LOG OF BORING

B-2

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1	SM	TOP SOIL: Light gray-brown Silty fine to medium Sand, damp, loose	-1	S	8	2.9	
4	SM	Natural Soil: (Ns) Brown, Silty fine to coarse Sand, trace fine gravel, damp, dense	-4	D	36	3.4	118.2
7	SM	Same	-7	D	46	3.2	122.6
10	SM	Damp to moist, very dense	-10	D	4"/54	5.1	131.6
15	SM	Orange-brown, Silty fine to coarse Sand, trace Caliche, damp to moist, very dense	-15	S	62	4.8	
19.5							

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D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-2

Project Location 23641 Placentia Avenue, perris, CA

Date Drilled: 1-21-2024

Surface Elevation (ft): 100

Project No.: G-032522

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Dry Unit Wt. (pcf)
20	SM	Natural Soil: (Ns) Orange-brown, Silty fine to coarse Sand, trace Caliche, damp to moist, very dense	-20	D	68	5.1	130.7
22.5		Terminated at depth of 22.5 feet. Groundwater not encountered. Boring backfilled on 1-21-2024.					
25							
30							
35							

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D =Drive sample
S = SPT sample

Plate A-2

LOG OF BORING

B-3

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1							
3	SM	Natural Soil: Light brown, Silty fine to medium Sand, with Clay, damp, firm	-3	D	27	3.6	115.6
6	SM	Dense	-6	S	47	3.9	
8		Same	-8	S	53	4.4	
11	SM	Natural Soil: Brown to orange-brown, Silty fine to coarse Sand, with Clay, damp, very dense	-11	D	65	4.7	122.6
15	SM	Light brown, Silty fine to coarse Sand with Caliche, damp to moist, very dense	-15	S	5"/59	5.2	
18	SM	Same	-18	S	3"/52	5.9	
19.5		Terminated at 19.5 feet					

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D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-4

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1		TOP SOIL: Light brown, Silty fine to medium Sand, trace roots, moist, loose	-1	S	9	5.6	
3	SM	Natural Soil:(Ns) Brown to orange brown Silty fine to coarse Sand with Clay, damp, dense	-3	D	34	3.6	112.9
5	SM	Same	-5	D	41	3.9	116.2
7	SM	Same	-7	S	48	3.4	
10	SM/SP	Natural Soil: Gray-brown, Silty fine to coarse Sand, trace fine gravel, damp to moist, very dense	-10	D	5"/60	5.1	123.1
15	SM/SP	Same	-15	D	54.0	4.4	
18	SM/SP	Same	-18	D	65	4.1	
19.5		Terminated at 19.5 feet					

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D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-5

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1		TOP SOIL: Light gray-brown, Silty fine to medium Sand, trace roots, damp, loose	-1	S			
3	SM	Natural Soil:(Ns) Brown to orange brown Silty fine to medium Sand trace Clay, damp, firm	-3	S			
5	SM	Light brown, Silty fine to Clayey fine to coarse Sand damp, dense	-5	S			
6.5							
7		Terminated at depth of 7.0 feet. Groundwater not encountered. Boring backfilled on 1-21- 2024.					
10							
15							

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D =Drive sample
S = SPT sample

Plate A-1

APPENDIX B

LABORATORY TESTING

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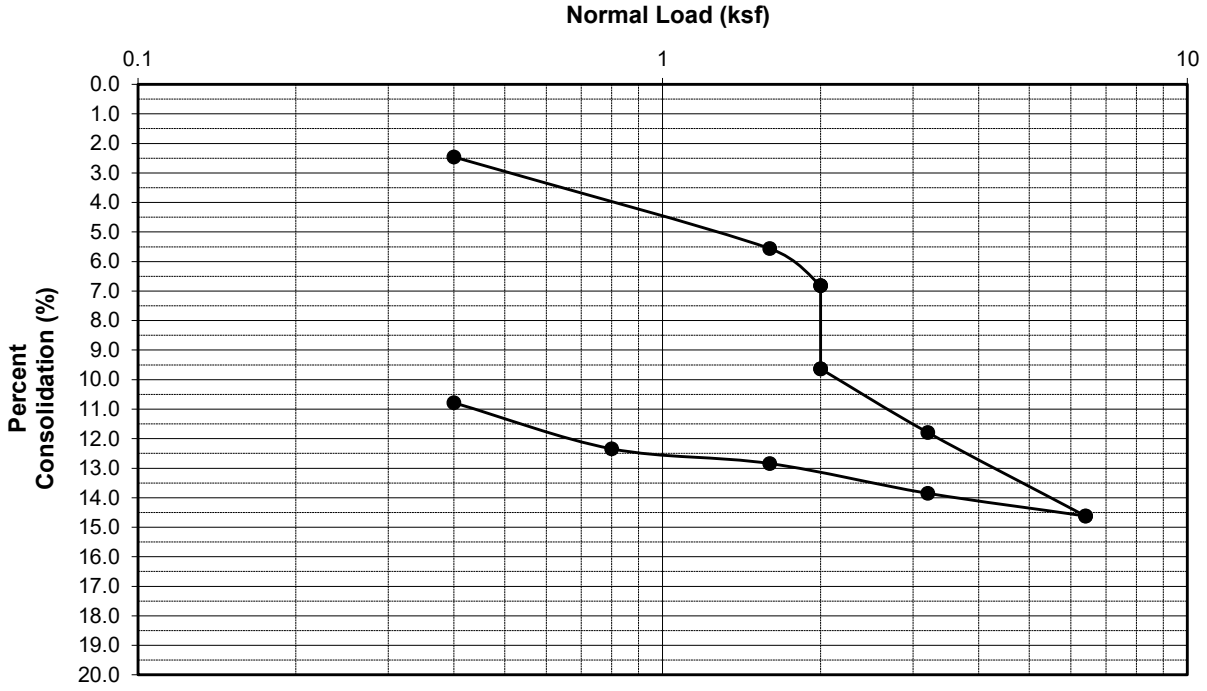
CONSOLIDATION TEST NO.1

Location: Perris-23641 Placentia Avenue
Boring No: B-1
Soil Type: Brown Silty fine Sand, trace clay
Tested By: RK
Project No G-012424-1
Depth: 3feet
Date: 1/23/2024



Geo Environmental Resources Inc.

CONSOLIDATION TEST NO.3

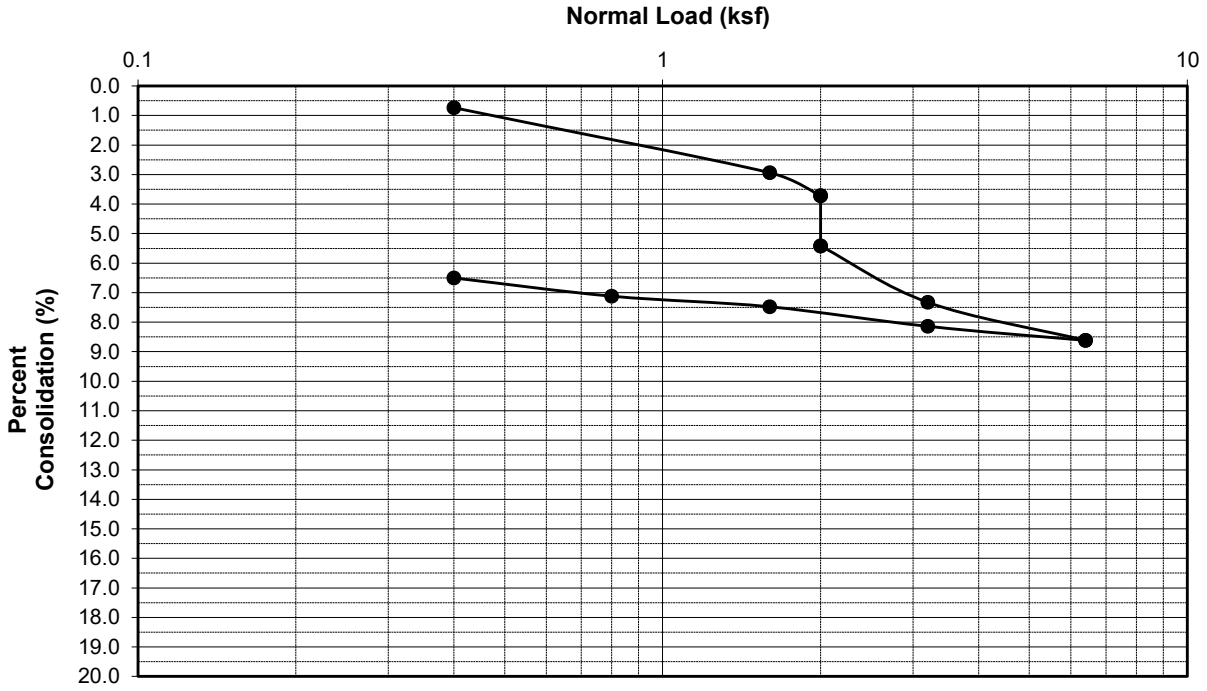
Location: PERRIS-23641 Placentia Avenue Boring No: B-2

Soil Type: Light brown Silty fine to coarse sand Tested By: RK

Project No G-012224-1 Depth: Bulk (1-5feet)

Date: 1/25/2024

REMOLD SAMPLE



Geo Environmental Resources Inc.

CONSOLIDATION TEST NO.2

Location: Perris-23628 Water Street

Boring No: B-3

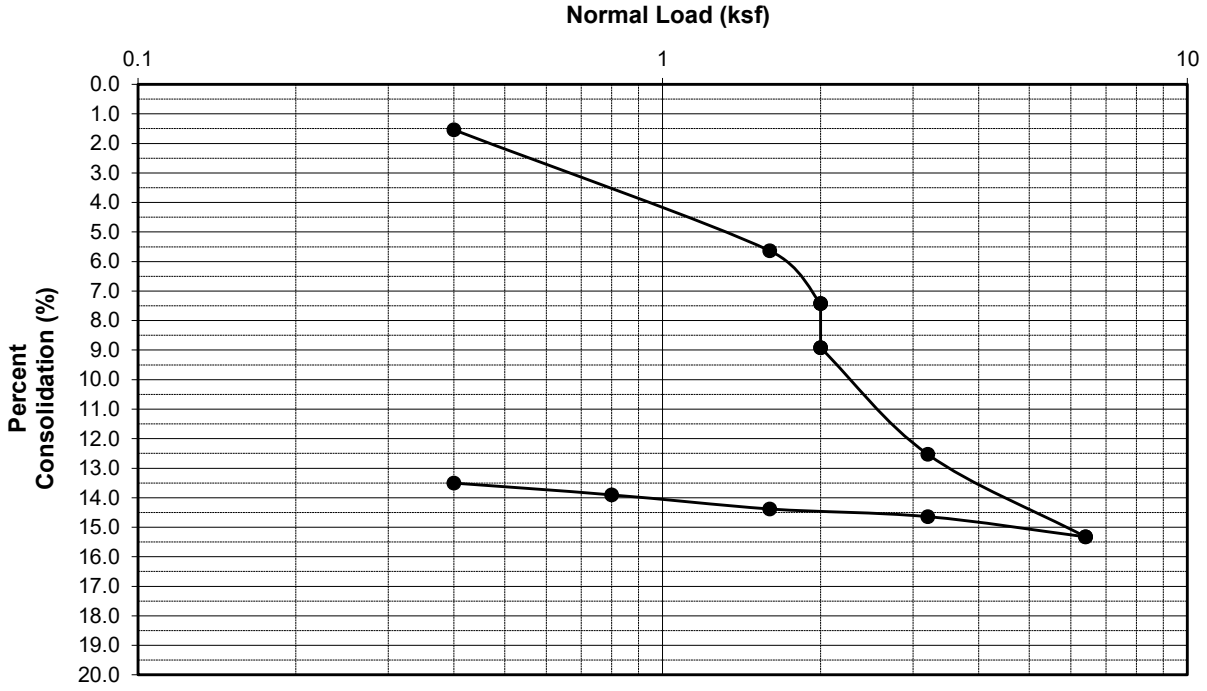
Soil Type: Dark to light brown Silty fine sand

Tested By: RK

Project No. G-012424-1

Depth: 5.0 feet

Date: 1/25/2024



Geo Environmental Resources Inc.

DIRECT SHEAR TEST

REMOLDED SAMPLE

Location : Perris-23641 Placentia Avenue

Boring No: B-2

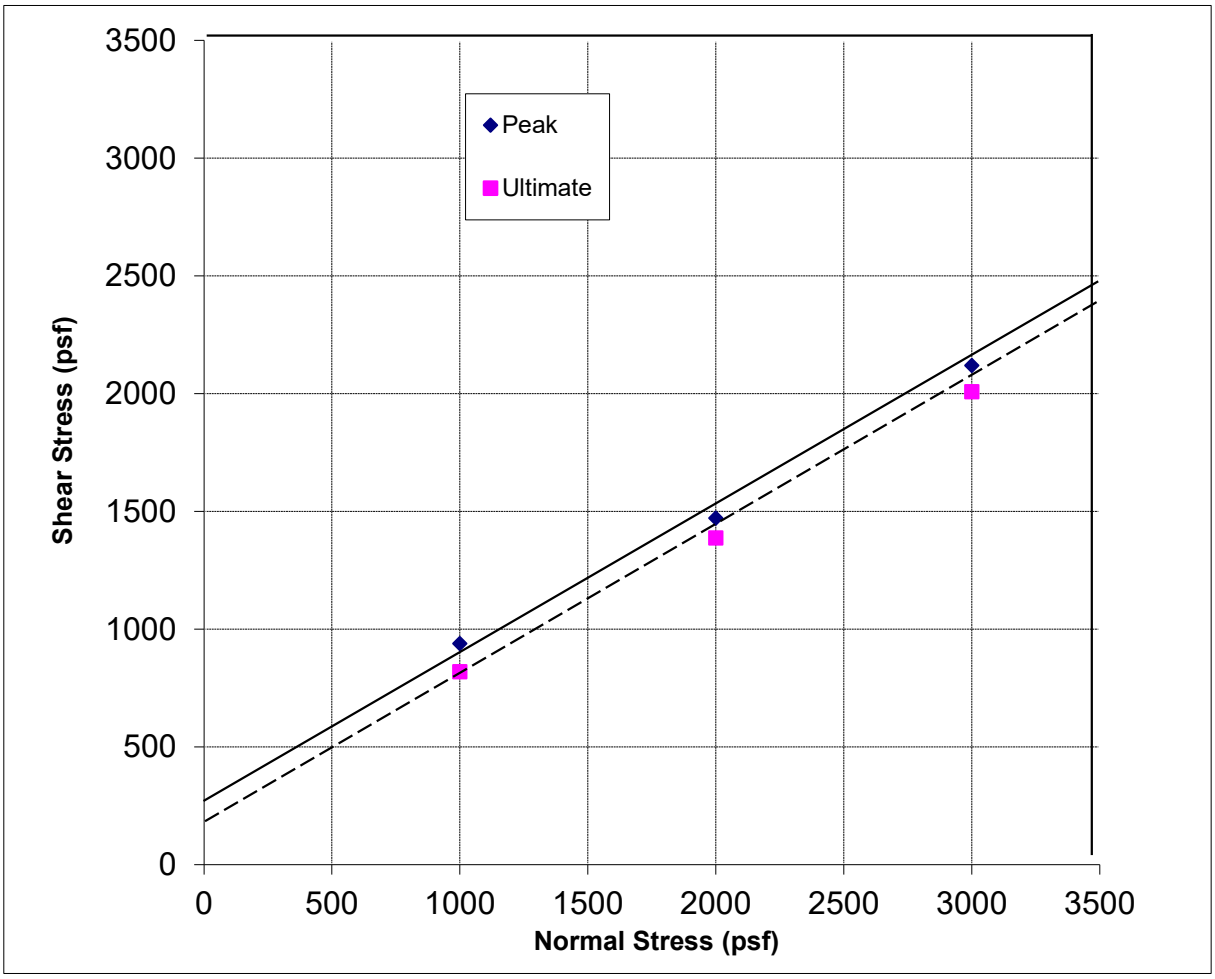
Soil Type: Brown silty fine to coarse sand

Tested by: MF

Project No: G-012424-1

Depth: (1- 5) feet

Date: 1/26/2024

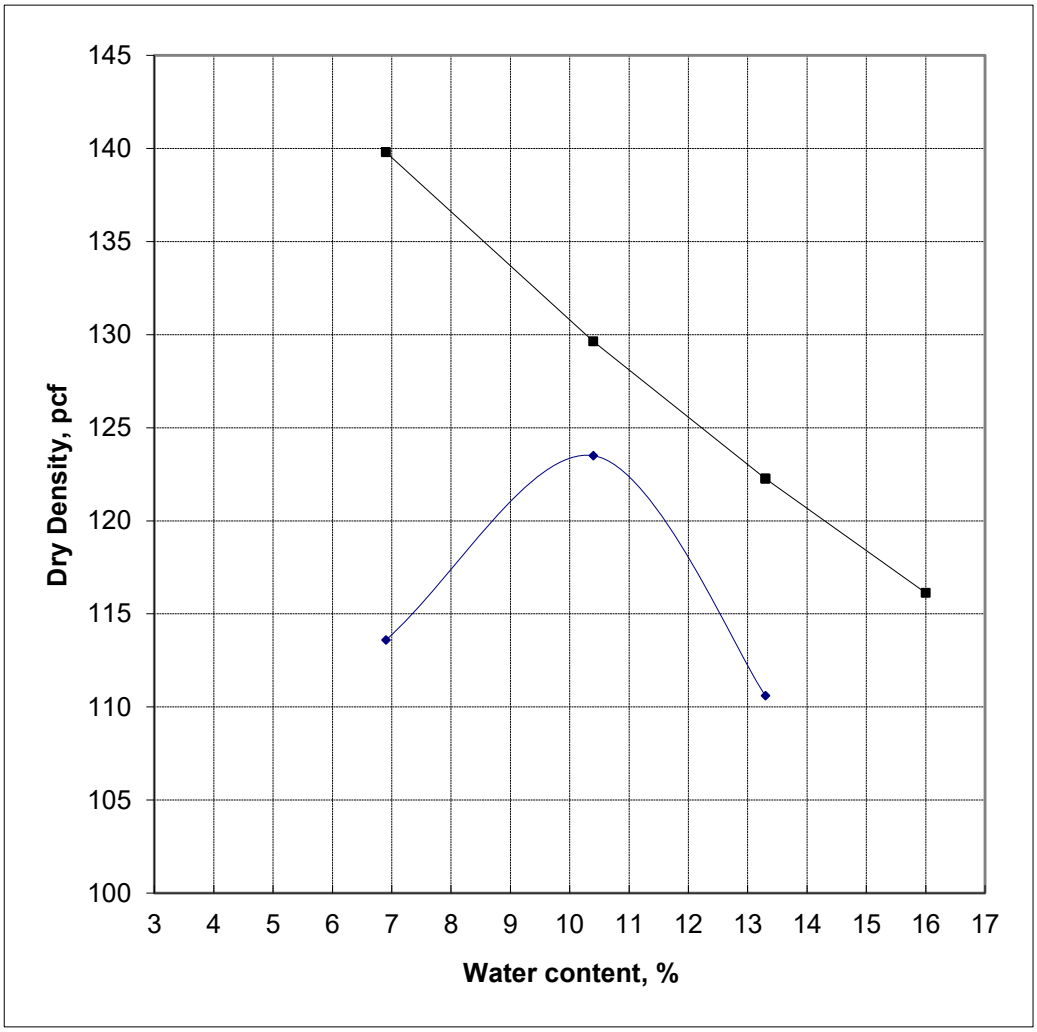


	Peak	Ultimate
Cohesion (psf)	280	180
Friction Angle (deg.)	30	30

Geo Environmental Resources Inc.

MAXIMUM DENSITY TEST

Location : Perris-23841 Placentia Avenue
Boring No: B-4
Soil Type: Brown silty f-c sand
Tested by: MG
Project No: G-012424-1
Depth: Bulk (2-6) feet
Date: 1/25/2024
Proctor No.1 123.5 @ 10.5



APPENDIX C

FIGURES

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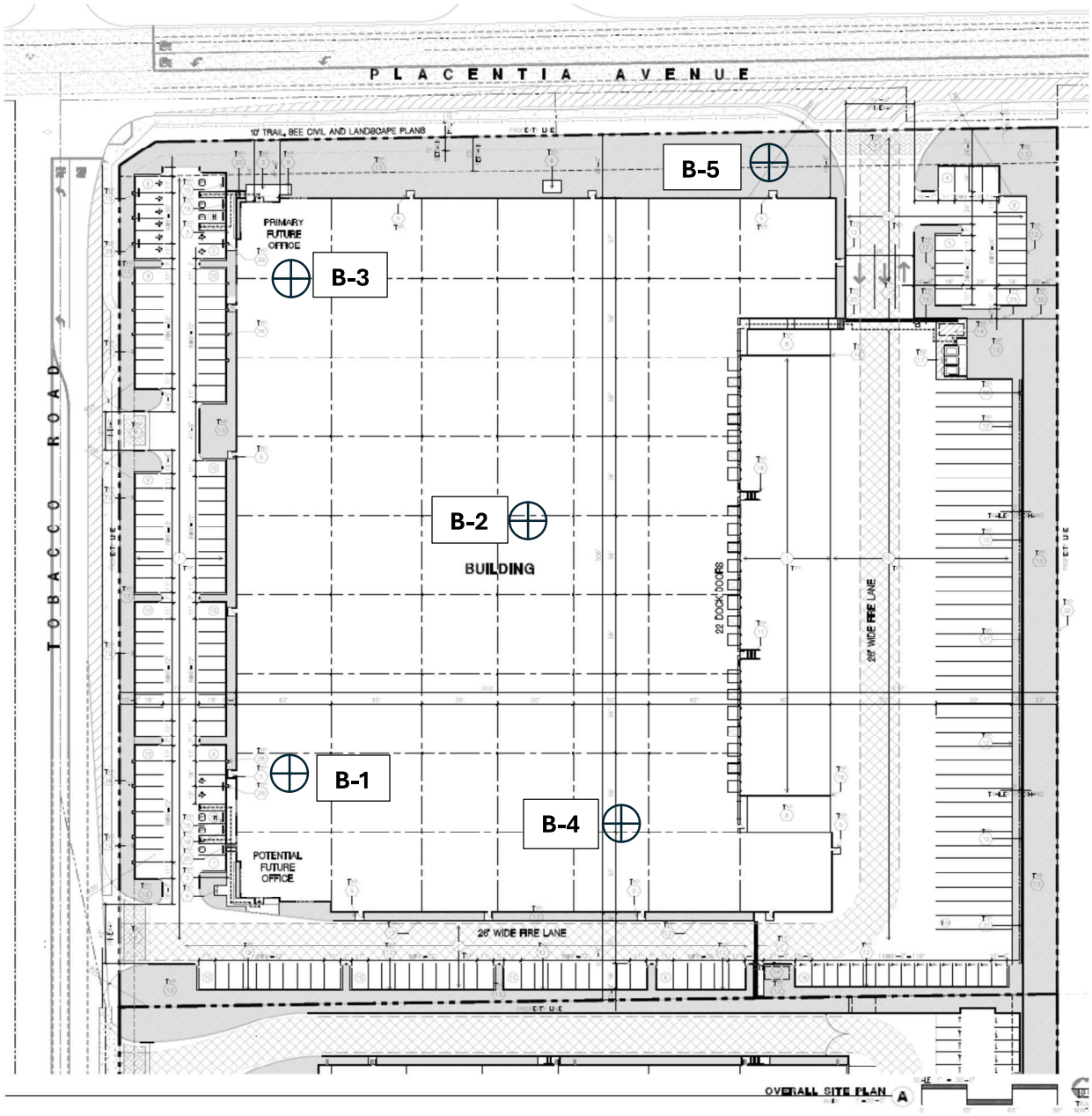
N



THIS SITE PLAN IS FOR GEOTECHNICAL REPORT ONLY. SITE PLAN PREPARED WITHOUT BENEFIT OF TITLE OPINION, DEED RESTRICTION, OR SURVEY. SITE SUBJECT TO CHANGE.

Boring Location ⊕

GERI	Geo Environmental Resources, Inc. 2511 West La Palma Ave., Suite E Anaheim, California 92801	SITE PLAN /Boring Location Project No. G-012424-1 **Figure 1**

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GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

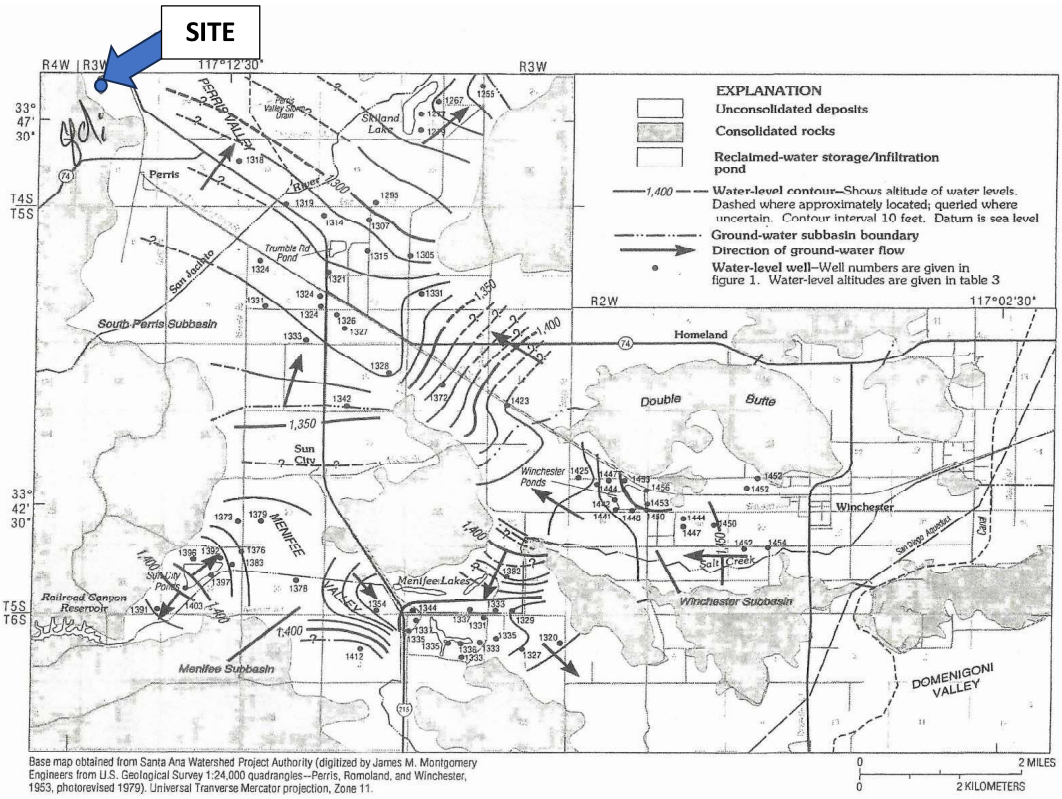
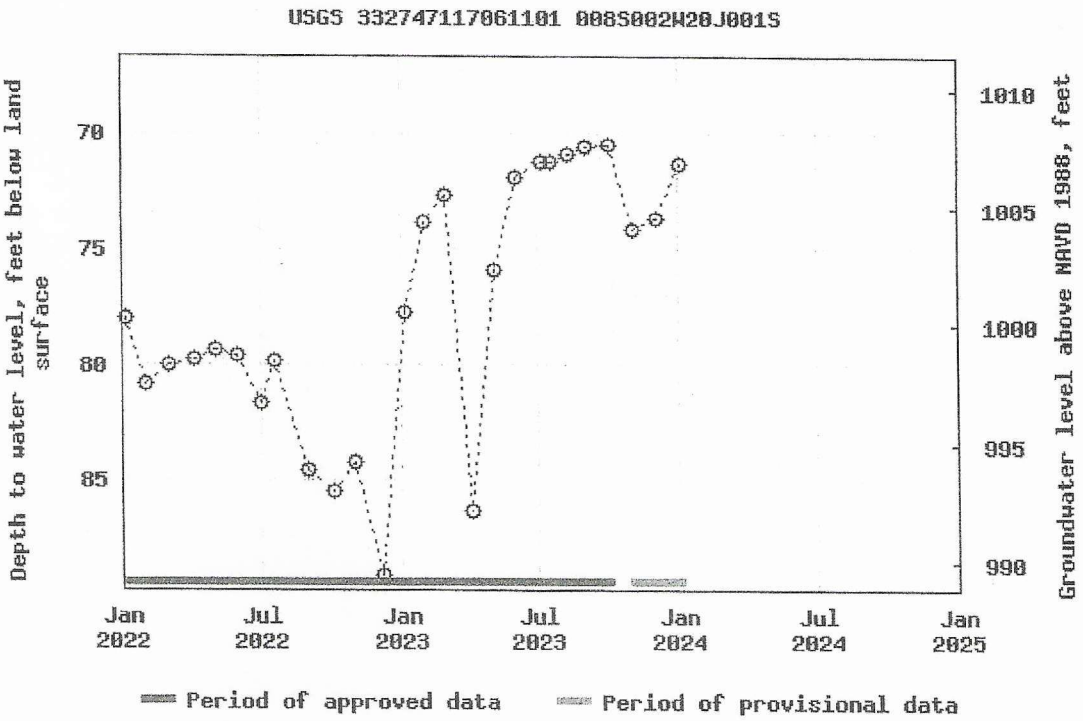


Figure 2. Water levels in the Winchester, Menifee, and south Perris ground-water subbasins, California, March 31 to June 6, 1995.



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

USGS 332747117061102 008S002W20J002S

Riverside County, California
Hydrologic Unit Code 18070302
Latitude 33°27'47.53", Longitude 117°06'15.58" NAD83
Land-surface elevation 1,078.36 feet above NAVD88
The depth of the well is 180 feet below land surface.
The depth of the hole is 590 feet below land surface.
This well is completed in the California Coastal Basin aquifers (N100CACSTL) national aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

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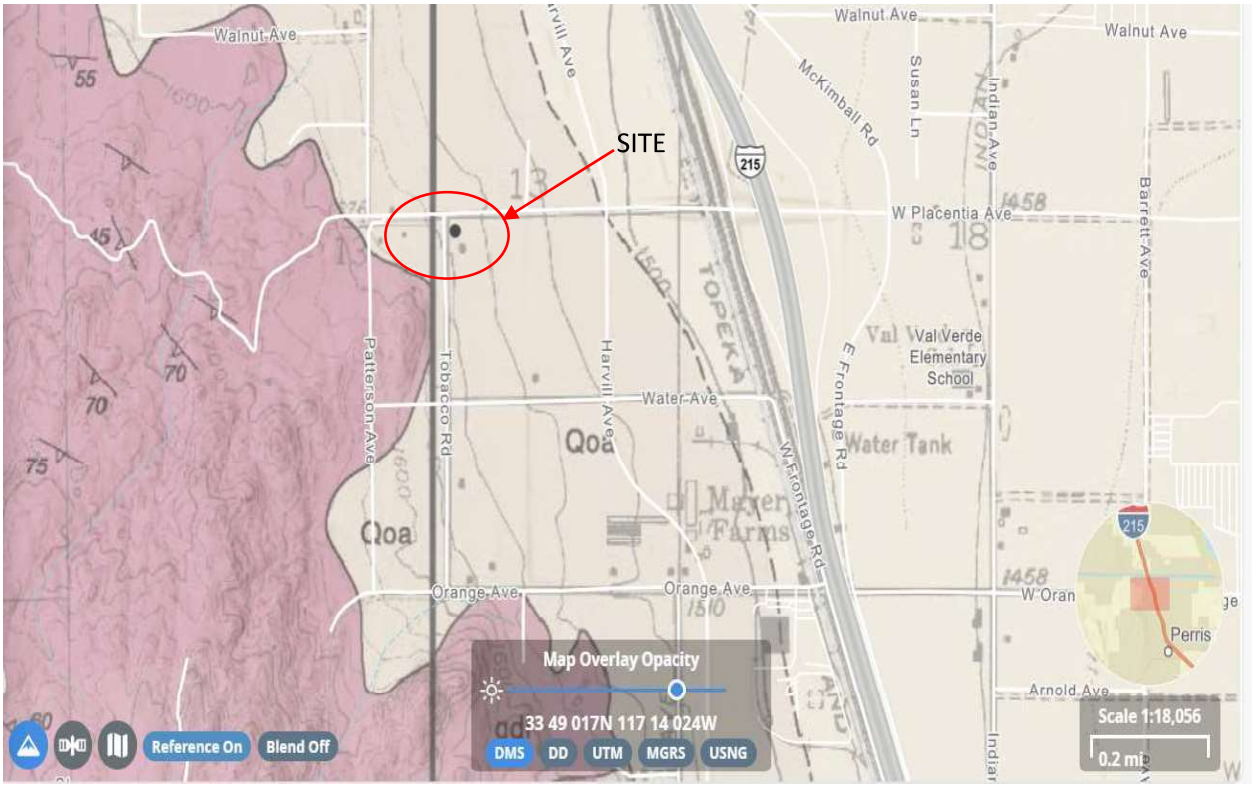

FIGURE NO. 4-USGS-NATIVE SOIL-ALLUVIAL FAN GRAVEL AND SAND (Qoa)

Project: Proposed Commercial Tilt-up Building

Project: Address: 23641 Placentia Avenue, Perris, CA

Project No.G-012224-1

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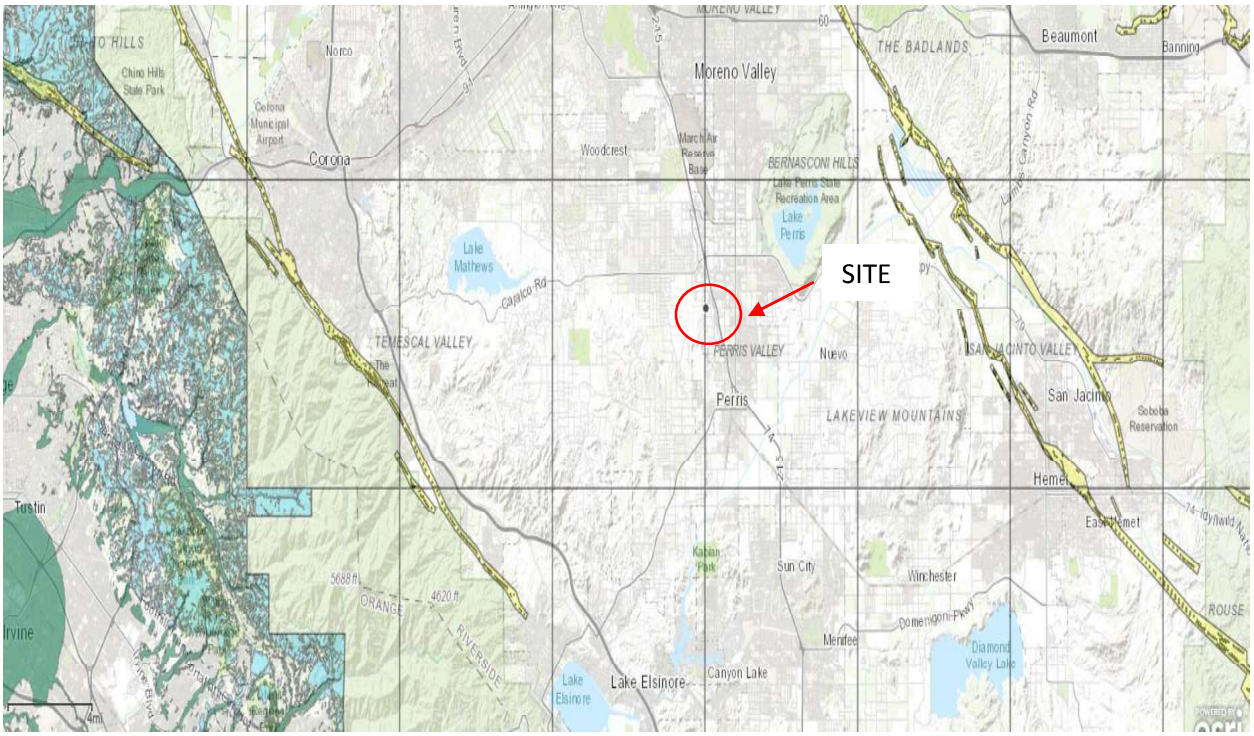

FIGURE NO. 5 -CGS-SEISMIC HAZARDS-ACTIVE FAULTS

Project: Proposed Commercial Building

Project Address: 23641 Placentia Avenue, Perris, CA

Project No. G-012424-1

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FIGURE NO. 6 CGS-VICINITY MAP

Project: Proposed Commercial Building

Project Address: 23641 Placentia Avenue, Perris, CA

Project No. G-012424-1

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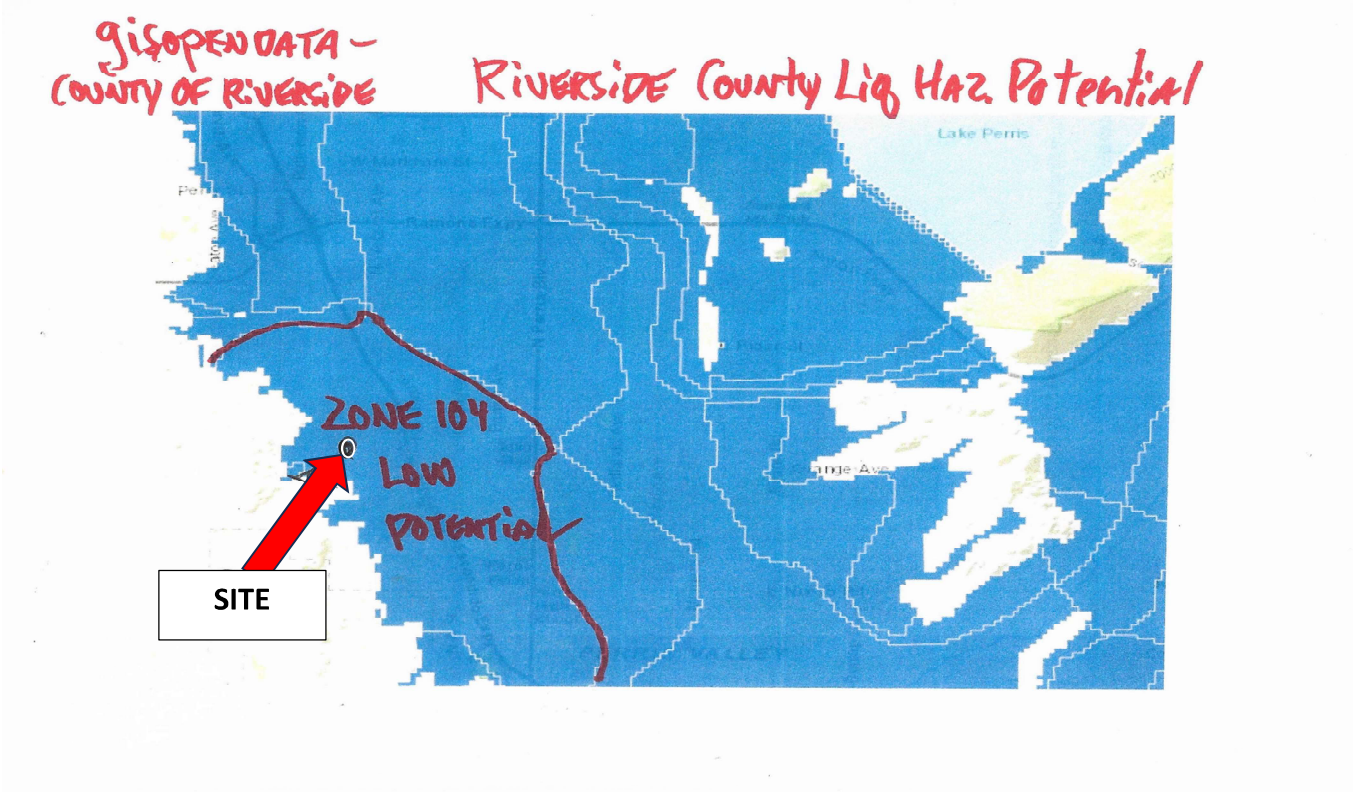


Figure No. 7 Liquefaction Susceptibility

APPENDIX D

General Notes

GENERAL NOTES

SAMPLE IDENTIFICATION

All samples are visually classified in general accordance with the Unified Soil Classification System (ASTM D-2487-75 or D-2488-75)

DESCRIPTIVE TERM (% BY DRY WEIGHT)

Trace:	1-10%
Little:	11-20%
Some:	21-35%
And/Adjective	36-50%

PARTICLE SIZE (DIAMETER)

Boulders:	8 in and larger
Cobbles:	3 in to 8 in
Gravel:	coarse - ¾ to 3 in
	fine - No. 4 (4.76 mm) to ¾ in
Sand:	coarse - No. 4 (4.76 mm) to No. 10 (2.0 mm)
	medium - No. 10 (2.0 mm) to No. 40 (0.42 mm)
	fine - No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt:	No. 200 (0.074 mm) and smaller (Non-plastic)
Clay:	No. 200 (0.074 mm) and smaller (Plastic)

SOIL PROPERTY SYMBOLS

Dd:	Dry Density (pcf)
LL:	Liquid Limit, percent
PL:	Plastic Limit, percent
PI:	Plasticity Index (LL-PL)
LOI:	Loss on Ignition, percent
Gs:	Specific Gravity
K:	Coefficient of Permeability
w:	Moisture content, percent
qp:	Calibrated Penetrometer Resistance, tsf
qs:	Vane-Shear Strength, tsf
qu:	Unconfined Compressive Strength, tsf
qc:	Static Cone Penetrometer Resistance Correlated to Unconfined Compressive Strength, tsf
PID:	Results of vapor analysis conducted on representative samples utilizing a Photoionization Detector calibrated to a benzene standard. Results expressed in HNU-units (BDL=Below Detection Limits)
N:	Penetration Resistance per 6 inch interval, or fraction thereof, for a standard 2 inch O.D. (1⅜ inch I.D.) split spoon sampler driven with a 140 pound weight free-falling 30 inches. Performed in general accordance with Standard Penetration Test Specifications (ASTM D-1586). N in blows per foot equals sum of N values where plus sign is shown
Nc:	Penetration Resistance per 1¾ inches of Dynamic Cone Penetrometer. Approximately equivalent to Standard Penetration Test N-Value in blows per foot.
Nr:	Penetration Resistance per 6 inch interval, or fraction thereof, for California Ring Sampler driven with a 140 pound weight free-falling 30 inches per ASTM D-3550. Not equivalent to Standard Penetration Test N-Value.

DRILLING AND SAMPLING SYMBOLS

SS:	Split-Spoon
ST:	Shelby Tube - 3" O.D. (except where noted)
CS:	3" O.D. California Ring Sampler
DC:	Dynamic Cone Penetrometer per ASTM Special Technical Publication No. 399
AU:	Auger Sample
DB:	Diamond Bit
CB:	Carbide Bit
WS:	Wash Sample
RB:	Rock-Roller Bit
BS:	Bulk Sample
Note:	Depth intervals for sampling shown on Record of Subsurface Exploration are not indicative of sample recovery, but position where sampling initiated

SOIL STRENGTH CHARACTERISTICS

COHESIVE (CLAYEY) SOILS

COMPARATIVE CONSISTENCY	BLOWS PER FOOT (N)	UNCONFINED COMPRESSIVE STRENGTH (TSF)
Very Soft	0-2	0-0.25
Soft	3-4	0.25-0.50
Medium Stiff	5-8	0.50-1.00
Stiff	9-15	1.00-2.00
Very Stiff	16-30	2.00-4.00
Hard	31+	4.00+

DEGREE OF PLASTICITY	PI	DEGREE OF EXPANSIVE POTENTIAL	PI
None to Slight	0-4	Low	0-15
Slight	5-10	Medium	15-25
Medium	11-30	High	25+
High to Very High	31+		

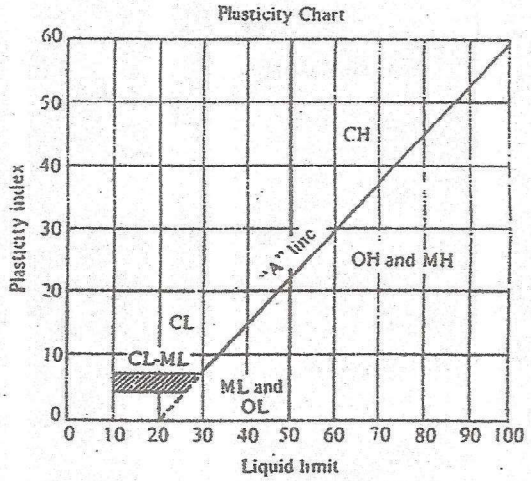
NON-COHESIVE (GRANULAR) SOILS

RELATIVE DENSITY	BLOWS PER FOOT (N)
Very Loose	0-4
Loose	5-10
Firm	11-30
Dense	31-50
Very Dense	51+

UNIFIED SOIL CLASSIFICATION SYSTEM. (ASTM D-2487)

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravels with fines (Appreciable amount of fines)	GM[a] d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits below "A" line with P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM[a] d / u	Silty sands, sand-silt mixtures	Atterberg limits above "A" line or P.I. less than 4 — Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
Fine-grained soils (More than half material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly organic soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
- Less than 5 per cent — GW, GP, SW, SP
- More than 12 per cent — GM, GC, SM, SC
- 5 to 12 per cent — *Borderline* cases requiring dual symbols[b]



[a] Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.

[b] Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.

CHARACTERISTICS AND RATINGS OF UNIFIED SOIL SYSTEM CLASSES FOR SOIL CONSTRUCTION *

Class	Compaction Characteristics	Max. Dry Density Standard Proctor (pcf)	Compressibility and Expansion	Drainage and Permeability	Value as an Embankment Material	Value as Subgrade When Not Subject to Frost	Value as Base Course	Value as Temporary Pavement	
								With Dust Palliative	With Bituminous Treatment
GW	Good: tractor, rubber-tired, steel wheel or vibratory roller	125-135	Almost none	Good drainage, pervious	Very stable	Excellent	Good	Fair to Poor	Excellent
GP	Good: tractor, rubber-tired, steel wheel or vibratory roller	115-125	Almost none	Good drainage, pervious	Reasonably stable	Excellent to good	Poor to fair	Poor	
GM	Good: rubber-tired or light sheepsfoot roller	120-135	Slight	Poor drainage, semipervious	Reasonably stable	Excellent to good	Fair to poor	Poor	Poor to fair
GC	Good to fair: rubber-tired or sheepsfoot roller	115-130	Slight	Poor drainage, impervious	Reasonably stable	Good	Good to fair **	Excellent	Excellent
SW	Good: tractor, rubber-tired or vibratory roller	110-130	Almost none	Good drainage, pervious	Very stable	Good	Fair to poor	Fair to poor	Good
SP	Good: tractor, rubber-tired or vibratory roller	100-120	Almost none	Good drainage, pervious	Reasonably stable when dense	Good to fair	Poor	Poor	Poor to fair
SM	Good: rubber-tired or sheepsfoot roller	110-125	Slight	Poor drainage, impervious	Reasonably stable when dense	Good to fair	Poor	Poor	Poor to fair
SC	Good to fair: rubber-tired or sheepsfoot roller	105-125	Slight to medium	Poor drainage, impervious	Reasonably stable	Good to fair	Fair to poor	Excellent	Excellent
ML	Good to poor: rubber-tired or sheepsfoot roller	95-120	Slight to medium	Poor drainage, impervious	Poor stability, high density required	Fair to poor	Not suitable	Poor	Poor
CL	Good to fair: sheepsfoot or rubber-tired roller	95-120	Medium	No drainage, impervious	Good stability	Fair to poor	Not suitable	Poor	Poor
OL	Fair to poor: sheepsfoot or rubber-tired roller	80-100	Medium to high	Poor drainage, impervious	Unstable, should not be used	Poor	Not suitable	Not suitable	Not suitable
MH	Fair to poor: sheepsfoot or rubber-tired roller	70-95	High	Poor drainage, impervious	Poor stability, should not be used	Poor	Not suitable	Very poor	Not suitable
CH	Fair to poor: sheepsfoot roller	80-105	Very high	No drainage, impervious	Fair stability, may soften on expansion	Poor to very poor	Not suitable	Very poor	Not suitable
OH	Fair to poor: sheepsfoot roller	65-100	High	No drainage, impervious	Unstable, should not be used	Very poor	Not suitable	Not suitable	Not suitable
Pt	Not suitable		Very high	Fair to poor drainage	Should not be used	Not suitable	Not suitable	Not suitable	Not suitable

* "The Unified Classification: Appendix A - Characteristics of Soil, Groups Pertaining to Roads and Airfields, and Appendix B - Characteristics of Soil Groups Pertaining to Embankments and Foundations," Technical Memorandum 357, U.S. Waterways Experiment Station, Vicksburg, 1953.

** Not suitable if subject to frost.

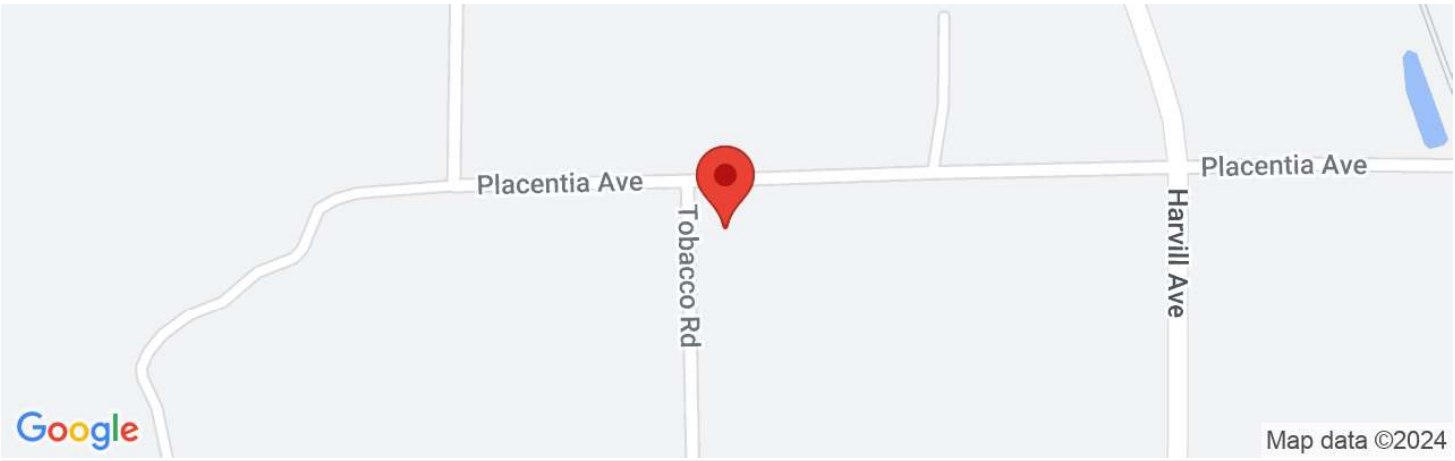
APPENDIX E

Seismic Design Parameters

USGS web services were down for some period of time and as a result this tool wasn't operational, resulting in *timeout* error.
USGS web services are now operational so this tool should work as expected.

23641 Placentia Ave, Perris, CA 92570, USA

Latitude, Longitude: 33.8226811, -117.2501986



Date	2/9/2024, 9:14:15 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.488	MCE_R ground motion. (for 0.2 second period)
S_1	0.551	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.488	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	0.992	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.5	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.55	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.488	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.587	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.551	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.601	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)

Type	Value	Description
PGA_{UH}	0.625	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.938	Mapped value of the risk coefficient at short periods
C_{R1}	0.918	Mapped value of the risk coefficient at a period of 1 s
C_V	1.398	Vertical coefficient

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APPENDIX E

Seismic Design Parameters

PERCOLATION TEST REPORT

Project Name:		Commercial Tilt-up Building			**Project No.:**		G-012424-1
Test Hole No.:		P-1			**Date Excavated:**		2/5/2024
Length of Test Pipe:			72.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			1.2	inches	**Presoak Date:**		2/4/2024
Depth of Test Hole:			70.8	inches	**Perc Test Date:**		2/5/2024
Check for Sandy Soil Criteria Tested by:				A.K	**Percolation Tested by:**		A.K
Water level measured from BOTTOM of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	8:00 AM 8:25 AM	25	25	64.8	13.2	51.6	0.5
2	8:30 AM 8:55 AM	25	50	64.8	15.6	49.2	0.5
			Soil Criteria: Sandy				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	9:00 AM 9:30 AM	30	30	64.8	18.0	46.8	0.6
2	9:30 AM 10:00 AM	30	60	63.6	19.2	44.4	0.7
3	10:00 AM 10:30 AM	30	90	64.8	16.8	48.0	0.6
4	10:30 AM 11:00 AM	30	120	63.6	20.4	43.2	0.7
5	11:00 AM 11:30 AM	30	150	64.8	24.0	40.8	0.7
6	11:30 AM 12:00 PM	30	180	64.8	26.4	38.4	0.8
7	12:00 PM 12:30 PM	30	210	64.8	28.8	36.0	0.8
8	12:30 PM 1:00 PM	30	240	64.8	30.0	34.8	0.9
9	1:00 PM 1:30 PM	30	270	64.8	30.0	34.8	0.9
10	1:30 PM 2:00 PM	30	300	64.8	31.2	33.6	0.9
11	2:00 PM 2:30 PM	30	330	64.8	31.2	33.6	0.9
12	2:30 PM 3:00 PM	30	360	64.8	31.2	33.6	0.9

Radius of test hole (in):			4				
Average Head (in):			48.0				**A-1**
Infiltration Rate (in/hr):			2.7				

Thrifty Oil Warehouse Project
(PPT230048, PDA 8407, OAPL2300972)
GREENHOUSE GAS ANALYSIS
COUNTY OF RIVERSIDE

PREPARED BY:

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JANUARY 24, 2024

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LIST OF ABBREVIATED TERMS

%	Percent
°C	Degrees Celsius
°F	Degrees Fahrenheit
(1)	Reference
2017 Scoping Plan	*Final 2017 Scoping Plan Update*
2022 Scoping Plan	2022 Scoping Plan
AB	Assembly Bill
AB 32	Global Warming Solutions Act of 2006
AB 1493	Pavley Fuel Efficiency Standards
AB 1881	California Water Conservation Landscaping Act of 2006
Annex I	Industrialized Nations
APA	Administrative Procedure Act
AQIA	*Thrifty Oil Warehouse Project Air Quality Impact Analysis*
BAU	Business as Usual
C_2F_6	Hexafluoroethane
C_2H_6	Ethane
$C_2H_2F_4$	Tetrafluroethane
$C_2H_4F_2$	Ethylidene Fluoride
CAA	Federal Clean Air Act
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGAPS	California LBNL GHG Analysis of Policies Spreadsheet
CALGreen	California Green Building Standards Code
CalSTA	California State Transportation Agency
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CBSC	California Building Standards Commission
CEC	California Energy Commission
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CEQA Guidelines	*2023 CEQA Statute and Guidelines*
CDFA	California Department of Food and Agriculture
CF_4	Tetrafluoromethane
CFC	Chlorofluorocarbons

CFC-113	Trichlorotrifluoroethane
CH_4	Methane
CNRA	California Natural Resources Agency
CNRA 2009	*2009 California Climate Adaptation Strategy*
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
Convention	United Nation's Framework Convention on Climate Change
COP	Conference of the Parties
County	County of Riverside
CPUC	California Public Utilities Commission
CTC	California Transportation Commission
DOF	Department of Finance
DWR	Department of Water Resources
EMFAC	Emission Factor Model
EPA	Environmental Protection Agency
EV	Electric Vehicle
FED	Functional Equivalent Document
GCC	Global Climate Change
Gg	Gigagram
GHGA	Greenhouse Gas Analysis
GO-Biz	Governor's Office of Business and Economic Development
gpd	Gallons Per Day
gpm	Gallons Per Minute
GWP	Global Warming Potential
H_2O	Water
HFC	Hydrofluorocarbons
HDT	Heavy-Duty Trucks
HFC-23	Fluoroform
HFC-134a	1,1,1,2-tetrafluoroethane
HFC-152a	1,1-difluoroethane
HHDT	Heavy-Heavy-Duty Trucks
hp	Horsepower
IBANK	California Infrastructure and Economic Development Bank
IPCC	Intergovernmental Panel on Climate Change
IRP	Integrated Resource Planning
ISO	Independent System Operator
ITE	Institute of Transportation Engineers
kWh	Kilowatt Hours

lbs	Pounds
LBNL	Lawrence Berkeley National Laboratory
LCA	Life-Cycle Analysis
LCD	Liquid Crystal Display
LCFS	Low Carbon Fuel Standard or Executive Order S-01-07
LDA	Light-Duty Auto
LDT1/LDT2	Light-Duty Trucks
LEV III	Low-Emission Vehicle
LHDT1/LHDT2	Light-Heavy-Duty Trucks
LULUCF	Land-Use, Land-Use Change and Forestry
MCA	Municipal Code Amendment
MCY	Motorcycles
MD	Medium Duty
MDT	Medium-Duty Trucks
MDV	Medium-Duty Vehicles
MHDT	Medium-Heavy-Duty Tucks
MMR	Mandatory Reporting Rule
$MMTCO_2e$	Million Metric Ton of Carbon Dioxide Equivalent
mpg	Miles Per Gallon
MPOs	Metropolitan Planning Organizations
$MMTCO_2e/yr$	Million Metric Ton of Carbon Dioxide Equivalent Per Year
MT/yr	Metric Tons Per Year
$MTCO_2e$	Metric Ton of Carbon Dioxide Equivalent
$MTCO_2e/yr$	Metric Ton of Carbon Dioxide Equivalent Per Year
MW	Megawatts
MWh	Megawatts Per Hour
MWELO	California Department of Water Resources' Model Water Efficient
N_2O	Nitrous Oxide
NDC	Nationally Determined Contributions
NF_3	Nitrogen Trifluoride
NHTSA	National Highway Traffic Safety Administration
NIOSH	National Institute for Occupational Safety and Health
NO_X	Nitrogen Oxides
Non-Annex I	Developing Nations
OAL	Office of Administrative Law
OPR	Office of Planning and Research
PFC	Perfluorocarbons

ppb	Parts Per Billion
ppm	Parts Per Million
ppt	Parts Per Trillion
Project	Thrifty Oil Warehouse Project
RTP	Regional Transportation Plan
SAFE	Safer Affordable Fuel-Efficient Vehicles Rule
SB	Senate Bill
SB 32	California Global Warming Solutions Act of 2006
SB 375	Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies
SB 1078	Renewable Portfolio Standards
SB 1368	Statewide Retail Provider Emissions Performance Standards
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
Scoping Plan	California Air Resources Board Climate Change Scoping Plan
SCS	Sustainable Communities Strategy
sf	Square Feet
SF_6	Sulfur Hexaflouride
SGC	Strategic Growth Council
SHGC	Solar Heat Gain Coefficient
SLPS	Short-Lived Climate Pollutant Strategy
SP	Service Population
SWCRB	State Water Resources Control Board
TDM	Transportation Demand Measures
Title 20	Appliance Energy Efficiency Standards
Title 24	California Building Code
U.N.	United Nations
U.S.	United States
UNFCCC	United Nations' Framework Convention on Climate Change
URBEMIS	Urban Emissions
UTR	Utility Tractors
VFP	Vehicle Fueling Positions
VMT	Vehicle Miles Traveled
WCI	Western Climate Initiative
WRI	World Resources Institute

ZE/NZE	Zero and Near-Zero Emissions
ZEV	Zero-Emissions Vehicles

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EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *Thrifty Oil Warehouse Project Greenhouse Gas Analysis* (GHGA) is summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the *California Environmental Quality Act (CEQA) Guidelines* (*CEQA Guidelines*) (1). Table ES-1 shows the findings of significance for potential greenhouse gas (GHG) impacts under CEQA.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
GHG Impact #1: Would the Project generate GHG emissions either directly or indirectly, that may have a significant impact on the environment?	3.7	*Less Than Significant*	*n/a*
GHG Impact #2: Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?	3.7	*Less Than Significant*	*n/a*

ES.2 PROJECT REQUIREMENTS

The Project would be required to comply with regulations imposed by the State of California and the South Coast Air Quality Management District (SCAQMD) aimed at the reduction of air pollutant emissions. Those that are directly and indirectly applicable to the Project and that would assist in the reduction of GHG emissions include:

- Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) (2).
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (Senate Bill [SB] 375) (3).
- Pavley Fuel Efficiency Standards (AB 1493). Establishes fuel efficiency ratings for new vehicles (4).
- California Building Code (Title 24 California Code of Regulations [CCR]). Establishes energy efficiency requirements for new construction (5).
- Appliance Energy Efficiency Standards (Title 20 CCR). Establishes energy efficiency requirements for appliances (6).
- Low Carbon Fuel Standard (LCFS). Requires carbon content of fuel sold in California to be 10 percent (%) less by 2020 (7).
- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions (8).

- Renewable Portfolio Standards (RPS) Required electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20% by 2010 and 33% by 2020. SB 350 mandated a 50% RPS by 2030. SB 100 increased the RPS requirements to 60% by 2030 with new interim targets of 44% by 2024 and 52% by 2027 (9).
- California Global Warming Solutions Act of 2006 (SB 32). Requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15 (10).
- SCAQMD Rule 2305. The SCAQMD adopted Rule 2305, the Warehouse Indirect Source Rule, on May 7, 2021. Owners and operators associated with warehouses 100,000 square feet (sf) or larger are required to directly reduce nitrogen oxides (NO_X) and particulate matter emissions, or to otherwise facilitate emission and exposure reductions of these pollutants in nearby communities.

Promulgated regulations that would affect the Project's emissions are accounted for in the Project's GHG calculations provided in this report. In particular, AB 1493, LCFS, and RPS, and therefore are accounted for in the Project's emission calculations.

ES.3 COUNTY OF RIVERSIDE CLIMATE ACTION PLAN (CAP)

To evaluate consistency with the CAP Update, the County has implemented CAP Update Screening Tables (Screening Tables) to aid in measuring the reduction of GHG emissions attributable to certain design and construction measures incorporated in development projects. To this end, the Screening Tables establish categories of GHG Implementation Measures. Under each Implementation Measure category, mitigation or project design features (collectively "features") are assigned point values that correspond to the minimum GHG emissions reduction that would result from each feature. Projects that yield at least 100 points are considered to be consistent with the GHG emissions reduction quantities anticipated in the County's GHG Technical Report and support the GHG emissions reduction targets established under the CAP Update. The potential for such projects to generate direct or indirect GHG emissions that would result in a significant impact on the environment; or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs would be considered less-than-significant.

MM GHG-1

Prior to issuance of each building permit, the Project Applicant shall provide documentation to the County of Riverside Building Department demonstrating implementation of CAP measure R2-CE1, which includes on-site renewable energy production. This measure is required for any tentative tract map, plot plan, or conditional use permit that proposes development or one or more new buildings totaling more than 100,000 gross square feet (sf) of commercial, office, industrial, or manufacturing development to offset its energy demand. For industrial developments, measure R2-CE1 requires a 20% offset in energy demand. As a conservative measure, emissions associated with energy usage do not reflect implementation of R2-CE1.

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1 INTRODUCTION

This report presents the results of the GHGA prepared by Urban Crossroads, Inc., for the proposed Thrifty Oil Warehouse Project (Project). The purpose of this GHGA is to evaluate Project-related construction and operational emissions and determine the level of GHG impacts as a result of constructing and operating the Project.

1.1 SITE LOCATION

The proposed project is located on the southeast corner of Tobacco Road and Placentia Avenue at 23641 Placentia Avenue in the County of Riverside, as shown on Exhibit 1-A.

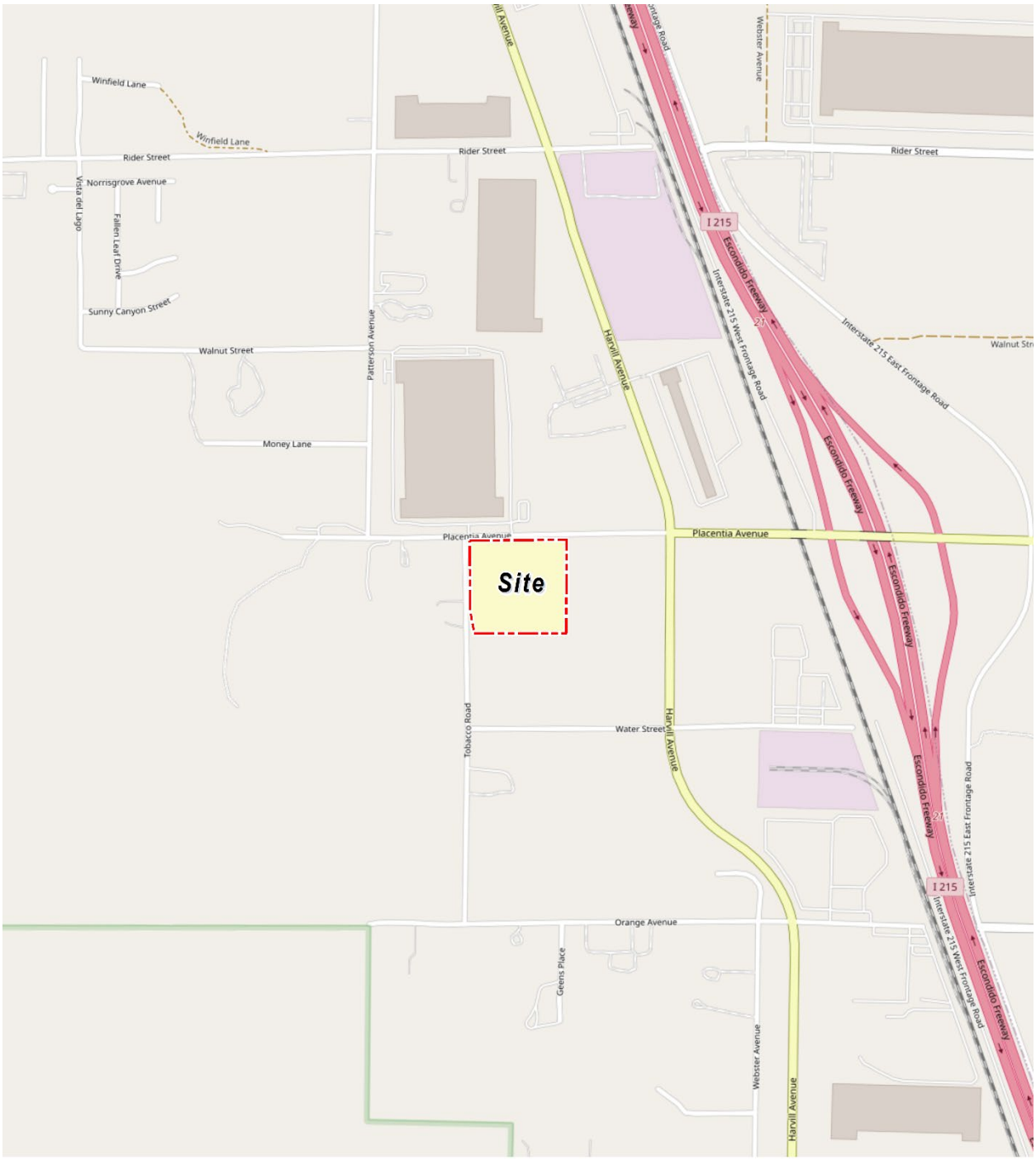
1.2 PROJECT DESCRIPTION

The Project consists of the development of a 185,785-sf warehouse building with 167,785 sf of warehousing use and 18,000 sf of office space (9,000 sf on first and second floors). The total Project site is 8.72 acres on APNs 317-260-017 and 317-261-018. A preliminary site plan for the proposed Project is shown on Exhibit 1-B. The Project is anticipated to have an Opening Year of 2026.

Construction is expected to commence in January 2025 and would last through January 2026. Construction activities will include demolition, site preparation, grading, building construction, paving, and architectural coating. To support the Project development, there will be frontage street improvements as well as offsite sewer improvements for the Project.

The Project site is located within an unincorporated portion of the County of Riverside. As per the General Plan, the unincorporated portions of the County are divided into 19 area plans. These area plans provide more detailed land use and policy direction regarding local issues such as land use, circulation, open space, and other topical areas (11). Per the General Plan, the Project site is located within the Mead Valley Area Plan and is designated for Business Park uses. The Business Park land use designation allows for employee-intensive uses, including research and development, technology centers, corporate and support office uses, clean industry and supporting retail uses (11).

EXHIBIT 1-A: LOCATION MAP

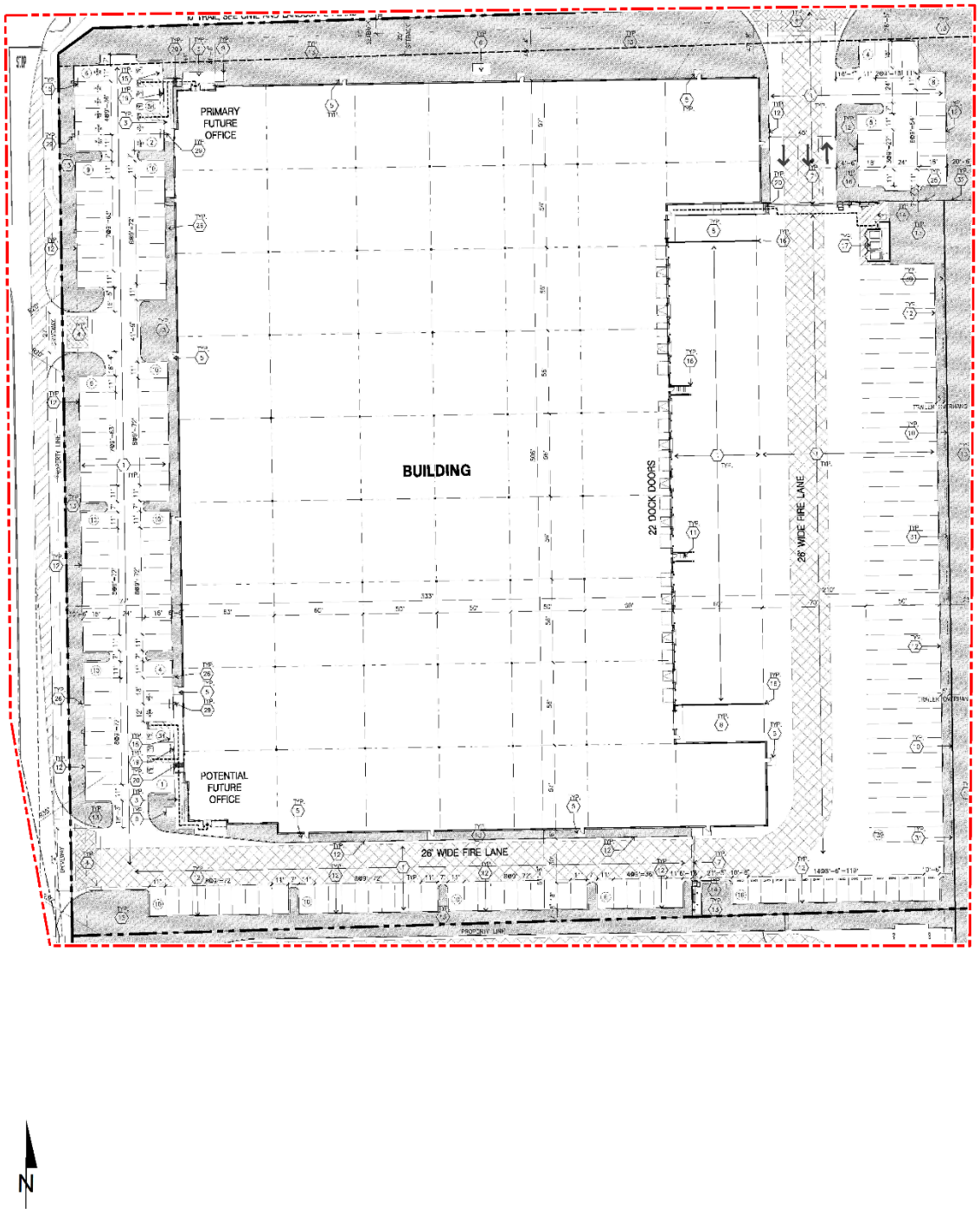


N

LEGEND:

Site Boundary

EXHIBIT 1-B: PRELIMINARY SITE PLAN



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2 CLIMATE CHANGE SETTING

2.1 INTRODUCTION TO GLOBAL CLIMATE CHANGE (GCC)

GCC is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. The majority of scientists believe that the climate shift taking place since the Industrial Revolution is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of GHGs in the earth's atmosphere, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. The majority of scientists believe that this increased rate of climate change is the result of GHGs resulting from human activity and industrialization over the past 200 years.

An individual project like the Project evaluated in this GHGA cannot generate enough GHG emissions to affect a discernible change in global climate. However, the Project may participate in the potential for GCC by its incremental contribution of GHGs combined with the cumulative increase of all other sources of GHGs, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental consequences, Section 4.0 will evaluate the potential for the Project to have a significant effect upon the environment as a result of its potential contribution to the greenhouse effect.

2.2 GLOBAL CLIMATE CHANGE DEFINED

GCC refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation, and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO_2, N_2O, CH_4, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the earth's atmosphere, but prevent radiative heat from escaping, thus warming the earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages.

Gases that trap heat in the atmosphere are often referred to as GHGs. GHGs are released into the atmosphere by both natural and anthropogenic activity. Without the natural GHG effect, the earth's average temperature would be approximately 61 degrees Fahrenheit (°F) cooler than it is currently. The cumulative accumulation of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

2.3 GHGS

2.3.1 GHGS AND HEALTH EFFECTS

GHGs trap heat in the atmosphere, creating a GHG effect that results in global warming and climate change. Many gases demonstrate these properties and as discussed in Table 2-1. For the purposes of this analysis, emissions of CO_2, CH_4, and N_2O were evaluated (see Table 4-1 later in this report) because these gases are the primary contributors to GCC from development projects. Although there are other substances such as fluorinated gases that also contribute to GCC, these

fluorinated gases were not evaluated as their sources are not well-defined and do not contain accepted emissions factors or methodology to accurately calculate these gases.

TABLE 2-1: GHGS

GHGs	Description	Sources	Health Effects
Water	Water is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. Climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop would continue is unknown as there are also dynamics that hold the positive	The main source of water vapor is evaporation from the oceans (approximately 85%). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.	There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.

GHGs	Description	Sources	Health Effects
	feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it would eventually condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the earth's surface and heat it up) (12).		
CO_2	CO_2 is an odorless and colorless GHG. Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO_2 concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30%. Left unchecked, the concentration of CO_2 in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources (13).	CO_2 is emitted from natural and manmade sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include: the burning of coal, oil, natural gas, and wood. CO_2 is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks (14).	Outdoor levels of CO_2 are not high enough to result in negative health effects. According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of CO_2 can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of CO_2 in the earth's atmosphere are estimated to be approximately 370 ppm, the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000 ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000 ppm averaged over a 15-minute period (15).
CH_4	CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than CO_2 and its lifetime in	CH_4 in the atmosphere is generated by many different sources,	CH_4 is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Exposure to

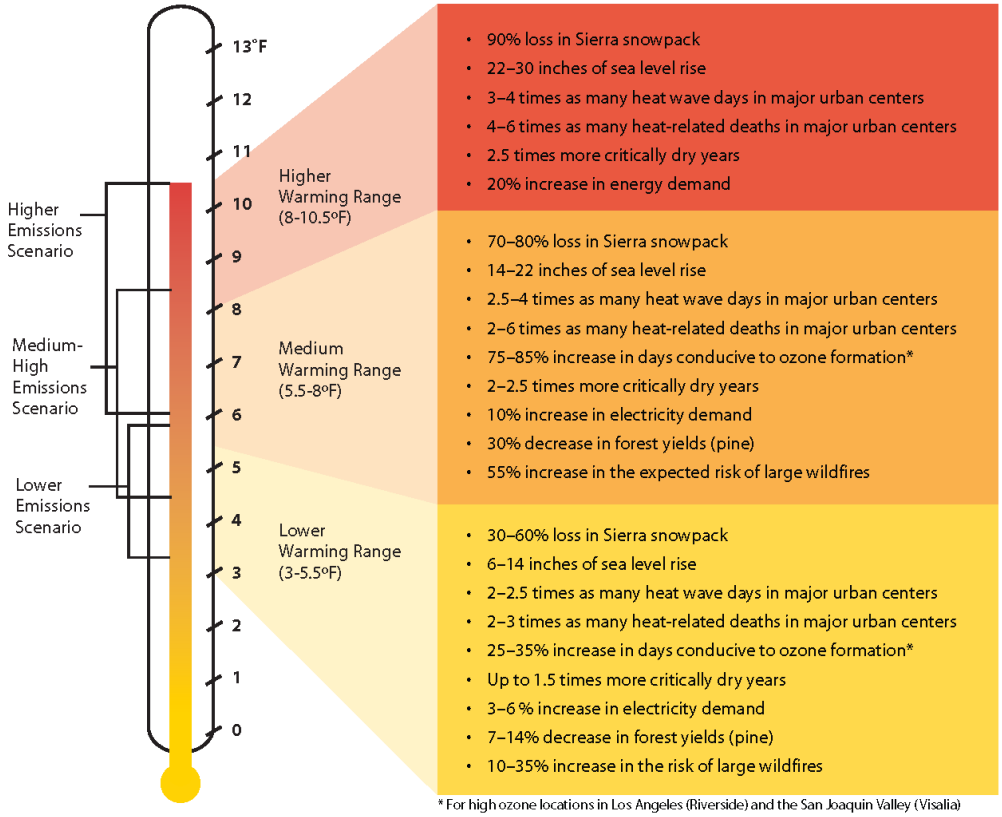
GHGs	Description	Sources	Health Effects
	the atmosphere is brief (10-12 years), compared to other GHGs.	such as fossil fuel production, transport and use, from the decay of organic matter in wetlands, and as a byproduct of digestion by ruminant animals such as cows. Determining which specific sources are responsible for variations in annual increases of CH_4 is complex, but scientists estimate that fossil fuel production and use contributes roughly 30% of the total CH_4 emissions. These industrial sources of CH_4 are relatively simple to pinpoint and control using current technology (16).	elevated levels of CH_4 can cause asphyxiation, loss of consciousness, headache and dizziness, nausea and vomiting, weakness, loss of coordination, and an increased breathing rate.
N_2O	N_2O, also known as laughing gas, is a colorless GHG. Concentrations of N_2O also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb).	N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also	N_2O can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage) (17).

GHGs	Description	Sources	Health Effects
		used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. N_2O can be transported into the stratosphere, be deposited on the earth's surface, and be converted to other compounds by chemical reaction (17).	
Chlorofluorocarbons (CFCs)	CFCs are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).	CFCs have no natural source. They are found in aerosol sprays, blowing agents for foams and packing materials, as solvents, and as refrigerants. (18).	In confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.
HFCs	HFCs are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential (GWP). The HFCs with the largest measured atmospheric abundances are (in order), Fluoroform (HFC-23), 1,1,1,2-tetrafluoroethane (HFC-134a), and 1,1-difluoroethane (HFC-152a). Prior to 1990, the only significant emissions were of HFC-23. HCF-134a emissions are increasing due to its use as a refrigerant.	HFCs are manmade for applications such as automobile air conditioners and refrigerants.	No health effects are known to result from exposure to HFCs.

GHGs	Description	Sources	Health Effects
PFCs	PFCs have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above earth's surface, are able to destroy the compounds. Because of this, PFCs have exceptionally long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). The EPA estimates that concentrations of CF_4 in the atmosphere are over 70 parts per trillion (ppt).	The two main sources of PFCs are primary aluminum production and semiconductor manufacture.	No health effects are known to result from exposure to PFCs.
SF_6	SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas evaluated (23,900) (19). The EPA indicates that concentrations in the 1990s were about 4 ppt.	SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.	In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.
Nitrogen Trifluoride (NF_3)	NF_3 is a colorless gas with a distinctly moldy odor. The World Resources Institute (WRI) indicates that NF_3 has a 100-year GWP of 17,200 (20).	NF_3 is used in industrial processes and is produced in the manufacturing of semiconductors, Liquid Crystal Display (LCD) panels, types of solar panels, and chemical lasers.	Long-term or repeated exposure may affect the liver and kidneys and may cause fluorosis (21).

The potential health effects related directly to the emissions of CO_2, CH_4, and N_2O as they relate to development projects such as the Project are still being debated in the scientific community. Their cumulative effects to GCC have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport those higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change would likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (22). Exhibit 2-A presents the potential impacts of global warming (23).

EXHIBIT 2-A: SUMMARY OF PROJECTED GLOBAL WARMING IMPACT, 2070-2099 (AS COMPARED WITH 1961-1990)



Source: Barbara H. Allen-Diaz. "Climate change affects us all." *University of California, Agriculture and Natural Resources*, 2009.

2.4 GLOBAL WARMING POTENTIAL

GHGs have varying GWP values. GWP of a GHG indicates the amount of warming a gas cause over a given period of time and represents the potential of a gas to trap heat in the atmosphere. CO_2 is utilized as the reference gas for GWP, and thus has a GWP of 1. CO_2 equivalent (CO_2e) is a term used for describing the difference GHGs in a common unit. CO_2e signifies the amount of CO_2 which would have the equivalent GWP.

The atmospheric lifetime and GWP of selected GHGs are summarized at Table 2-2. As shown in the table below, GWP for the 6th Assessment Report, the Intergovernmental Panel on Climate Change (IPCC)'s scientific and socio-economic assessment on climate change, range from 1 for CO_2 to 25,200 for SF_6 (24).

TABLE 2-2: GWP AND ATMOSPHERIC LIFETIME OF SELECT GHGS

Gas	Atmospheric Lifetime (years)	GWP (100-year time horizon)
		6th Assessment Report
CO_2	Multiple	1
CH_4	12 .4	28
N_2O	121	273
HFC-23	222	14,600
HFC-134a	13.4	1,526
HFC-152a	1.5	164
SF_6	3,200	25,200

Source: IPCC Second Assessment Report, 1995 and IPCC Sixth Assessment Report, 2022

2.5 GHG EMISSIONS INVENTORIES

2.5.1 GLOBAL

Worldwide anthropogenic GHG emissions are tracked by the IPCC for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Human GHG emissions data for Annex I nations are available through 2020. Based on the latest available data, the sum of these emissions totaled approximately 28,026,643 gigagram (Gg) CO_2e[1] (25) (26) as summarized on Table 2-3.

2.5.2 UNITED STATES

As noted in Table 2-3, the United States, as a single country, was the number two producer of GHG emissions in 2020.

[1] The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2020 data, the United Nations' Framework Convention on Climate Change (UNFCCC) data for the most recent year were used U.N. Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF," The most recent GHG emissions for China and India are from 2014 and 2016, respectively.

TABLE 2-3: TOP GHG PRODUCING COUNTRIES AND THE EUROPEAN UNION [2]

Emitting Countries	GHG Emissions (Gg CO_2e)
China	12,300,200
United States	5,981,354
European Union (27-member countries)	3,706,110
India	2,839,420
Russian Federation	2,051,437
Japan	1,148,122
Total	**28,026,643**

2.5.3 STATE OF CALIFORNIA

California has significantly slowed the rate of growth of GHG emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls but is still a substantial contributor to the United States (U.S.) emissions inventory total (27). The California Air Resource Board (CARB) compiles GHG inventories for the State of California. Based upon the 2022 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2020 GHG emissions period, California emitted an average 369.2 million metric tons of CO_2e per year ($MMTCO_2e/yr$) or 369,200 Gg CO_2e (6.17% of the total United States GHG emissions) (28).

2.6 EFFECTS OF CLIMATE CHANGE IN CALIFORNIA

2.6.1 PUBLIC HEALTH

Higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35% under the lower warming range to 75 to 85% under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. Based on *Our Changing Climate Assessing the Risks to California by the California Climate Change Center*, large wildfires could become up to 55% more frequent if GHG emissions are not significantly reduced (29).

In addition, under the higher warming range scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a significant increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

[2] Used http://unfccc.int data for Annex I countries. Consulted the CAIT Climate Data Explorer in https://www.climatewatchdata.org site to reference Non-Annex I countries of China and India.

2.6.2 WATER RESOURCES

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90%. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

2.6.3 AGRICULTURE

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25% of the water supply needed. Although higher CO_2 levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits, and nuts.

In addition, continued GCC could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued GCC could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

2.6.4 FORESTS AND LANDSCAPES

GCC has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55%, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks would not be uniform throughout the state. In contrast, wildfires in northern California could increase by up to 90% due to decreased precipitation.

Moreover, continued GCC has the potential to alter natural ecosystems and biological diversity within the state. For example, alpine and subalpine ecosystems could decline by as much as 60 to 80% by the end of the century as a result of increasing temperatures. The productivity of the state's forests has the potential to decrease as a result of GCC.

2.6.5 RISING SEA LEVELS

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the state's coastal regions. Under the higher warming range scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

2.7 REGULATORY SETTING

2.7.1 INTERNATIONAL

Climate change is a global issue involving GHG emissions from all around the world; therefore, countries such as the ones discussed below have made an effort to reduce GHGs.

IPCC

In 1988, the United Nations (U.N.) and the World Meteorological Organization established the IPCC to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

UNITED NATION'S FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

On March 21, 1994, the U.S. joined a number of countries around the world in signing the Convention. Under the UNFCCC, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

INTERNATIONAL CLIMATE CHANGE TREATIES

The Kyoto Protocol is an international agreement linked to the UNFCCC. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at an average of 5% against 1990 levels over the five-year period 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the UN Climate Change Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2 degrees Celsius (°C) above pre-industrial levels, subject to a review in 2015. The Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings gradually gained consensus among participants on individual climate change issues.

On September 23, 2014, more than 100 Heads of State and Government and leaders from the private sector and civil society met at the Climate Summit in New York hosted by the U.N. At the Summit, heads of government, business and civil society announced actions in areas that would have the greatest impact on reducing emissions, including climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

Parties to the UNFCCC reached a landmark agreement on December 12, 2015, in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating a four-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen them in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21st session of the UNFCCC Conference of the Parties (COP) 21. Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2°C, while urging efforts to limit the increase to 1.5 degrees;
- Establish binding commitments by all parties to make "nationally determined contributions" (NDCs), and to pursue domestic measures aimed at achieving them;
- Commit all countries to report regularly on their emissions and "progress made in implementing and achieving" their NDCs, and to undergo international review;

- Commit all countries to submit new NDCs every five years, with the clear expectation that they would "represent a progression" beyond previous ones;
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing $100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address "loss and damage" resulting from climate change, which explicitly would not "involve or provide a basis for any liability or compensation;"
- Require parties engaging in international emissions trading to avoid "double counting;" and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country's NDC (C2ES 2015a) (30).

Following President Biden's day one executive order, the United States officially rejoined the landmark Paris Agreement on February 19, 2021, positioning the country to once again be part of the global climate solution. Meanwhile, city, state, business, and civic leaders across the country and around the world have been ramping up efforts to drive the clean energy advances needed to meet the goals of the agreement and put the brakes on dangerous climate change.

2.7.2 NATIONAL

Prior to the last decade, there have been no concrete federal regulations of GHGs or major planning for climate change adaptation. The following are actions regarding the federal government, GHGs, and fuel efficiency.

GHG ENDANGERMENT

In *Massachusetts v. Environmental Protection Agency* 549 U.S. 497 (2007), decided on April 2, 2007, the United States Supreme Court (Supreme Court) found that four GHGs, including CO_2, are air pollutants subject to regulation under Section 202(a)(1) of the Clean Air Act (CAA). The Supreme Court held that the EPA Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs— CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section

"Clean Vehicles" below. After a lengthy legal challenge, the Supreme Court declined to review an Appeals Court ruling that upheld the EPA Administrator's findings (31).

CLEAN VEHICLES

Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the U.S. On April 1, 2010, the EPA, and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the U.S.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty (MD) passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon (mpg) if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the NHTSA issued final rules on a second-phase joint rulemaking establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012. The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and MD passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO_2 in model year 2025, which is equivalent to 54.5 mpg if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks (HDT) and buses on September 15, 2011, effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20% reduction in CO_2 emissions and fuel consumption by the 2018 model year. For HDT and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10% reduction for gasoline vehicles and a 15% reduction for diesel vehicles by the 2018 model year (12 and 17% respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10% reduction in fuel consumption and CO_2 emissions from the 2014 to 2018 model years.

On April 2, 2018, the EPA signed the Mid-term Evaluation Final Determination, which declared that the MY 2022-2025 GHG standards are not appropriate and should be revised (32). This Final Determination serves to initiate a notice to further consider appropriate standards for MY 2022-2025 light-duty vehicles. On August 2, 2018, the NHTSA in conjunction with the EPA, released a notice of proposed rulemaking, the *Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks* (SAFE Vehicles Rule). The SAFE Vehicles Rule was proposed to amend existing Corporate Average Fuel Economy (CAFE) and tailpipe CO_2

standards for passenger cars and light trucks and to establish new standards covering model years 2021 through 2026. As of March 31, 2020, the NHTSA and EPA finalized the SAFE Vehicle Rule which increased stringency of CAFE and CO_2 emissions standards by 1.5% each year through model year 2026 (33). On December 21, 2021, after reviewing all the public comments submitted on NHTSA's April 2021 Notice of Proposed Rulemaking, NHTSA finalizes the CAFE Preemption rulemaking to withdraw its portions of the so-called SAFE I Rule. The final rule concludes that the SAFE I Rule overstepped the agency's legal authority and established overly broad prohibitions that did not account for a variety of important state and local interests. The final rule ensures that the SAFE I Rule will no longer form an improper barrier to states exploring creative solutions to address their local communities' environmental and public health challenges (34).

On March 31, 2022, NHTSA finalized CAFE standards for MY 2024-2026. The standards for passenger cars and light trucks for MYs 2024-2025 were increased at a rate of 8% per year and then increased at a rate of 10% per year for MY 2026 vehicles. NHTSA currently projects that the revised standards would require an industry fleet-wide average of roughly 49 mpg in MY 2026 and would reduce average fuel outlays over the lifetimes of affected vehicles that provide consumers hundreds of dollars in net savings. These standards are directly responsive to the agency's statutory mandate to improve energy conservation and reduce the nation's energy dependence on foreign sources (35).

MANDATORY REPORTING OF GHGS

The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of GHGs Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S. and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons per year (MT/yr) or more of GHG emissions are required to submit annual reports to the EPA.

NEW SOURCE REVIEW

The EPA issued a final rule on May 13, 2010, that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these CAA permitting programs to limit which facilities would be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the Federal Code of Regulations, the EPA states:

> *"This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the CAA, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the*

> *applicability of these programs to GHG sources, starting with the largest GHG emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for GHG emissions until at least April 30, 2016."*

The EPA estimates that facilities responsible for nearly 70% of the national GHG emissions from stationary sources would be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

STANDARDS OF PERFORMANCE FOR GHG EMISSIONS FOR NEW STATIONARY SOURCES: ELECTRIC UTILITY GENERATING UNITS

As required by a settlement agreement, the EPA proposed new performance standards for emissions of CO_2 for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts (MW) would be required to meet an output-based standard of 1,000 pounds (lbs) of CO_2 per MW-hour (MWh), based on the performance of widely used natural gas combined cycle technology. It should be noted that on February 9, 2016, the Supreme Court issued a stay of this regulation pending litigation. Additionally, the current EPA Administrator has also signed a measure to repeal the Clean Power Plan, including the CO_2 standards. The Clean Power Plan was officially repealed on June 19, 2019, when the EPA issued the final Affordable Clean Energy rule (ACE). Under ACE, new state-specific emission guidelines were established that provided existing coal-fired electric utility generating units with achievable standards.

On January 19, 2021, the D.C. Circuit Court of Appeals ruled that the EPA's ACE Rule for GHG emissions from power plants rested on an erroneous interpretation of the CAA that barred EPA from considering measures beyond those that apply at and to an individual source. The court therefore vacated and remanded the ACE Rule and adopted a replacement rule which regulates CO_2 emissions from existing power plants, potentially again considering generation shifting and other measures to more aggressively target power sector emissions.

CAP-AND-TRADE

Cap-and-trade refers to a policy tool where emissions are limited to a certain amount and can be traded or provides flexibility on how the emitter can comply. Successful examples in the U.S. include the Acid Rain Program and the N_2O Budget Trading Program and Clean Air Interstate Rule in the northeast. There is no federal GHG cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap-and-trade.

The Regional GHG Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps CO_2 emissions from power plants, auctions CO_2 emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008 and in 2020 has retained all participating states.

The Western Climate Initiative (WCI) partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15% below 2005 levels by 2020. The partners were originally California, British Columbia, Manitoba, Ontario, and Quebec. However, Manitoba and Ontario are not currently participating. California linked with Quebec's cap-and-trade system January 1, 2014, and joint offset auctions took place in 2015. While the WCI has yet to publish whether it has successfully reached the 2020 emissions goal initiative set in 2007, SB 32 requires that California, a major partner in the WCI, adopt the goal of reducing statewide GHG emissions to 40% below the 1990 level by 2030.

SMARTWAY PROGRAM

The SmartWay Program is a public-private initiative between the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies. Its purpose is to improve fuel efficiency and the environmental performance (reduction of both GHG emissions and air pollution) of the goods movement supply chains. SmartWay is comprised of four components (36):

1. SmartWay Transport Partnership: A partnership in which freight carriers and shippers commit to benchmark operations, track fuel consumption, and improve performance annually.
2. SmartWay Technology Program: A testing, verification, and designation program to help freight companies identify equipment, technologies, and strategies that save fuel and lower emissions.
3. SmartWay Vehicles: A program that ranks light-duty cars and small trucks and identifies superior environmental performers with the SmartWay logo.
4. SmartWay International Interests: Guidance and resources for countries seeking to develop freight sustainability programs modeled after SmartWay.

SmartWay effectively refers to requirements geared towards reducing fuel consumption. Most large trucking fleets driving newer vehicles are compliant with SmartWay design requirements. Moreover, over time, all HDTs would have to comply with the CARB GHG Regulation that is designed with the SmartWay Program in mind, to reduce GHG emissions by making them more fuel-efficient. For instance, in 2015, 53 foot or longer dry vans or refrigerated trailers equipped with a combination of SmartWay-verified low-rolling resistance tires and SmartWay-verified aerodynamic devices would obtain a total of 10% or more fuel savings over traditional trailers.

Through the SmartWay Technology Program, the EPA has evaluated the fuel saving benefits of various devices through grants, cooperative agreements, emissions, and fuel economy testing, demonstration projects and technical literature review. As a result, the EPA has determined the following types of technologies provide fuel saving and/or emission reducing benefits when used properly in their designed applications, and has verified certain products:

- Idle reduction technologies – less idling of the engine when it is not needed would reduce fuel consumption.
- Aerodynamic technologies minimize drag and improve airflow over the entire tractor-trailer vehicle. Aerodynamic technologies include gap fairings that reduce turbulence between the tractor and trailer, side skirts that minimize wind under the trailer, and rear fairings that reduce turbulence and pressure drop at the rear of the trailer.

- Low rolling resistance tires can roll longer without slowing down, thereby reducing the amount of fuel used. Rolling resistance (or rolling friction or rolling drag) is the force resisting the motion when a tire rolls on a surface. The wheel would eventually slow down because of this resistance.
- Retrofit technologies include things such as diesel particulate filters, emissions upgrades (to a higher tier), etc., which would reduce emissions.
- Federal excise tax exemptions.

EXECUTIVE ORDER 13990

On January 20, 2021, Federal agencies were directed to immediately review, and take action to address, Federal regulations promulgated and other actions taken during the last 4 years that conflict with national objectives to improve public health and the environment; ensure access to clean air and water; limit exposure to dangerous chemicals and pesticides; hold polluters accountable, including those who disproportionately harm communities of color and low-income communities; reduce GHG emissions; bolster resilience to the impacts of climate change; restore and expand our national treasures and monuments; and prioritize both environmental justice and employment.

2.7.3 CALIFORNIA

2.7.3.1 LEGISLATIVE ACTIONS TO REDUCE GHGS

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark AB 32 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

AB 1881

The Water Conservation in Landscaping Act of 2006 requires local agencies to adopt the updated DWR model ordinance or equivalent. AB 1881 also requires the CEC to consult with the DWR to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

SB 1368

California SB 1368 adds Sections 8340 and 8341 to the Public Utilities Code (effective January 1, 2007) with the intent "to prevent long-term investments in power plants with GHG emissions in excess of those produced by a combined-cycle natural gas power plant" with the aim of "reducing emissions of GHGs from the state's electricity consumption, not just the state's electricity production." SB 1368 provides a mechanism for reducing the GHG emissions of electricity providers, both in-state and out-of-state, thereby assisting CARB in meeting its mandate under AB 32, the Global Warming Solutions Act of 2006.

AB 32

The California State Legislature enacted AB 32, which required that GHGs emitted in California be reduced to 1990 levels by the year 2020 (this goal has been met[3]). GHGs as defined under AB 32 include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. Since AB 32 was enacted, a seventh chemical, NF_3, has also been added to the list of GHGs. CARB is the state agency charged with monitoring and regulating sources of GHGs. Pursuant to AB 32, CARB adopted regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 states the following:

> *"Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems."*

SB 375

On September 30, 2008, SB 375 was signed by Governor Schwarzenegger. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40% of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California would not be able to achieve the goals of AB 32." SB 375 does the following: it (1) requires metropolitan planning organizations (MPOs) to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

SB 375 requires MPOs to prepare a Sustainable Communities Strategy (SCS) within the Regional Transportation Plan (RTP) that guides growth while taking into account the transportation, housing, environmental, and economic needs of the region. SB 375 uses CEQA streamlining as an incentive to encourage residential projects, which help achieve AB 32 goals to reduce GHG emissions. Although SB 375 does not prevent CARB from adopting additional regulations, such actions are not anticipated in the foreseeable future.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28, states that CEQA findings for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts, or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network, if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that CARB accepts as achieving the GHG emission reduction targets.

[3] Based upon the 2019 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2017 GHG emissions period, California emitted an average 424.1 $MMTCO_2e$ (56). This is less than the 2020 emissions target of 431 $MMTCO_2e$.

2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the MMs required by an applicable prior environmental document.

AB 1493 - Pavley Fuel Efficiency Standards

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program (LEV III) or the Advanced Clean Cars (ACC) program. The ACC program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for MY 2017 through 2025. The regulation will reduce GHGs from new cars by 34% from 2016 levels by 2025. The new rules will clean up gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid EV and hydrogen fuel cell cars. The package will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California. On March 9, EPA reinstated California's authority under the Clean Air Act to implement its own GHG emission standards for cars and light trucks, which other states can also adopt and enforce. With this authority restored, EPA will continue partnering with states to advance the next generation of clean vehicle technologies.

CLEAN ENERGY AND POLLUTION REDUCTION ACT OF 2015 (SB 350)

In October 2015, the legislature approved, and Governor Jerry Brown signed SB 350, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for EV charging stations. Provisions for a 50% reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33% to 50% by 2030, with interim targets of 40% by 2024, and 25% by 2027.
- Double the energy efficiency in existing buildings by 2030. This target would be achieved through the California Public Utilities Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which would facilitate the growth of renewable energy markets in the western United States.

SB 32

On September 8, 2016, Governor Brown signed SB 32 and its companion bill, AB 197. SB 32 requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15. The new legislation builds upon the AB 32 goal and provides an intermediate goal to achieving S-3-05, which sets a statewide GHG reduction target of 80% below 1990 levels by 2050. AB 197 creates a legislative committee to oversee regulators to ensure that CARB not only responds to the Governor, but also the Legislature (10).

2017 CARB SCOPING PLAN

In November 2017, CARB released the *Final 2017 Scoping Plan Update* (*2017 Scoping Plan*), which identifies the State's post-2020 reduction strategy. The *2017 Scoping Plan* reflects the 2030 target of a 40% reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. Key programs that the proposed Second Update builds upon include the Cap-and-Trade Regulation, the LCFS, and much cleaner cars, trucks, and freight movement, utilizing cleaner, renewable energy, and strategies to reduce CH_4 emissions from agricultural and other wastes.

The *2017 Scoping Plan* establishes a new emissions limit of 260 $MMTCO_2e$ for the year 2030, which corresponds to a 40% decrease in 1990 levels by 2030 (37).

California's climate strategy would require contributions from all sectors of the economy, including the land base, and would include enhanced focus on zero and near-zero emission (ZE/NZE) vehicle technologies; continued investment in renewables, including solar roofs, wind, and other distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (CH_4, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for direct GHG reductions at refineries would further support air quality co-benefits in neighborhoods, including in disadvantaged communities historically located adjacent to these large stationary sources, as well as efforts with California's local air pollution control and air quality management districts (air districts) to tighten emission limits on a broad spectrum of industrial sources. Major elements of the *2017 Scoping Plan* framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero-emission vehicles (ZEV) buses and trucks.
- LCFS, with an increased stringency (18% by 2030).
- Implementing SB 350, which expands the RPS to 50% RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing CH_4 and HCF emissions by 40% and anthropogenic black carbon emissions by 50% by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20% reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Note, however, that the *2017 Scoping Plan* acknowledges that:

> *"[a]chieving net zero increases in GHG emissions, resulting in no contribution to GHG impacts, may not be feasible or appropriate for every project, however, and the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA."*

In addition to the statewide strategies listed above, the *2017 Scoping Plan* also identifies local governments as essential partners in achieving the State's long-term GHG reduction goals and identifies local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends that local governments achieve a community-wide goal to achieve emissions of no more than 6 metric tons of CO_2e ($MTCO_2e$) or less per capita by 2030 and 2 $MTCO_2e$ or less per capita by 2050. For CEQA projects, CARB states that lead agencies may develop evidence-based bright-line numeric thresholds—consistent with the *2017 Scoping Plan* and the State's long-term GHG goals—and projects with emissions over that amount may be required to incorporate on-site design features and MMs that avoid or minimize project emissions to the degree feasible; or a performance-based metric using a CAP or other plan to reduce GHG emissions is appropriate.

According to research conducted by the Lawrence Berkeley National Laboratory (LBNL) and supported by CARB, California, under its existing and proposed GHG reduction policies, could achieve the 2030 goals under SB 32. The research utilized a new, validated model known as the California LBNL GHG Analysis of Policies Spreadsheet (CALGAPS), which simulates GHG and criteria pollutant emissions in California from 2010 to 2050 in accordance to existing and future GHG-reducing policies. The CALGAPS model showed that by 2030, emissions could range from 211 to 428 $MTCO_2e$ per year ($MTCO_2e$/yr), indicating that "even if all modeled policies are not implemented, reductions could be sufficient to reduce emissions 40% below the 1990 level [of SB 32]." CALGAPS analyzed emissions through 2050 even though it did not generally account for policies that might be put in place after 2030. Although the research indicated that the emissions would not meet the State's 80% reduction goal by 2050, various combinations of policies could allow California's cumulative emissions to remain very low through 2050 (38) (39).

2022 CARB SCOPING PLAN

On December 15, 2022, CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) (40). The 2022 Scoping Plan builds on the 2017 Scoping Plan as well as the requirements set forth by AB 1279, which directs the state to become carbon neutral no later than 2045. To achieve this statutory objective, the 2022 Scoping Plan lays out how California can reduce GHG emissions by 85% below 1990 levels and achieve carbon neutrality by 2045. The Scoping Plan scenario to do this is to "deploy a broad portfolio of existing and emerging fossil fuel alternatives and clean technologies, and align with statutes, Executive Orders, Board direction, and direction from the governor." The 2022 Scoping Plan sets one of the most aggressive approaches to reach carbon neutrality in the world. Unlike the 2017 Scoping Plan, CARB no longer includes a numeric per capita threshold and instead advocates for compliance with a local GHG reduction strategy (CAP) consistent with CEQA Guidelines section 15183.5.

The key elements of the 2022 CARB Scoping Plan focus on transportation - the regulations that will impact this sector are adopted and enforced by CARB on vehicle manufacturers and outside the jurisdiction and control of local governments. As stated in the Plan's executive summary:

> "The major element of this unprecedented transformation is the aggressive reduction of fossil fuels wherever they are currently used in California, building on and accelerating carbon reduction programs that have been in place for a decade and a half. That means rapidly moving to zero-emission transportation; electrifying the cars, buses, trains, and trucks that now constitute California's single largest source of planet-warming pollution."
>
> "[A]pproval of this plan catalyzes a number of efforts, including the development of new regulations as well as amendments to strengthen regulations and programs already in place, not just at CARB but across state agencies."

Under the 2022 Scoping Plan, the State will lead efforts to meet the 2045 carbon neutrality goal through implementation of the following objectives:

- Reimagine roadway projects that increase VMT in a way that meets community needs and reduces the need to drive.
- Double local transit capacity and service frequencies by 2030.
- Complete the High-Speed Rail (HSR) System and other elements of the intercity rail network by 2040.
- Expand and complete planned networks of high-quality active transportation infrastructure.
- Increase availability and affordability of bikes, e-bikes, scooters, and other alternatives to light-duty vehicles, prioritizing needs of underserved communities.
- Shift revenue generation for transportation projects away from the gas tax into more durable sources by 2030.
- Authorize and implement roadway pricing strategies and reallocate revenues to equitably improve transit, bicycling, and other sustainable transportation choices.
- Prioritize addressing key transit bottlenecks and other infrastructure investments to improve transit operational efficiency over investments that increase VMT.
- Develop and implement a statewide transportation demand management (TDM) framework with VMT mitigation requirements for large employers and large developments.
- Prevent uncontrolled growth of autonomous vehicle (AV) VMT, particularly zero-passenger miles.
- Channel new mobility services towards pooled use models, transit complementarity, and lower VMT outcomes.
- Establish an integrated statewide system for trip planning, booking, payment, and user accounts that enables efficient and equitable multimodal systems.
- Provide financial support for low-income and disadvantaged Californians' use of transit and new mobility services.
- Expand universal design features for new mobility services.
- Accelerate infill development in existing transportation-efficient places and deploy strategic resources to create more transportation-efficient locations.

- Encourage alignment in land use, housing, transportation, and conservation planning in adopted regional plans (RTP/SCS and RHNA) and local plans (e.g., general plans, zoning, and local transportation plans).
- Accelerate production of affordable housing in forms and locations that reduce VMT and affirmatively further fair housing policy objectives.
- Reduce or eliminate parking requirements (and/or enact parking maximums, as appropriate) and promote redevelopment of excess parking, especially in infill locations.
- Preserve and protect existing affordable housing stock and protect existing residents and businesses from displacement and climate risk.

Included in the 2022 Scoping Plan is a set of Local Actions (Appendix D to the 2022 Scoping Plan) aimed at providing local jurisdictions with tools to reduce GHGs and assist the state in meeting the ambitious targets set forth in the 2022 Scoping Plan. Appendix D to the 2022 Scoping Plan includes a section on evaluating plan-level and project-level alignment with the State's Climate Goals in CEQA GHG analyses. In this section, CARB identifies several recommendations and strategies that should be considered for new development in order to determine consistency with the 2022 Scoping Plan. Notably, this section is focused on Residential and Mixed-Use Projects, in fact CARB states in Appendix D (page 4): "…focuses primarily on climate action plans (CAPs) and local authority over new residential development. It does not address other land use types (e.g., industrial) or air permitting."

Additionally on Page 21 in Appendix D, CARB states: "The recommendations outlined in this section apply only to residential and mixed-use development project types. California currently faces both a housing crisis and a climate crisis, which necessitates prioritizing recommendations for residential projects to address the housing crisis in a manner that simultaneously supports the State's GHG and regional air quality goals. CARB plans to continue to explore new approaches for other land use types in the future." As such, it would be inappropriate to apply the requirements contained in Appendix D of the 2022 Scoping Plan to any land use types other than residential or mixed-use residential development.

CAP-AND-TRADE PROGRAM

The *2022 Scoping Plan* identifies a Cap-and-Trade Program as one of the key strategies for California to reduce GHG emissions. According to CARB, a cap-and-trade program would help put California on the path to meet its goal of achieving a 40% reduction in GHG emissions from 1990 levels by 2030. Under cap-and-trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap would be able to trade permits to emit GHGs within the overall limit.

CARB adopted a California Cap-and-Trade Program pursuant to its authority under AB 32. The Cap-and-Trade Program is designed to reduce GHG emissions from regulated entities by more than 16% between 2013 and 2020, and by an additional 40% by 2030. The statewide cap for GHG emissions from the capped sectors (e.g., electricity generation, petroleum refining, and cement production) commenced in 2013 and would decline over time, achieving GHG emission reductions throughout the program's duration.

Covered entities that emit more than 25,000 $MTCO_2e$/yr must comply with the Cap-and-Trade Program. Triggering of the 25,000 $MTCO_2e$/yr "inclusion threshold" is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of GHG Emissions (Mandatory Reporting Rule or "MRR").

Under the Cap-and-Trade Program, CARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits. Each covered entity with a compliance obligation is required to surrender "compliance instruments" for each $MTCO_2e$ of GHG they emit. There also are requirements to surrender compliance instruments covering 30% of the prior year's compliance obligation by November of each year (41).

The Cap-and-Trade Program provides a firm cap, which provides the highest certainty of achieving the 2030 target. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are only guaranteed on an accumulative basis. As summarized by CARB in the *First Update to the Climate Change Scoping Plan*:

> *"The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative."* (42)

The Cap-and-Trade Program covers approximately 80% of California's GHG emissions (37). The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period. The Cap-and-Trade Program covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in-state or imported.

2.7.3.2 EXECUTIVE ORDERS RELATED TO GHG EMISSIONS

California's Executive Branch has taken several actions to reduce GHGs through the use of Executive Orders. Although not regulatory, they set the tone for the state and guide the actions of state agencies.

EXECUTIVE ORDER S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that would stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

EXECUTIVE ORDER S-01-07 (LCFS)

Governor Schwarzenegger signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020. CARB adopted the LCFS on April 23, 2009.

After a series of legal changes, in order to address the Court ruling, CARB was required to bring a new LCFS regulation to the Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon intensity fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. On November 16, 2015, the Office of Administrative Law (OAL) approved the Final Rulemaking Package. The new LCFS regulation became effective on January 1, 2016.

In 2018, CARB approved amendments to the regulation, which included strengthening the carbon intensity benchmarks through 2030 in compliance with the SB 32 GHG emissions reduction target for 2030. The amendments included crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector (43).

EXECUTIVE ORDER S-13-08

Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the Order, the *2009 California Climate Adaptation Strategy* (*CNRA 2009*) was adopted, which is the "…first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying, and exploring strategies to adapt to climate change, and specifying a direction for future research.

EXECUTIVE ORDER B-30-15

On April 29, 2015, Governor Brown issued an executive order to establish a California GHG reduction target of 40% below 1990 levels by 2030. The Governor's executive order aligned

California's GHG reduction targets with those of leading international governments ahead of the U.N. Climate Change Conference in Paris late 2015. The Order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40% below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050 and directs CARB to update the *2017 Scoping Plan* to express the 2030 target in terms of $MMTCO_2e$. The Order also requires the state's climate adaptation plan to be updated every three years, and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this Order is not legally enforceable as to local governments and the private sector. Legislation that would update AB 32 to make post 2020 targets and requirements a mandate is in process in the State Legislature.

EXECUTIVE ORDER B-55-18 AND SB 100

SB 100 and Executive Order B-55-18 were signed by Governor Brown on September 10, 2018. Under the existing RPS, 25% of retail sales of electricity are required to be from renewable sources by December 31, 2016, 33% by December 31, 2020, 40% by December 31, 2024, 45% by December 31, 2027, and 50% by December 31, 2030. SB 100 raises California's RPS requirement to 50% renewable resources target by December 31, 2026, and to achieve a 60% target by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours (kWh) of those products sold to their retail end-use customers achieve 44% of retail sales by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030. In addition to targets under AB 32 and SB 32, Executive Order B-55-18 establishes a carbon neutrality goal for the state of California by 2045; and sets a goal to maintain net negative emissions thereafter. The Executive Order directs the California Natural Resources Agency (CNRA), California EPA (CalEPA), the California Department of Food and Agriculture (CDFA), and CARB to include sequestration targets in the Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal.

2.7.3.3 CALIFORNIA REGULATIONS AND BUILDING CODES

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

TITLE 20 CCR SECTIONS 1601 ET SEQ. – APPLIANCE EFFICIENCY REGULATIONS

The Appliance Efficiency Regulations regulate the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. 23 categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles (RV) or other mobile equipment (CEC 2012).

TITLE 24 CCR PART 6 – CALIFORNIA ENERGY CODE

The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods.

TITLE 24 CCR PART 11 – CALIFORNIA GREEN BUILDING STANDARDS CODE

California Code of Regulations (CCR) Title 24 Part 6: The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on August 1, 2009, and is administered by the California Building Standards Commission.

CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2022 California Green Building Code Standards that became effective on January 1, 2023. The CEC anticipates that the 2022 energy code will provide $1.5 billion in consumer benefits and reduce GHG emissions by 10 million metric tons (44). The Project would be required to comply with the applicable standards in place at the time plan check submittals are made. These require, among other items (45):

NONRESIDENTIAL MANDATORY MEASURES

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking for clean air vehicles. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- EV charging stations. New construction shall facilitate the future installation of EV supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. The number of spaces to be provided for is contained in Table 5.106. 5.3.3 (5.106.5.3). Additionally, Table 5.106.5.4.1 specifies requirements for the installation of raceway conduit and panel power requirements for medium- and heavy-duty electric vehicle supply equipment for warehouses, grocery stores, and retail stores.
- Outdoor light pollution reduction. Outdoor lighting systems shall be designed to meet the backlight, uplight and glare ratings per Table 5.106.8 (5.106.8).

- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1. 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reuse or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
    - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
    - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor- mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
    - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
    - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor potable water uses in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent (5.304.1).
- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gallons per day (GPD) (5.303.1.1 and 5.303.1.2).
- Outdoor water uses in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).

- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

CARB REFRIGERANT MANAGEMENT PROGRAM

CARB adopted a regulation in 2009 to reduce refrigerant GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal. The regulation is set forth in sections 95380 to 95398 of Title 17, CCR. The rules implementing the regulation establish a limit on statewide GHG emissions from stationary facilities with refrigeration systems with more than 50 pounds of a high GWP refrigerant. The refrigerant management program is designed to (1) reduce emissions of high-GWP GHG refrigerants from leaky stationary, non-residential refrigeration equipment; (2) reduce emissions from the installation and servicing of refrigeration and air-conditioning appliances using high-GWP refrigerants; and (3) verify GHG emission reductions.

TRACTOR-TRAILER GHG REGULATION

The tractors and trailers subject to this regulation must either use EPA SmartWay certified tractors and trailers or retrofit their existing fleet with SmartWay verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the HD tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low rolling resistance tires. Sleeper cab tractors MY 2011 and later must be SmartWay certified. All other tractors must use SmartWay verified low rolling resistance tires. There are also requirements for trailers to have low rolling resistance tires and aerodynamic devices.

PHASE I AND 2 HEAVY-DUTY VEHICLE GHG STANDARDS

In September 2011, CARB has adopted a regulation for GHG emissions from HDTs and engines sold in California. It establishes GHG emission limits on truck and engine manufacturers and harmonizes with the EPA rule for new trucks and engines nationally. Existing HD vehicle regulations in California include engine criteria emission standards, tractor-trailer GHG requirements to implement SmartWay strategies (i.e., the Heavy-Duty Tractor-Trailer GHG Regulation), and in-use fleet retrofit requirements such as the Truck and Bus Regulation. The EPA rule has compliance requirements for new compression and spark ignition engines, as well as trucks from Class 2b through Class 8. Compliance requirements began with MY 2014 with stringency levels increasing through MY 2018. The rule organizes truck compliance into three groupings, which include a) HD pickups and vans; b) vocational vehicles; and c) combination tractors. The EPA rule does not regulate trailers.

CARB staff has worked jointly with the EPA and the NHTSA on the next phase of federal GHG emission standards for medium-duty trucks (MDT) and HDT vehicles, called federal Phase 2. The federal Phase 2 standards were built on the improvements in engine and vehicle efficiency required by the Phase 1 emission standards and represent a significant opportunity to achieve

further GHG reductions for 2018 and later MY HDT vehicles, including trailers. The EPA and NHTSA have proposed to roll back GHG and fuel economy standards for cars and light-duty trucks, which suggests a similar rollback of Phase 2 standards for MDT and HDT vehicles may be pursued.

SB 97 AND THE CEQA GUIDELINES UPDATE

Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states "(a) On or before July 1, 2009, the Office of Planning and Research (OPR) shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the OPR pursuant to subdivision (a)."

In 2012, Public Resources Code Section 21083.05 was amended to state:

> *"The Office of Planning and Research and the Natural Resources Agency shall periodically update the guidelines for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption, to incorporate new information or criteria established by the State Air Resources Board pursuant to Division 25.5 (commencing with Section 38500) of the Health and Safety Code."*

On December 28, 2018, the Natural Resources Agency announced the OAL approved the amendments to the *CEQA Guidelines* for implementing CEQA. The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing *CEQA Guidelines* to reference climate change.

Section 15064.4 was added the *CEQA Guidelines* and states that in determining the significance of a project's GHG emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively insignificant compared to statewide, national, or global emissions. The agency's analysis should consider a timeframe that is appropriate for the project. The agency's analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes. Additionally, a lead agency may use a model or methodology to estimate GHG emissions resulting from a project. The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change. The lead agency must support its selection of a model or methodology with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use (46).

2.7.4 REGIONAL

The project is within the SCAB, which is under the jurisdiction of the SCAQMD.

SCAQMD

SCAQMD is the agency responsible for air quality planning and regulation in the SCAB. The SCAQMD addresses the impacts to climate change of projects subject to SCAQMD permit as a lead agency if they are the only agency having discretionary approval for the project and acts as a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

In 2008, SCAQMD formed a Working Group to identify GHG emissions thresholds for land use projects that could be used by local lead agencies in the SCAB. The Working Group developed several different options that are contained in the SCAQMD Draft Guidance Document – Interim CEQA GHG Significance Threshold, which could be applied by lead agencies. The working group has not provided additional guidance since release of the interim guidance in 2008. The SCAQMD Board has not approved the thresholds; however, the Guidance Document provides substantial evidence supporting the approaches to significance of GHG emissions that can be considered by the lead agency in adopting its own threshold. The current interim thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
    - Residential and commercial land use: 3,000 $MTCO_2e$/yr
    - Industrial land use: 10,000 $MTCO_2e$/yr
    - Based on land use type: residential: 3,500 $MTCO_2e$/yr; commercial: 1,400 $MTCO_2e$/yr; or mixed use: 3,000 $MTCO_2e$/yr
- Tier 4 has the following options:
    - Option 1: Reduce Business-as-Usual (BAU) emissions by a certain percentage; this percentage is currently undefined.
    - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
    - Option 3: 2020 target for service populations (SP), which includes residents and employees: 4.8 $MTCO_2e$ per SP per year for projects and 6.6 $MTCO_2e$ per SP per year for plans;
    - Option 3, 2035 target: 3.0 $MTCO_2e$ per SP per year for projects and 4.1 $MTCO_2e$ per SP per year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's interim thresholds used the Executive Order S-3-05-year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap CO_2 concentrations at 450 ppm, thus stabilizing global climate.

SCAQMD only has authority over GHG emissions from development projects that include air quality permits. At this time, it is unknown if the project would include stationary sources of emissions subject to SCAQMD permits. Notwithstanding, if the Project requires a stationary permit, it would be subject to the applicable SCAQMD regulations.

SCAQMD Regulation XXVII, adopted in 2009 includes the following rules:

- Rule 2700 defines terms and post global warming potentials.
- Rule 2701, SoCal Climate Solutions Exchange, establishes a voluntary program to encourage, quantify, and certify voluntary, high quality certified GHG emission reductions in the SCAQMD.
- Rule 2702, GHG Reduction Program created a program to produce GHG emission reductions within the SCAQMD. The SCAQMD would fund projects through contracts in response to requests for proposals or purchase reductions from other parties.
- Rule 2305, Warehouse Indirect Source Rule, which includes the Warehouse Actions and Investments to Reduce Emissions Program (WAIRE), and Rule 316. Rule 2305 establishes for the first time a regulatory program designed to reduce air pollution (and indirect GHG emissions) caused by warehouse-related activities and is focused on emissions from vehicles that service large warehouses. Rule 316 establishes a fee system to support the Rule 2305 program on an ongoing basis. Rules 2305 and 316 apply to operators and owners of existing and new warehouses with floor space greater than or equal to 100,000-sf within a single building (i.e., large warehouses). Rules 2305 and 316 require such operators and owners to annually take actions with respect to their warehouses that either reduce emissions regionally and locally or facilitate emission reductions. Specifically, owners and operators must "earn" a specific number of WAIRE Points. However, warehouse owners are only required to earn WAIRE Points if they are also a warehouse operator. If a warehouse owner is not an operator, they are not required to earn WAIRE Points even if the operator in their warehouse does not earn the required number of WAIRE Points. Warehouse owners are only required to submit a Warehouse Operations Notification to the SCAQMD.

  The number of WAIRE Points required for a specific operator is based on the intensity of operations (i.e., number of truck trips and type of trucks) at each of their warehouses every year. The required points are known as the WAIRE Points Compliance Obligation (WPCO). The WPCO is calculated based on a 12-month survey of truck trips entering or exiting the site, the truck data is weighted based on the types of trucks, and activity is projected for the next year. Thus, the WAIRE Points pay for the prior year's emissions based on points earned in subsequent years.

  WAIRE Points are earned by implementing a menu of items including purchasing/renting/leasing near-zero (NZE) and zero emission (ZE) yard equipment and/or trucks, installing on-site ZE fueling stations, and proving on-site solar PV systems that are intended to offset or reduce warehouse emissions. Owners and operators may also implement custom WAIRE plans for individual facilities, subject to SCAQMD approval; or pay mitigation fees to have the SCAQMD implement measures within the SCAB. Owners

and operators that over-comply may transfer excess WAIRE Points earned in one year to a subsequent year or may transfer WAIRE points to another site within their control. WAIRE Points cannot be transferred to other operators and expire after 3 years. Rule 2305 also requires reporting information about facility operations and recordkeeping. Rule 316 is the companion rule to Rule 2305 and establishes the administrative fees that Rule 2305 warehouse owners and operators must pay to support SCAQMD compliance activities.

While the Project proponent may be defined as a warehouse owner and would submit a Warehouse Operation Notice(s), as required, the Project proponent does not intend to be the warehouse operator and has no knowledge of the future operations. Thus, the specific information required by Rule 2305 for calculating the WPCO is unavailable, and the necessary number of points is unknown. Finally, the WAIRE points expire after 3 years and are based on actions of future operators and are thus temporary and could not be calculated. Therefore, even though the WAIRE program will reduce emissions for warehouse activities in the region, no emission reductions from the WAIRE Program can be calculated for this analysis.

2.7.5 LOCAL

COUNTY OF RIVERSIDE CAP

The County of Riverside adopted the 2019 CAP Update on December 17, 2019. The 2019 CAP Update considers the previous GHG reduction targets identified in the 2015 CAP and refines the County's efforts to meet GHG reduction strategies in 2035 and 2050 and proposes new targets that are consistent with updates in State climate change regulations in order to meet the requirements of SB 32.

The 2019 CAP Update establishes a framework under which future projects would be designed for the purposes of reducing GHG emissions. Although the 2019 CAP Update is designed as a stand-alone GHG policy document, it would be utilized to provide a more comprehensive and detailed framework for land-based policy decisions to reduce GHG emissions from existing and future development. Any future projects proposed pursuant to the 2019 CAP Update would be developed in accordance with General Plan Policies for energy conservation while maximizing efficient use of resources, maintaining a high quality of life, enhancing job opportunities, promoting sustainability, and facilitating access to transportation facilities.

The 2019 CAP Update includes an update to the County's GHG inventory for the year 2017 and sets a target to reduce communitywide GHG emissions by 16.3% by 2030. GHG reduction measures prescribed in the 2019 CAP Update build upon those adopted under the County's 2015 CAP to ensure that the County meets the reduction targets established pursuant to SB 32.

The CAP Update provides a flexible way of demonstrating GHG reductions consistent with the CAP through the use of screening tables. The screening tables included in the CAP Update provide a menu of options for energy efficiency, renewable energy, water conservation measures, and additional measures that provide predictable GHG reductions. Each option within the screening tables includes point values based upon the GHG reduction that each measure can achieve relative to a development project. Projects that achieve at least 100 points from the screening tables are determined to have provided a fair-share contribution of GHG reductions and, therefore, are considered consistent with the County of Riverside CAP Update.

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3 PROJECT GHG IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will result in a significant GHG impact. The significance of these potential impacts is described in the following sections.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related GHG impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to GHG if it would (47):

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

The evaluation of an impact under CEQA requires measuring data from a project against both existing conditions and a "threshold of significance." For establishing significance thresholds, the Office of Planning and Research's amendments to the CEQA Guidelines Section 15064.7(c) state "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

CEQA Guidelines Section 15064.4(a) further states, ". . . A lead agency shall have discretion to determine, in the context of a particular project, whether to: (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use . . .; or (2) Rely on a qualitative analysis or performance-based standards."

CEQA Guidelines Section 15064.4 provides that a lead agency should consider the following factors, among others, in assessing the significance of impacts from greenhouse gas emissions:

- **Consideration #1:** The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.
- **Consideration #2:** Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- **Consideration #3:** The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies

address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

3.2.1 Discussion on Establishment of Significance Thresholds

Pursuant to the County of Riverside CAP Update, the development review process procedures for evaluating and determining the significance of GHG impacts is streamlined by (1) applying an emissions level that is determined to be less than significant for small projects, and (2) utilizing Screening Tables to mitigate project GHG emissions that exceed the threshold level. Projects that have emissions below the screening threshold of 3,000 $MTCO_2e$/yr, that meet the energy efficiency requirements of Title 24, and that incorporate water conservation measures pursuant to the California Green Building Standards Code are considered less than significant and do not require the use of the CAP Update Screening Tables or alternative GHG mitigation analysis as specified by the CAP. A threshold level above 3,000 $MTCO_2e$/yr is used to identify projects that require the use of CAP Update Screening Tables or a project-specific technical analysis to quantify and mitigate project emissions. The CAP Screening Tables provide a menu of options for energy efficiency, renewable energy, water conservation measures, and additional measures that provide predictable GHG reductions. Each option within the screening tables includes point values based upon the GHG reduction that each measure can achieve relative to a development project. Projects that achieve at least 100 points from the screening tables are determined to have provided a fair-share contribution of GHG reductions and, therefore, are considered consistent with the County of Riverside CAP Update. Because the County of Riverside CAP Update addresses GHG emissions reductions and is consistent with the requirements of AB 32, SB 32, and international efforts to reduce GHG emissions, Projects that comply with the CAP Update would have a less-than-significant GHG impact.

3.3 Models Employed To Analyze GHGs

3.3.1 California Emissions Estimator Model (CalEEMod)

In May 2022 the California Air Pollution Control Officers Association (CAPCOA) in conjunction with other California air districts, including SCAQMD, released the latest version of CalEEMod Version 2022.1. The purpose of this model is to calculate construction-source and operational-source criteria pollutants and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (48). Accordingly, the latest version of CalEEMod has been used for this Project to determine GHG emissions. Output from the model runs for construction and operational activity are provided in Appendices 3.1 through 3.3. CalEEMod includes GHG emissions from the following source categories: construction, area, energy, mobile, waste, water and refrigerants.

3.4 Life-Cycle Analysis Not Required

A full life-cycle analysis (LCA) for construction and operational activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time (49). Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the Project development, infrastructure, and on-going

operations) depends on emission factors or econometric factors that are not well established for all processes. At this time, a LCA would be extremely speculative and thus has not been prepared.

Additionally, the SCAQMD recommends analyzing direct and indirect project GHG emissions generated within California and not life-cycle emissions because the life-cycle effects from a project could occur outside of California, might not be very well understood, or documented, and would be challenging to mitigate (50). Additionally, the science to calculate life cycle emissions is not yet established or well defined; therefore, SCAQMD has not recommended, and is not requiring, life-cycle emissions analysis.

3.5 CONSTRUCTION EMISSIONS

Project construction actvities would generate CO_2 and CH_4 emissions. The *Thrift Oil Warehouse Project Air Quality Impact Analysis* (AQIA) report contains detailed information regarding Project construction activities (51). As discussed in the AQIA, construction related emissions are expected from the following construction activities:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

3.5.1 CONSTRUCTION DURATION

For purposes of analysis, construction of Project is expected to commence in January 2025 and would last through February 2026. The construction schedule utilized in the analysis, shown in Table 3-1, represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent[4]. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per *CEQA Guidelines* (47).

3.5.2 CONSTRUCTION EQUIPMENT

Consistent with industry standards and typical construction practices, each piece of equipment listed in Table 3-2 would operate up to a total of eight (8) hours per day, or more than two-thirds of the period during which construction activities are allowed pursuant to the County Code. In accordance with the County of Riverside Good Neighbor Policy for Logistics and Warehouse/Distribution uses, it was assumed that equipment greater than 50 horsepower would meet at least CARB Tier 4 Interim emissions standards.

[4] As shown in the CalEEMod User's Guide Version 2022.1, Section 4.3 "Off-Road Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

TABLE 3-1: CONSTRUCTION DURATION

Construction Activity	Start Date	End Date	Working Days
Demolition	1/7/2025	2/4/2025	20
Site Preparation	2/5/2025	2/19/2025	10
Grading	2/20/2025	3/20/2025	20
Building Construction	3/21/2025	2/6/2026	230
Paving	1/10/2026	2/6/2026	20
Architectural Coating	1/10/2026	2/6/2026	20

TABLE 3-2: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Construction Activity	Equipment	Amount	Hours Per Day
Demolition	Rubber Tired Dozers	2	8
	Excavators	3	8
	Concrete/Industrial Saws	1	8
Site Preparation	Rubber Tired Dozers	3	8
	Crawler Tractors	4	8
Grading	Graders	1	8
	Excavators	1	8
	Rubber Tired Dozers	1	8
	Crawler Tractors	3	8
Building Construction	Forklifts	3	8
	Generator Sets	1	8
	Cranes	1	8
	Welders	1	8
	Tractors/Loaders/Backhoes	3	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8

3.5.3 CONSTRUCTION EMISSIONS SUMMARY

For construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total GHG emissions for the construction activities, dividing it by a 30-year Project life then adding that number to the annual operational phase GHG emissions (52). As such,

construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions. The amortized construction emissions are presented in Table 3-3.

TABLE 3-3: AMORTIZED ANNUAL CONSTRUCTION EMISSIONS

Year	Emissions (MT/yr)				
	CO_2	CH_4	N_2O	Refrigerants	Total CO_2e[5]
2025	741.67	0.02	0.06	0.48	759.27
2026	71.13	0.00	0.00	0.03	71.91
Total GHG Emissions	812.80	0.03	0.06	0.51	831.18
Amortized Construction Emissions	**27.09**	**8.77E-04**	**1.93E-03**	**0.02**	**27.71**

Source: CalEEMod annual construction-source emissions are presented in Appendix 3.1.

3.6 OPERATIONAL EMISSIONS

Operational activities associated with the Project would result in emissions of CO_2, CH_4, N_2O and R from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions
- On-Site Cargo Handling Equipment Emissions
- Stationary Source Emissions
- Water Supply, Treatment, and Distribution
- Solid Waste

3.6.1 AREA SOURCE EMISSIONS

LANDSCAPE MAINTENANCE EQUIPMENT

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. It should be noted that as October 9, 2021, Governor Gavin Newsom signed AB 1346. The bill aims to ban the sale of new gasoline-powered equipment under 25 gross horsepower (known as small off-road engines [SOREs]) by 2024. For purposes of analysis, the emissions associated with landscape maintenance equipment were calculated based on assumptions provided in CalEEMod.

[5] CalEEMod reports the most common GHGs emitted which include CO_2, CH_4, N_2O and R. These GHGs are then converted into the CO_2e by multiplying the individual GHG by the GWP.

3.6.2 ENERGY SOURCE EMISSIONS

COMBUSTION EMISSIONS ASSOCIATED WITH NATURAL GAS AND ELECTRICITY

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building; the building energy use emissions do not include street lighting[6]. Based on information provided by the Project applicant, the site is also not expected to utilize natural gas for the building envelope, and therefore would not generate any emissions from direct energy consumption. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions. Electricity usage associated with the Project was calculated based on CalEEMod defaults and includes 20% of the building user's electric power from renewable sources.

3.6.3 MOBILE SOURCE EMISSIONS

The Project related GHG emissions derive primarily from vehicle trips generated by the Project, including employee trips to and from the site and truck trips associated with the proposed uses. Trip characteristics available from the *Thrifty Oil Warehouse Project (PPT220047) Trip Generation Assessment* were utilized in this analysis (53).

PASSENGER VEHICLES

To determine emissions from passenger car vehicles, the CalEEMod defaults were utilized for trip length and trip purpose for the proposed industrial land use.

This analysis assumes that passenger cars include Light-Duty-Auto vehicles (LDA), Light-Duty-Trucks (LDT1[7] & LDT2[8]), Medium-Duty-Vehicles (MDV), and Motorcycles (MCY) vehicle types. In order to account for emissions generated by passenger cars, the fleet mix in Table 3-4 was utilized.

TABLE 3-4: PASSENGER CAR FLEET MIX

Land Use	% Vehicle Type				
	LDA	LDT1	LDT2	MDV	MCY
Warehousing	53.90%	4.13%	22.26%	17.20%	2.51%

Note: The Project-specific passenger car fleet mix used in this analysis is based on a proportional split utilizing the default CalEEMod percentages assigned to LDA, LDT1, LDT2, and MDV vehicle types.

[6] The CalEEMod emissions inventory model does not include indirect emission related to street lighting. Indirect emissions related to street lighting are expected to be negligible and cannot be accurately quantified at this time as there is insufficient information as to the number and type of street lighting that would occur.

[7] Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

[8] Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.

TRUCKS

To determine emissions from trucks for the proposed industrial uses, the analysis incorporated the SCAQMD recommended truck trip length of 15.3 miles for 2-axle (LHDT1, LHDT2), 14.2 miles for 3-axle (MHDT) trucks, and 39.9 miles for 4+-axle (HHDT) trucks and weighting the average trip lengths using traffic trip percentages. The trip length function for the proposed industrial building use has been calculated to 30.17 miles for warehousing and an assumption of 100% primary trips. This trip length assumption is higher than the CalEEMod defaults for trucks. In order to be consistent with the *Thrifty Oil Warehouse Project (PAR220087) Traffic Study Scoping Analysis*, trucks are broken down by truck type. The truck fleet mix is estimated by rationing the trip rates for each truck type based on information provided by the SCAQMD recommended truck mix, by axle type. Heavy trucks are broken down by truck type (or axle type) and are categorized as either Light-Heavy-Duty Trucks (LHDT1[9] & LHDT2 [10])/2-axle, Medium-Heavy-Duty Trucks (MHDT)/3-axle, and Heavy-Heavy-Duty Trucks (HHDT)/4+-axle. To account for emissions generated by trucks, the fleet mix in Table 3-5 was utilized.

TABLE 3-5: TRUCK FLEET MIX

Land Use	% Vehicle Type			
	LHDT1	LHDT2	MHDT	HHDT
Warehousing	13.65%	3.89%	21.05%	61.40%

Note: Project-specific truck fleet mix is based on the number of trips generated by each truck type (LHDT1, LHDT2, MHDT, and HHDT) relative to the total number of truck trips.

3.6.4 ON-SITE CARGO HANDLING EQUIPMENT EMISSIONS

It is common for industrial buildings to require the operation of exterior cargo handling equipment in the building's truck court areas. For this Project, on-site modeled operational equipment includes up to one (1) 75 horsepower (hp), electric-powered cargo handling equipment – port tractor operating 4 hours a day[11] for 365 days of the year. Per County of Riverside Good Neighbor Guidelines, all on-site equipment (cargo handling equipment, yard goats, forklifts) utilized for the operation of the proposed Project will be electrically powered and charging stations will be provided on-site.

3.6.5 STATIONARY SOURCE EMISSIONS

The proposed Project was conservatively assumed to include installation of a 300-horsepower diesel-powered emergency generator/fire pump. The emergency generator/fire pump was estimated to operate for up to 1 hour per day, 1 day per week for up to 50 hours per year for

[9] Vehicles under the LHDT1 category have a GVWR of 8,501 to 10,000 lbs.

[10] Vehicles under the LHDT2 category have a GVWR of 10,001 to 14,000 lbs.

[11] Based on Table II-3, Port and Rail Cargo Handling Equipment Demographics by Type, from CARB's Technology Assessment: Mobile Cargo Handling Equipment document, a single piece of equipment could operate up to 2 hours per day (Total Average Annual Activity divided by Total Number Pieces of Equipment). As such, the analysis conservatively assumes that the tractor/loader/backhoe would operate up to 4 hours per day.

maintenance and testing purposes. Emissions associated with the stationary emergency diesel-powered emergency generator/fire pump were calculated using CalEEMod.

3.6.6 WATER SUPPLY, TREATMENT AND DISTRIBUTION

Indirect GHG emissions result from the production of electricity used to convey, treat, and distribute water and wastewater. The amount of electricity required to convey, treat, and distribute water depends on the volume of water as well as the sources of the water. Unless otherwise noted, CalEEMod default parameters were used.

3.6.7 SOLID WASTE

Industrial land uses would result in the generation and disposal of solid waste. A percentage of this waste would be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting. The remainder of the waste not diverted would be disposed of at a landfill. GHG emissions from landfills are associated with the anaerobic breakdown of material. GHG emissions associated with the disposal of solid waste associated with the proposed Project were calculated by CalEEMod using default parameters.

3.6.8 EMISSIONS SUMMARY

The estimated Project-related GHG emissions are summarized on Table 3-6. Detailed operation model outputs for the Project are presented in Appendix 3.2. As shown in Table 3-6, construction and operation of the Project would generate approximately 1,827.49 $MTCO_2e/yr$.

TABLE 3-6: PROJECT GHG EMISSIONS

Emission Source	Emissions (MT/yr)				
	CO_2	CH_4	N_2O	Refrigerants	Total CO_2e
Annual construction-related emissions amortized over 30 years	27.09	8.77E-04	1.93E-03	0.02	27.71
Mobile Source	1,427.00	0.03	0.18	1.83	1,483.00
Area Source	3.77	0.00	0.00	0.00	3.78
Energy Source	141.00	0.01	0.00	0.00	142.00
Water Usage	60.30	1.40	0.03	0.00	105.00
Waste	15.60	1.56	0.00	0.00	54.50
Stationary Source	11.40	0.00	0.00	0.00	11.50
Total CO_2e (All Sources)	**1,827.49**				

Source: CalEEMod output, See Appendices 3.1 and 3.2 for detailed model outputs.

3.7 GHG EMISSIONS FINDINGS AND RECOMMENDATIONS

3.7.1 GHG IMPACT 1

Potential to generate direct or indirect GHG emissions that would result in a significant impact on the environment.

The purpose of the CAP is to provide guidance on how to analyze GHG emissions and determine significance during the CEQA review of proposed development projects within the County. To address the state's requirement to reduce GHG emissions, the County prepared its CAP with the goal of reducing GHG emissions within the County by 49% below "existing" 2008 levels by the year 2030 and 83% below the 2008 baseline levels by 2050. The County's GHG reduction targets are consistent with the AB 32, SB 32, and EO S-3-05, and ensure that the County is providing GHG reductions locally that will complement the State and international efforts of stabilizing climate change.

The CAP identifies a two-step approach in evaluating GHG emissions. First, a screening threshold of 3,000 $MTCO_2e$/yr is used to determine if additional analysis is required. Projects that exceed the 3,000 $MTCO_2e$/yr will be required to quantify and disclose the anticipated GHG emissions then either 1) demonstrates GHG emissions at project buildout year levels of efficiency and includes project design features and/or MMs to reduce GHG emissions or 2) garner 100 points through the Screening Tables.

As shown on Tables 3-6, the Project will result in approximately 1,827.49 $MTCO_2e$/yr; the proposed Project would not exceed the County's screening threshold of 3,000 $MTCO_2e$/yr. Thus, the Project would not have the potential to result in a cumulatively considerable impact with respect to GHG emissions and Project GHG emissions would have a less than significant impact.

3.7.2 GHG IMPACT 2

Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

As previously stated, pursuant to 15604.4 of the *CEQA Guidelines*, a lead agency may rely on qualitative analysis or performance-based standards to determine the significance of impacts from GHG emissions (46). As such, the Project's consistency with the 2022 Scoping Plan, is discussed below. It should be noted that the Project's consistency with the 2022 Scoping Plan also satisfies consistency with AB 32 since the 2022 Scoping Plan is based on the overall targets established by AB 32 and SB 32. Consistency with the 2008 and 2017 Scoping Plan is not necessary, since both of these plans have been superseded by the 2022 Scoping Plan. For reasons outlined herein, the proposed Project would result in a less than significant impact with respect to GHG emissions for GHG Impact #2.

2022 SCOPING PLAN CONSISTENCY

The Project would not impede the State's progress towards carbon neutrality by 2045 under the 2022 Scoping Plan. The Project would be required to comply with applicable current and future regulatory requirements promulgated through the 2022 Scoping Plan. Some of the current

transportation sector policies the Project will comply with (through vehicle manufacturer compliance) include: Advanced Clean Cars II, Advanced Clean Trucks, Advanced Clean Fleets, Zero Emission Forklifts, the Off-Road Zero-Emission Targeted Manufacturer rule, Clean Off-Road Fleet Recognition Program, In-use Off-Road Diesel-Fueled Fleets Regulation, Off-Road Zero-Emission Targeted Manufacturer rule, Clean Off-Road Fleet Recognition Program, Amendments to the In-use Off-Road Diesel-Fueled Fleets Regulation, carbon pricing through the Cap-and-Trade Program, and the Low Carbon Fuel Standard. Further, the Project will implement MM GHG-1 which will also reduce GHG emissions. Additionally, the Project includes design features related to water and solid conservation that will further reduce Project GHG emissions. As such, the Project would be consistent with the 2022 Scoping Plan. Lastly, the Project would be required to comply with applicable elements outlined in the County's CAP. As such, the Project would be consistent with the 2022 Scoping Plan.

COUNTY OF RIVERSIDE CAP CONSISTENCY

As previously stated, the proposed Project will result in approximately 1,823.89 $MTCO_2e$/yr; the proposed Project would not exceed the County's screening threshold of 3,000 $MTCO_2e$/yr. Furthermore, the Project would satisfy the energy efficiency requirement per the County's CAP, including mandatory compliance with the requirements of Title 24 and the California Green Building Standards Code. Thus, project-related emissions would not have a significant direct or indirect impact on GHG and climate change and would not require additional analysis. Overall, the proposed Project would not conflict with the County's CAP and impacts would be less than significant.

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5 CERTIFICATIONS

The contents of this GHG study report represent an accurate depiction of the GHG impacts associated with the proposed Thrifty Oil Warehouse Project Project. The information contained in this GHG report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at hqureshi@urbanxroads.com.

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Planned Communities and Urban Infill – Urban Land Institute • June 2011
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APPENDIX 3.1:

CALEEMOD PROJECT CONSTRUCTION EMISSIONS MODEL OUTPUTS

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APPENDIX 3.2:

CALEEMOD PROJECT OPERATIONAL EMISSIONS MODEL OUTPUTS

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APPENDIX 3.3:

CALEEMOD PROJECT OPERATIONAL LSTS EMISSIONS MODEL OUTPUTS

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APPENDIX 3.4:

CAP UPDATE CHECKLIST

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Phase I Environmental Assessment Report

9.48 Acre Property
23641 Placentia Avenue
Perris, California 92570

July 27, 2022 **Project: 22-132**

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Phase I Environmental Assessment Report

9.48 Acre Property
23641 Placentia Avenue
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July 27, 2022 **Project: 22-132**

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Section 1.0
Introduction

1.1 Purpose

Waterstone Environmental, Inc. ("Waterstone") has been retained by Thrifty Oil Co. to prepare a Phase I Environmental Site Assessment ("Phase I") for the approximately 9.48-acre property located on 23641 Placentia Avenue, Perris, California 92570 ("Subject Property", see Figure 1 and Figure 2) with an assessor's parcel number of 317-260-017. The Subject Property is currently vacant land with no structures.

The sole purpose of this environmental assessment is to identify Recognized Environmental Conditions ("REC") for the Subject Property. This assessment was conducted utilizing generally accepted Phase I industry standards in general accordance with the American Society of Testing and Materials ("ASTM") Standard E 1527-21 – Phase I Environmental Site Assessment Process and All Appropriate Inquiry ("AAI").

For the purpose of this report, and as defined by the ASTM, a REC means "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." *De minimis* conditions are not RECs.

The work was conducted pursuant to Thrifty Oil Co. Work Order-No. #511-22-C272.

1.2 Scope of Work

The following scope of work was performed to accomplish the Phase I objectives:

- **Visual Inspection** - A visual evaluation of the Subject Property was conducted in readily accessible areas to identify RECs. Additionally, visual observations of adjoining properties were made from the vantage point of the Subject Property as well as from public rights-of-way to determine the potential impact of these sites on the Subject Property.
- **Subject Property Interview** - Interviews were requested of individuals knowledgeable and familiar with the Subject Property.
- **Records Review** - Available environmental reports, agency records, building department permits, Sanborn Maps and historical aerial photographs of the Subject Property and surrounding areas were reviewed.
- **Agency Document Review** - Appropriate regulatory agencies were contacted for information regarding hazardous materials use, storage, and/or releases at the Subject Property.
- **Published Database Review** - Published governmental agency databases were reviewed to identify properties within ASTM-specified radii of the Subject Property with a reported

environmental concern or incident. Waterstone subcontracted the government agency database search to Environmental Data Resources, Inc. ("EDR").

- **Additional Regulatory Review -** Appropriate regulatory agencies were contacted and available records for properties that may negatively impact the Subject Property were reviewed.
- **Report Preparation** - A summary report was prepared of the environmental assessment findings and conclusions.
- **Environmental Professional** – All Subject Property inquiry was conducted by an environmental professional or under the supervision of an environmental professional.
- **Required Purchaser Activities** – It is the responsibility of the purchaser to assess the purchase price compared to fair market value, conduct a search for environmental cleanup liens, inquire about commonly known or ascertainable information that may affect the environmental conditions of the Subject Property, and provide any specialized knowledge or experience as the landowner or grantee.

1.3 Limitations and Exceptions

If topics are not explicitly discussed within this document, the reader should not assume those topics have been investigated. For example, physical testing, other than that specifically detailed in this document, was not performed. The work performed in conjunction with this study and data developed are intended as a description of available information on the dates and at the locations described. This report does not warrant against future operations or conditions, nor does it warrant against:

- Operations which are not in evidence from visual observations or search of published agency records, or facts that were concealed, withheld, or not fully disclosed at the time the inspection was conducted.
- Conditions that could only be determined by physical sampling or intrusive testing.
- Conditions on locations other than the User-provided Subject Property address and/or legal parcel description.

This report is not intended to address, assess, or otherwise determine whether soil or groundwater contamination, waste emplacement, existing or threatened mold/fungus growth, asbestos containing building materials, and/or lead-based paint actually exists at the Subject Property. Such determination would require comprehensive subsurface exploration and/or other sampling activities, which were beyond the scope of service for this assessment. Additionally, this report does not serve as a comprehensive wetlands, mining, oil, pipeline, and/or gas well survey.

This report summarizes an environmental investigation conducted for the Subject Property. Although conditions at neighboring properties may impact the Subject Property and, to the extent they were identified, were included in the Subject Property evaluation, this report does not serve as an assessment of sites other than the Subject Property.

1.4 Reliance

The Phase I Environmental Assessment was performed in accordance with Thrifty Oil Co. Work Order-No. # 511-22-C272. The work was performed in accordance with the terms and conditions of the existing contract for the environmental evaluation of the Subject Property for the exclusive use of Thrifty Oil Co. This party intends to rely upon this report as an assessment of the existing physical condition of the Subject Property for due diligence purposes for the possible purchase, sale, or refinancing of the property. Waterstone recommends that any authorized party intending to rely upon the report independently determine whether the scope of services meets their expectations for an acquisition or other transaction.

Waterstone's professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable due-diligence professionals practicing in the Phase I Environmental Assessment due-diligence consulting field in this or similar localities at this time. No other warranty, expressed or implied, is made as to the professional opinions described in this report. Waterstone is not responsible or liable for any claims that are associated with the interpretation of the available information. Additionally, Waterstone is not responsible for any claims from third parties not associated with the User, unless this report is assigned in its entirety to a party acceptable to Waterstone.

Note: Waterstone exercised the usual and customary professional care in its efforts to assess property environmental law/code/regulation compliance. However, it is beyond the scope of a Phase I Environmental Assessment to provide definitive and thorough opinions regarding environmental compliance. Due to the existence of literally thousands of laws, codes, and regulations pertaining to the environment, Waterstone does not represent that any observations in this Phase I Environmental Assessment are a complete and definitive opinion regarding regulatory compliance.

Waterstone has based its assessment on prior Subject Property histories, interviews, a review of available records, and observations of activities during a physical site inspection. Some or all of this information has been reported to Waterstone from several sources. Waterstone has relied on this reported information and data without further verification or validation of its accuracy.

1.5 Environmental Professional Statement

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in Section 312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and experience to assess the nature, history, and setting of the Subject Property. We have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312. (See Appendix A for Environmental Professional Resume.)

1.6 Proprietary Notice

This document is privileged and confidential information and should not be duplicated or copied without the express permission of Waterstone Environmental, Inc. Any unauthorized reuse of Waterstone reports or data will be at the unauthorized user's sole risk and liability.

Section 2.0
User Provided Information

Waterstone has performed this Phase I ESA for Thrifty Oil Co. As such, Thrifty Oil Co. is considered the "User" of the report, as defined under ASTM Standard Practice E 1527-21. To satisfy the requirements of AAI and to qualify for one of the Landowner Liability Protections ("LLPs") offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "Brownfields Amendments"), the User must provide certain information regarding the history of the property, its use, and its fair market value.

2.1 Reason for Performing the Phase I ESA

Waterstone understands that this assessment has been performed for the User for due diligence purposes which may include purchase of the Subject Property. As such, this Phase I ESA was conducted in accordance with AAI to qualify for the bona fide prospective purchaser exception to CERCLA liability. It has also been performed as a risk management and due diligence procedure in connection with a real estate transaction in accordance with general industry standards which include ASTM Standard E 1527-21.

2.2 Title Records, Liens, and Property Use Limitations

Waterstone conducted a search of title records and liens regarding the Subject Property's usage and history. The Lien search did not identify and liens or any property use limitations (Appendix H). A tax map report for the property is also included in Appendix H.

With reference to Activity Use Limitations (AUL) that are in place on the Subject Property or that have been filed or recorded in a registry (40 CFR 312.26), the Environmental Lien and AUL Search performed by EDR did not identify any AULs, such as engineering controls, land use restrictions, or institutional controls that are in place at the Subject Property and/or have been filed or recorded in a registry under federal, tribal, state or local law (Appendix H).

2.3 Specialized Knowledge, Commonly Known & Degree of Obviousness

With reference to specialized knowledge or experience of the person seeking to qualify for LLPs (40 CFR 312.28), Waterstone interviewed the User who stated he had no specialized knowledge or experience related to the Subject Property or nearby properties other than the information Waterstone has provided in this Phase I report which Waterstone previously discussed with the User.

With reference to commonly known or reasonably ascertainable information about the Subject Property (40 CFR 312.30), the User was not aware (other than the information Waterstone has provided in this Phase I report which Waterstone previously discussed with the User) of commonly known or reasonably ascertainable information about the Subject Property that would help the environmental professional to identify conditions indicative of releases or threatened releases, such as the historical past uses of the Subject Property:

1. Specific chemicals that are present or once were present at the Subject Property;
2. Spills or other chemical releases that have taken place at the Subject Property; and
3. Environmental cleanups that have taken place at the Subject Property.

With reference to the degree of obviousness of the presence or likely presence of contamination at the Subject Property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31), the User, based on knowledge and experience related to the Subject Property, was not aware of any obvious indicators that point to the presence or likely presence of contamination at the Subject Property other than the information Waterstone has provided in this Phase I report which Waterstone previously discussed with the User.

Waterstone requested from the User any other specialized knowledge regarding the environmental conditions associated with the Subject Property. The User did not have any specialized knowledge of RECs or other conditions of environmental concern at the Subject Property other than the information Waterstone has provided in this Phase I report which Waterstone previously discussed with the User.

2.4 Value Reduction for Environmental Issues

Waterstone interviewed the User regarding the relationship of the prospective purchase price to the fair market value of the Subject Property if it were not contaminated (40 CFR 312.29). The User indicated that, to his knowledge, the prospective purchase price for the Subject Property reasonably reflects its fair market value and has not been reduced due to contamination known or believed to be present.

Section 3.0
General Subject Property Characteristics

3.1 Subject Property General Description

The Subject Property is currently undeveloped land. Major Subject Property characteristics are summarized as the following:

Subject Property Characteristics Summary Table

Property Characteristics	Observations
Total Subject Property Lot Size	Approximately 9.48 Acres
Building Descriptions	No Buildings Currently Onsite
Street Address	23641 Placentia Avenue
County	Riverside County
Assessor's Parcel Number (APN)	Assessor's Tax Parcel #317-260-017
Distance to Major Landmark	The Subject Property is approximately 0.5 miles west of I-215.
Current Use	The Subject Property is currently undeveloped land.
Current Owner	Thrifty Oil Co.

The history and Subject Property inspection observations are further discussed in Sections 5.0 and 6.0, respectively.

3.2 Adjacent Properties

The Subject Property is located in a rural area of the City of Perris, Riverside County, California (See Figure 1). At the time of the Subject Property inspection, the properties adjacent to the Subject Property were characterized as the following (see Figure 2):

North: Placentia Avenue followed by Former Undeveloped Property Currently Under Development as Commercial Tilt Up Buildings

East: Undeveloped Agricultural Land and Residential Structures

South: Undeveloped Agricultural Land

West: Undeveloped Agricultural Land and Residential Structures

Section 4.0
Environmental Setting

The following summarizes the general environmental setting of the Subject Property.

4.1 Regional Setting

The Subject Property is situated near latitude 33.8220840 (north) and longitude 117.2493920(west) at an approximate elevation of 1,545 feet above mean sea level. The topography of the Subject Property and vicinity slopes gently to the east-northeast. A topographic map is provided in the Physical Source Settings Summary section of the EDR Radius Map report. The Subject Property is not located within a special flood hazard area. The Subject Property is not located within a mapped National Wetlands Inventory of Federal Wetlands area.

4.2 General Geologic Conditions

The Site is located in Riverside County, within the Peninsular Range Physiographic Province. The area consists of Mesozoic age igneous rocks overlain by several hundred feet of Holocene alluvial sediments derived from the Santa Ana Mountain Highlands. This area is part of the San Jacinto Groundwater Basin. Surface soil was mapped at the Subject Property by the US Department of Agriculture (USDA) as well drained sandy loam.

4.3 Groundwater Conditions

This area is part of the San Jacinto Groundwater Basin. The uppermost groundwater beneath this site occurs at approximately 60 to 70 feet below grade in an unconfined condition based on review of GeoTracker files for the nearby Nuevo AM/PM ARCO at 280 Old Nuevo Road. Groundwater in the basin has been designated for beneficial use for agricultural, municipal, domestic, and industrial uses.

Section 5.0
Government Database Review

5.1 Government Databases Searched

An investigation of the government environmental databases related to the Subject Property and the nearby area was conducted to identify potential RECs that may be recorded in government database systems or files. Properties that have or may have the potential for existing or future Subject Property contamination, environmental liabilities, or the potential for contamination migration to surrounding areas are listed in this report. The information pertaining to the sites on the regulatory databases was obtained from the *EDR Radius Map Report with GeoCheck* (See Appendix B) provided by EDR. The databases searched are detailed in the EDR Radius Map report. The results of the Subject Property and Surrounding Property listings are summarized in Sections 5.2 and 5.3, respectively.

5.2 Subject Property Summary

The Subject Property on 23641 Placentia Avenue with APN # 317-260-017 was not listed in the EDR Radius Report. No environmental impairments were noted for the Subject Property.

5.3 Surrounding Properties Summary

A total of three (3) Federal, State, or local or other listings for surrounding properties are provided in the EDR Report's summary of government databases, within 1/8 of a mile of the Subject Property, six (6) listings between 1/8 and 1/4 of a mile, three (3) listings within 1/4 and 1/2 of a mile, and one (4) listing between 1/2 and 1 mile, for a total of 16 listings within a 1-mile radius of the Subject Property.[1] All of these offsite properties are located east or north of the Subject Property.

The closest properties within 1/8 of a mile of the Subject Property detailed in the EDR Report are summarized and reviewed in the attached Table 1. Each nearby property included in the EDR report summary was evaluated to determine the likelihood of negative impact to the Subject Property. The Subject Property is located in a rural residential/commercial area with many surrounding properties still undeveloped. Properties were evaluated based on (i) the database source to determine if the listing is indicative of spill or leak, (ii) case status, (iii) distance from the Subject Property, and (iv) position of the property relative to groundwater flow direction. There were only three facilities listings within one-eighth mile of the Subject Property which would be considered within relatively close proximity to the Subject Property, however they were all at a lower relative elevation than the Subject Property. These facility listing are summarized below:

[1] Note: Although neighboring sites may be listed in multiple governmental databases, only those listings within the specified ASTM radius are detailed above.

Table 1 - EDR Government Database Summary Table

Property Name	Property Address	EDR Direction - Distance	EDR ID	Databases	Comments
Less Than 1/8 Mile - presumed downgradient					
A-1 Mobile Tire & Axle Company	23745 Placentia Ave	NE – 45 feet, relatively lower	1	EDR Hist Auto	Listed as historic auto station from 1993 through 2014.
IPT Riverside Logistics Center II, LLC	20421 Sharon Ann Lane	NNE – 464 feet, Relatively Lower	A2-A3	RCRA NonGen/NLR	Listed for all other waste management services. No violations noted.
Pedro Ma Indacochea	23772 Water Street	SE - 814 feet, relatively lower	B4-B5	HIST UST	Listed for one 500-gallon Regular gasoline UST installed in 1973 for agricultural uses.

The nearby properties, and others listed at further distances from the Subject Property, have a low likelihood to negatively impact the Subject Property based on case status and distance. Section 6.0 provides further discussion regarding the Subject Property and surrounding site use.

Section 6.0
Historical Document Review

To determine whether RECs exist for the Subject Property based on historical activities and/or operations at the Subject Property and/or a neighboring property, Waterstone conducted a review of historical documents, available local agency or departmental records, and available previous investigation reports. The following sections summarize the findings of these document reviews.

6.1 Proprietary Document Review

Waterstone subcontracted the historical document search to EDR. The information searched and documents available are summarized as the following:

- A search of the EDR Historic Map Collection was conducted for the Subject Property. The EDR Historic Map Collection is the largest and most extensive private collection of prior-use maps in the United States, with coverage ranging from 1923 through 2012. Sanborn Fire Insurance Maps were not available for review for the Subject Property. The Certified Sanborn Map Report is provided as Appendix C.
- Historical aerial photographs of the Subject Property and surrounding area were obtained from EDR. Photographs from 1938, 1949, 1953, 1961, 1967, 1974, 1978, 1985, 1989, 1990, 1994, 1997, 2002, 2006, 2009, 2012, and 2016 were provided to and reviewed by Waterstone (See Appendix D). A review of the aerial photographs is provided in the table below.
- Historical Topographic Maps of the Subject Property and surrounding area were obtained from EDR. Maps from 1901, 1942, 1943, 1947, 1953, 1967, 1973, 1978, 1979, 2012, 2015, and 2018 were provided to and reviewed by Waterstone (See Appendix E). A review of the Topographic Maps was conducted, and uses were similar to the aerial photographs reviewed.
- City Directories have been published for many cities and towns across the United States since the 18th century. For each address within an area, City Directories list the name of each resident or, if a business operates from that address, the name and type of business. While the geographic coverage of City Directories is comprehensive for most major cities, many rural areas and small towns may not be included, and many towns and cities have discontinued the practice of issuing City Directories (See Appendix F). City Directory coverage was available for the area and was listed for the Subject Property address and surrounding properties from 1976 through 2017. The site address was listed as Jeremy Price in 2017, Elmer Rasmussen in 2014, Amy Rasmussen in 2010, Thurman Cooper in 2005, Tori Seabra in 2000, Sean Myers in 1995, and Victor Scaramella in 1990, 1985, 1980, and 1976.
- Building records were reviewed for the Subject Property through EDR for building permits at the County of Riverside. The EDR Building Permit Report is included in Appendix G.

There was a demolition permit for utilities and structures in 2017 when the former structures were removed from the property.

Historical Sources Summary Table 1

Date	Observations	Source
1938	**Subject Property:** The Subject Property appears to be agricultural land with a number of small structures in the northern and northwestern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties to the north, east, west, and south are also mixed agriculture land with small farmhouses on many of the parcels.	Aerial Photograph
1949	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with a number of small structures in the northern and northwestern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties to the north, east, west, and south are also mixed agriculture land with small farmhouses on many of the parcels similar to the earlier photo.	Aerial Photograph
1953	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with a number of small structures in the northern and northwestern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties to the north, east, west, and south are also mixed agriculture land with small farmhouses on many of the parcels similar to the earlier photo. A property further to the southeast appears to have added a number of barn type structures.	Aerial Photograph
1961	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with a number of small structures in the northern and northwestern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties to the north, east, west, and south are also mixed agriculture land with small farmhouses on many of the parcels similar to the earlier photo.	Aerial Photograph
1967	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with a small house in the southern center of the property along Water Street. **Surrounding Properties:** Surrounding properties to the north, east, west, and south are also mixed agriculture land with small farmhouses on many of the parcels similar to the earlier photo. A parcel to the southeast near I-215 appears to have been developed into a commercial property.	Aerial Photograph
1974	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with a number of small structures in the northern and northwestern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties to the north, east, west, and south are also mixed agriculture land with small farmhouses on many of the parcels similar to the earlier photo. A parcel to the southeast near I-215 appears to have been developed into a commercial property.	Aerial Photograph

Historical Sources Summary Table 1

Date	Observations	Source
1978	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with a number of small structures in the northern and northwestern portion of the property along Placentia Avenue with addition of a house like structure in the northwestern corner of the property. **Surrounding Properties:** Surrounding properties to the north, east, west, and south are also mixed agriculture land with small farmhouses on many of the parcels similar to the earlier photo. The structures on the adjacent parcel to the south and southeast appear to have changed in size and increased in number. The adjacent parcel to the northwest along Tobacco Road has added a residential structure near the corner of the intersection with Placentia Avenue. A house has been added to the property located in the northeast corner of the Subject Property for the first time.	Aerial Photograph
1985	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with numerous small structures in the northwestern and northern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties to the north, east, west, and south are also mixed agriculture land with small farmhouses on many of the parcels similar to the earlier photo. A parcel to the east along I-215 appears to have been developed with two large commercial buildings and a large parcel to the southeast along I-215 appears to be being used for building material sales with a large building and stockpiles of building material. Additional structures have been added to the property located in the northeast corner of the Subject Property.	Aerial Photograph
1989	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with numerous small structures in the northwestern and northern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties are similar to the previous photo with the addition of a number of new commercial buildings added along the I-215 to the east. The adjacent property to the southeast appears to have numerous truck trailers parked on the property and it does not appear to be being used for farming any longer. The larger barn like structure adjacent to the east has been removed.	Aerial Photograph
1990	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with numerous small structures in the northwestern and northern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties appear relatively similar to the previous photo.	Aerial Photograph
1994	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with numerous small structures in the northwestern and northern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties appear relatively similar to the previous photo.	Aerial Photograph
1997	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with numerous small structures in the northwestern and northern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties appear relatively similar to the previous photo. Harvill Avenue a major paved street has been built to the east of the Subject Property parallel to I-215.	Aerial Photograph
2002	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with numerous small structures in the northwestern and northern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties appear relatively similar to the previous photo. The adjacent parcel to the west has a swimming pool next to the small house visible for the first time and some additional small structures.	Aerial Photograph

Historical Sources Summary Table 1

Date	Observations	Source
2006	**Subject Property:** The Subject Property appears to be agricultural land similar to the earlier photo with numerous small structures in the northwestern and northern portion of the property along Placentia Avenue. **Surrounding Properties:** Surrounding properties appear relatively similar to the previous photo. A parcel was developed further to the north in the photo with two new commercial building added on the west side of Harvill Avenue.	Aerial Photograph
2009	**Subject Property:** The Subject Property appears to be agricultural land with a house like structure similar to the earlier photo now present only in the northwest portion of the property and the majority of the other structures in the northern portion of the property have been removed. **Surrounding Properties:** Surrounding properties appear relatively unchanged from the previous photo with the exception of the parcel adjacent to the east where the house structures on these two parcels have been removed.	Aerial Photograph
2012	**Subject Property:** The Subject Property is unchanged from the previous photo. **Surrounding Properties:** Surrounding properties appear relatively unchanged from the previous photo.	Aerial Photograph
2016	**Subject Property:** The Subject Property is unchanged from the previous photo. **Surrounding Properties:** Surrounding properties appear relatively unchanged from the previous photo.	Aerial Photograph

6.2 Local Agency Records Review

Based on the listings provided in the EDR report review of government databases, there were no agency records that required review other than the information provided by EDR. The results of file reviews are discussed in the following sections and a copy of the file request is included in Appendix I.

6.2.1 Local Agencies

Based on the listings provided in the EDR report review of government databases, Waterstone reviewed the compiled database search information for the Subject Property to determine if any RECs were present on the Subject Property or on surrounding properties that could have an impact on the Subject Property. According to files made available at state and local agencies, included in this report, no RECs were identified that are impacting the Subject Property either onsite or offsite.

6.3 Potential for Vapor Encroachment

As a part of the Phase I investigation, Waterstone reviewed all reasonably ascertainable information for the Subject Property and nearby properties to determine if potential vapor-phase migration concerns may be present which could impact the Subject Property. The information reviewed includes regulatory databases, files for nearby sites, and historical documentation.

Based on the information available, there is no information or data that suggest a vapor encroachment issue is likely to exist at the Subject Property from any neighboring properties.

6.4 Summary of Subject Property and Vicinity History/Land Use

Waterstone reviewed available historical documents and local agency records to determine the history of the Subject Property. The history of the Subject Property and vicinity is summarized as the following:

- The Subject Property is in a rural area of the City of Perris, Riverside County, California, and has been either agricultural or undeveloped land until present. There were small farmhouse or structures on the Subject Property from at least 1938 through 2016. In 2017 the farmhouse and other structures were demolished and removed from the Site.

The history of surrounding properties is summarized as the following:

- The majority surrounding properties were also undeveloped or agricultural land with residential structures until present. Development of commercial/industrial properties appears to begin in the 1980's and development has slowly continued along the transportation corridor until present.

Section 7.0
Subject Property Inspection Observations

7.1 Personnel Interviews

There were no persons identified or available for personnel interviews for the Subject Property.

7.2 Subject Property Inspection Observations

Richard Vogl, PG, CEG, CHG, Principal Geologist with Waterstone completed the Site inspection of the Subject Property on July 19, 2022. The Subject Property was vacant undeveloped land with some grass and a few small trees in the northwest corner of the Subject Property. No RECs were identified on the Subject Property or adjacent properties at the time of inspection.

Subject Property Feature Summary Table

Feature / Characteristic	Y/N	Comments
Underground Storage Tanks (USTs)	N	None observed.
Aboveground Storage Tanks (ASTs)	N	None observed.
Hazardous Chemicals (including petroleum and pesticides)	N	None observed.
Other or Unidentified Drums and Containers	N	None observed
Septic Tanks	N	None observed.
Drainage Systems	N	None observed.
Sumps/Sewer	N	None observed.
Clarifiers	N	None observed.
Hoists or Lifts	N	None observed.
Dumping or Filling Activities	N	None observed.
Vapor Intrusion	N	No evidence observed.
Floor Drains	N	None observed.
Materials Spills	N	None observed.
Monitor/Supply/ Disposal Wells	Y	Remnants of what appeared to be a residential groundwater drinking water well were visibly present in the northcentral portion of the Subject Property beneath an area with an open structure of wooden beams.
Odors	N	None noted.
Air Emissions	N	None observed.
Unusually Stained Pavement or Flooring	N	None observed.
Pits, Ponds, Lagoons	N	None observed.
Pools of Liquid	N	None observed.
Roads and Trails with No Apparent Purpose	N	None observed.
Stained or Disturbed Soil	N	None observed.
Stressed Vegetation	N	None observed.
High Voltage Power Lines/ Magnetic Fields	N	None observed.

Subject Property Feature Summary Table

Feature / Characteristic	Y/N	Comments
Waste Water Generation	N	None observed.
Solid Waste Storage	N	None observed.
Electrical Transformers	N	None observed.
Evidence of Historical Features	N	None observed.
Evidence of Historical Processes or Material Usage/Storage	N	None observed.

7.2.1 Historical Materials of Concern

Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs) were used as coolants and insulators in electrical transformers beginning in 1929. Exposure to PCBs has since been found to cause liver ailments, skin lesions, tumors, and growth and reproductive problems. Use of PCBs was regulated in 1977. No records or evidence were identified indicating the presence of PCBs on the Subject Property.

Suspect Asbestos-Containing Materials

While the use of asbestos in the manufacture of most building materials has not been fully prohibited by federal law, the use of asbestos, for the most part, has voluntarily been discontinued since the late 1970s. Some non-friable materials, such as roofing material and floor coverings (floor tile and mastic) may have been manufactured with asbestos materials and may have been used into the early 1980s.

There were no buildings or building material identified onsite during the site inspection. Therefore, it is unlikely that any ACM would be present onsite.

Lead-based Paint

Lead was a major ingredient in paint pigment prior to and through the 1940s. While other pigments were used in the 1950s, the use of lead in paint continued until the mid-1970s. In 1978, the Consumer Products Safety Commission banned paint and other surface coating materials which are lead-containing.

There were no buildings or building material identified onsite during the site inspection. Therefore, it is unlikely that any lead-based paint would be present onsite.

Lead in Drinking Water

The USEPA sets drinking water standards and has determined that lead is a health concern at certain exposure levels. Materials that contain lead have frequently been used in the construction of water supply distribution systems, and plumbing systems in private home and other buildings. The most commonly found materials include service lines, pipes, brass and bronze fixtures, and solders and fluxes. Lead in these materials can contaminate drinking water as a result of the corrosion that takes place when water comes into contact with those materials.

EPA's national primary drinking water regulations requires all public water systems to optimize corrosion control to minimize lead contamination results from the corrosion of plumbing materials. EPA has established an action level of 15 parts per billion (ppb) for lead in drinking water. Any water system that continues to exceed the action level after installation of corrosion control and/or source water treatment must eventually replace all lead service lines contributing in excess of 15 ppb of lead to drinking water. Any water system that exceeds the action level must also undertake a public education program to inform users of ways they can reduce their exposure to potentially high levels of lead in drinking water.

7.2.2 Utilities

The following utilities service the area:

- Water – City of Perris and Eastern Municipal Water District
- Electric – Southern California Edison
- Gas – The Gas Company
- Sewer – City of Perris

7.2.3 Oil and Gas Wells and Pipelines

Wells can act as potential conduits for the migration of contamination, unless they have been properly abandoned (i.e., filled and plugged) in such a manner as to prevent the transport of hazardous material into the groundwater aquifers. Oil or gas wells or pipelines were not identified on the Subject Property during the Subject Property inspection. According to the EDR Report, there are no oil and/or gas wells located on the Subject Property, or within a one-mile radius of the Subject Property.

7.2.4 Public Water Wells

No public water wells were observed on the Subject Property during the Subject Property inspection. According to the EDR Report, there are no public water supply wells located within 1-mile of the Subject Property.

7.2.5 Sensitive Environmental Receptors

Primary concerns associated with sensitive receptors and wetlands are:

- Federal and state environmental regulations often limit an owner's ability to modify the Property when sensitive receptors or wetlands are potentially impacted; and
- The potential of a release or discharge from a facility that could impact a sensitive receptor or wetland.

Sensitive environmental receptors, such as Federally listed wetlands were not identified on the Subject Property.

7.2.6 Radon

Radon is a gas that can seep into structures constructed in areas with soils containing uranium. Radon travels through soil and enters the structure through cracks and holes in basement walls or floor drains, or other openings. According to the EDR Report, of the 2 radon test results in the area approximately 100% of tests were less than 4.0 picocuries per liter (pCi/L). Riverside County is with Federal EPA Radon Zone 2, with indoor average level >=2 pCi/L and <=4 pCi/L.

7.2.7 Mold

Mold and/or fungi growth generally occurs on cellulose-based material, such as wood or drywall paper, that has been inundated with excess moisture. The presence of mold and/or fungi growth is normally an indication of a plumbing, roofing, or other leak, and/or a water source that results in the abnormal presence of moisture. It is possible that significant fungal spore growth inside walls, insulation, attic spaces, or other areas can exist and not be visible on the finished surfaces of a building's interior spaces. Waterstone did not (i) perform a mold/fungi inspection, (ii) perform any building material surface mold sampling, or (iii) perform air sampling for mold spores at the Subject Property as part of this Phase I. Waterstone did not identify any structures on the Subject Property.

7.2.8 Engineering Controls

No engineering controls (fans and ducts) were identified on the Subject Property.

7.3 Neighboring Property Inspection Observations

Visual observations of adjoining properties were made from the vantage point of the Subject Property as well as from public rights-of-way to determine the potential impact of these sites on the Subject Property. The following table summarizes neighboring property observations and neighboring properties listed in the EDR Radius Report:

Neighboring Property Summary Table

Property Characteristics	Observations
Surrounding Property General Description	The Subject Property is located in a rural and commercial area of the City of Perris, Riverside County, California.
Neighboring Properties Listed In EDR Radius Report	Neighboring properties listed in the EDR Radius Report primarily include properties listed as waste generators or for historical USTs. No observations of USTs were made on adjacent properties; however, Waterstone did not enter adjacent properties to perform a thorough inspection.
Groundwater Monitoring Wells	Groundwater monitoring wells were not observed on the Subject Property or neighboring properties however, Waterstone did not enter adjacent properties to perform a thorough inspection. There appeared to be the remnants of an agricultural water well located on the Subject Property in the central north portion of the Site along Placentia Avenue.
Underground Features	No evidence of underground features was observed in the vicinity of the Subject Property, but Waterstone did not enter adjacent properties to perform a thorough inspection.
Evidence of Subsurface Investigation	No evidence of subsurface investigations was observed on the Subject Property or neighboring properties however, Waterstone did not enter adjacent properties to perform a thorough inspection.

Section 8.0
Summary and Conclusions

8.1 Summary

The Subject Property is approximately 9.48-acre property located on 23641 Placentia Avenue, Perris, California 92570 ("Subject Property", see Figure 1 and Figure 2). The Subject Property is currently vacant land.

Waterstone reviewed available historical documents and local agency records to determine the history of the Subject Property. The history of the Subject Property and vicinity is summarized as the following:

- The Subject Property is in a rural area of the City of Perris, Riverside County, California, and has been either agricultural or undeveloped land until present. There were small farmhouse or structures on the Subject Property from at least 1938 through 2016. In 2017 the farmhouse and other structures were demolished and removed from the Site.

At the time of the Subject Property inspection, the properties adjacent to the Subject Property were characterized as the following:

North:	Placentia Avenue followed by Former Undeveloped Property Currently Under Development as Commercial Tilt Up Buildings
East:	Undeveloped Agricultural Land and Residential Structures
South:	Undeveloped Agricultural Land
West:	Undeveloped Agricultural Land and Residential Structures

The history of surrounding properties is summarized as the following:

- The majority surrounding properties were also undeveloped land or agriculture with residential structures until the 1980s when development as commercial/industrial properties appeared to begin in the area and has continued slowly until present. Commercial/industrial properties manly flank interstate 215 to the east.

None of the nearby properties are likely to negatively impact the Subject Property based on case status, distance, and/or groundwater flow direction.

No obvious RECs were identified during the site inspection.

There were no structures currently present on the Subject Property therefore there is a very low likelihood that there are any building materials onsite which contain lead-based paint or asbestos containing material.

8.2 Findings and Conclusions

Waterstone has performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM Practice E1527 of the Subject Property located in Perris, California. Any exceptions to, or deletions from, this practice are described in Section 1.3 of this report. This assessment has revealed no evidence of recognized environmental conditions (RECs).

8.3 Recommendations

Based on the absence of any RECs identified for the Subject Property, no further assessment is recommended for the Subject Property.

Section 9.0
References

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Figures

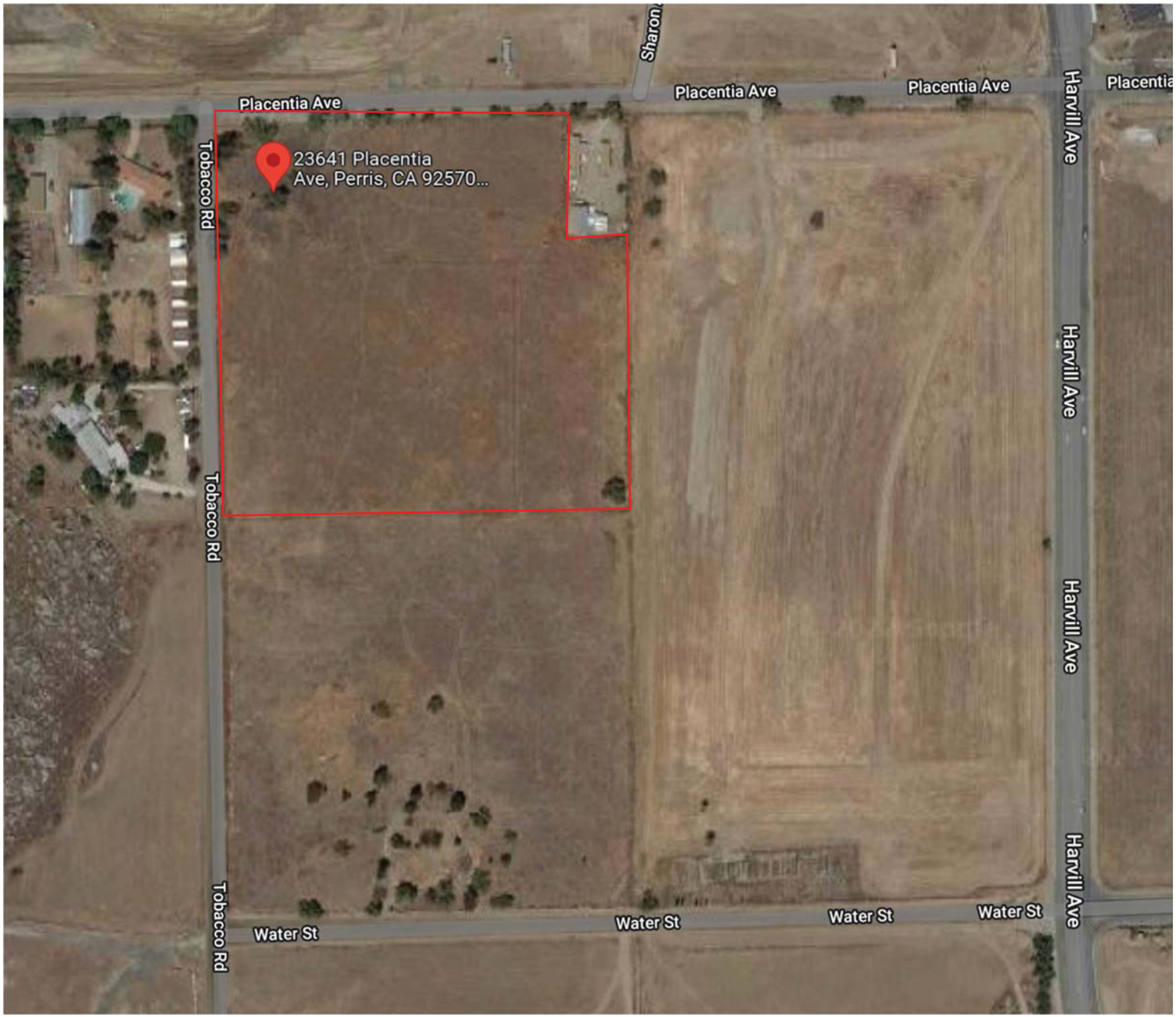

FIGURE 1
Subject Property
Location Map
23641 Placentia Ave
Perris, California

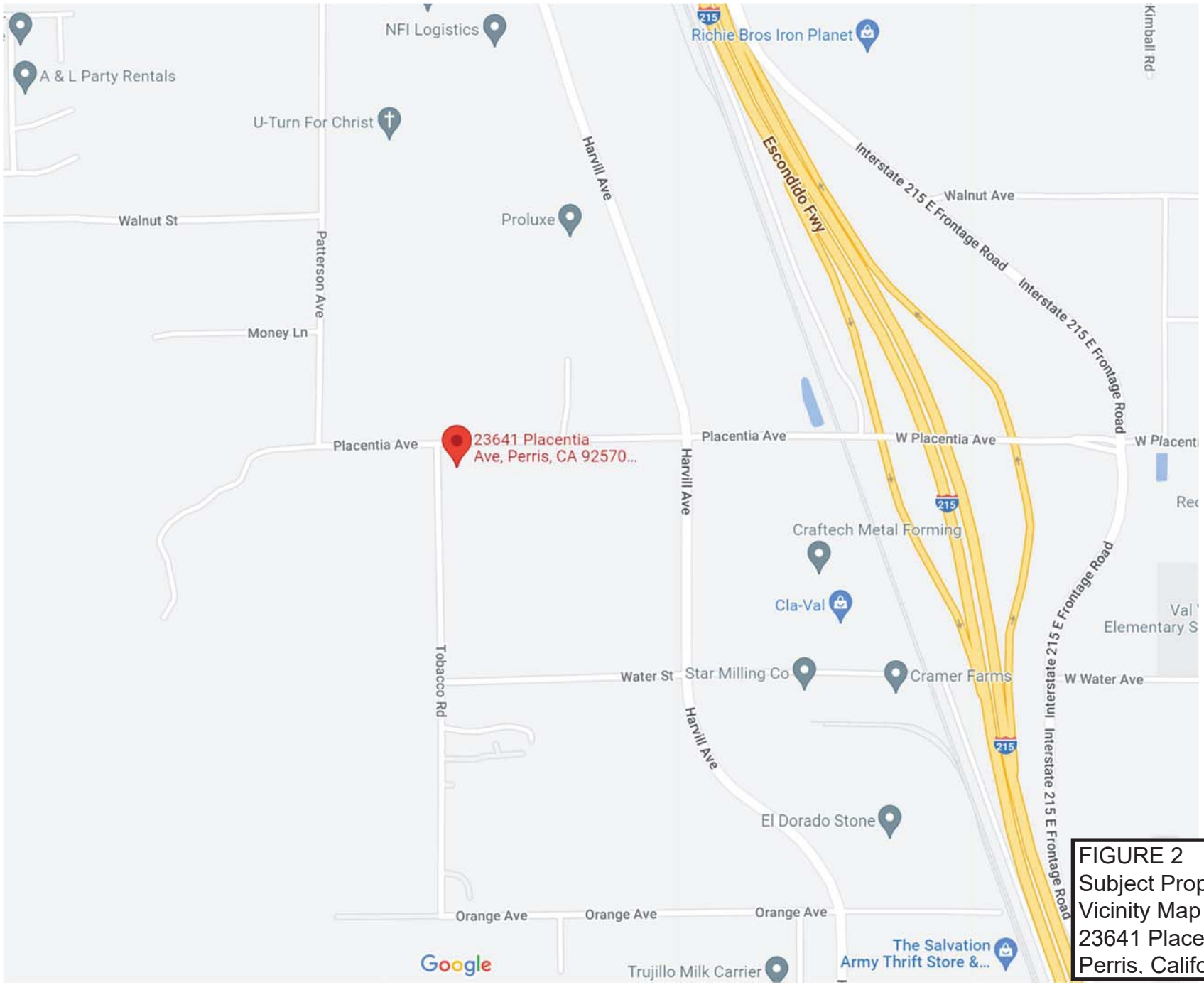

FIGURE 2
Subject Property
Vicinity Map
23641 Placentia Ave
Perris, California

Appendix A
Environmental Professional Resume

Curriculum Vitae

Richard A. Vogl, PG, CHG, CEG

Principal Hydrogeologist

Waterstone Environmental, Inc.
2936 East Coronado Street, Anaheim, CA 92806
714 615-0585 rvogl@waterstone-env.com

Mr. Vogl currently serves as a Principal Hydrogeologist at Waterstone Environmental, Inc. Mr. Vogl is a registered professional Geologist, Certified Hydrogeologist, and Certified Engineering Geologist in the state of California and a registered professional Geologist in Arizona and Oregon. His credentials, along with his over 28 years of professional experience, have led to work on numerous projects involving litigation support and expert witness testimony. Mr. Vogl is an expert in the areas of hydrogeology; soil and groundwater contamination, investigation, and remediation; and soil vapor intrusion. Mr. Vogl has worked on dozens of litigation support projects that have included preparing expert opinion reports and testimony.

Mr. Vogl has performed numerous groundwater monitoring and extraction projects, geologic mapping, Phase I and Phase II environmental assessments, and remedial actions involving soil and groundwater contamination. His strong technical background in environmental assessments and remediation has provided the necessary background information to manage a wide variety of environmental projects.

Mr. Vogl has completed hundreds of Phase I and Phase II environmental site assessments in California for a wide variety of industrial sites and contaminants, including work on dozens of soil and groundwater assessment and remediation projects involving chlorinated hydrocarbon contamination, heavy metals, and other recalcitrant compounds. Remediation techniques employed have included classical solutions such as soil vapor extraction, dual-phase extraction, multi-phase extraction, and groundwater pump and treat as well as other more innovative approaches such as ozone injection and enhanced biodegradation (aerobic and anaerobic).

Mr. Vogl's expertise includes assessment and remediation of contamination of soil and groundwater with petroleum hydrocarbons, both as dissolved phase (benzene, toluene, ethylbenzene, xylenes [BTEX] and methyl tertiary-butyl ether [MTBE]) and light nonaqueous phase liquid (LNAPL). Mr. Vogl has managed and worked on numerous large-scale groundwater restoration projects at petroleum refining and storage facilities within the Los Angeles area. This work involved permitting, lead agency liaison, and assessment and remediation of soil and groundwater affected by dissolved phased hydrocarbons and LNAPL. In addition, Mr. Vogl has conducted numerous assessments and remediations of hydrocarbon-affected soil and groundwater at gasoline service stations for a number of major petroleum marketing corporations. His master's thesis consisted of design, implementation, and evaluation of a field baildown test for determining the actual mobile thickness of LNAPL in the geologic formation surrounding a monitoring well within an LNAPL plume.

In addition, he has successfully remediated a number of sites with petroleum hydrocarbon-affected soil using bioremediation.

Mr. Vogl has also spearheaded numerous hydrogeological evaluations of landfill impacts on aquifers and adjoining parcels. He has served as the director of complex investigations and critical evaluations of landfill impacts on water quality.

Mr. Vogl has also conducted dozens of geotechnical investigations and provided geotechnical oversight on numerous projects in Southern California for both contaminated and non-contaminated properties.

EXAMPLE PROJECTS:

Expert witness and litigation support for groundwater intrusion issues within a basement that lead to mold issues throughout the house. The groundwater intrusion issues were the result of water leaks on an upslope property from various sources including irrigation lines and swimming pool in Pasadena, California.

Expert witness and litigation support for hydrology and storm drain design issues that lead to flooding of two properties during a two separate storm events in La Canada Flint Ridge, California.

Conducted soil and groundwater assessment at the former Golden West Refinery in Santa Fe Springs involving numerous wells and soil borings. Performed soil and groundwater remediation including soil excavation, disposal, and confirmation sampling; vapor extraction pilot testing; design and installation of a large scale property wide vapor extraction system integrated with commercial/industrial development of the property; and installation of a free product and groundwater boundary recovery system integrated within existing and planned commercial/industrial development of the former refinery property.

Conducted RI/FS and RAP preparation and implementation for the City of La Mirada Redevelopment Agency for a residential redevelopment project with DTSC as the regulatory agency. The project included a Phase I Site Assessment, Phase II Site Assessment, Remedial Action Plan and Feasibility Study, and Remedial Action Implementation and involved public participation, a CEQA negative declaration, and risk assessment for multiple VOC impacted soils for a multiple parcel/multiple owner project, and included valuation of identified environmental impacts for negotiations of fair market value of the properties for purchase by the Redevelopment Agency. The Site received a No Further Action letter from DTSC for unrestricted residential development. The NFA letter also included language protecting the City and developer from future claims using the Polanco Act.

Conducted soil and groundwater assessment and remediation for two separate former gasoline stations for a major oil company for petroleum releases involving benzene and fuel oxygenated compounds including MTBE and TBA in the Charnock Groundwater Basin in Santa Monica.

Conducted soil and groundwater assessment and prepared a remedial action plan for monitored natural attenuation for a major oil company along a historic petroleum pipeline

corridor in the Port of Los Angeles, the RWQCB, Los Angeles Region was the lead regulatory agency.

Conducted third party oversight for a large groundwater remediation project involving chlorinated solvents in Orange County, California, for a settlement trust for multiple RPs.

Conducted soil and groundwater remediation and site closure for two separate chlorinated solvent plumes for the City of La Mirada Redevelopment Agency. The project included litigation against past tenants.

Conducted soil and groundwater assessment and remediation activities for a large dry cleaner client at a number of facilities within various counties throughout southern California.

Conducted over 500 soil and groundwater assessments and remediations for petroleum hydrocarbon contamination involving MTBE for a major oil company in California. Remediation techniques included soil vapor extraction, air sparging, multi-phase extraction, dual-phase extraction, ozone sparging, and pump and treat technologies.

Conducted expert witness and testimony regarding the extent and nature of contamination of an oil field producing property in La Habra, California with respect to contamination caused by crude oil.

Conducted expert witness and testimony related to contamination of two separate properties by previous tenants in the Culver City, California. Contaminants included petroleum hydrocarbons and VOCs in soil and groundwater.

Conducted the largest sediment study performed to date for the Salton Sea. The Study included over 50 grab sediment samples and fifteen 6 foot deep cores over the entire length of the Sea. Contaminants of concern included pesticides, PCBs, VOCs, SVOCs, and heavy metals, including selenium. This study was conducted for the Salton Sea Authority to aid in determination of the overall health of the Sea and the potential impacts of pollutants on the flora and fauna, especially avian species that were dying at the Sea. Testified at California State Water Resources Control Board hearing regarding the state of the Salton Sea with respect to contamination issues.

Conducted soil remediation related to a UST removal. Following completion of backfill activities, testing information provided by contractor revealed that the soil used for backfill contained PCBs. After a detailed evaluation was performed with respect to the laboratory results, it was determined that the PCBs detected were a result of false positive results from the laboratory in question. Successfully demonstrated that the fill material actually did not contain PCBs and received a NFA letter for the client.

Project manager of multi-million dollar capped-cost remediation of chlorinated solvent (TCE) soil and groundwater plume in Central Coast. Project involved multiple party lawsuits and a settlement trust.

Conducted assessment and remediation of former garage facility that contained hydraulic lifts that were found to contain PCBs. Included removal of hydraulic lifts and PCB contaminated hydraulic oil and PCB impacted soils.

Technical director of chlorinated solvent remediation involving soil vapor extraction and potassium permanganate injection for treatment of TCE groundwater plume. This was the first WDR permitted potassium permanganate injection under the CRWQCB, Los Angeles Region performed in Los Angeles County.

Project manager of a detailed hydrogeologic assessment that included geologic logging, well installation, slug tests, pump tests, packer tests, and monitoring and dewatering system design for Subsurface Barrier No. 4 at the Puente Hills Landfill.

Conducted a detailed cost evaluation of remedial alternatives for a Ventura County refinery and tank farm.

Directed a detailed assessment of four parcels that are part of a former landfill for purchase and development as industrial property.

Performed emergency response measures and detailed evaluation of a jet fuel release to San Diego Creek for a major petroleum pipeline company as part of a natural resource damage assessment (NRDA) with the Department of Fish and Game OSPR as the regulatory agency.

Performed a detailed evaluation of a proposed insured remediation project for cleanup of soil and groundwater at a former refinery site in southern California.

Conducted litigation support and assisted with expert witness testimony for over twenty separate petroleum retail sites in California, Nevada, and Oregon.

Conducted a detailed hydrogeologic assessment for litigation project involving millions of dollars of structural damage to homes as a result of land movement and subsidence in Simi Valley, California. Project involved expert opinion.

Assisted in litigation support and provided expert witness for insurance claims related to hexavalent chromium contamination of soil and groundwater related to a former chrome plating facility in Los Angeles, California.

Conducted detailed soil and groundwater assessment for litigation project involving petroleum hydrocarbon releases, including litigation against former environmental consultants. Project also included bioremediation of remaining petroleum impacted soils and received a NFA letter from the RWQCB, Los Angeles.

Conducted a soil and groundwater assessment and remediation of a petroleum pipeline release (including gasoline, naptha, and diesel) in Southern California. Soil remediation was conducted via vapor extraction and LNAPL recovery is being performed via vacuum enhanced product recovery. Over 40,000 gallons of LNAPL were recovered.

Developed, managed, and conducted bioremediation of 30,000 cubic yards of TPH-, VOC-, and SVOC-affected soil. Received a NFA letter from the RWQCB, Los Angeles.

Developed, managed, and conducted soil remediation of over 20,000 cubic yards of TPH-affected soil. Received a NFA letter and the property was successfully redeveloped.

Conducted soil investigation and remediation of over 100 former sump and tank locations at 80-year-old active oil field.

Managed and conducted soil and groundwater remediation of halogenated volatile organic compound release in Orange County, California.

Managed and conducted RI/FS of soil and groundwater affected by heavy metals including antimony, lead, arsenic, and selenium at a battery recycling facility in El Florido, Baja, California. The project was performed for the Mexican equivalent to the EPA and involved international litigation against the former tenant for illegal disposal of waste on the property across international borders.

Developed, managed, and conducted soil and groundwater assessments and remediations at gasoline service stations in Santa Barbara, Ventura, Los Angeles, Riverside, San Bernardino, and San Diego counties in Southern California.

Managed and conducted monitoring well baildown tests to estimate the true volume of free phase jet fuel that was present on the water table at the Paramount Petroleum storage facility in Lakewood, California.

Managed and conducted a groundwater assessment at a coatings manufacturing facility in Southern California.

Managed and implemented large-scale groundwater assessment and remediation at a GATX petroleum storage facility in Los Angeles Harbor.

Developed and managed soil and groundwater investigation at an aluminum wheel manufacturing facility in Orange County, California.

Managed, designed, and installed a liquid hydrocarbon recovery system at a GATX petroleum storage facility in the Los Angeles Harbor area.

Conducted an aquifer characterization at the Paramount Petroleum refinery in Paramount, California.

Conducted an aquifer characterization at a large GATX petroleum storage facility in Carson, California.

Implemented a large-scale total fluids recovery system at an ARCO refinery in Carson, California.

Managed and implemented a large-scale groundwater assessment and remediation involving multiple types of free phase liquid hydrocarbons at a petroleum storage facility in Los Angeles Harbor, California. This project included a detailed aquifer characterization that involved numerous pumping step tests, long-term pump tests, and slug tests.

Developed and implemented a verification soil sampling plan and groundwater monitoring program for a large-scale heavy metal-contaminated (predominantly lead) soil remediation project in Riverside, California.

PROFESSIONAL EXPERIENCE

April 2013 to Present – Waterstone Environmental, Inc. – Principal Hydrogeologist

September 2011 to April 2013 – SAIC – Senior Principal Hydrogeologist

2001 to September 2011 - GeoHydrologic Consultants, Inc. – CEO/CFO, Principal Hydrogeologist

1991-2001 – Levine Fricke Recon – Principal Hydrogeologist, Geoscience Group Manager, Technical Group Leader Southwest Region

1990-1991 – Riedel Environmental – Senior Hydrogeologist

1987-1990 – Engineering Enterprises Inc.-Staff, Senior Staff, and Project Hydrogeologist

1985-1987 - Roscoe Moss Company – Monitoring Well Division, Sales and Technical Assistance

REGISTRATIONS: Certified Engineering Geologist: California, No. 2036
Certified Hydrogeologist: California, No. HG-47
Professional Geologist: California, No. 5526
Registered Geologist: Arizona, No. 26396
Registered Geologist: Oregon, No. G1456

EDUCATION: University of California Irvine Extension: Certificate in Environmental Site Assessment and Remediation, 1993
California State University, Los Angeles: M.S. Geology, 1990
California State University, Los Angeles: B.S. Geology, 1987
Cypress Junior College: A.S., 1984

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Appendix B
Radius Map Report

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570

Inquiry Number: 7056923.2s
July 19, 2022

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

23641 PLACENTIA AVENUE
PERRIS, CA 92570

COORDINATES

Latitude (North):	33.8220840 - 33ˆ 49' 19.50''
Longitude (West):	117.2493920 - 117ˆ 14' 57.81''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	476920.8
UTM Y (Meters):	3742263.2
Elevation:	1545 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	12015907 PERRIS, CA
Version Date:	2018
West Map:	12015925 STEELE PEAK, CA
Version Date:	2018

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
23641 PLACENTIA AVENUE
PERRIS, CA 92570

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	A-1 MOBILE TIRE & AX	23745 PLACENTIA AVE	EDR Hist Auto	Lower	45, 0.009, NE
A2	IPT RIVERSIDE LOGIST	20421 SHARON ANN LAN	RCRA NonGen / NLR	Lower	464, 0.088, NNE
A3	IPT RIVERSIDE LOGIST	20395 SHARON ANN LAN	RCRA NonGen / NLR	Lower	605, 0.115, NNE
B4	PEDRO MA INDACOCHEA	23772 WATER STREET	HIST UST	Lower	814, 0.154, SE
B5	PEDRO MA INDACOCHEA	23772 WATER AVE	HIST UST	Lower	814, 0.154, SE
C6	CENTRAL FREIGHT LINE	20388 HARVILL AVE	RCRA NonGen / NLR	Lower	999, 0.189, NE
C7	CENTRAL FREIGHT LINE	20388 HARVILL AVE	CERS HAZ WASTE, NPDES, CERS	Lower	999, 0.189, NE
D8	STEARNS PRODUCT DEVE	20281 HARVILL AVE	RCRA NonGen / NLR	Lower	1287, 0.244, NNE
D9	STEARNS PRODUCT DEVE	20281 HARVILL AVE	CERS HAZ WASTE, NPDES, CIWQS, CERS	Lower	1287, 0.244, NNE
10	CLA-VAL COMPANY	24100 WATER ST	LUST, CERS HAZ WASTE, Cortese, EMI, HIST CORTESE,...	Lower	1728, 0.327, ESE
11	VAL VERDE ELEMENTARY	2656 INDIAN AVENUE	ENVIROSTOR, SCH	Lower	4117, 0.780, East
12	ALPHA RESINS	19991 SEATON AVE	CORRACTS, RCRA-TSDF, RCRA-LQG, ENVIROSTOR, HIST...	Higher	4521, 0.856, NW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---------- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROLS ---------- Institutional Controls Sites List

Federal ERNS list

ERNS ---------- Emergency Response Notification System

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE State Response Sites

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF Solid Waste Information System

Lists of state and tribal leaking storage tanks

INDIAN LUST Leaking Underground Storage Tanks on Indian Land
CPS-SLIC Statewide SLIC Cases

Lists of state and tribal registered storage tanks

FEMA UST Underground Storage Tank Listing
UST Active UST Facilities
AST Aboveground Petroleum Storage Tank Facilities
INDIAN UST Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

INDIAN VCP Voluntary Cleanup Priority Listing
VCP Voluntary Cleanup Program Properties

Lists of state and tribal brownfield sites

BROWNFIELDS Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT Waste Management Unit Database
SWRCY Recycler Database
HAULERS Registered Waste Tire Haulers Listing
INDIAN ODI Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 Torres Martinez Reservation Illegal Dump Site Locations
ODI Open Dump Inventory
IHS OPEN DUMPS Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL Delisted National Clandestine Laboratory Register
HIST Cal-Sites Historical Calsites Database
SCH School Property Evaluation Program
CDL Clandestine Drug Labs
Toxic Pits Toxic Pits Cleanup Act Sites
US CDL National Clandestine Laboratory Register

AQUEOUS FOAM ..... Former Fire Training Facility Assessments Listing
PFAS ..... PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ..... SWEEPS UST Listing
CA FID UST ..... Facility Inventory Database
CERS TANKS ..... California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS ..... Environmental Liens Listing
LIENS 2 ..... CERCLA Lien Information
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
CHMIRS ..... California Hazardous Material Incident Report System
LDS ..... Land Disposal Sites Listing
MCS ..... Military Cleanup Sites Listing
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS ..... Formerly Used Defense Sites
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
ROD ..... Records Of Decision
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PRP ..... Potentially Responsible Parties
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System
COAL ASH DOE ..... Steam-Electric Plant Operation Data
COAL ASH EPA ..... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ..... PCB Transformer Registration Database
RADINFO ..... Radiation Information Database
HIST FTTS ..... FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ..... Incident and Accident Data
CONSENT ..... Superfund (CERCLA) Consent Decrees
INDIAN RESERV ..... Indian Reservations
FUSRAP ..... Formerly Utilized Sites Remedial Action Program
UMTRA ..... Uranium Mill Tailings Sites
LEAD SMELTERS ..... Lead Smelter Sites
US AIRS ..... Aerometric Information Retrieval System Facility Subsystem

US MINES - Mines Master Index File
ABANDONED MINES - Abandoned Mines
FINDS - Facility Index System/Facility Registry System
DOCKET HWC - Hazardous Waste Compliance Docket Listing
ECHO - Enforcement & Compliance History Information
UXO - Unexploded Ordnance Sites
FUELS PROGRAM - EPA Fuels Program Registered Listing
CA BOND EXP. PLAN - Bond Expenditure Plan
CUPA Listings - CUPA Resources List
DRYCLEANERS - Cleaner Facilities
EMI - Emissions Inventory Data
ENF - Enforcement Action Listing
Financial Assurance - Financial Assurance Information Listing
HAZNET - Facility and Manifest Data
ICE - ICE
HWT - Registered Hazardous Waste Transporter Database
MINES - Mines Site Location Listing
MWMP - Medical Waste Management Program Listing
NPDES - NPDES Permits Listing
PEST LIC - Pesticide Regulation Licenses Listing
PROC - Certified Processors Database
Notify 65 - Proposition 65 Records
UIC - UIC Listing
UIC GEO - UIC GEO (GEOTRACKER)
WASTEWATER PITS - Oil Wastewater Pits Listing
WDS - Waste Discharge System
WIP - Well Investigation Program Case List
MILITARY PRIV SITES - MILITARY PRIV SITES (GEOTRACKER)
PROJECT - PROJECT (GEOTRACKER)
WDR - Waste Discharge Requirements Listing
CIWQS - California Integrated Water Quality System
CERS - CERS
NON-CASE INFO - NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS - OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS - PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT - SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ - Well Stimulation Project (GEOTRACKER)
MINES MRDS - Mineral Resources Data System
HWTS - Hazardous Waste Tracking System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP - EDR Proprietary Manufactured Gas Plants
EDR Hist Cleaner - EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF - Recovered Government Archive Solid Waste Facilities List
RGA LUST - Recovered Government Archive Leaking Underground Storage Tank

EXECUTIVE SUMMARY

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 06/20/2022 has revealed that there is 1 CORRACTS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ALPHA RESINS EPA ID:: CAD059270975	***19991 SEATON AVE***	***NW 1/2 - 1 (0.856 mi.)***	***12***	***81***

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 04/25/2022 has revealed that there are 2 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ALPHA RESINS Facility Id: 80001432 Status: Active	***19991 SEATON AVE***	***NW 1/2 - 1 (0.856 mi.)***	***12***	***81***

Lower Elevation	Address	Direction / Distance	Map ID	Page
VAL VERDE ELEMENTARY	***2656 INDIAN AVENUE***	***E 1/2 - 1 (0.780 mi.)***	***11***	***78***

Facility Id: 33820012
Status: No Action Required

Lists of state and tribal leaking storage tanks

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there is 1 LUST site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CLA-VAL COMPANY	***24100 WATER ST***	***ESE 1/4 - 1/2 (0.327 mi.)***	***10***	***53***

Database: LUST REG 8, Date of Government Version: 02/14/2005
Database: RIVERSIDE CO. LUST, Date of Government Version: 03/31/2022
Database: LUST, Date of Government Version: 05/23/2022
Status: Completed - Case Closed
Facility Status: Case Closed
Facility Id: 92274
Global Id: T0606500263
Facility Status: 9
Global ID: T0606500263

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 04/18/2022 has revealed that there are 2 CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CENTRAL FREIGHT LINE	***20388 HARVILL AVE***	***NE 1/8 - 1/4 (0.189 mi.)***	***C7***	***21***
STEARNS PRODUCT DEVE	***20281 HARVILL AVE***	***NNE 1/8 - 1/4 (0.244 mi.)***	***D9***	***30***

Local Lists of Registered Storage Tanks

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there are 2 HIST UST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
PEDRO MA INDACOCHEA	23772 WATER STREET	SE 1/8 - 1/4 (0.154 mi.)	B4	14
PEDRO MA INDACOCHEA Facility Id: 00000051662	23772 WATER AVE	SE 1/8 - 1/4 (0.154 mi.)	B5	15

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 06/20/2022 has revealed that there are 4 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
IPT RIVERSIDE LOGIST EPA ID:: CAC003122823	20421 SHARON ANN LAN	NNE 0 - 1/8 (0.088 mi.)	A2	9
IPT RIVERSIDE LOGIST EPA ID:: CAC003126553	20395 SHARON ANN LAN	NNE 0 - 1/8 (0.115 mi.)	A3	12
CENTRAL FREIGHT LINE EPA ID:: CAC003109472 EPA ID:: CAL000450703	20388 HARVILL AVE	NE 1/8 - 1/4 (0.189 mi.)	C6	15
STEARNS PRODUCT DEVE EPA ID:: CAL000339084	20281 HARVILL AVE	NNE 1/8 - 1/4 (0.244 mi.)	D8	28

Cortese: The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

A review of the Cortese list, as provided by EDR, and dated 03/21/2022 has revealed that there is 1 Cortese site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CLA-VAL COMPANY Cleanup Status: COMPLETED - CASE CLOSED	***24100 WATER ST***	***ESE 1/4 - 1/2 (0.327 mi.)***	***10***	***53***

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CLA-VAL COMPANY	***24100 WATER ST***	***ESE 1/4 - 1/2 (0.327 mi.)***	***10***	***53***

Reg Id: 083302019T

HWP: Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

A review of the HWP list, as provided by EDR, and dated 02/14/2022 has revealed that there is 1 HWP site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ALPHA RESINS	***19991 SEATON AVE***	***NW 1/2 - 1 (0.856 mi.)***	***12***	***81***
EPA ID: CAD059270975				
Cleanup Status: CLOSED				

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

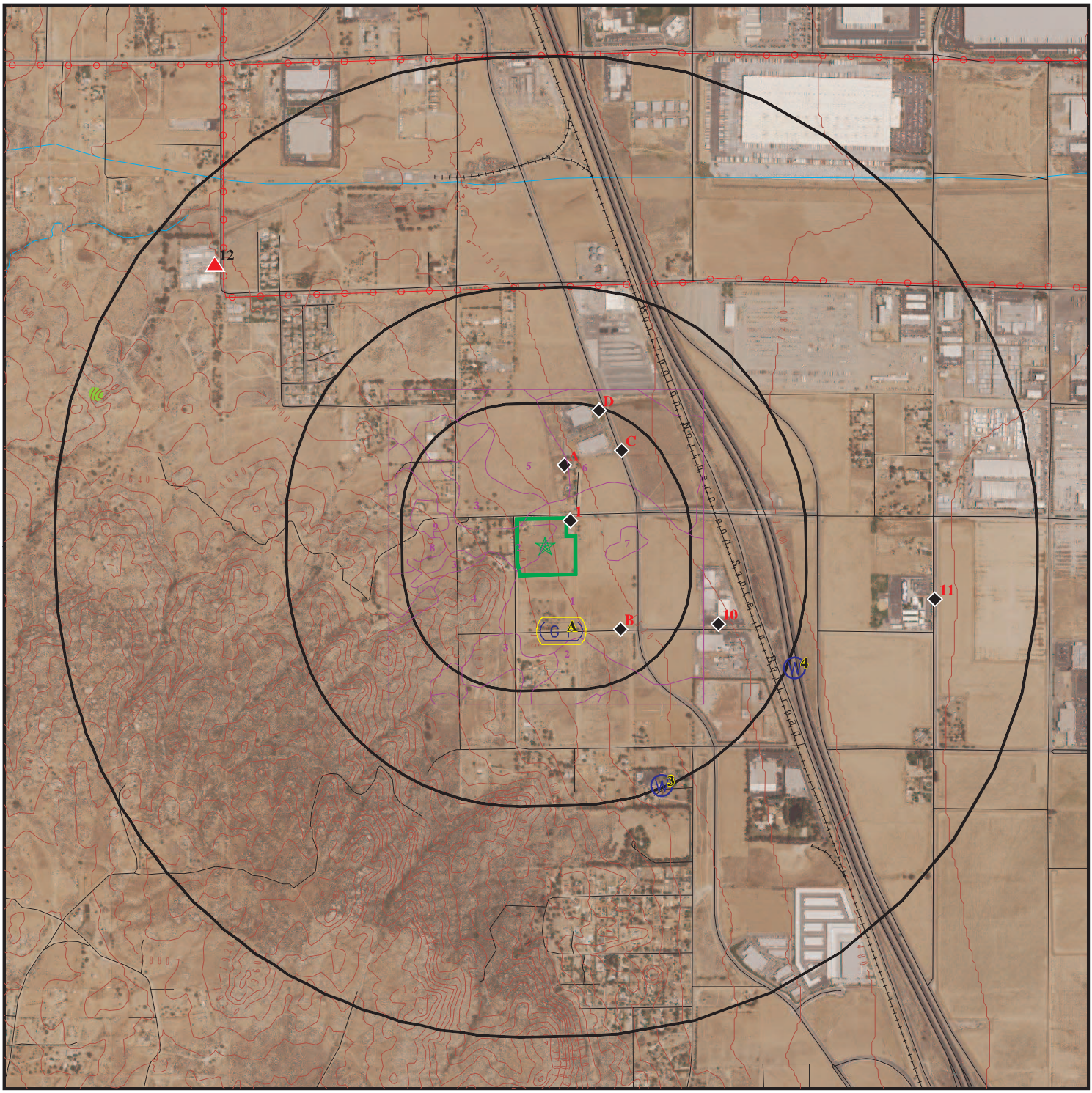
A review of the EDR Hist Auto list, as provided by EDR, has revealed that there is 1 EDR Hist Auto site within approximately 0.125 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
A-1 MOBILE TIRE & AX	23745 PLACENTIA AVE	NE 0 - 1/8 (0.009 mi.)	1	9

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 7056923.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Thrifty 9.48 Acres Perris CA	CLIENT:	Waterstone Environmental Inc
ADDRESS:	23641 Placentia Avenue Perris CA 92570	CONTACT:	RICHARD VOGL
		INQUIRY #:	7056923.2s
LAT/LONG:	33.822084 / 117.249392	DATE:	July 19, 2022 12:08 pm

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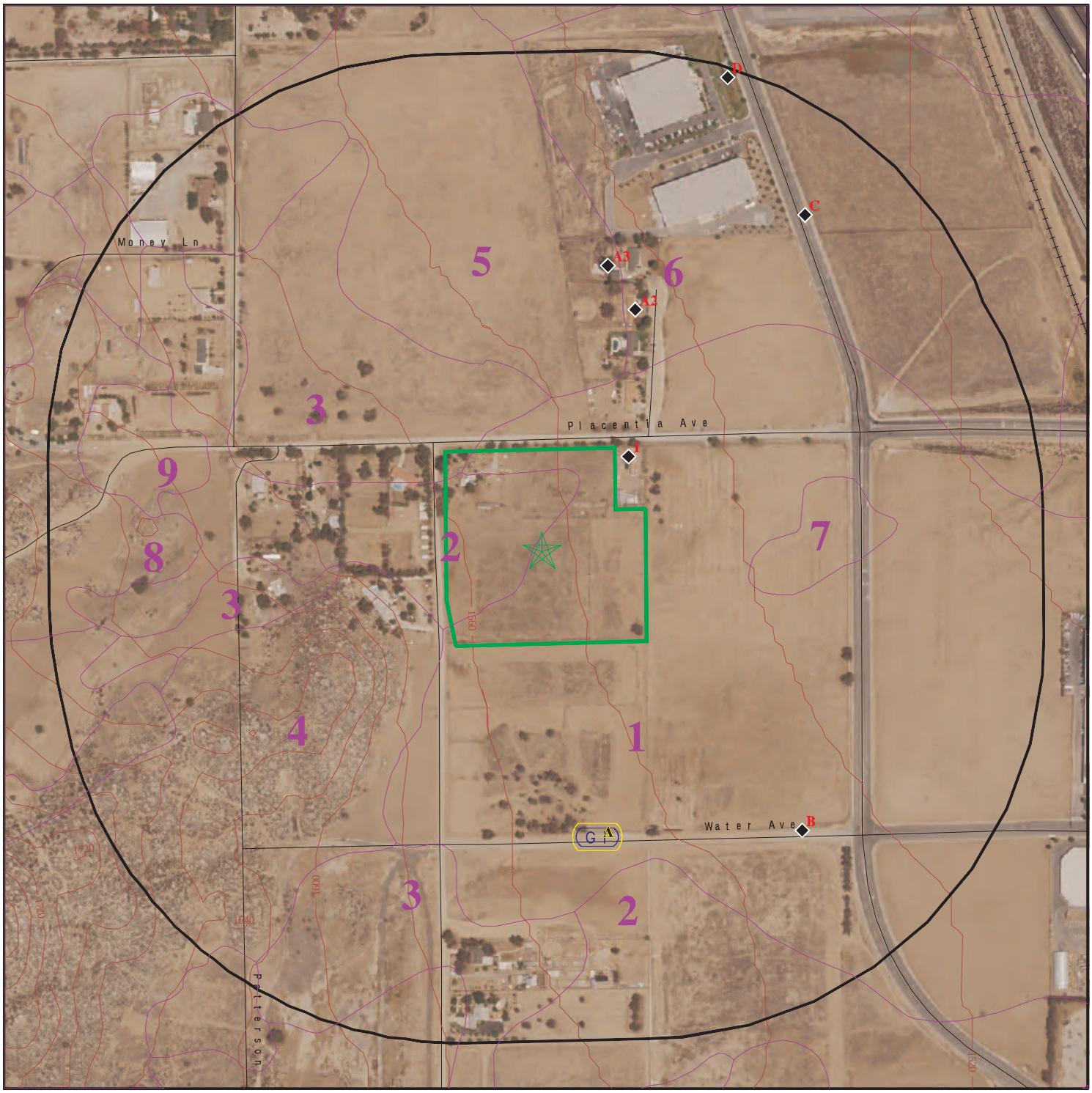
DETAIL MAP - 7056923.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Thrifty 9.48 Acres Perris CA	CLIENT:	Waterstone Environmental Inc
ADDRESS:	23641 Placentia Avenue Perris CA 92570	CONTACT:	RICHARD VOGL
		INQUIRY #:	7056923.2s
LAT/LONG:	33.822084 / 117.249392	DATE:	July 19, 2022 12:09 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	1	NR	1
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	0	2	NR	2
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	1	NR	NR	1
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	2	NR	NR	NR	2
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
AQUEOUS FOAM	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	2	NR	NR	NR	2
CA FID UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		2	2	NR	NR	NR	4
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	1	NR	NR	1
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	1	NR	NR	1
HWP	1.000		0	0	0	1	NR	1
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		1	NR	NR	NR	NR	1
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	3	6	3	4	0	16

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
NE
< 1/8
0.009 mi.
45 ft.

A-1 MOBILE TIRE & AXL COMPANY
23745 PLACENTIA AVE
PERRIS, CA 92570

EDR Hist Auto **1021097306**
N/A

Relative:
Lower

Actual:
1531 ft.

EDR Hist Auto

Year:	Name:	Type:
1993	A 1 MOBIL AXEL CO	Gasoline Service Stations
1994	A 1 MOBIL AXEL CO	Gasoline Service Stations
1995	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
1996	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
1997	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
1998	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
1999	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2000	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2001	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2002	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2003	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2004	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2005	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2006	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2007	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2008	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2009	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2010	A-1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2011	A 1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2012	A 1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2013	A 1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations
2014	A 1 MOBILE TIRE & AXL COMPANY	Gasoline Service Stations

A2
NNE
< 1/8
0.088 mi.
464 ft.

IPT RIVERSIDE LOGISTICS CENTER II, LLC
20421 SHARON ANN LANE
PERRIS, CA 92570

RCRA NonGen / NLR **1026810404**
CAC003122823

Site 1 of 2 in cluster A

Relative:
Lower

Actual:
1523 ft.

RCRA NonGen / NLR:

Date Form Received by Agency:	20210603
Handler Name:	IPT RIVERSIDE LOGISTICS CENTER II, LLC
Handler Address:	20421 SHARON ANN LANE
Handler City,State,Zip:	PERRIS, CA 92570
EPA ID:	CAC003122823
Contact Name:	WES HOCKINSON
Contact Address:	4675 MACARTHUR COURT
Contact City,State,Zip:	NEWPORT BEACH, CA 92660
Contact Telephone:	949-892-4908
Contact Fax:	Not reported
Contact Email:	JHUBER@ORBISREP.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Not reported
State District Owner:	Not reported
State District:	Not reported

IPT RIVERSIDE LOGISTICS CENTER II, LLC (Continued) **1026810404**

Mailing Address:	4675 MACARTHUR COURT
Mailing City,State,Zip:	NEWPORT BEACH, CA 92660
Owner Name:	IPT RIVERSIDE LOGISTICS CENTER II L
Owner Type:	Other
Operator Name:	WES HOCKINSON
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20210604
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No

IPT RIVERSIDE LOGISTICS CENTER II, LLC (Continued) **1026810404**

Exporter of Spent Lead Acid Batteries: No
Recycler Activity Without Storage: No
Manifest Broker: No
Sub-Part P Indicator: No

Handler - Owner Operator:
Owner/Operator Indicator: Owner
Owner/Operator Name: IPT RIVERSIDE LOGISTICS CENTER II L
Legal Status: Other
Date Became Current: Not reported
Date Ended Current: Not reported
Owner/Operator Address: 4675 MACARTHUR COURT
Owner/Operator City,State,Zip: NEWPORT BEACH, CA 92660
Owner/Operator Telephone: 949-892-4908
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: WES HOCKINSON
Legal Status: Other
Date Became Current: Not reported
Date Ended Current: Not reported
Owner/Operator Address: 4675 MACARTHUR COURT
Owner/Operator City,State,Zip: NEWPORT BEACH, CA 92660
Owner/Operator Telephone: 949-892-4908
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Historic Generators:
Receive Date: 20210603
Handler Name: IPT RIVERSIDE LOGISTICS CENTER II, LLC
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: No
Electronic Manifest Broker: No

List of NAICS Codes and Descriptions:
NAICS Code: 56299
NAICS Description: ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

A3
NNE
< 1/8
0.115 mi.
605 ft.

IPT RIVERSIDE LOGISTICS CENTER II, LLC
20395 SHARON ANN LANE
PERRIS, CA 92570

Site 2 of 2 in cluster A

RCRA NonGen / NLR | **1026813958** | **CAC003126553**

Relative:
Lower

Actual:
1524 ft.

RCRA NonGen / NLR:

Date Form Received by Agency:	20210625
Handler Name:	IPT RIVERSIDE LOGISTICS CENTER II, LLC
Handler Address:	20395 SHARON ANN LANE
Handler City,State,Zip:	PERRIS, CA 92570
EPA ID:	CAC003126553
Contact Name:	WES HOCKINSON
Contact Address:	4675 MACARTHUR COURT
Contact City,State,Zip:	NEWPORT BEACH, CA 92660
Contact Telephone:	949-892-4908
Contact Fax:	Not reported
Contact Email:	JHUBER@ORBISREP.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Not reported
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	4675 MACARTHUR COURT
Mailing City,State,Zip:	NEWPORT BEACH, CA 92660
Owner Name:	IPT RIVERSIDE LOGISTICS CENTER II L
Owner Type:	Other
Operator Name:	WES HOCKINSON
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported

IPT RIVERSIDE LOGISTICS CENTER II, LLC (Continued) **1026813958**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20210630
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	IPT RIVERSIDE LOGISTICS CENTER II L
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	4675 MACARTHUR COURT
Owner/Operator City,State,Zip:	NEWPORT BEACH, CA 92660
Owner/Operator Telephone:	949-892-4908
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	WES HOCKINSON
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	4675 MACARTHUR COURT
Owner/Operator City,State,Zip:	NEWPORT BEACH, CA 92660
Owner/Operator Telephone:	949-892-4908
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

IPT RIVERSIDE LOGISTICS CENTER II, LLC (Continued) **1026813958**

Historic Generators:
Receive Date: 20210625
Handler Name: IPT RIVERSIDE LOGISTICS CENTER II, LLC
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: No
Electronic Manifest Broker: No

List of NAICS Codes and Descriptions:
NAICS Code: 56299
NAICS Description: ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

B4 **PEDRO MA INDACOCHEA** **HIST UST** **S118413988**
SE **23772 WATER STREET** **N/A**
1/8-1/4 **PERRIS, CA 92370**
0.154 mi.
814 ft. **Site 1 of 2 in cluster B**

Relative: **Lower**
Actual: **1528 ft.**

HIST UST:
Name: PEDRO MA INDACOCHEA
Address: 23772 WATER STREET
City,State,Zip: PERRIS, CA 92370
File Number: 0001F87D
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F87D.pdf
Region: Not reported
Facility ID: Not reported
Facility Type: Not reported
Other Type: Not reported
Contact Name: Not reported
Telephone: Not reported
Owner Name: Not reported
Owner Address: Not reported
Owner City,St,Zip: Not reported
Total Tanks: Not reported

Tank Num: Not reported
Container Num: Not reported
Year Installed: Not reported
Tank Capacity: Not reported
Tank Used for: Not reported
Type of Fuel: Not reported
Container Construction Thickness: Not reported
Leak Detection: Not reported

PEDRO MA INDACOCHEA (Continued) **S118413988**

Click here for Geo Tracker PDF:

B5 **PEDRO MA INDACOCHEA** **HIST UST** **U001575340**
SE **23772 WATER AVE** **N/A**
1/8-1/4 **PERRIS, CA 92370**
0.154 mi.
814 ft. **Site 2 of 2 in cluster B**

Relative: HIST UST:
Lower

Name:	PEDRO MA INDACOCHEA
Address:	23772 WATER AVE
City,State,Zip:	PERRIS, CA 92370
File Number:	Not reported
URL:	Not reported
Region:	STATE
Facility ID:	00000051662
Facility Type:	Other
Other Type:	AGRICULTURAL
Contact Name:	Not reported
Telephone:	7146579050
Owner Name:	PEDRO MA INDACOCHEA
Owner Address:	26891 WATER AVENUE
Owner City,St,Zip:	PERRIS, CA 92370
Total Tanks:	0001
Tank Num:	001
Container Num:	001
Year Installed:	1973
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	None

Actual:
1528 ft.

C6 **CENTRAL FREIGHT LINES INC** **RCRA NonGen / NLR** **1025877565**
NE **20388 HARVILL AVE** **CAC003109472**
1/8-1/4 **PERRIS, CA 92570**
0.189 mi.
999 ft. **Site 1 of 2 in cluster C**

Relative: RCRA NonGen / NLR:
Lower

Date Form Received by Agency:	20210310
Handler Name:	CENTRAL FREIGHT LINES INC
Handler Address:	20388 HARVILL AVE
Handler City,State,Zip:	PERRIS, CA 92570
EPA ID:	CAC003109472
Contact Name:	NORMAN PACHECO
Contact Address:	5601 WEST WACO DR
Contact City,State,Zip:	WACO, TX 76710
Contact Telephone:	800-424-9300
Contact Fax:	Not reported
Contact Email:	NPACHECO@CENTRALFREIGHT.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified

Actual:
1508 ft.

CENTRAL FREIGHT LINES INC (Continued) **1025877565**

Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Not reported
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	5601 WEST WACO DR
Mailing City,State,Zip:	WACO, TX 76710
Owner Name:	CENTRAL FREIGHT LINES
Owner Type:	Other
Operator Name:	NORMAN PACHECO
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No

CENTRAL FREIGHT LINES INC (Continued) **1025877565**

Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20210312
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name:	NORMAN PACHECO
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	5601 WEST WACO DR
Owner/Operator City,State,Zip:	WACO, TX 76710
Owner/Operator Telephone:	800-424-9300
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	CENTRAL FREIGHT LINES
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	5601 WEST WACO DR
Owner/Operator City,State,Zip:	WACO, TX 76710
Owner/Operator Telephone:	800-424-9300
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	20210310
Handler Name:	CENTRAL FREIGHT LINES INC
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	No
Electronic Manifest Broker:	No

List of NAICS Codes and Descriptions:

NAICS Code:	484110
NAICS Description:	GENERAL FREIGHT TRUCKING, LOCAL

CENTRAL FREIGHT LINES INC (Continued) **1025877565**

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

Date Form Received by Agency:	20210708
Handler Name:	CENTRAL FREIGHT LINES INC
Handler Address:	20388 HARVILL AVE
Handler City,State,Zip:	PERRIS, CA 92570
EPA ID:	CAL000450703
Contact Name:	BRYAN RODELA
Contact Address:	HARVILL AVE
Contact City,State,Zip:	PERRIS, CA 92570
Contact Telephone:	951-405-6964
Contact Fax:	951-272-8650
Contact Email:	BRODELA@CENTRALFREIGHT.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Not reported
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	E LOOP 8205
Mailing City,State,Zip:	FORT WORTH, TX 76119
Owner Name:	CENTRAL FREIGHT LINES INC
Owner Type:	Other
Operator Name:	CENTRAL FREIGHT LINES INC
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported

CENTRAL FREIGHT LINES INC (Continued) **1025877565**

2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20210722
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	CENTRAL FREIGHT LINES INC
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	5601 W WACO DR
Owner/Operator City,State,Zip:	WACO, TX 76710
Owner/Operator Telephone:	254-772-2120
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	JOE COYLE
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	20388 HARVILL AVE
Owner/Operator City,State,Zip:	PERRIS, CA 92570
Owner/Operator Telephone:	951-396-3564
Owner/Operator Telephone Ext:	Not reported

CENTRAL FREIGHT LINES INC (Continued) **1025877565**

Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Owner
Owner/Operator Name: CENTRAL FREIGHT LINES INC
Legal Status: Other
Date Became Current: Not reported
Date Ended Current: Not reported
Owner/Operator Address: 5602 W WACO DR
Owner/Operator City,State,Zip: WACO, TX 76710
Owner/Operator Telephone: 254-772-2120
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: 254-741-5297
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: CENTRAL FREIGHT LINES INC
Legal Status: Other
Date Became Current: Not reported
Date Ended Current: Not reported
Owner/Operator Address: 5602 W WACO DR
Owner/Operator City,State,Zip: WACO, TX 76710
Owner/Operator Telephone: 254-772-2120
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: 254-741-5297
Owner/Operator Email: Not reported

Historic Generators:
Receive Date: 20191118
Handler Name: CENTRAL FREIGHT LINES INC
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20210708
Handler Name: CENTRAL FREIGHT LINES INC
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: No
Electronic Manifest Broker: No

List of NAICS Codes and Descriptions:
NAICS Code: 56299

CENTRAL FREIGHT LINES INC (Continued) **1025877565**

NAICS Description: ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

C7 **CENTRAL FREIGHT LINES PERRIS** **CERS HAZ WASTE** **S124446106**
NE **20388 HARVILL AVE** **NPDES** **N/A**
1/8-1/4 **PERRIS, CA 92570** **CERS**
0.189 mi.
999 ft. **Site 2 of 2 in cluster C**

Relative:
Lower

Actual:
1508 ft.

CERS HAZ WASTE:
Name: CENTRAL FREIGHT LINES INC. (PERRIS, CA)
Address: 20388 HARVILL AVE
City,State,Zip: PERRIS, CA 92570
Site ID: 554470
CERS ID: 10809124
CERS Description: Hazardous Waste Generator

NPDES:
Name: CENTRAL FREIGHT LINES PERRIS
Address: 20388 HARVILL AVE
City,State,Zip: PERRIS, CA 92570
Facility Status: Not reported
NPDES Number: Not reported
Region: Not reported
Agency Number: Not reported
Regulatory Measure ID: Not reported
Place ID: Not reported
Order Number: Not reported
WDID: 8 33NNA000408
Regulatory Measure Type: Industrial
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Discharge Address: Not reported
Discharge Name: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
Status: NONA Submitted
Status Date: 10/22/2019
Operator Name: Central Freight Lines Inc
Operator Address: 4301 W Mohave Sr
Operator City: Phoenix
Operator State: Arizona
Operator Zip: 85043

CERS:
Name: CENTRAL FREIGHT LINES INC. (PERRIS, CA)

CENTRAL FREIGHT LINES PERRIS (Continued) **S124446106**

Address: 20388 HARVILL AVE
City,State,Zip: PERRIS, CA 92570
Site ID: 554470
CERS ID: 10809124
CERS Description: Chemical Storage Facilities

Violations:

Site ID: 554470
Site Name: Central Freight Lines Inc. (Perris, CA)
Violation Date: 10-02-2019
Citation: 40 CFR 1 262.34(d)(5)(ii) - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 262.34(d)(5)(ii)
Violation Description: Failure to post the following information next to the telephone: (A) The name and telephone number of the emergency coordinator; (B) Location of fire extinguishers and spill control material, and, if present, fire alarm; and (C) The telephone number of the fire department, unless the facility has a direct alarm.
Violation Notes: Returned to compliance on 12/04/2019.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS,

Site ID: 554470
Site Name: Central Freight Lines Inc. (Perris, CA)
Violation Date: 10-02-2019
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes: Returned to compliance on 12/17/2019.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS,

Site ID: 554470
Site Name: Central Freight Lines Inc. (Perris, CA)
Violation Date: 10-02-2019
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to establish and electronically submit an adequate training program in safety procedures in the event of a release or threatened release of a hazardous material.
Violation Notes: Returned to compliance on 12/04/2019.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS,

Site ID: 554470
Site Name: Central Freight Lines Inc. (Perris, CA)
Violation Date: 10-02-2019
Citation: Un-Specified
Violation Description: Business Plan Program - Administration/Documentation - General Local Ordinance
Violation Notes: Returned to compliance on 01/27/2020.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS,

CENTRAL FREIGHT LINES PERRIS (Continued) **S124446106**

Site ID:	554470
Site Name:	Central Freight Lines Inc. (Perris, CA)
Violation Date:	10-02-2019
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to establish and electronically submit an adequate emergency response plan and procedures for a release or threatened release of a hazardous material.
Violation Notes:	Returned to compliance on 12/04/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,

Site ID:	554470
Site Name:	Central Freight Lines Inc. (Perris, CA)
Violation Date:	10-02-2019
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 12/04/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,

Site ID:	554470
Site Name:	Central Freight Lines Inc. (Perris, CA)
Violation Date:	10-02-2019
Citation:	HSC 6.95 25505(c) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(c)
Violation Description:	Failure to have a business plan readily available to personnel of the business or the unified program facility with responsibilities for emergency response or training.
Violation Notes:	Returned to compliance on 12/17/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,

Site ID:	554470
Site Name:	Central Freight Lines Inc. (Perris, CA)
Violation Date:	10-02-2019
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit a site map with all required content.
Violation Notes:	Returned to compliance on 12/04/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,

Site ID:	554470
Site Name:	Central Freight Lines Inc. (Perris, CA)
Violation Date:	10-02-2019
Citation:	Un-Specified

CENTRAL FREIGHT LINES PERRIS (Continued) **S124446106**

Violation Description:	Business Plan Program - Administration/Documentation - General Local Ordinance
Violation Notes:	Returned to compliance on 12/04/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	554470
Site Name:	Central Freight Lines Inc. (Perris, CA)
Violation Date:	10-02-2019
Citation:	HSC 6.95 25507 - California Health and Safety Code, Chapter 6.95, Section(s) 25507
Violation Description:	Failure to adequately establish and implement a business plan when storing/handling a hazardous material at or above reportable quantities.
Violation Notes:	Returned to compliance on 12/17/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	554470
Site Name:	Central Freight Lines Inc. (Perris, CA)
Violation Date:	10-02-2019
Citation:	40 CFR 1 265.174 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.174
Violation Description:	Failure to inspect hazardous waste storage areas at least weekly and look for leaking and deteriorating containers.
Violation Notes:	Returned to compliance on 12/04/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,
Site ID:	554470
Site Name:	Central Freight Lines Inc. (Perris, CA)
Violation Date:	10-02-2019
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit a business plan when storing/handling a hazardous material at or above reportable quantities.
Violation Notes:	Returned to compliance on 12/17/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	554470
Site Name:	Central Freight Lines Inc. (Perris, CA)
Violation Date:	10-02-2019
Citation:	22 CCR 12 66262.12 - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.12
Violation Description:	Failure to obtain an Identification Number prior to treating, storing, disposing of, transporting or offering for transportation any hazardous waste.
Violation Notes:	Returned to compliance on 12/04/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,

CENTRAL FREIGHT LINES PERRIS (Continued) **S124446106**

Site ID: 554470
Site Name: Central Freight Lines Inc. (Perris, CA)
Violation Date: 10-02-2019
Citation: Un-Specified
Violation Description: Hazardous Waste Generator Program - Administration/Documentation - General Local Ordinance
Violation Notes: Returned to compliance on 01/27/2020.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS,

Site ID: 554470
Site Name: Central Freight Lines Inc. (Perris, CA)
Violation Date: 10-02-2019
Citation: Un-Specified
Violation Description: Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes: Returned to compliance on 12/04/2019.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS,

Site ID: 554470
Site Name: Central Freight Lines Inc. (Perris, CA)
Violation Date: 10-02-2019
Citation: 40 CFR 1 265.31 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.31
Violation Description: Failure to maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.
Violation Notes: Returned to compliance on 12/04/2019.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS,

Site ID: 554470
Site Name: Central Freight Lines Inc. (Perris, CA)
Violation Date: 10-02-2019
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit the Business Activities Page and/or Business Owner Operator Identification Page.
Violation Notes: Returned to compliance on 12/04/2019.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS,

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-02-2019
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW

CENTRAL FREIGHT LINES PERRIS (Continued) **S124446106**

Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-02-2019
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Coordinates:
Site ID: 554470
Facility Name: Central Freight Lines Inc. (Perris, CA)
Env Int Type Code: HMBP
Program ID: 10809124
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.,
Latitude: 33.823740
Longitude: -117.245960

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: David Garlinger
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 20388 Harvill Ave.
Affiliation City: Perris
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92570
Affiliation Phone: ,

Affiliation Type Desc: Legal Owner
Entity Name: Central Freight Lines, Inc.
Entity Title: Not reported
Affiliation Address: 5601 W. Waco Dr.
Affiliation City: Waco
Affiliation State: TX
Affiliation Country: United States
Affiliation Zip: 76710
Affiliation Phone: (254) 772-2120,

Affiliation Type Desc: Operator
Entity Name: Central Freight Lines, Inc.
Entity Title: Not reported
Affiliation Address: Not reported

CENTRAL FREIGHT LINES PERRIS (Continued) **S124446106**

Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(254) 772-2120,
Affiliation Type Desc:	Parent Corporation
Entity Name:	CENTRAL FREIGHT LINERS INC
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Environmental Contact
Entity Name:	Gerry Horn
Entity Title:	Not reported
Affiliation Address:	3450 S. 59th. Avenue
Affiliation City:	Phoenix
Affiliation State:	AZ
Affiliation Country:	Not reported
Affiliation Zip:	85043
Affiliation Phone:	,
Affiliation Type Desc:	Identification Signer
Entity Name:	Joseph Coyle
Entity Title:	Terminal Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Property Owner
Entity Name:	Southwest Premier Properties
Entity Title:	Not reported
Affiliation Address:	PO Box 1397
Affiliation City:	Tolleson
Affiliation State:	AZ
Affiliation Country:	United States
Affiliation Zip:	85353
Affiliation Phone:	(602) 875-5355,
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055,

D8 **STEARNS PRODUCT DEVELOPMENT CORPORATION** **RCRA NonGen / NLR** **1024821995**
NNE **20281 HARVILL AVE** **CAL000339084**
1/8-1/4 **PERRIS, CA 92570**
0.244 mi.
1287 ft. **Site 1 of 2 in cluster D**

Relative: **Lower**

Actual: **1512 ft.**

RCRA NonGen / NLR:

Date Form Received by Agency:	20081218
Handler Name:	STEARNS PRODUCT DEVELOPMENT CORPORATION
Handler Address:	20281 HARVILL AVE
Handler City,State,Zip:	PERRIS, CA 92570-7235
EPA ID:	CAL000339084
Contact Name:	CHARLES WIELAND
Contact Address:	20281 HARVILL AVE
Contact City,State,Zip:	PERRIS, CA 92570-0000
Contact Telephone:	951-657-0379
Contact Fax:	951-657-7091
Contact Email:	CDEJONG@PROLUXE.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	20281 HARVILL AVE
Mailing City,State,Zip:	PERRIS, CA 92570
Owner Name:	STEARNS PRODUCT DEV CORP
Owner Type:	Other
Operator Name:	CHARLES WIELAND
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported

STEARNS PRODUCT DEVELOPMENT CORPORATION (Continued) **1024821995**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20180905
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	STEARNS PRODUCT DEV CORP
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	20281 HARVILL AVE
Owner/Operator City,State,Zip:	PERRIS, CA 92570-0000
Owner/Operator Telephone:	951-657-0379
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	CHARLES WIELAND
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	20281 HARVILL AVE
Owner/Operator City,State,Zip:	PERRIS, CA 92570-0000
Owner/Operator Telephone:	951-657-0379
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

STEARNS PRODUCT DEVELOPMENT CORPORATION (Continued) **1024821995**

Historic Generators:
Receive Date: 20081218
Handler Name: STEARNS PRODUCT DEVELOPMENT CORPORATION
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 333294
NAICS Description: FOOD PRODUCT MACHINERY MANUFACTURING

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

D9 **STEARNS PRODUCT DEVELOPMENT CORP** **CERS HAZ WASTE** **S119087517**
NNE **20281 HARVILL AVE** **NPDES** **N/A**
1/8-1/4 **PERRIS, CA 92570** **CIWQS**
0.244 mi. **CERS**
1287 ft. **Site 2 of 2 in cluster D**

Relative:
Lower

Actual:
1512 ft.

CERS HAZ WASTE:
Name: STEARNS PRODUCT DEVELOPMENT CORP
Address: 20281 HARVILL AVE
City,State,Zip: PERRIS, CA 92570
Site ID: 402881
CERS ID: 10328665
CERS Description: Hazardous Waste Generator

NPDES:
Name: STEARNS PRODUCT DEVELOPMENT CORP
Address: 20281 HARVILL AVE
City,State,Zip: PERRIS, CA 92570
Facility Status: Active
NPDES Number: CAS000001
Region: 8
Agency Number: 0
Regulatory Measure ID: 474596
Place ID: Not reported
Order Number: 97-03-DWQ
WDID: 8 33I026687
Regulatory Measure Type: Enrollee
Program Type: Industrial
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 07/13/2016

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	20281 Harvill Ave
Discharge Name:	Stearns Product Development Corp
Discharge City:	Perris
Discharge State:	California
Discharge Zip:	92570
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	474596
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I026687
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	07/08/2016
Processed Date:	07/13/2016
Status:	Active
Status Date:	07/13/2016
Place Size:	48000
Place Size Unit:	SqFt
Contact:	CAROLINE DE JONG
Contact Title:	CEO
Contact Phone:	800-624-6717
Contact Phone Ext:	122
Contact Email:	CDEJONG@PROLUXE.COM
Operator Name:	Stearns Product Development Corp
Operator Address:	20281 Harvill Ave
Operator City:	Perris
Operator State:	California
Operator Zip:	92570
Operator Contact:	STEVEN RAIO
Operator Contact Title:	CEO
Operator Contact Phone:	800-624-6717
Operator Contact Phone Ext:	122
Operator Contact Email:	SRAIO@PROLUXE.COM
Operator Type:	Private Business
Developer:	Not reported

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	951-237-1040
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Y
Receiving Water Name:	REGION 8 SANTA ANA REGION
Certifier:	STEVEN RAIO
Certifier Title:	CEO
Certification Date:	08-JUL-16
Primary Sic:	3556-Food Products Machinery
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	474596
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I026687
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	07/13/2016
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Stearns Product Development Corp
Discharge Address:	20281 Harvill Ave
Discharge City:	Perris
Discharge State:	California
Discharge Zip:	92570
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	STEARNS PRODUCT DEVELOPMENT CORP
Address:	20281 HARVILL AVE
City,State,Zip:	PERRIS, CA 92570

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	8 33I026687
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	07/13/2016
Operator Name:	Stearns Product Development Corp
Operator Address:	20281 Harvill Ave
Operator City:	Perris
Operator State:	California
Operator Zip:	92570

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	474596
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I026687
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	07/08/2016
Processed Date:	07/13/2016
Status:	Active
Status Date:	07/13/2016
Place Size:	48000
Place Size Unit:	SqFt
Contact:	CAROLINE DE JONG
Contact Title:	CEO
Contact Phone:	800-624-6717
Contact Phone Ext:	122
Contact Email:	CDEJONG@PROLUXE.COM

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Operator Name:	Stearns Product Development Corp
Operator Address:	20281 Harvill Ave
Operator City:	Perris
Operator State:	California
Operator Zip:	92570
Operator Contact:	STEVEN RAIO
Operator Contact Title:	CEO
Operator Contact Phone:	800-624-6717
Operator Contact Phone Ext:	122
Operator Contact Email:	SRAIO@PROLUXE.COM
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	951-237-1040
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Y
Receiving Water Name:	REGION 8 SANTA ANA REGION
Certifier:	STEVEN RAIO
Certifier Title:	CEO
Certification Date:	08-JUL-16
Primary Sic:	3556-Food Products Machinery
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	474596
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I026687
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Effective Date Of Regulatory Measure:	07/13/2016
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Stearns Product Development Corp
Discharge Address:	20281 Harvill Ave
Discharge City:	Perris
Discharge State:	California
Discharge Zip:	92570
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Name:	STEARNS PRODUCT DEVELOPMENT CORP
Address:	20281 HARVILL AVE
City,State,Zip:	PERRIS, CA 92570
Agency:	Stearns Product Development Corp
Agency Address:	20281 Harvill Ave, Perris, CA 92570
Place/Project Type:	Industrial - Food Products Machinery
SIC/NAICS:	3556
Region:	8
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	8 33I026687
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	07/13/2016
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.82628
Longitude:	-117.24809

CERS:

Name:	STEARNS PRODUCT DEVELOPMENT CORP
Address:	20281 HARVILL AVE
City,State,Zip:	PERRIS, CA 92570
Site ID:	402881
CERS ID:	10328665
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-10-2021
Citation:	Un-Specified
Violation Description:	Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes:	Returned to compliance on 06/16/2021. OBSERVATION: Required NFPA-704 signs were not posted. CORRECTIVE ACTION: Owner/operator shall research chemical safety data sheets and post proper NFPA-704 signs. Signs shall be posted at the entrance to the facility. Submit photos to this department. OBSERVATION: Observed faded NFPA-704 signs located

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

	on the Propane tank. CORRECTIVE ACTION: Owner/operator shall replace all faded or otherwise unrecognizable NFPA-704 signs. Submit photos to this department.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-04-2018
Citation:	Un-Specified
Violation Description:	Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes:	Returned to compliance on 05/23/2018. OBSERVATION: Observed Propane containment with a faded product label. CORRECTIVE ACTION: Owner/operator shall ensure all hazardous materials containers are labeled with a product name. Submit photos to this department.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-04-2018
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 05/23/2018. OBSERVATION: No training records observed/provided during inspection. CORRECTIVE ACTION: Owner/operator shall provide training to all employees. Documentation shall be retained and be made available for inspection for a minimum period of 3 years from the date of the training.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-04-2018
Citation:	Un-Specified
Violation Description:	Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes:	Returned to compliance on 05/23/2018. OBSERVATION: Required NFPA-704 signs were not posted. CORRECTIVE ACTION: Owner/operator shall research chemical safety data sheets and post proper NFPA-704 signs. Signs shall be posted on the Propane storage area. Submit photos to this department.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 08/01/2017. CERS submittal accepted
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Training - General
Violation Notes:	Returned to compliance on 01/15/2014.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	22 CCR 15 66265.31 - California Code of Regulations, Title 22, Chapter 15, Section(s) 66265.31
Violation Description:	Failure to maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water which could threaten human health or the environment.
Violation Notes:	Returned to compliance on 01/15/2014.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-10-2021
Citation:	40 CFR 1 265.31 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.31
Violation Description:	Failure to maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.
Violation Notes:	Returned to compliance on 06/16/2021. OBSERVATION: Observed used oily absorbent on the ground outside under the metal recycling container and under the machinery inside the facility. Also observed saturated oily absorbent pads on top of the Cutting and Grind fluid 55 gallon drums. CORRECTIVE ACTION: Owner/operator shall immediately clean all spills, and manage according to Title 22 hazardous waste regulations. Submit a statement and supporting documentation (photos) explaining how this waste was managed to this department.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,
Site ID:	402881

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 01/15/2014.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	22 CCR 15 66265.173 - California Code of Regulations, Title 22, Chapter 15, Section(s) 66265.173
Violation Description:	Failure to properly close hazardous waste containers when not in active use.
Violation Notes:	Returned to compliance on 01/15/2014.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 01/15/2014. [LOCAL ORDINANCE VIOLATION 105A] Hazardous materials are stored in a manner to minimize the possibility of a fire, explosion, or release.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	22 CCR 15 66265.174 - California Code of Regulations, Title 22, Chapter 15, Section(s) 66265.174
Violation Description:	Failure to inspect hazardous waste storage areas at least weekly.
Violation Notes:	Returned to compliance on 01/15/2014.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-04-2018
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Violation Notes:	Returned to compliance on 05/04/2018. OBSERVATION: The chemical inventory description page submitted for Nitrogen and Diethanolamine contained incorrect information. The DOT hazard class and fire code for Nitrogen were incorrect and the storage pressure and storage temperature for Diethanolamine were incorrect. CORRECTIVE ACTION: Owner/operator shall update the chemical inventory page for Nitrogen and Diethanolamine and submit to the statewide information management system at http://cers.calepa.ca.gov. Missing information may be found by looking at the chemical safety data sheet. **Corrected during the inspection.**
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-10-2021
Citation:	HSC 6.95 25508(a)(3) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(3)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 06/16/2021. OBSERVATION: The most recent business plan submission in the statewide information management system (CERS) failed to contain a chemical inventory description page for Cutting and Grinding Fluid. CORRECTIVE ACTION: Owner/operator shall complete a chemical inventory page for all reportable hazardous materials on site and submit to the statewide information management system (e.g. CERS) at http://cers.calepa.ca.gov.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	05-10-2021
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	This facility is a restaurant equipment manufacturer that generates oily water and used absorbent. Used absorbent shall be stored in a closed, properly labeled hazardous waste drum.
Eval Division:	Riverside County Department of Env Health
Eval Program:	HW
Eval Source:	CERS,
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	05-10-2021
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	This facility is a restaurant equipment manufacturer that handles compressed gases, cutting and grind fluid, and Acetone.
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS,
Eval General Type:	Other/Unknown
Eval Date:	01-15-2014

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-04-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-09-2013
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Other/Unknown
Eval Date: 01-15-2014
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-04-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-09-2013
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Enforcement Action:
Site ID: 402881
Site Name: Stearns Product Development Corp
Site Address: 20281 HARVILL AVE
Site City: PERRIS

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Site Zip: 92570
Enf Action Date: 10-09-2013
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HMRRP
Enf Action Source: CERS,

Site ID: 402881
Site Name: Stearns Product Development Corp
Site Address: 20281 HARVILL AVE
Site City: PERRIS
Site Zip: 92570
Enf Action Date: 10-09-2013
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HW
Enf Action Source: CERS,

Coordinates:
Site ID: 402881
Facility Name: Stearns Product Development Corp
Env Int Type Code: HMBP
Program ID: 10328665
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.,
Latitude: 33.826280
Longitude: -117.248090

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055,

Affiliation Type Desc: Document Preparer
Entity Name: Caroline De Jong
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Operator
Entity Name: STEVE RAIO
Entity Title: Not reported

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(957) 657-0379,
Affiliation Type Desc:	Owner/Operator
Entity Name:	Stearns Product Development Corp
Entity Title:	Operator
Affiliation Address:	20281 Harvill Ave
Affiliation City:	Perris
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92570
Affiliation Phone:	,
Affiliation Type Desc:	Parent Corporation
Entity Name:	Stearns Product Development Corp
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Environmental Contact
Entity Name:	EDDIE MARTINEZ
Entity Title:	Not reported
Affiliation Address:	20281 HARVILL AVE
Affiliation City:	Perris
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92570
Affiliation Phone:	,
Affiliation Type Desc:	Legal Owner
Entity Name:	Stearns Product Development Co
Entity Title:	Not reported
Affiliation Address:	20281 Harvill Ave
Affiliation City:	Perris
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92587
Affiliation Phone:	(951) 657-0379,
Affiliation Type Desc:	Property Owner
Entity Name:	Steven Raio
Entity Title:	Not reported
Affiliation Address:	20281 Harvill Ave
Affiliation City:	Perris
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92570
Affiliation Phone:	(949) 283-3078,

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 20281 Harvill Ave
Affiliation City: Perris
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92570
Affiliation Phone: ,

Affiliation Type Desc: Identification Signer
Entity Name: Steve Raio
Entity Title: CEO/President
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Name: STEARNS PRODUCT DEVELOPMENT CORP
Address: 20281 HARVILL AVE
City,State,Zip: PERRIS, CA 92570
Site ID: 402881
CERS ID: 847641
CERS Description: Industrial Facility Storm Water

Violations:
Site ID: 402881
Site Name: Stearns Product Development Corp
Violation Date: 05-10-2021
Citation: Un-Specified
Violation Description: Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes: Returned to compliance on 06/16/2021. OBSERVATION: Required NFPA-704 signs were not posted. CORRECTIVE ACTION: Owner/operator shall research chemical safety data sheets and post proper NFPA-704 signs. Signs shall be posted at the entrance to the facility. Submit photos to this department. OBSERVATION: Observed faded NFPA-704 signs located on the Propane tank. CORRECTIVE ACTION: Owner/operator shall replace all faded or otherwise unrecognizable NFPA-704 signs. Submit photos to this department.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS,

Site ID: 402881
Site Name: Stearns Product Development Corp
Violation Date: 05-04-2018
Citation: Un-Specified
Violation Description: Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes: Returned to compliance on 05/23/2018. OBSERVATION: Observed Propane containment with a faded product label. CORRECTIVE ACTION: Owner/operator shall ensure all hazardous materials containers are labeled with a product name. Submit photos to this department.
Violation Division: Riverside County Department of Env Health

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-04-2018
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 05/23/2018. OBSERVATION: No training records observed/provided during inspection. CORRECTIVE ACTION: Owner/operator shall provide training to all employees. Documentation shall be retained and be made available for inspection for a minimum period of 3 years from the date of the training.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-04-2018
Citation:	Un-Specified
Violation Description:	Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes:	Returned to compliance on 05/23/2018. OBSERVATION: Required NFPA-704 signs were not posted. CORRECTIVE ACTION: Owner/operator shall research chemical safety data sheets and post proper NFPA-704 signs. Signs shall be posted on the Propane storage area. Submit photos to this department.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 08/01/2017. CERS submittal accepted
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Training - General
Violation Notes:	Returned to compliance on 01/15/2014.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	22 CCR 15 66265.31 - California Code of Regulations, Title 22, Chapter 15, Section(s) 66265.31
Violation Description:	Failure to maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water which could threaten human health or the environment.
Violation Notes:	Returned to compliance on 01/15/2014.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,

Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-10-2021
Citation:	40 CFR 1 265.31 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.31
Violation Description:	Failure to maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.
Violation Notes:	Returned to compliance on 06/16/2021. OBSERVATION: Observed used oily absorbent on the ground outside under the metal recycling container and under the machinery inside the facility. Also observed saturated oily absorbent pads on top of the Cutting and Grind fluid 55 gallon drums. CORRECTIVE ACTION: Owner/operator shall immediately clean all spills, and manage according to Title 22 hazardous waste regulations. Submit a statement and supporting documentation (photos) explaining how this waste was managed to this department.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,

Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 01/15/2014.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,

Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	22 CCR 15 66265.173 - California Code of Regulations, Title 22, Chapter 15, Section(s) 66265.173
Violation Description:	Failure to properly close hazardous waste containers when not in

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

	active use.
Violation Notes:	Returned to compliance on 01/15/2014.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	HSC 6.95 Multiple - California Health and Safety Code, Chapter 6.95, Section(s) Multiple
Violation Description:	Business Plan Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 01/15/2014. [LOCAL ORDINANCE VIOLATION 105A] Hazardous materials are stored in a manner to minimize the possibility of a fire, explosion, or release.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	10-09-2013
Citation:	22 CCR 15 66265.174 - California Code of Regulations, Title 22, Chapter 15, Section(s) 66265.174
Violation Description:	Failure to inspect hazardous waste storage areas at least weekly.
Violation Notes:	Returned to compliance on 01/15/2014.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-04-2018
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 05/04/2018. OBSERVATION: The chemical inventory description page submitted for Nitrogen and Diethanolamine contained incorrect information. The DOT hazard class and fire code for Nitrogen were incorrect and the storage pressure and storage temperature for Diethanolamine were incorrect. CORRECTIVE ACTION: Owner/operator shall update the chemical inventory page for Nitrogen and Diethanolamine and submit to the statewide information management system at http://cers.calepa.ca.gov. Missing information may be found by looking at the chemical safety data sheet. **Corrected during the inspection.**
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	402881
Site Name:	Stearns Product Development Corp
Violation Date:	05-10-2021
Citation:	HSC 6.95 25508(a)(3) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(3)

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Violation Description: Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes: Returned to compliance on 06/16/2021. OBSERVATION: The most recent business plan submission in the statewide information management system (CERS) failed to contain a chemical inventory description page for Cutting and Grinding Fluid. CORRECTIVE ACTION: Owner/operator shall complete a chemical inventory page for all reportable hazardous materials on site and submit to the statewide information management system (e.g. CERS) at http://cers.calepa.ca.gov.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS,

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-10-2021
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: This facility is a restaurant equipment manufacturer that generates oily water and used absorbent. Used absorbent shall be stored in a closed, properly labeled hazardous waste drum.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-10-2021
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: This facility is a restaurant equipment manufacturer that handles compressed gases, cutting and grind fluid, and Acetone.
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Other/Unknown
Eval Date: 01-15-2014
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-04-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-09-2013
Violations Found: Yes

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Other/Unknown
Eval Date: 01-15-2014
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-04-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-09-2013
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Enforcement Action:
Site ID: 402881
Site Name: Stearns Product Development Corp
Site Address: 20281 HARVILL AVE
Site City: PERRIS
Site Zip: 92570
Enf Action Date: 10-09-2013
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health
Enf Action Program: HMRRP
Enf Action Source: CERS,

Site ID: 402881
Site Name: Stearns Product Development Corp
Site Address: 20281 HARVILL AVE
Site City: PERRIS
Site Zip: 92570
Enf Action Date: 10-09-2013
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Riverside County Department of Env Health

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Enf Action Program: HW
Enf Action Source: CERS,

Coordinates:
Site ID: 402881
Facility Name: Stearns Product Development Corp
Env Int Type Code: HMBP
Program ID: 10328665
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.,
Latitude: 33.826280
Longitude: -117.248090

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055,

Affiliation Type Desc: Document Preparer
Entity Name: Caroline De Jong
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Operator
Entity Name: STEVE RAIO
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (957) 657-0379,

Affiliation Type Desc: Owner/Operator
Entity Name: Stearns Product Development Corp
Entity Title: Operator
Affiliation Address: 20281 Harvill Ave
Affiliation City: Perris
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92570
Affiliation Phone: ,

Affiliation Type Desc: Parent Corporation
Entity Name: Stearns Product Development Corp

STEARNS PRODUCT DEVELOPMENT CORP (Continued) **S119087517**

Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Environmental Contact
Entity Name:	EDDIE MARTINEZ
Entity Title:	Not reported
Affiliation Address:	20281 HARVILL AVE
Affiliation City:	Perris
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92570
Affiliation Phone:	,
Affiliation Type Desc:	Legal Owner
Entity Name:	Stearns Product Development Co
Entity Title:	Not reported
Affiliation Address:	20281 Harvill Ave
Affiliation City:	Perris
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92587
Affiliation Phone:	(951) 657-0379,
Affiliation Type Desc:	Property Owner
Entity Name:	Steven Raio
Entity Title:	Not reported
Affiliation Address:	20281 Harvill Ave
Affiliation City:	Perris
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92570
Affiliation Phone:	(949) 283-3078,
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	20281 Harvill Ave
Affiliation City:	Perris
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92570
Affiliation Phone:	,
Affiliation Type Desc:	Identification Signer
Entity Name:	Steve Raio
Entity Title:	CEO/President
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

10
ESE
1/4-1/2
0.327 mi.
1728 ft.

Relative:
Lower

Actual:
1504 ft.

CLA-VAL COMPANY
24100 WATER ST
PERRIS, CA 92370

LUST **S103820898**
CERS HAZ WASTE **N/A**
Cortese
EMI
HIST CORTESE
NPDES
CIWQS
CERS

LUST:

Name:	CLA VAL COMPANY
Address:	24100 WATER ST
City,State,Zip:	PERRIS, CA 92370
Lead Agency:	RIVERSIDE COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606500263
Global Id:	T0606500263
Latitude:	33.8206717684704
Longitude:	-117.242686263824
Status:	Completed - Case Closed
Status Date:	06/16/1993
Case Worker:	RIV
RB Case Number:	083302019T
Local Agency:	RIVERSIDE COUNTY LOP
File Location:	Local Agency Warehouse
Local Case Number:	92274
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Waste Oil / Motor / Hydraulic / Lubricating
Site History:	Not reported

LUST:

Global Id:	T0606500263
Contact Type:	Local Agency Caseworker
Contact Name:	Riverside County LOP
Organization Name:	RIVERSIDE COUNTY LOP
Address:	3880 LEMON ST SUITE 200
City:	RIVERSIDE
Email:	Not reported
Phone Number:	9519558980

LUST:

Global Id:	T0606500263
Action Type:	ENFORCEMENT
Date:	06/15/1993
Action:	File review - #RCDEH Upload Site File 4/29/2015
Global Id:	T0606500263
Action Type:	Other
Date:	03/24/1992
Action:	Leak Reported
Global Id:	T0606500263
Action Type:	Other
Date:	03/21/1991
Action:	Leak Stopped
Global Id:	T0606500263
Action Type:	ENFORCEMENT
Date:	06/16/1993

CLA-VAL COMPANY (Continued) **S103820898**

Action: Closure/No Further Action Letter - #Riv Co Closure

Global Id: T0606500263
Action Type: Other
Date: 01/06/1991
Action: Leak Discovery

LUST:
Global Id: T0606500263
Status: Open - Case Begin Date
Status Date: 01/06/1991

Global Id: T0606500263
Status: Open - Site Assessment
Status Date: 03/21/1992

Global Id: T0606500263
Status: Open - Site Assessment
Status Date: 08/17/1992

Global Id: T0606500263
Status: Completed - Case Closed
Status Date: 06/16/1993

LUST REG 8:

Name:	CLA-VAL COMPANY
Address:	24100 WATER ST
City:	PERRIS
Region:	8
County:	Riverside
Regional Board:	Santa Ana Region
Facility Status:	Case Closed
Case Number:	083302019T
Local Case Num:	92274
Case Type:	Soil only
Substance:	Cutting Oil
Qty Leaked:	Not reported
Abate Method:	Not reported
Cross Street:	HWY 215
Enf Type:	Not reported
Funding:	Not reported
How Discovered:	Tank Closure
How Stopped:	Not reported
Leak Cause:	Corrosion
Leak Source:	Tank
Global ID:	T0606500263
How Stopped Date:	3/21/1991
Enter Date:	4/1/1992
Date Confirmation of Leak Began:	3/21/1992
Date Preliminary Assessment Began:	Not reported
Discover Date:	1/6/1991
Enforcement Date:	Not reported
Close Date:	6/16/1993
Date Prelim Assessment Workplan Submitted:	Not reported
Date Pollution Characterization Began:	8/17/1992

CLA-VAL COMPANY (Continued) **S103820898**

Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	Not reported
Enter Date:	4/1/1992
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.8193608
Longitude:	-117.2425602
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	0
Max MTBE Soil:	Not reported
MTBE Fuel:	0
MTBE Tested:	Not Required to be Tested.
MTBE Class:	*
Staff:	NOM
Staff Initials:	UNK
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	SAN JACINTO (8-5)
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

Summary: MACHINE OIL

RIVERSIDE CO. LUST:

Name:	CLA VAL
Address:	24100 WATER AVE
City,State,Zip:	PERRIS, CA
Region:	RIVERSIDE
Facility ID:	92274
Employee:	Brown
Site Closed:	Yes
Case Type:	Soil only
Facility Status:	closed/action completed
Casetype Decode:	Soil only is impacted
Fstatus Decode:	Closed/Action completed

CERS HAZ WASTE:

Name:	CRAFTECH METAL FORMING
Address:	24100 WATER AVE # B
City,State,Zip:	PERRIS, CA 92570
Site ID:	390764
CERS ID:	10320835
CERS Description:	Hazardous Waste Generator

CORTESE:

Name:	CLA VAL COMPANY
Address:	24100 WATER ST
City,State,Zip:	PERRIS, CA 92370
Region:	CORTESE

CLA-VAL COMPANY (Continued) **S103820898**

Envirostor Id:	Not reported
Global ID:	T0606500263
Site/Facility Type:	LUST CLEANUP SITE
Cleanup Status:	COMPLETED - CASE CLOSED
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported
WID Id:	Not reported
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported
File Name:	Active Open

EMI:

Name:	CLAY-VAL CO
Address:	24100 WATER ST
City,State,Zip:	PERRIS, CA 92370
Year:	1990
County Code:	33
Air Basin:	SC
Facility ID:	46162
Air District Name:	SC
SIC Code:	0
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2

Name:	CLAY-VAL CO
Address:	24100 WATER AV
City,State,Zip:	PERRIS, CA 92370
Year:	1993
County Code:	33
Air Basin:	SC
Facility ID:	46162
Air District Name:	SC
SIC Code:	9999
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0

CLA-VAL COMPANY (Continued) **S103820898**

NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Name: CLAY-VAL CO
Address: 24100 WATER AV
City,State,Zip: PERRIS, CA 92370
Year: 1995
County Code: 33
Air Basin: SC
Facility ID: 46162
Air District Name: SC
SIC Code: 9999
Air District Name: SOUTH COAST AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 1
Reactive Organic Gases Tons/Yr: 0
Carbon Monoxide Emissions Tons/Yr: 0
NOX - Oxides of Nitrogen Tons/Yr: 0
SOX - Oxides of Sulphur Tons/Yr: 0
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

HIST CORTESE:
edr_fname: CLA-VAL COMPANY
edr_fadd1: 24100 WATER
City,State,Zip: PERRIS, CA 92370
Region: CORTESE
Facility County Code: 33
Reg By: LTNKA
Reg Id: 083302019T

NPDES:
Name: CRAFTECH METAL FORMING
Address: 24100 WATER AVE B
City,State,Zip: PERRIS, CA 92570
Facility Status: Active
NPDES Number: CAS000001
Region: 8
Agency Number: 0
Regulatory Measure ID: 210882
Place ID: Not reported
Order Number: 97-03-DWQ
WDID: 8 33I015223
Regulatory Measure Type: Enrollee
Program Type: Industrial
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 07/01/1999
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Discharge Address: 24100 Water Ave B
Discharge Name: Craftech Metal Forming
Discharge City: Perris
Discharge State: California

CLA-VAL COMPANY (Continued) **S103820898**

Discharge Zip:	92570
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	210882
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I015223
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	07/01/1999
Status:	Active
Status Date:	07/01/1999
Place Size:	10
Place Size Unit:	Acres
Contact:	Joe Steinmentz
Contact Title:	Env Compliance Mgr
Contact Phone:	714-357-9153
Contact Phone Ext:	Not reported
Contact Email:	jsteinmetz@craftechmetal.com
Operator Name:	Craftech Metal Forming
Operator Address:	24100 Water Ave B
Operator City:	Perris
Operator State:	California
Operator Zip:	92570
Operator Contact:	Joe Steinmetz
Operator Contact Title:	Not reported
Operator Contact Phone:	951-940-6444
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	joe@aps-dev.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported

CLA-VAL COMPANY (Continued) **S103820898**

Constype Linear Utility Ind:	Not reported
Emergency Phone:	213-200-8243
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	none
Certifier:	Joe Steinmetz
Certifier Title:	Contractor Consultant
Certification Date:	22-SEP-15
Primary Sic:	3728-Aircraft Parts and Auxiliary Equipment, NEC
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	210882
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I015223
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	07/01/1999
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Craftech Metal Forming
Discharge Address:	24100 Water Ave B
Discharge City:	Perris
Discharge State:	California
Discharge Zip:	92570
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported

CLA-VAL COMPANY (Continued) **S103820898**

Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	CLA VAL
Address:	24100 WATER AVE
City,State,Zip:	PERRIS, CA 92570
Facility Status:	Active
NPDES Number:	CAS000001
Region:	8
Agency Number:	0
Regulatory Measure ID:	358429
Place ID:	Not reported

CLA-VAL COMPANY (Continued) **S103820898**

Order Number:	97-03-DWQ
WDID:	8 33NEC003025
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	02/28/2017
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	1701 Placentia Ave
Discharge Name:	Griswold Industries
Discharge City:	Costa Mesa
Discharge State:	California
Discharge Zip:	92627
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	358429
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33NEC003025
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	02/28/2017
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Griswold Industries
Discharge Address:	1701 Placentia Ave
Discharge City:	Costa Mesa
Discharge State:	California
Discharge Zip:	92627
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported

CLA-VAL COMPANY (Continued) **S103820898**

Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	358429
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33NEC003025
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported

CLA-VAL COMPANY (Continued) **S103820898**

Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	02/23/2017
Processed Date:	02/28/2017
Status:	Active
Status Date:	02/28/2017
Place Size:	5
Place Size Unit:	Acres
Contact:	Bob Rost
Contact Title:	EHS Manager
Contact Phone:	949-722-4848
Contact Phone Ext:	Not reported
Contact Email:	brost@cla-val.com
Operator Name:	Griswold Industries
Operator Address:	1701 Placentia Ave
Operator City:	Costa Mesa
Operator State:	California
Operator Zip:	92627
Operator Contact:	Bob Rost
Operator Contact Title:	Not reported
Operator Contact Phone:	949-722-4848
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	brost@cla-val.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	UNKNOWN
Certifier:	Bob Rost
Certifier Title:	EHS Manager
Certification Date:	23-FEB-17
Primary Sic:	4225-General Warehousing and Storage
Secondary Sic:	Not reported

CLA-VAL COMPANY (Continued) **S103820898**

Tertiary Sic: Not reported

Name: CRAFTECH METAL FORMING
Address: 24100 WATER AVE B
City,State,Zip: PERRIS, CA 92570
Facility Status: Not reported
NPDES Number: Not reported
Region: Not reported
Agency Number: Not reported
Regulatory Measure ID: Not reported
Place ID: Not reported
Order Number: Not reported
WDID: 8 33I015223
Regulatory Measure Type: Industrial
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Discharge Address: Not reported
Discharge Name: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
Status: Active
Status Date: 07/01/1999
Operator Name: Craftech Metal Forming
Operator Address: 24100 Water Ave B
Operator City: Perris
Operator State: California
Operator Zip: 92570

NPDES as of 03/2018:
NPDES Number: Not reported
Status: Not reported
Agency Number: Not reported
Region: 8
Regulatory Measure ID: 210882
Order Number: Not reported
Regulatory Measure Type: Industrial
Place ID: Not reported
WDID: 8 33I015223
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Discharge Name: Not reported
Discharge Address: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
Received Date: 05/09/2008
Processed Date: 07/01/1999
Status: Active
Status Date: 07/01/1999
Place Size: 10

CLA-VAL COMPANY (Continued) **S103820898**

Place Size Unit:	Acres
Contact:	Joe Steinmentz
Contact Title:	Env Compliance Mgr
Contact Phone:	714-357-9153
Contact Phone Ext:	Not reported
Contact Email:	jsteinmetz@craftechmetal.com
Operator Name:	Craftech Metal Forming
Operator Address:	24100 Water Ave B
Operator City:	Perris
Operator State:	California
Operator Zip:	92570
Operator Contact:	Joe Steinmetz
Operator Contact Title:	Not reported
Operator Contact Phone:	951-940-6444
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	joe@aps-dev.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	213-200-8243
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	none
Certifier:	Joe Steinmetz
Certifier Title:	Contractor Consultant
Certification Date:	22-SEP-15
Primary Sic:	3728-Aircraft Parts and Auxiliary Equipment, NEC
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	210882

CLA-VAL COMPANY (Continued) **S103820898**

Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I015223
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	07/01/1999
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Craftech Metal Forming
Discharge Address:	24100 Water Ave B
Discharge City:	Perris
Discharge State:	California
Discharge Zip:	92570
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported

CLA-VAL COMPANY (Continued) **S103820898**

Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	CLA VAL
Address:	24100 WATER AVE
City,State,Zip:	PERRIS, CA 92570
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	8 33NEC003025
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	02/28/2017
Operator Name:	Griswold Industries
Operator Address:	1701 Placentia Ave
Operator City:	Costa Mesa
Operator State:	California
Operator Zip:	92627

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	358429
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33NEC003025
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	02/28/2017

CLA-VAL COMPANY (Continued) **S103820898**

Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Griswold Industries
Discharge Address:	1701 Placentia Ave
Discharge City:	Costa Mesa
Discharge State:	California
Discharge Zip:	92627
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported

CLA-VAL COMPANY (Continued) **S103820898**

Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	358429
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33NEC003025
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	02/23/2017
Processed Date:	02/28/2017
Status:	Active
Status Date:	02/28/2017
Place Size:	5
Place Size Unit:	Acres
Contact:	Bob Rost
Contact Title:	EHS Manager
Contact Phone:	949-722-4848
Contact Phone Ext:	Not reported
Contact Email:	brost@cla-val.com
Operator Name:	Griswold Industries
Operator Address:	1701 Placentia Ave
Operator City:	Costa Mesa
Operator State:	California
Operator Zip:	92627
Operator Contact:	Bob Rost
Operator Contact Title:	Not reported
Operator Contact Phone:	949-722-4848
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	brost@cla-val.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported

CLA-VAL COMPANY (Continued) **S103820898**

Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	UNKNOWN
Certifier:	Bob Rost
Certifier Title:	EHS Manager
Certification Date:	23-FEB-17
Primary Sic:	4225-General Warehousing and Storage
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Name:	CRAFTECH METAL FORMING
Address:	24100 WATER AVE B
City,State,Zip:	PERRIS, CA 92570
Agency:	Craftech Metal Forming
Agency Address:	24100 Water Ave B, Perris, CA 92570
Place/Project Type:	Industrial - Aircraft Parts and Auxiliary Equipment, NEC
SIC/NAICS:	3728
Region:	8
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	8 33I015223
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	07/01/1999
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.81951
Longitude:	-117.24178

Name:	CLA VAL
Address:	24100 WATER AVE

CLA-VAL COMPANY (Continued) **S103820898**

City,State,Zip:	PERRIS, CA 92570
Agency:	Griswold Industries
Agency Address:	1701 Placentia Ave, Costa Mesa, CA 92627
Place/Project Type:	Industrial - General Warehousing and Storage
SIC/NAICS:	4225
Region:	8
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	8 33NEC003025
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	02/28/2017
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.81951
Longitude:	-117.24178

CERS:

Name:	CRAFTECH METAL FORMING
Address:	24100 WATER AVE B
City,State,Zip:	PERRIS, CA 92570
Site ID:	529971
CERS ID:	216014
CERS Description:	Industrial Facility Storm Water

Violations:

Site ID:	529971
Site Name:	Craftech Metal Forming
Violation Date:	07-16-2016
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	Failure to submit 2015 - 2016 Annual Report by due date
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS,

Site ID:	529971
Site Name:	Craftech Metal Forming
Violation Date:	07-03-2000
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Deficient Report
Violation Notes:	Non-submittal of Annual Report. Due 7/1/2000
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS,

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	02-06-2015

CLA-VAL COMPANY (Continued) **S103820898**

Violations Found: No
Eval Type: Industrial Storm Water Compliance Evaluation
Eval Notes: On 2-6-15, staff met with Mr. Joe Steinmentz to inspect the site due to a request for NEC. Upon arrival, the SWPPP and inspection logs were reviewed. The SWPPP requires revision to include a new outfall in the front of the facility, installation of a sampler area, and BMPs involved. This company makes molds for sheet metal press to make airplane parts. The molds are made of metal (mainly zinc) and are stored outdoors in the back of the facility. Some of the molds had petroleum hydrocarbons and oils on them. One area where used parts are stored requires tarp cover to eliminate exposure. A curb in the secondary containment of one of the compressor units was cut and oil and grease was noted on the ground. The secondary containment should be repaired to avoid runoff or spills from this area. Outfall number 1 is connected to a large capacity in ground clarifier. The clarifier removes sediments and oil and grease. Mr. Steinmentz and Mr. Shaw were notified that due to exposure, they do not qualify for the NEC status. Furthermore, the parts in the back of the facility must be covered by a tarp. The County inspector has asked them to cover the molds and parts in the back as well. Billing and annual reports are all up-to-date. Staff will inspect the site again as soon as the proper fixes have been implemented.
Eval Division: Water Boards
Eval Program: INDSTW
Eval Source: SMARTS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-25-2006
Violations Found: No
Eval Type: Industrial Storm Water Compliance Evaluation
Eval Notes: There is exposure at this site from the mold storage and drum storage areas. Therefore, the No Exposure Certification is denied.
Eval Division: Water Boards
Eval Program: INDSTW
Eval Source: SMARTS,

Enforcement Action:
Site ID: 529971
Site Name: Craftech Metal Forming
Site Address: 24100 WATER AVE B
Site City: PERRIS
Site Zip: 92570
Enf Action Date: 07-26-2000
Enf Action Type: Notice of Violation
Enf Action Description: Notice of Violation
Enf Action Notes: Non-submittal of Annual Report. Due 7/1/2000
Enf Action Division: Water Boards
Enf Action Program: INDSTW
Enf Action Source: SMARTS,

Site ID: 529971
Site Name: Craftech Metal Forming
Site Address: 24100 WATER AVE B
Site City: PERRIS
Site Zip: 92570
Enf Action Date: 08-01-2016
Enf Action Type: Industrial Storm Water Enforcement

CLA-VAL COMPANY (Continued) **S103820898**

Enf Action Description: Industrial Storm Water Enforcement
Enf Action Notes: Failure to submit 2015-2016 Annual Report by July 15, 2016 due date.
Enf Action Division: Water Boards
Enf Action Program: INDSTW
Enf Action Source: SMARTS,

Affiliation:
Affiliation Type Desc: Owner/Operator
Entity Name: Craftech Metal Forming
Entity Title: Operator
Affiliation Address: 24100 Water Ave B
Affiliation City: Perris
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92570
Affiliation Phone: ,

Name: CLA VAL COMPANY
Address: 24100 WATER ST
City,State,Zip: PERRIS, CA 92370
Site ID: 208955
CERS ID: T0606500263
CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:
Affiliation Type Desc: Local Agency Caseworker
Entity Name: Riverside County LOP - RIVERSIDE COUNTY LOP
Entity Title: Not reported
Affiliation Address: 3880 LEMON ST SUITE 200
Affiliation City: RIVERSIDE
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: 9519558980,

Name: CLA VAL
Address: 24100 WATER AVE
City,State,Zip: PERRIS, CA 92570
Site ID: 529354
CERS ID: 730633
CERS Description: Industrial Facility Storm Water

Violations:
Site ID: 529354
Site Name: Cla Val
Violation Date: 07-01-2013
Citation: 2014-0057-DWQ - Industrial General Permit
Violation Description: SW - Late Report
Violation Notes: Failure to submit Annual Report for the reporting year 2012-2013 by July 1, 2013. Annual Report 2012-2013 1st Notice of Non-Compliance was sent out on July 31, 2013.
Violation Division: Water Boards
Violation Program: INDSTW
Violation Source: SMARTS,

CLA-VAL COMPANY (Continued) **S103820898**

Evaluation:
- Eval General Type: Other/Unknown
- Eval Date: 04-08-2020
- Violations Found: No
- Eval Type: Construction Storm Water Compliance Evaluation
- Eval Notes: No exposure observed at site.
- Eval Division: Water Boards
- Eval Program: INDSTW
- Eval Source: SMARTS,

Enforcement Action:
- Site ID: 529354
- Site Name: Cla Val
- Site Address: 24100 WATER AVE
- Site City: PERRIS
- Site Zip: 92570
- Enf Action Date: 07-31-2013
- Enf Action Type: Industrial Storm Water Enforcement
- Enf Action Description: Industrial Storm Water Enforcement
- Enf Action Notes: Site has not submitted the 2012-2013 annual report by 07/01/2013. - 1st Notice of Non-Compliance sent on 07/31/2013, via certified mail to facility, CC to owner.
- Enf Action Division: Water Boards
- Enf Action Program: INDSTW
- Enf Action Source: SMARTS,

Affiliation:
- Affiliation Type Desc: Owner/Operator
- Entity Name: Griswold Industries
- Entity Title: Operator
- Affiliation Address: 1701 Placentia Ave
- Affiliation City: Costa Mesa
- Affiliation State: CA
- Affiliation Country: Not reported
- Affiliation Zip: 92627
- Affiliation Phone: ,

- Name: CRAFTECH METAL FORMING
- Address: 24100 WATER AVE # B
- City,State,Zip: PERRIS, CA 92570
- Site ID: 390764
- CERS ID: 10320835
- CERS Description: Chemical Storage Facilities

Violations:
- Site ID: 390764
- Site Name: Craftech Metal Forming
- Violation Date: 03-13-2018
- Citation: HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
- Violation Description: Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
- Violation Notes: Returned to compliance on 04/11/2018.

CLA-VAL COMPANY (Continued) **S103820898**

Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS,

Site ID: 390764
Site Name: Craftech Metal Forming
Violation Date: 03-13-2018
Citation: Un-Specified
Violation Description: Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes: Returned to compliance on 04/11/2018.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS,

Site ID: 390764
Site Name: Craftech Metal Forming
Violation Date: 07-05-2017
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes: Returned to compliance on 03/13/2018.
Violation Division: Riverside County Department of Env Health
Violation Program: HMRRP
Violation Source: CERS,

Site ID: 390764
Site Name: Craftech Metal Forming
Violation Date: 03-13-2018
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes: Returned to compliance on 04/11/2018.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS,

Site ID: 390764
Site Name: Craftech Metal Forming
Violation Date: 03-13-2018
Citation: 22 CCR 12 66262.23(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.23(a)
Violation Description: Failure to properly complete the Uniform Hazardous Waste Manifest.
Violation Notes: Returned to compliance on 04/11/2018.
Violation Division: Riverside County Department of Env Health
Violation Program: HW
Violation Source: CERS,

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 01-20-2021

CLA-VAL COMPANY (Continued) **S103820898**

Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 01-20-2021
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-13-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Other/Unknown
Eval Date: 07-05-2017
Violations Found: Yes
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-13-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055,

Affiliation Type Desc: Environmental Contact
Entity Name: Joe Steinmetz
Entity Title: Not reported

CLA-VAL COMPANY (Continued) **S103820898**

Affiliation Address:	PO Box 4759
Affiliation City:	Orange
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92863
Affiliation Phone:	,
Affiliation Type Desc:	Property Owner
Entity Name:	Griswold Industries
Entity Title:	Not reported
Affiliation Address:	1701 Placentia Avenue
Affiliation City:	Costa Mesa
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92627
Affiliation Phone:	(949) 722-4805,
Affiliation Type Desc:	Document Preparer
Entity Name:	JOE STEINMETZ
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	24100 Water Ave
Affiliation City:	Perris
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92570
Affiliation Phone:	,
Affiliation Type Desc:	Identification Signer
Entity Name:	Richard L. Shaw
Entity Title:	President
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Legal Owner
Entity Name:	Craftech Metal Forming
Entity Title:	Not reported
Affiliation Address:	24100 Water Ave
Affiliation City:	Perris
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92570
Affiliation Phone:	(909) 940-6444,

CLA-VAL COMPANY (Continued) **S103820898**

Affiliation Type Desc:	Operator
Entity Name:	Richard Shaw
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 940-6444,

Affiliation Type Desc:	Parent Corporation
Entity Name:	Craftech Metal Forming
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

11
East
1/2-1
0.780 mi.
4117 ft.

VAL VERDE ELEMENTARY SCHOOL ADDITION **ENVIROSTOR** **S118756753**
2656 INDIAN AVENUE **SCH** **N/A**
PERRIS, CA 92571

Relative:
Lower

Actual:
1462 ft.

ENVIROSTOR:

Name:	VAL VERDE ELEMENTARY SCHOOL ADDITION
Address:	2656 INDIAN AVENUE
City,State,Zip:	PERRIS, CA 92571-3210
Facility ID:	33820012
Status:	No Action Required
Status Date:	10/13/2000
Site Code:	404158
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	1
NPL:	NO
Regulatory Agencies:	DTSC
Lead Agency:	DTSC
Program Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	61
Senate:	31
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	33.81987
Longitude:	-117.2351
APN:	NONE SPECIFIED
Past Use:	* EDUCATIONAL SERVICES
Potential COC:	NONE SPECIFIED No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	VAL VERDE ELEMENTARY SCHOOL ADDITION

VAL VERDE ELEMENTARY SCHOOL ADDITION (Continued) **S118756753**

Alias Type: Alternate Name
Alias Name: VAL VERDE UNIFIED SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: VAL VERDE USD-VAL VERDE ELEM SCH
Alias Type: Alternate Name
Alias Name: 404158
Alias Type: Project Code (Site Code)
Alias Name: 33820012
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 01/18/2002
Comments: CRU Memo

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 10/13/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 11/22/2000
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Name: VAL VERDE ELEMENTARY SCHOOL ADDITION
Address: 2656 INDIAN AVENUE
City,State,Zip: PERRIS, CA 92571-3210
Facility ID: 33820012
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 1
National Priorities List: NO
Cleanup Oversight Agencies: DTSC
Lead Agency: DTSC
Lead Agency Description: * DTSC
Project Manager: Not reported
Supervisor: Javier Hinojosa
Division Branch: Southern California Schools & Brownfields Outreach
Site Code: 404158

VAL VERDE ELEMENTARY SCHOOL ADDITION (Continued) **S118756753**

Assembly:	61
Senate:	31
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	10/13/2000
Restricted Use:	NO
Funding:	School District
Latitude:	33.81987
Longitude:	-117.2351
APN:	NONE SPECIFIED
Past Use:	* EDUCATIONAL SERVICES
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	VAL VERDE ELEMENTARY SCHOOL ADDITION
Alias Type:	Alternate Name
Alias Name:	VAL VERDE UNIFIED SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	VAL VERDE USD-VAL VERDE ELEM SCH
Alias Type:	Alternate Name
Alias Name:	404158
Alias Type:	Project Code (Site Code)
Alias Name:	33820012
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	01/18/2002
Comments:	CRU Memo
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	10/13/2000
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	11/22/2000
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

12
NW
1/2-1
0.856 mi.
4521 ft.

Relative:
Higher

Actual:
1562 ft.

ALPHA RESINS
19991 SEATON AVE
PERRIS, CA 92370

CORRACTS **1000238960**
RCRA-TSDF **CAD059270975**
RCRA-LQG
ENVIROSTOR
HIST UST
RAATS
EMI
HWP
NPDES
CIWQS
CERS

CORRACTS:

Name:	AOC LLC
Address:	19991 SEATON AVENUE
Address 2:	Not reported
EPA ID:	CAD059270975
Area Name:	ENTIRE FACILITY
Corrective Action:	LEAD AGENCY DETERMINATION
Actual Date:	19900101
Air Release Indicator:	Not reported
Groundwater Release Indicator:	Not reported
Soil Release Indicator:	Not reported
Surface Water Release Indicator:	Not reported

Name:	AOC LLC
Address:	19991 SEATON AVENUE
Address 2:	Not reported
EPA ID:	CAD059270975
Area Name:	ENTIRE FACILITY
Corrective Action:	RFA COMPLETED
Actual Date:	19881024
Air Release Indicator:	Not reported
Groundwater Release Indicator:	Not reported
Soil Release Indicator:	Not reported
Surface Water Release Indicator:	Not reported

Name:	AOC LLC
Address:	19991 SEATON AVENUE
Address 2:	Not reported
EPA ID:	CAD059270975
Area Name:	ENTIRE FACILITY
Corrective Action:	CA PRIORITIZATION-LOW CA PRIORITY
Actual Date:	19920716
Air Release Indicator:	Not reported
Groundwater Release Indicator:	Not reported
Soil Release Indicator:	Not reported
Surface Water Release Indicator:	Not reported

Name:	AOC LLC
Address:	19991 SEATON AVENUE
Address 2:	Not reported
EPA ID:	CAD059270975
Area Name:	ENTIRE FACILITY
Corrective Action:	STABILIZATION MEASURES EVALUATION-FACILITY NOT AMENABLE TO STABILIZATION
Actual Date:	19920716
Air Release Indicator:	Not reported
Groundwater Release Indicator:	Not reported

ALPHA RESINS (Continued) **1000238960**

Soil Release Indicator: Not reported
Surface Water Release Indicator: Not reported

Name: AOC LLC
Address: 19991 SEATON AVENUE
Address 2: Not reported
EPA ID: CAD059270975
Area Name: ENTIRE FACILITY
Corrective Action: CA PROCESS IS TERMINATED
Actual Date: 19881024
Air Release Indicator: Not reported
Groundwater Release Indicator: Not reported
Soil Release Indicator: Not reported
Surface Water Release Indicator: Not reported

RCRA-LQG:

Date Form Received by Agency:		20220118
Handler Name:	AOC LLC	
Handler Address:		19991 SEATON AVENUE
Handler City,State,Zip:		PERRIS, CA 92570
EPA ID:		CAD059270975
Contact Name:		JUAN F MONTALVO
Contact Address:		SEATON AVENUE
Contact City,State,Zip:		PERRIS, CA 92570
Contact Telephone:		951-943-9708
Contact Fax:		951-657-8370
Contact Email:		JUAN.MONTALVO@AOCRESINS.COM
Contact Title:		ENVIRONMENTAL HEALTH AND SAFETY LEADER
EPA Region:		09
Land Type:		Private
Federal Waste Generator Description:		Large Quantity Generator
Non-Notifier:		Not reported
Biennial Report Cycle:		2021
Accessibility:		Not reported
Active Site Indicator:		Handler Activities
State District Owner:		Not reported
State District:		Not reported
Mailing Address:		SEATON AVENUE
Mailing City,State,Zip:		PERRIS, CA 92570
Owner Name:		THE ALPHA CORPORATION
Owner Type:		Private
Operator Name:		AOC, LLC
Operator Type:		Private
Short-Term Generator Activity:		No
Importer Activity:		No
Mixed Waste Generator:		No
Transporter Activity:		No
Transfer Facility Activity:		No
Recycler Activity with Storage:		No
Small Quantity On-Site Burner Exemption:		No
Smelting Melting and Refining Furnace Exemption:		No
Underground Injection Control:		No
Off-Site Waste Receipt:		No
Universal Waste Indicator:		No
Universal Waste Destination Facility:		No
Federal Universal Waste:		No
Active Site Fed-Reg Treatment Storage and Disposal Facility:		Not reported

ALPHA RESINS (Continued) **1000238960**

Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Incineration, Storage
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Incineration, Storage
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	Yes
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	Yes
Corrective Action Priority Ranking:	Low
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20220207
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Biennial: List of Years
Year: 2019

Click Here for Biennial Reporting System Data:
Year: 2017

Click Here for Biennial Reporting System Data:
Year: 2015

Click Here for Biennial Reporting System Data:
Year: 2013

Click Here for Biennial Reporting System Data:
Year: 2011

ALPHA RESINS (Continued) **1000238960**

Click Here for Biennial Reporting System Data:
Year: 2009

Click Here for Biennial Reporting System Data:
Year: 2007

Click Here for Biennial Reporting System Data:
Year: 2005

Click Here for Biennial Reporting System Data:
Year: 2001

Click Here for Biennial Reporting System Data:

Hazardous Waste Summary:
Waste Code: D001
Waste Description: IGNITABLE WASTE

Waste Code: D009
Waste Description: MERCURY

Waste Code: U107
Waste Description: 1,2-BENZENEDICARBOXYLIC ACID, DIOCTYL ESTER (OR) DI-N-OCTYL PHTHALATE

Waste Code: U147
Waste Description: 2,5-FURANDIONE (OR) MALEIC ANHYDRIDE

Waste Code: U190
Waste Description: 1,3-ISOBENZOFURANDIONE (OR) PHTHALIC ANHYDRIDE

Handler - Owner Operator:
Owner/Operator Indicator: Operator
Owner/Operator Name: THE ALPHA CORPORATION
Legal Status: Private
Date Became Current: 19970501
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: AOC, LLC
Legal Status: Private
Date Became Current: 19970501
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

ALPHA RESINS (Continued) **1000238960**

Owner/Operator Indicator:	Operator
Owner/Operator Name:	AOC, LLC
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	19991 SEATON AVENUE
Owner/Operator City,State,Zip:	PERRIS, CA 92570-0000
Owner/Operator Telephone:	951-943-9708
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	951-657-8370
Owner/Operator Email:	JMONTALVO@AOC-RESINS.COM

Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	JUAN.MONTALVO@AOCRESINS.COM

Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported

ALPHA RESINS (Continued) **1000238960**

Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name:	AOC, LLC
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	19991 SEATON AVENUE
Owner/Operator City,State,Zip:	PERRIS, CA 92370-0000
Owner/Operator Telephone:	951-943-9708
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	951-657-8370
Owner/Operator Email:	JMONTALVO@AOC-RESINS.COM
Owner/Operator Indicator:	Owner
Owner/Operator Name:	ALPHA OWENS CORNING L L C
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	PO BOX 610
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38027-0610
Owner/Operator Telephone:	901-854-2800
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported

ALPHA RESINS (Continued) **1000238960**

Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	JMONTALVO@AOC-RESINS.COM
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORP
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2859
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name:	AOC LLC
Legal Status:	Private

ALPHA RESINS (Continued) **1000238960**

Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	JMONTALVO@AOC-RESINS.COM

Owner/Operator Indicator:	Operator
Owner/Operator Name:	AOC, LLC
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	19991 SEATON AVENUE
Owner/Operator City,State,Zip:	PERRIS, CA 92570-0000
Owner/Operator Telephone:	951-943-9708
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	951-657-8370
Owner/Operator Email:	JUAN.MONTALVO@AOCRESINS.COM

Owner/Operator Indicator:	Operator
Owner/Operator Name:	AOC, LLC
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	19991 SEATON AVENUE
Owner/Operator City,State,Zip:	PERRIS, CA 92570
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	ALPHA CHEMICAL CORPORATION
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	PO DRAWER A
Owner/Operator City,State,Zip:	CITY NOT REPORTED, TN 99999
Owner/Operator Telephone:	901-853-2450
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

ALPHA RESINS (Continued) **1000238960**

Owner/Operator Indicator:	Operator
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	20100208
Handler Name: AOC, LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20120228
Handler Name: AOC, LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20140301
Handler Name: AOC, LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20160119
Handler Name: AOC, LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No

ALPHA RESINS (Continued) **1000238960**

Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20180125
Handler Name: AOC LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	No
Electronic Manifest Broker:	No

Receive Date:	20201001
Handler Name: AOC LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	No
Electronic Manifest Broker:	No

Receive Date:	20220118
Handler Name: AOC LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	No
Electronic Manifest Broker:	No

Receive Date:	19960901
Handler Name: ALPHA OWENS CORNING L L C	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	CA
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No

ALPHA RESINS (Continued) **1000238960**

Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20060227
Handler Name: AOC, L.L.C.
Federal Waste Generator Description: Small Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 19941017
Handler Name: ALPHA OWENS CORNING L L C
Federal Waste Generator Description: Small Quantity Generator
State District Owner: CA
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 19900412
Handler Name: ALPHA RESINS
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 19920226
Handler Name: ALPHA RESINS
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 19940329
Handler Name: ALPHA RESINS CORP

ALPHA RESINS (Continued) **1000238960**

Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	19990304
Handler Name:	ALPHA/OWENS-CORNING L.L.C
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20020301
Handler Name:	AOC, L.L.C.
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20060227
Handler Name:	AOC, L.L.C.
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20080227
Handler Name:	AOC, L.L.C.
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No

ALPHA RESINS (Continued) **1000238960**

Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 325211
NAICS Description: PLASTICS MATERIAL AND RESIN MANUFACTURING

Facility Has Received Notices of Violation:
Found Violation: No
Agency Which Determined Violation: Not reported
Violation Short Description: Not reported
Date Violation was Determined: Not reported
Actual Return to Compliance Date: Not reported
Return to Compliance Qualifier: Not reported
Violation Responsible Agency: Not reported
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: LDR - General
Date Violation was Determined: 19880607
Actual Return to Compliance Date: 19880801
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State

ALPHA RESINS (Continued) **1000238960**

Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 19890111
Actual Return to Compliance Date: 19890512
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: 19890324
Enforcement Identifier: 001
Date of Enforcement Action: 19890224
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: R9STA
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported

ALPHA RESINS (Continued) **1000238960**

SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090306
Return to Compliance Qualifier: Documented
Violation Responsible Agency: State
Scheduled Compliance Date: 20090306
Enforcement Identifier: 601
Date of Enforcement Action: 20090106
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: LDR - General
Date Violation was Determined: 19890111
Actual Return to Compliance Date: 19890324
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State

ALPHA RESINS (Continued) **1000238960**

Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: EPA
Violation Short Description: Generators - Pre-transport
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090219
Return to Compliance Qualifier: Documented
Violation Responsible Agency: EPA
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported

ALPHA RESINS (Continued) **1000238960**

SEP Expenditure Amount:	Not reported
SEP Scheduled Completion Date:	Not reported
SEP Actual Date:	Not reported
SEP Defaulted Date:	Not reported
SEP Type:	Not reported
SEP Type Description:	Not reported
Proposed Amount:	Not reported
Final Monetary Amount:	Not reported
Paid Amount:	Not reported
Final Count:	Not reported
Final Amount:	Not reported
Found Violation:	No
Agency Which Determined Violation:	Not reported
Violation Short Description:	Not reported
Date Violation was Determined:	Not reported
Actual Return to Compliance Date:	Not reported
Return to Compliance Qualifier:	Not reported
Violation Responsible Agency:	Not reported
Scheduled Compliance Date:	Not reported
Enforcement Identifier:	Not reported
Date of Enforcement Action:	Not reported
Enforcement Responsible Agency:	Not reported
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported
Corrective Action Component:	Not reported
Appeal Initiated Date:	Not reported
Appeal Resolution Date:	Not reported
Disposition Status Date:	Not reported
Disposition Status:	Not reported
Disposition Status Description:	Not reported
Consent/Final Order Sequence Number:	Not reported
Consent/Final Order Respondent Name:	Not reported
Consent/Final Order Lead Agency:	Not reported
Enforcement Type:	Not reported
Enforcement Responsible Person:	Not reported
Enforcement Responsible Sub-Organization:	Not reported
SEP Sequence Number:	Not reported
SEP Expenditure Amount:	Not reported
SEP Scheduled Completion Date:	Not reported
SEP Actual Date:	Not reported
SEP Defaulted Date:	Not reported
SEP Type:	Not reported
SEP Type Description:	Not reported
Proposed Amount:	Not reported
Final Monetary Amount:	Not reported
Paid Amount:	Not reported
Final Count:	Not reported
Final Amount:	Not reported
Found Violation:	Yes
Agency Which Determined Violation:	EPA
Violation Short Description:	TSD IS-Container Use and Management
Date Violation was Determined:	20090106
Actual Return to Compliance Date:	20090219
Return to Compliance Qualifier:	Documented
Violation Responsible Agency:	EPA

ALPHA RESINS (Continued) **1000238960**

Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: LDR - General
Date Violation was Determined: 19880607
Actual Return to Compliance Date: 19880801
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported

ALPHA RESINS (Continued) **1000238960**

SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090306
Return to Compliance Qualifier: Documented
Violation Responsible Agency: State
Scheduled Compliance Date: 20090306
Enforcement Identifier: 601
Date of Enforcement Action: 20090106
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number:Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: EPA
Violation Short Description: TSD IS-Preparedness and Prevention
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090219
Return to Compliance Qualifier: Documented
Violation Responsible Agency: EPA

ALPHA RESINS (Continued) **1000238960**

Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 19921202
Actual Return to Compliance Date: 19930107
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: 19921217
Enforcement Identifier: 002
Date of Enforcement Action: 19921202
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: INITIAL 3008(A) COMPLIANCE
Enforcement Responsible Person: R9STA
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported

ALPHA RESINS (Continued) **1000238960**

SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: 2400
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Transporters - General
Date Violation was Determined: 19890111
Actual Return to Compliance Date: 19890512
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: 19890324
Enforcement Identifier: 001
Date of Enforcement Action: 19890224
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number:Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: R9STA
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Transporters - General
Date Violation was Determined: 19880607
Actual Return to Compliance Date: 19880801
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State

ALPHA RESINS (Continued) **1000238960**

Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 19880607
Actual Return to Compliance Date: 19880801
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported

ALPHA RESINS (Continued) **1000238960**

SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: No
Agency Which Determined Violation: Not reported
Violation Short Description: Not reported
Date Violation was Determined: Not reported
Actual Return to Compliance Date: Not reported
Return to Compliance Qualifier: Not reported
Violation Responsible Agency: Not reported
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: No
Agency Which Determined Violation: Not reported
Violation Short Description: Not reported
Date Violation was Determined: Not reported
Actual Return to Compliance Date: Not reported
Return to Compliance Qualifier: Not reported
Violation Responsible Agency: Not reported

ALPHA RESINS (Continued) **1000238960**

Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20041104
Actual Return to Compliance Date: 20041203
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: Not reported
Enforcement Identifier: 501
Date of Enforcement Action: 20041104
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported

ALPHA RESINS (Continued) **1000238960**

SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 19921202
Actual Return to Compliance Date: 19930107
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: 19921217
Enforcement Identifier: 002
Date of Enforcement Action: 19921202
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: INITIAL 3008(A) COMPLIANCE
Enforcement Responsible Person: R9STA
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: 2400
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090306
Return to Compliance Qualifier: Documented
Violation Responsible Agency: State

ALPHA RESINS (Continued) **1000238960**

Scheduled Compliance Date: 20090306
Enforcement Identifier: 601
Date of Enforcement Action: 20090106
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090306
Return to Compliance Qualifier: Documented
Violation Responsible Agency: State
Scheduled Compliance Date: 20090306
Enforcement Identifier: 601
Date of Enforcement Action: 20090106
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported

ALPHA RESINS (Continued) **1000238960**

SEP Expenditure Amount:	Not reported
SEP Scheduled Completion Date:	Not reported
SEP Actual Date:	Not reported
SEP Defaulted Date:	Not reported
SEP Type:	Not reported
SEP Type Description:	Not reported
Proposed Amount:	Not reported
Final Monetary Amount:	Not reported
Paid Amount:	Not reported
Final Count:	Not reported
Final Amount:	Not reported
Found Violation:	Yes
Agency Which Determined Violation:	State
Violation Short Description:	LDR - General
Date Violation was Determined:	19890111
Actual Return to Compliance Date:	19890512
Return to Compliance Qualifier:	Observed
Violation Responsible Agency:	State
Scheduled Compliance Date:	Not reported
Enforcement Identifier:	Not reported
Date of Enforcement Action:	Not reported
Enforcement Responsible Agency:	Not reported
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported
Corrective Action Component:	Not reported
Appeal Initiated Date:	Not reported
Appeal Resolution Date:	Not reported
Disposition Status Date:	Not reported
Disposition Status:	Not reported
Disposition Status Description:	Not reported
Consent/Final Order Sequence Number:	Not reported
Consent/Final Order Respondent Name:	Not reported
Consent/Final Order Lead Agency:	Not reported
Enforcement Type:	Not reported
Enforcement Responsible Person:	Not reported
Enforcement Responsible Sub-Organization:	Not reported
SEP Sequence Number:	Not reported
SEP Expenditure Amount:	Not reported
SEP Scheduled Completion Date:	Not reported
SEP Actual Date:	Not reported
SEP Defaulted Date:	Not reported
SEP Type:	Not reported
SEP Type Description:	Not reported
Proposed Amount:	Not reported
Final Monetary Amount:	Not reported
Paid Amount:	Not reported
Final Count:	Not reported
Final Amount:	Not reported
Found Violation:	Yes
Agency Which Determined Violation:	State
Violation Short Description:	Generators - General
Date Violation was Determined:	20090106
Actual Return to Compliance Date:	20090306
Return to Compliance Qualifier:	Documented
Violation Responsible Agency:	State

ALPHA RESINS (Continued) **1000238960**

Scheduled Compliance Date: 20090306
Enforcement Identifier: 601
Date of Enforcement Action: 20090106
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number:Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Evaluation Action Summary:
Evaluation Date: 19890109
Evaluation Responsible Agency: State
Found Violation: No
Evaluation Type Description: FINANCIAL RECORD REVIEW
Evaluation Responsible Person Identifier: R9STA
Evaluation Responsible Sub-Organization: Not reported
Actual Return to Compliance Date: Not reported
Scheduled Compliance Date: Not reported
Date of Request: Not reported
Date Response Received: Not reported
Request Agency: Not reported
Former Citation: Not reported

Evaluation Date: 19880607
Evaluation Responsible Agency: State
Found Violation: Yes
Evaluation Type Description: COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier: R9STA
Evaluation Responsible Sub-Organization: Not reported
Actual Return to Compliance Date: 19880801
Scheduled Compliance Date: Not reported
Date of Request: Not reported
Date Response Received: Not reported
Request Agency: Not reported
Former Citation: Not reported

ALPHA RESINS (Continued) **1000238960**

Evaluation Date:	19890111
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19890512
Scheduled Compliance Date:	19890324
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	20090106
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090306
Scheduled Compliance Date:	20090306
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	19890111
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19890324
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	20090106
Evaluation Responsible Agency:	EPA
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	CMCDO
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090219
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	20191022
Evaluation Responsible Agency:	State
Found Violation:	No
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported

ALPHA RESINS (Continued) **1000238960**

Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	Not reported
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20090106
Evaluation Responsible Agency:	EPA
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	CMCDO
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090219
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	19880607
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19880801
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20090106
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090306
Scheduled Compliance Date:	20090306
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20090106
Evaluation Responsible Agency:	EPA
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	CMCDO
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090219
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported

ALPHA RESINS (Continued) **1000238960**

Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	19921019
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19930107
Scheduled Compliance Date:	19921217
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	19890111
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19890512
Scheduled Compliance Date:	19890324
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	19880607
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19880801
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	19880607
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19880801
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20150813
Evaluation Responsible Agency:	State

ALPHA RESINS (Continued) **1000238960**

Found Violation:	No
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	Not reported
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	19921106
Evaluation Responsible Agency:	State
Found Violation:	No
Evaluation Type Description:	FINANCIAL RECORD REVIEW
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	Not reported
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	20041104
Evaluation Responsible Agency:	State Contractor/Grantee
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20041203
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	19921019
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19930107
Scheduled Compliance Date:	19921217
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	20090106
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090306

ALPHA RESINS (Continued) **1000238960**

Scheduled Compliance Date:	20090306
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20090106
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090306
Scheduled Compliance Date:	20090306
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	19890111
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19890512
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20090106
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090306
Scheduled Compliance Date:	20090306
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

ALPHA RESINS (Continued) **1000238960**

RCRA-LQG:

Date Form Received by Agency:		20220118
Handler Name:	AOC LLC	
Handler Address:		19991 SEATON AVENUE
Handler City,State,Zip:		PERRIS, CA 92570
EPA ID:		CAD059270975
Contact Name:		JUAN F MONTALVO
Contact Address:		SEATON AVENUE
Contact City,State,Zip:		PERRIS, CA 92570
Contact Telephone:		951-943-9708
Contact Fax:		951-657-8370
Contact Email:		JUAN.MONTALVO@AOCRESINS.COM
Contact Title:		ENVIRONMENTAL HEALTH AND SAFETY LEADER
EPA Region:		09
Land Type:		Private
Federal Waste Generator Description:		Large Quantity Generator
Non-Notifier:		Not reported
Biennial Report Cycle:		2021
Accessibility:		Not reported
Active Site Indicator:		Handler Activities
State District Owner:		Not reported
State District:		Not reported
Mailing Address:		SEATON AVENUE
Mailing City,State,Zip:		PERRIS, CA 92570
Owner Name:		THE ALPHA CORPORATION
Owner Type:		Private
Operator Name:		AOC, LLC
Operator Type:		Private
Short-Term Generator Activity:		No
Importer Activity:		No
Mixed Waste Generator:		No
Transporter Activity:		No
Transfer Facility Activity:		No
Recycler Activity with Storage:		No
Small Quantity On-Site Burner Exemption:		No
Smelting Melting and Refining Furnace Exemption:		No
Underground Injection Control:		No
Off-Site Waste Receipt:		No
Universal Waste Indicator:		No
Universal Waste Destination Facility:		No
Federal Universal Waste:		No
Active Site Fed-Reg Treatment Storage and Disposal Facility:		Not reported
Active Site Converter Treatment storage and Disposal Facility:		Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:		Not reported
Active Site State-Reg Handler:		---
Federal Facility Indicator:		Not reported
Hazardous Secondary Material Indicator:		N
Sub-Part K Indicator:		Not reported
Commercial TSD Indicator:		No
Treatment Storage and Disposal Type:		Incineration, Storage
2018 GPRA Permit Baseline:		Not on the Baseline
2018 GPRA Renewals Baseline:		Not on the Baseline
Permit Renewals Workload Universe:		Not reported
Permit Workload Universe:		Not reported
Permit Progress Universe:		Incineration, Storage
Post-Closure Workload Universe:		Not reported
Closure Workload Universe:		Not reported

ALPHA RESINS (Continued) **1000238960**

202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	Yes
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	Yes
Corrective Action Priority Ranking:	Low
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20220207
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Biennial: List of Years
Year: 2019

Click Here for Biennial Reporting System Data:
Year: 2017

Click Here for Biennial Reporting System Data:
Year: 2015

Click Here for Biennial Reporting System Data:
Year: 2013

Click Here for Biennial Reporting System Data:
Year: 2011

Click Here for Biennial Reporting System Data:
Year: 2009

Click Here for Biennial Reporting System Data:
Year: 2007

Click Here for Biennial Reporting System Data:
Year: 2005

Click Here for Biennial Reporting System Data:
Year: 2001

Click Here for Biennial Reporting System Data:

ALPHA RESINS (Continued) **1000238960**

Hazardous Waste Summary:
Waste Code: D001
Waste Description: IGNITABLE WASTE

Waste Code: D009
Waste Description: MERCURY

Waste Code: U107
Waste Description: 1,2-BENZENEDICARBOXYLIC ACID, DIOCTYL ESTER (OR) DI-N-OCTYL PHTHALATE

Waste Code: U147
Waste Description: 2,5-FURANDIONE (OR) MALEIC ANHYDRIDE

Waste Code: U190
Waste Description: 1,3-ISOBENZOFURANDIONE (OR) PHTHALIC ANHYDRIDE

Handler - Owner Operator:
Owner/Operator Indicator: Operator
Owner/Operator Name: THE ALPHA CORPORATION
Legal Status: Private
Date Became Current: 19970501
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: AOC, LLC
Legal Status: Private
Date Became Current: 19970501
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: AOC, LLC
Legal Status: Private
Date Became Current: 19970501
Date Ended Current: Not reported
Owner/Operator Address: 19991 SEATON AVENUE
Owner/Operator City,State,Zip: PERRIS, CA 92570-0000
Owner/Operator Telephone: 951-943-9708
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: 951-657-8370
Owner/Operator Email: JMONTALVO@AOC-RESINS.COM

Owner/Operator Indicator: Owner
Owner/Operator Name: THE ALPHA CORPORATION
Legal Status: Private

ALPHA RESINS (Continued) **1000238960**

Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	JUAN.MONTALVO@AOCRESINS.COM
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

ALPHA RESINS (Continued) **1000238960**

Owner/Operator Indicator:	Operator
Owner/Operator Name:	AOC, LLC
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	19991 SEATON AVENUE
Owner/Operator City,State,Zip:	PERRIS, CA 92370-0000
Owner/Operator Telephone:	951-943-9708
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	951-657-8370
Owner/Operator Email:	JMONTALVO@AOC-RESINS.COM

Owner/Operator Indicator:	Owner
Owner/Operator Name:	ALPHA OWENS CORNING L L C
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	PO BOX 610
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38027-0610
Owner/Operator Telephone:	901-854-2800
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported

ALPHA RESINS (Continued) **1000238960**

Owner/Operator Fax:	Not reported
Owner/Operator Email:	JMONTALVO@AOC-RESINS.COM
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2850
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORP
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST
Owner/Operator City,State,Zip:	COLLIERVILLE, TN 38017
Owner/Operator Telephone:	901-854-2859
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name:	AOC LLC
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name:	THE ALPHA CORPORATION
Legal Status:	Private
Date Became Current:	19970501
Date Ended Current:	Not reported
Owner/Operator Address:	950 HIGHWAY 57 EAST

ALPHA RESINS (Continued) **1000238960**

Owner/Operator City,State,Zip: COLLIERVILLE, TN 38017
Owner/Operator Telephone: 901-854-2850
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: JMONTALVO@AOC-RESINS.COM

Owner/Operator Indicator: Operator
Owner/Operator Name: AOC, LLC
Legal Status: Private
Date Became Current: 19970501
Date Ended Current: Not reported
Owner/Operator Address: 19991 SEATON AVENUE
Owner/Operator City,State,Zip: PERRIS, CA 92570-0000
Owner/Operator Telephone: 951-943-9708
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: 951-657-8370
Owner/Operator Email: JUAN.MONTALVO@AOCRESINS.COM

Owner/Operator Indicator: Operator
Owner/Operator Name: AOC, LLC
Legal Status: Private
Date Became Current: 19970501
Date Ended Current: Not reported
Owner/Operator Address: 19991 SEATON AVENUE
Owner/Operator City,State,Zip: PERRIS, CA 92570
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: ALPHA CHEMICAL CORPORATION
Legal Status: Private
Date Became Current: Not reported
Date Ended Current: Not reported
Owner/Operator Address: PO DRAWER A
Owner/Operator City,State,Zip: CITY NOT REPORTED, TN 99999
Owner/Operator Telephone: 901-853-2450
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: THE ALPHA CORPORATION
Legal Status: Private
Date Became Current: 19970501
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Historic Generators:
Receive Date: 20100208
Handler Name: AOC, LLC

ALPHA RESINS (Continued) **1000238960**

Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20120228
Handler Name: AOC, LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20140301
Handler Name: AOC, LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20160119
Handler Name: AOC, LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20180125
Handler Name: AOC LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No

ALPHA RESINS (Continued) **1000238960**

Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	No
Electronic Manifest Broker:	No

Receive Date:	20201001
Handler Name: AOC LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	No
Electronic Manifest Broker:	No

Receive Date:	20220118
Handler Name: AOC LLC	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	No
Electronic Manifest Broker:	No

Receive Date:	19960901
Handler Name: ALPHA OWENS CORNING L L C	
Federal Waste Generator Description:	Large Quantity Generator
State District Owner:	CA
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

Receive Date:	20060227
Handler Name: AOC, L.L.C.	
Federal Waste Generator Description:	Small Quantity Generator
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	No
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

ALPHA RESINS (Continued) **1000238960**

Receive Date: 19941017
Handler Name: ALPHA OWENS CORNING L L C
Federal Waste Generator Description: Small Quantity Generator
State District Owner: CA
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 19900412
Handler Name: ALPHA RESINS
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 19920226
Handler Name: ALPHA RESINS
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 19940329
Handler Name: ALPHA RESINS CORP
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 19990304
Handler Name: ALPHA/OWENS-CORNING L.L.C
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No

ALPHA RESINS (Continued) **1000238960**

Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20020301
Handler Name: AOC, L.L.C.
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20060227
Handler Name: AOC, L.L.C.
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20080227
Handler Name: AOC, L.L.C.
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 325211
NAICS Description: PLASTICS MATERIAL AND RESIN MANUFACTURING

Facility Has Received Notices of Violation:
Found Violation: No
Agency Which Determined Violation: Not reported
Violation Short Description: Not reported
Date Violation was Determined: Not reported

ALPHA RESINS (Continued) **1000238960**

Actual Return to Compliance Date: Not reported
Return to Compliance Qualifier: Not reported
Violation Responsible Agency: Not reported
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: LDR - General
Date Violation was Determined: 19880607
Actual Return to Compliance Date: 19880801
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported

ALPHA RESINS (Continued) **1000238960**

Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 19890111
Actual Return to Compliance Date: 19890512
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: 19890324
Enforcement Identifier: 001
Date of Enforcement Action: 19890224
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: R9STA
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20090106

ALPHA RESINS (Continued) **1000238960**

Actual Return to Compliance Date:	20090306
Return to Compliance Qualifier:	Documented
Violation Responsible Agency:	State
Scheduled Compliance Date:	20090306
Enforcement Identifier:	601
Date of Enforcement Action:	20090106
Enforcement Responsible Agency:	State
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported
Corrective Action Component:	No
Appeal Initiated Date:	Not reported
Appeal Resolution Date:	Not reported
Disposition Status Date:	Not reported
Disposition Status:	Not reported
Disposition Status Description:	Not reported
Consent/Final Order Sequence Number:	Not reported
Consent/Final Order Respondent Name:	Not reported
Consent/Final Order Lead Agency:	Not reported
Enforcement Type:	WRITTEN INFORMAL
Enforcement Responsible Person:	Not reported
Enforcement Responsible Sub-Organization:	Not reported
SEP Sequence Number:	Not reported
SEP Expenditure Amount:	Not reported
SEP Scheduled Completion Date:	Not reported
SEP Actual Date:	Not reported
SEP Defaulted Date:	Not reported
SEP Type:	Not reported
SEP Type Description:	Not reported
Proposed Amount:	Not reported
Final Monetary Amount:	Not reported
Paid Amount:	Not reported
Final Count:	Not reported
Final Amount:	Not reported

Found Violation:	Yes
Agency Which Determined Violation:	State
Violation Short Description:	LDR - General
Date Violation was Determined:	19890111
Actual Return to Compliance Date:	19890324
Return to Compliance Qualifier:	Observed
Violation Responsible Agency:	State
Scheduled Compliance Date:	Not reported
Enforcement Identifier:	Not reported
Date of Enforcement Action:	Not reported
Enforcement Responsible Agency:	Not reported
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported
Corrective Action Component:	Not reported
Appeal Initiated Date:	Not reported
Appeal Resolution Date:	Not reported
Disposition Status Date:	Not reported
Disposition Status:	Not reported
Disposition Status Description:	Not reported
Consent/Final Order Sequence Number:	Not reported
Consent/Final Order Respondent Name:	Not reported
Consent/Final Order Lead Agency:	Not reported
Enforcement Type:	Not reported

ALPHA RESINS (Continued) **1000238960**

Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: EPA
Violation Short Description: Generators - Pre-transport
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090219
Return to Compliance Qualifier: Documented
Violation Responsible Agency: EPA
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: No
Agency Which Determined Violation: Not reported
Violation Short Description: Not reported
Date Violation was Determined: Not reported

ALPHA RESINS (Continued) **1000238960**

Actual Return to Compliance Date:	Not reported
Return to Compliance Qualifier:	Not reported
Violation Responsible Agency:	Not reported
Scheduled Compliance Date:	Not reported
Enforcement Identifier:	Not reported
Date of Enforcement Action:	Not reported
Enforcement Responsible Agency:	Not reported
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported
Corrective Action Component:	Not reported
Appeal Initiated Date:	Not reported
Appeal Resolution Date:	Not reported
Disposition Status Date:	Not reported
Disposition Status:	Not reported
Disposition Status Description:	Not reported
Consent/Final Order Sequence Number:	Not reported
Consent/Final Order Respondent Name:	Not reported
Consent/Final Order Lead Agency:	Not reported
Enforcement Type:	Not reported
Enforcement Responsible Person:	Not reported
Enforcement Responsible Sub-Organization:	Not reported
SEP Sequence Number:	Not reported
SEP Expenditure Amount:	Not reported
SEP Scheduled Completion Date:	Not reported
SEP Actual Date:	Not reported
SEP Defaulted Date:	Not reported
SEP Type:	Not reported
SEP Type Description:	Not reported
Proposed Amount:	Not reported
Final Monetary Amount:	Not reported
Paid Amount:	Not reported
Final Count:	Not reported
Final Amount:	Not reported

Found Violation:	Yes
Agency Which Determined Violation:	EPA
Violation Short Description:	TSD IS-Container Use and Management
Date Violation was Determined:	20090106
Actual Return to Compliance Date:	20090219
Return to Compliance Qualifier:	Documented
Violation Responsible Agency:	EPA
Scheduled Compliance Date:	Not reported
Enforcement Identifier:	Not reported
Date of Enforcement Action:	Not reported
Enforcement Responsible Agency:	Not reported
Enforcement Docket Number:	Not reported
Enforcement Attorney:	Not reported
Corrective Action Component:	Not reported
Appeal Initiated Date:	Not reported
Appeal Resolution Date:	Not reported
Disposition Status Date:	Not reported
Disposition Status:	Not reported
Disposition Status Description:	Not reported
Consent/Final Order Sequence Number:	Not reported
Consent/Final Order Respondent Name:	Not reported
Consent/Final Order Lead Agency:	Not reported
Enforcement Type:	Not reported

ALPHA RESINS (Continued) **1000238960**

Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: LDR - General
Date Violation was Determined: 19880607
Actual Return to Compliance Date: 19880801
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20090106

ALPHA RESINS (Continued) **1000238960**

Actual Return to Compliance Date: 20090306
Return to Compliance Qualifier: Documented
Violation Responsible Agency: State
Scheduled Compliance Date: 20090306
Enforcement Identifier: 601
Date of Enforcement Action: 20090106
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: EPA
Violation Short Description: TSD IS-Preparedness and Prevention
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090219
Return to Compliance Qualifier: Documented
Violation Responsible Agency: EPA
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported

ALPHA RESINS (Continued) **1000238960**

Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 19921202
Actual Return to Compliance Date: 19930107
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: 19921217
Enforcement Identifier: 002
Date of Enforcement Action: 19921202
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: INITIAL 3008(A) COMPLIANCE
Enforcement Responsible Person: R9STA
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: 2400
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Transporters - General
Date Violation was Determined: 19890111

ALPHA RESINS (Continued) **1000238960**

Actual Return to Compliance Date: 19890512
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: 19890324
Enforcement Identifier: 001
Date of Enforcement Action: 19890224
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: R9STA
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Transporters - General
Date Violation was Determined: 19880607
Actual Return to Compliance Date: 19880801
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported

ALPHA RESINS (Continued) **1000238960**

Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 19880607
Actual Return to Compliance Date: 19880801
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: No
Agency Which Determined Violation: Not reported
Violation Short Description: Not reported
Date Violation was Determined: Not reported

ALPHA RESINS (Continued) **1000238960**

Actual Return to Compliance Date: Not reported
Return to Compliance Qualifier: Not reported
Violation Responsible Agency: Not reported
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: No
Agency Which Determined Violation: Not reported
Violation Short Description: Not reported
Date Violation was Determined: Not reported
Actual Return to Compliance Date: Not reported
Return to Compliance Qualifier: Not reported
Violation Responsible Agency: Not reported
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported

ALPHA RESINS (Continued) **1000238960**

Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20041104
Actual Return to Compliance Date: 20041203
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: Not reported
Enforcement Identifier: 501
Date of Enforcement Action: 20041104
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 19921202

ALPHA RESINS (Continued) **1000238960**

Actual Return to Compliance Date: 19930107
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: 19921217
Enforcement Identifier: 002
Date of Enforcement Action: 19921202
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: INITIAL 3008(A) COMPLIANCE
Enforcement Responsible Person: R9STA
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: 2400
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090306
Return to Compliance Qualifier: Documented
Violation Responsible Agency: State
Scheduled Compliance Date: 20090306
Enforcement Identifier: 601
Date of Enforcement Action: 20090106
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL

ALPHA RESINS (Continued) **1000238960**

Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090306
Return to Compliance Qualifier: Documented
Violation Responsible Agency: State
Scheduled Compliance Date: 20090306
Enforcement Identifier: 601
Date of Enforcement Action: 20090106
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: LDR - General
Date Violation was Determined: 19890111

ALPHA RESINS (Continued) **1000238960**

Actual Return to Compliance Date: 19890512
Return to Compliance Qualifier: Observed
Violation Responsible Agency: State
Scheduled Compliance Date: Not reported
Enforcement Identifier: Not reported
Date of Enforcement Action: Not reported
Enforcement Responsible Agency: Not reported
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: Not reported
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: Not reported
Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Found Violation: Yes
Agency Which Determined Violation: State
Violation Short Description: Generators - General
Date Violation was Determined: 20090106
Actual Return to Compliance Date: 20090306
Return to Compliance Qualifier: Documented
Violation Responsible Agency: State
Scheduled Compliance Date: 20090306
Enforcement Identifier: 601
Date of Enforcement Action: 20090106
Enforcement Responsible Agency: State
Enforcement Docket Number: Not reported
Enforcement Attorney: Not reported
Corrective Action Component: No
Appeal Initiated Date: Not reported
Appeal Resolution Date: Not reported
Disposition Status Date: Not reported
Disposition Status: Not reported
Disposition Status Description: Not reported
Consent/Final Order Sequence Number: Not reported
Consent/Final Order Respondent Name: Not reported
Consent/Final Order Lead Agency: Not reported
Enforcement Type: WRITTEN INFORMAL

ALPHA RESINS (Continued) **1000238960**

Enforcement Responsible Person: Not reported
Enforcement Responsible Sub-Organization: Not reported
SEP Sequence Number: Not reported
SEP Expenditure Amount: Not reported
SEP Scheduled Completion Date: Not reported
SEP Actual Date: Not reported
SEP Defaulted Date: Not reported
SEP Type: Not reported
SEP Type Description: Not reported
Proposed Amount: Not reported
Final Monetary Amount: Not reported
Paid Amount: Not reported
Final Count: Not reported
Final Amount: Not reported

Evaluation Action Summary:
Evaluation Date: 19890109
Evaluation Responsible Agency: State
Found Violation: No
Evaluation Type Description: FINANCIAL RECORD REVIEW
Evaluation Responsible Person Identifier: R9STA
Evaluation Responsible Sub-Organization: Not reported
Actual Return to Compliance Date: Not reported
Scheduled Compliance Date: Not reported
Date of Request: Not reported
Date Response Received: Not reported
Request Agency: Not reported
Former Citation: Not reported

Evaluation Date: 19880607
Evaluation Responsible Agency: State
Found Violation: Yes
Evaluation Type Description: COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier: R9STA
Evaluation Responsible Sub-Organization: Not reported
Actual Return to Compliance Date: 19880801
Scheduled Compliance Date: Not reported
Date of Request: Not reported
Date Response Received: Not reported
Request Agency: Not reported
Former Citation: Not reported

Evaluation Date: 19890111
Evaluation Responsible Agency: State
Found Violation: Yes
Evaluation Type Description: COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier: R9STA
Evaluation Responsible Sub-Organization: Not reported
Actual Return to Compliance Date: 19890512
Scheduled Compliance Date: 19890324
Date of Request: Not reported
Date Response Received: Not reported
Request Agency: Not reported
Former Citation: Not reported

Evaluation Date: 20090106
Evaluation Responsible Agency: State

ALPHA RESINS (Continued) **1000238960**

Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090306
Scheduled Compliance Date:	20090306
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	19890111
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19890324
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	20090106
Evaluation Responsible Agency:	EPA
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	CMCDO
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090219
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	20191022
Evaluation Responsible Agency:	State
Found Violation:	No
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	Not reported
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	20090106
Evaluation Responsible Agency:	EPA
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	CMCDO
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090219

ALPHA RESINS (Continued) **1000238960**

Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	19880607
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19880801
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20090106
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090306
Scheduled Compliance Date:	20090306
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20090106
Evaluation Responsible Agency:	EPA
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	CMCDO
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090219
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	19921019
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19930107
Scheduled Compliance Date:	19921217
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

ALPHA RESINS (Continued) **1000238960**

Evaluation Date:	19890111
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19890512
Scheduled Compliance Date:	19890324
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	19880607
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19880801
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	19880607
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19880801
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	20150813
Evaluation Responsible Agency:	State
Found Violation:	No
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	Not reported
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

Evaluation Date:	19921106
Evaluation Responsible Agency:	State
Found Violation:	No
Evaluation Type Description:	FINANCIAL RECORD REVIEW
Evaluation Responsible Person Identifier:	R9STA

ALPHA RESINS (Continued) **1000238960**

Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	Not reported
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20041104
Evaluation Responsible Agency:	State Contractor/Grantee
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20041203
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	19921019
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19930107
Scheduled Compliance Date:	19921217
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20090106
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090306
Scheduled Compliance Date:	20090306
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20090106
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090306
Scheduled Compliance Date:	20090306
Date of Request:	Not reported
Date Response Received:	Not reported

ALPHA RESINS (Continued) **1000238960**

Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	19890111
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	R9STA
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	19890512
Scheduled Compliance Date:	Not reported
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported
Evaluation Date:	20090106
Evaluation Responsible Agency:	State
Found Violation:	Yes
Evaluation Type Description:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Evaluation Responsible Person Identifier:	Not reported
Evaluation Responsible Sub-Organization:	Not reported
Actual Return to Compliance Date:	20090306
Scheduled Compliance Date:	20090306
Date of Request:	Not reported
Date Response Received:	Not reported
Request Agency:	Not reported
Former Citation:	Not reported

ALPHA RESINS (Continued) **1000238960**

ENVIROSTOR:

Name:	AOC LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 923700000
Facility ID:	80001432
Status:	Active
Status Date:	08/12/2009
Site Code:	401231
Site Type:	Corrective Action
Site Type Detailed:	Corrective Action
Acres:	10
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	WM
Program Manager:	Viktoriya Anashkina
Supervisor:	Jose Diaz
Division Branch:	Cleanup Chatsworth
Assembly:	61
Senate:	31
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	Not reported
Latitude:	33.83099
Longitude:	-117.2627
APN:	317090029
Past Use:	MANUFACTURING - CHEMICALS
Potential COC:	Diethylene glycol, monobutyl ether Diethylene glycol, monoethyl ether Ethylene glycol Ethylene glycol, monobutyl ether Phthalic anhydride Propylene glycol Propylene glycol, monoethyl ether Propylene glycol, monomethyl ether
Confirmed COC:	NONE SPECIFIED
Potential Description:	OTH, SED, SOIL, SURFW
Alias Name:	317090029
Alias Type:	APN
Alias Name:	CAD059270975
Alias Type:	EPA Identification Number
Alias Name:	110000479385
Alias Type:	EPA (FRS #)
Alias Name:	401231
Alias Type:	Project Code (Site Code)
Alias Name:	80001432
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	03/09/2021
Comments:	RFI Requested
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Correspondence
Completed Date:	01/11/2005
Comments:	DTSC issued a letter to RP submitting a copy of the RCRA Facility Assessment report dated October 1988

ALPHA RESINS (Continued) **1000238960**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 12/16/2014
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 09/19/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RCRA Facility Assessment Report
Completed Date: 10/01/1988
Comments: RCRA FA was conducted by A. T. Kearney on behalf of the U.S.EPA

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Litigation Support
Completed Date: 09/15/2006
Comments: DTSC issued a letter on September 15, 2006 responding a letter request, dated April 24, 2006, to provide additional information on: 1) summary report related to the DTSC March 10, 2005 on-site evaluation; 2) copies of figures indicating the location of the new areas of concerns (AOCs) identified, as referenced in Section 3 of the draft corrective action consent agreement (CACA); and 3) clarification of table 2.3 of the draft CACA

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Pre-HARP Form
Completed Date: 01/25/2005
Comments: Signed HARP is not available in the file room

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 03/07/2007
Comments: DTSC concurred with AOC's proposed schedule for submittal of the Letter Report on Current Condition at the AOC LLC Facility

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 04/30/1990
Comments: DHS issued a letter on April 30, 1990 on which acknowledged the Certification of Closure Report dated December 28, 1989, for the hazardous waste incinerator that operated at the Alpha Resins Corporation. The acknowledgment of Facility closure was not a certification that the Facility did not pose any environmental or public health threat, nor did release the owner/operator from responsibilities and liabilities associated with past hazardous waste management practices that occurred at the site.

Completed Area Name: PROJECT WIDE

ALPHA RESINS (Continued) **1000238960**

Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 09/10/2015
Comments: Cost estimate completed

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RCRA Facility Assessment Report
Completed Date: 10/24/1988
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * CA Process is Terminated
Completed Date: 10/24/1988
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Interim Measures Questionnaire
Completed Date: 07/16/1992
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 02/04/2010
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 08/27/2021
Comments: Fieldwork completed.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Project Management
Completed Date: 06/30/2021
Comments: PM task completed for FY20/21

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 10/12/2021
Comments: Cost Estimate Letter is uploaded.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Other Report
Completed Date: 11/19/1980
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 03/30/1981

ALPHA RESINS (Continued) **1000238960**

Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Technical Report
Completed Date: 03/10/2005
Comments: Not reported

Future Area Name: PROJECT WIDE
Future Sub Area Name: Not reported
Future Document Type: RFI Report
Future Due Date: 2023
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

HIST UST:
Name: ALPHA RESINS
Address: 19991 SEATON AVE
City,State,Zip: PERRIS, CA 92370
File Number: 0001F9FE
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F9FE.pdf
Region: STATE
Facility ID: 00000019398
Facility Type: Other
Other Type: RESIN PLANT
Contact Name: JOHN HUGHES
Telephone: 7146575161
Owner Name: THE ALPHA CORPORATION
Owner Address: HIGHWAY 57 EAST
Owner City,St,Zip: COLLIERVILLE, TN 38017
Total Tanks: 0003

Tank Num: 001
Container Num: 01
Year Installed: Not reported
Tank Capacity: 00010000
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Container Construction Thickness: 1/4
Leak Detection: Stock Inventor

Tank Num: 002
Container Num: 02
Year Installed: Not reported
Tank Capacity: 00010000
Tank Used for: WASTE
Type of Fuel: Not reported
Container Construction Thickness: 1/4
Leak Detection: Visual

Tank Num: 003
Container Num: 03
Year Installed: Not reported
Tank Capacity: 00008000

ALPHA RESINS (Continued) **1000238960**

Tank Used for: PRODUCT
Type of Fuel: Not reported
Container Construction Thickness: 1/4
Leak Detection: Stock Inventor

Click here for Geo Tracker PDF:

RAATS:

Entry No: 1
Facility ID: CAD059270975
Type: Not reported
Docket No: RCRA-09-85-0001
Region: 09
Issue Date: Not reported
Final Date: 10/12/1984
Status: Complaint Issued
Additional: Not reported
Action ID: 522
Action: 3008 (A)
Violation No: Not reported
Viol No Cited: 1 3005
Total No Cited: Not reported
Reg Type: Federal
Prop. Penalty: .00
Final Penalty: .00
Total Prop. Penalty: .00
Comments: Not reported

Entry No: 1
Facility ID: CAD059270975
Type: Not reported
Docket No: RCRA-09-85-0001
Region: 09
Issue Date: Not reported
Final Date: 10/12/1984
Status: Complaint Issued
Additional: Not reported
Action ID: 522
Action: 3008 (A)
Violation No: Not reported
Viol No Cited: 2 270.10(E)(4)
Total No Cited: Not reported
Reg Type: CFR
Prop. Penalty: *
Final Penalty: .00
Total Prop. Penalty: .00
Comments: Not reported

EMI:

Name: AOC, LLC
Address: 19991 SEATON AVE
City,State,Zip: PERRIS, CA 92370
Year: 2002
County Code: 33
Air Basin: SC
Facility ID: 117140

ALPHA RESINS (Continued) **1000238960**

Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	15
Reactive Organic Gases Tons/Yr:	10
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92370
Year:	2003
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	15
Reactive Organic Gases Tons/Yr:	10
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92370
Year:	2004
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	14.9067966
Reactive Organic Gases Tons/Yr:	9.82
Carbon Monoxide Emissions Tons/Yr:	1.2297
NOX - Oxides of Nitrogen Tons/Yr:	2.2815
SOX - Oxides of Sulphur Tons/Yr:	0.029756
Particulate Matter Tons/Yr:	0.26499
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.23

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92370
Year:	2005

ALPHA RESINS (Continued) **1000238960**

County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.889675
Reactive Organic Gases Tons/Yr:	.549064262
Carbon Monoxide Emissions Tons/Yr:	1.2121
NOX - Oxides of Nitrogen Tons/Yr:	2.184545
SOX - Oxides of Sulphur Tons/Yr:	.02143
Particulate Matter Tons/Yr:	.261165
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.23025594

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92370
Year:	2006
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	9.432175151723743611
Reactive Organic Gases Tons/Yr:	5.853
Carbon Monoxide Emissions Tons/Yr:	1.365
NOX - Oxides of Nitrogen Tons/Yr:	2.26
SOX - Oxides of Sulphur Tons/Yr:	.023
Particulate Matter Tons/Yr:	.294
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.2641

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92370
Year:	2007
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	9.430036548942120371
Reactive Organic Gases Tons/Yr:	5.853
Carbon Monoxide Emissions Tons/Yr:	1.365
NOX - Oxides of Nitrogen Tons/Yr:	2.26
SOX - Oxides of Sulphur Tons/Yr:	.023
Particulate Matter Tons/Yr:	.294
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.2641

Name:	AOC, LLC

ALPHA RESINS (Continued) **1000238960**

Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92570
Year:	2008
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2295
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	15.07811376000858083
Reactive Organic Gases Tons/Yr:	9.963154663978917988
Carbon Monoxide Emissions Tons/Yr:	.9653995
NOX - Oxides of Nitrogen Tons/Yr:	4.40242296085028655
SOX - Oxides of Sulphur Tons/Yr:	.014278975
Particulate Matter Tons/Yr:	.194995375
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.19497979

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92570
Year:	2009
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2295
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	8.0821268014842804
Reactive Organic Gases Tons/Yr:	5.1635499999999999
Carbon Monoxide Emissions Tons/Yr:	0.68061000000000005
NOX - Oxides of Nitrogen Tons/Yr:	3.1142699999999999
SOX - Oxides of Sulphur Tons/Yr:	0.0122285
Particulate Matter Tons/Yr:	0.13782249999999999
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.13762286500000001

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92570
Year:	2010
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2295
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	5.7045807250007101
Reactive Organic Gases Tons/Yr:	3.6664599999999998
Carbon Monoxide Emissions Tons/Yr:	0.72604000000000002
NOX - Oxides of Nitrogen Tons/Yr:	1.3524
SOX - Oxides of Sulphur Tons/Yr:	0.01336795
Particulate Matter Tons/Yr:	0.15657974999999999

ALPHA RESINS (Continued) **1000238960**

Part. Matter 10 Micrometers and Smllr Tons/Yr:0.14263007150000001

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92570
Year:	2011
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2295
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	5.8255886653
Reactive Organic Gases Tons/Yr:	3.70706
Carbon Monoxide Emissions Tons/Yr:	0.86354
NOX - Oxides of Nitrogen Tons/Yr:	1.65961
SOX - Oxides of Sulphur Tons/Yr:	0.01689
Particulate Matter Tons/Yr:	0.18962
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.17000252

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92570
Year:	2012
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2295
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	5.7202886107
Reactive Organic Gases Tons/Yr:	3.73289
Carbon Monoxide Emissions Tons/Yr:	0.77024
NOX - Oxides of Nitrogen Tons/Yr:	1.4247
SOX - Oxides of Sulphur Tons/Yr:	0.01286
Particulate Matter Tons/Yr:	0.16742
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.14213816

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92570
Year:	2013
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	5.7592429067
Reactive Organic Gases Tons/Yr:	3.81681
Carbon Monoxide Emissions Tons/Yr:	1.98159

ALPHA RESINS (Continued) **1000238960**

NOX - Oxides of Nitrogen Tons/Yr:	1.48536
SOX - Oxides of Sulphur Tons/Yr:	0.01438
Particulate Matter Tons/Yr:	0.17037
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.1417864

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92570
Year:	2014
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	6.4971263252
Reactive Organic Gases Tons/Yr:	4.63982
Carbon Monoxide Emissions Tons/Yr:	0.70304
NOX - Oxides of Nitrogen Tons/Yr:	0.70898
SOX - Oxides of Sulphur Tons/Yr:	0.01108
Particulate Matter Tons/Yr:	0.14849
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.12351596

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92570
Year:	2015
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	12.673498909
Reactive Organic Gases Tons/Yr:	11.77189445
Carbon Monoxide Emissions Tons/Yr:	0.900319
NOX - Oxides of Nitrogen Tons/Yr:	0.9924485
SOX - Oxides of Sulphur Tons/Yr:	0.01402181
Particulate Matter Tons/Yr:	0.18722315
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.161949201

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92570
Year:	2016
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported

ALPHA RESINS (Continued) **1000238960**

Total Organic Hydrocarbon Gases Tons/Yr:	1.7742614136
Reactive Organic Gases Tons/Yr:	1.00127321
Carbon Monoxide Emissions Tons/Yr:	0.8260817
NOX - Oxides of Nitrogen Tons/Yr:	0.77
SOX - Oxides of Sulphur Tons/Yr:	0.0127233242
Particulate Matter Tons/Yr:	0.15259185
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.1294313376

Name:	AOC, LLC
Address:	19991 SEATON AVE
City,State,Zip:	PERRIS, CA 92570
Year:	2017
County Code:	33
Air Basin:	SC
Facility ID:	117140
Air District Name:	SC
SIC Code:	2821
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1.8833343432
Reactive Organic Gases Tons/Yr:	1.0516311
Carbon Monoxide Emissions Tons/Yr:	0.787559
NOX - Oxides of Nitrogen Tons/Yr:	1.4439181
SOX - Oxides of Sulphur Tons/Yr:	0.012990141
Particulate Matter Tons/Yr:	0.15292615
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.129653644

HWP:

EPA ID:	CAD059270975
Name:	AOC LLC
Address:	19991 SEATON AVE
Cleanup Status:	CLOSED
Latitude:	33.83099
Longitude:	-117.2627
Facility Type:	Historical - Non-Operating
Facility Size:	Not reported
Supervisor:	Not reported
Site Code:	401231, TBD
Senate District:	31
Assembly District:	61
Public Information Officer:	Not reported
Commercial Offsite Facility Types:	Not reported
Quarterly Update:	Active facility - undergoing corrective action: Alpha Owens Corning (AOC), a division of the Alpha Corporation of Tennessee, manufactures polyester resin at the facility located in Perris, California. The Facility uses specially designed reaction vessels to accomplish esterification of glycols and difunctional organic acids and bases. AOC has been manufacturing polyester resins at the facility since 1972, when the plant was built. The property on which the facility is situated is roughly square and approximately 10 acres in size. The aqueous waste stream generated by the polyester resin manufacturing contains constituents including phenol, 1, 4-dioxane, and benzene. The aqueous waste stream is processed to recover unconverted raw materials, while the remainder is incinerated in a thermal oxidizer. Alpha Resins filed a Part A permit application on November 17, 1980, and received interim status from the Department of Health Services on

ALPHA RESINS (Continued) **1000238960**

March 30, 1981. A visual site inspection (VSI) was conducted on September 14, 1988. A total of sixteen (16) solid waste management units (SWMUs) and three areas of concerns (AOCs) were identified in the RFA report. In a re-inspection of the facility on March 10, 2005, twenty three (23) areas of concerns (AOCs) were identified for further investigation. A draft corrective action consent agreement (CACA) has been prepared and is undergoing review by DTSC s Office of Legal Counsel.

Project Manager Lead: Not reported
Project Manager: Not reported
Permit Type: RCRA
Permit Effective Date: Not reported
Permit Expiration Date: Not reported
Calenviroscreen Score: 91-95%
Total Planned Hours: Not reported
Total Planned Amount: Not reported
Total Actual Hours: Not reported

Activities:

EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Status: CLOSED
Activity Type: New Operating Permit
Permit Being Renewed: Not reported
Permit Being Modified: Not reported
Final Date: 1989-06-21 00:00:00
Type: RCRA
Title Description: Initial Permit Application - Units - INCIN1 and Tankstr1
Due Date: Not reported
Comments: Not reported
Unit Names: INCIN1, TANKSTR1
Event Description: New Operating Permit - CALL-IN LETTER ISSUED
Actual Date: 09/30/1982

EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Status: CLOSED
Activity Type: New Operating Permit
Permit Being Renewed: Not reported
Permit Being Modified: Not reported
Final Date: 1989-06-21 00:00:00
Type: RCRA
Title Description: Initial Permit Application - Units - INCIN1 and Tankstr1
Due Date: Not reported
Comments: Application to withdraw (OP180FC) and close all waste handling units submitted 1/1/1989. Application to withdraw approved (OP190AR) dated 6/21/1989.
Unit Names: INCIN1, TANKSTR1
Event Description: New Operating Permit - 2ND NOTICE OF DEFICIENCY ISSUED
Actual Date: 10/23/1984

ALPHA RESINS (Continued) **1000238960**

EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Status: CLOSED
Activity Type: New Operating Permit
Permit Being Renewed: Not reported
Permit Being Modified: Not reported
Final Date: 1989-06-21 00:00:00
Type: RCRA
Title Description: PERMIT1
Due Date: Not reported
Comments: INTENDS/CLOSED ALL WASTE HANDLING FACILITY, INTENDS/CLOSED ALL WASTE HANDLING FACILITY, Approved Request
Unit Names: INCIN1, TANKSTR1
Event Description: New Operating Permit - FINAL PERMIT - WITHDRAWAL REQUEST RECEIVED
Actual Date: 01/01/1989

EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Status: CLOSED
Activity Type: New Operating Permit
Permit Being Renewed: Not reported
Permit Being Modified: Not reported
Final Date: 1989-06-21 00:00:00
Type: RCRA
Title Description: PERMIT1
Due Date: Not reported
Comments: INTENDS/CLOSED ALL WASTE HANDLING FACILITY, INTENDS/CLOSED ALL WASTE HANDLING FACILITY, Approved Request
Unit Names: INCIN1, TANKSTR1
Event Description: New Operating Permit - FINAL PERMIT - WITHDRAWAL REQUEST ACKNOWLEDGED
Actual Date: 06/21/1989

EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Status: CLOSED
Activity Type: New Operating Permit
Permit Being Renewed: Not reported
Permit Being Modified: Not reported
Final Date: 1989-06-21 00:00:00
Type: RCRA
Title Description: Initial Permit Application - Units - INCIN1 and Tankstr1
Due Date: Not reported
Comments: Not reported
Unit Names: INCIN1, TANKSTR1
Event Description: New Operating Permit - RESPONSE TO 1ST NOD RECEIVED

ALPHA RESINS (Continued) **1000238960**

Actual Date:	03/28/1984
EPA ID:	CAD059270975
Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Facility Status:	CLOSED
Activity Type:	New Operating Permit
Permit Being Renewed:	Not reported
Permit Being Modified:	Not reported
Final Date:	1989-06-21 00:00:00
Type:	RCRA
Title Description:	PERMIT1
Due Date:	Not reported
Comments:	Not reported
Unit Names:	INCIN1, TANKSTR1
Event Description:	New Operating Permit - CALL-IN LETTER ISSUED
Actual Date:	09/30/1982
EPA ID:	CAD059270975
Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Facility Status:	CLOSED
Activity Type:	New Operating Permit
Permit Being Renewed:	Not reported
Permit Being Modified:	Not reported
Final Date:	1989-06-21 00:00:00
Type:	RCRA
Title Description:	Initial Permit Application - Units - INCIN1 and Tankstr1
Due Date:	Not reported
Comments:	Not reported
Unit Names:	INCIN1, TANKSTR1
Event Description:	New Operating Permit - FINAL PERMIT - WITHDRAWAL REQUEST ACKNOWLEDGED
Actual Date:	06/21/1989
EPA ID:	CAD059270975
Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Facility Status:	CLOSED
Activity Type:	New Operating Permit
Permit Being Renewed:	Not reported
Permit Being Modified:	Not reported
Final Date:	1989-06-21 00:00:00
Type:	RCRA
Title Description:	Initial Permit Application - Units - INCIN1 and Tankstr1
Due Date:	Not reported
Comments:	Not reported
Unit Names:	INCIN1, TANKSTR1
Event Description:	New Operating Permit - APPLICATION PART B RECEIVED

ALPHA RESINS (Continued) **1000238960**

Actual Date:	05/02/1983
EPA ID:	CAD059270975
Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Facility Status:	CLOSED
Activity Type:	New Operating Permit
Permit Being Renewed:	Not reported
Permit Being Modified:	Not reported
Final Date:	1989-06-21 00:00:00
Type:	RCRA
Title Description:	PERMIT1
Due Date:	Not reported
Comments:	Not reported
Unit Names:	INCIN1, TANKSTR1
Event Description:	New Operating Permit - APPLICATION PART B RECEIVED
Actual Date:	05/02/1983
EPA ID:	CAD059270975
Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Facility Status:	CLOSED
Activity Type:	New Operating Permit
Permit Being Renewed:	Not reported
Permit Being Modified:	Not reported
Final Date:	1989-06-21 00:00:00
Type:	RCRA
Title Description:	PERMIT1
Due Date:	Not reported
Comments:	Not reported
Unit Names:	INCIN1, TANKSTR1
Event Description:	New Operating Permit - APPLICATION PART A RECEIVED
Actual Date:	11/19/1980
EPA ID:	CAD059270975
Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Facility Status:	CLOSED
Activity Type:	New Operating Permit
Permit Being Renewed:	Not reported
Permit Being Modified:	Not reported
Final Date:	1989-06-21 00:00:00
Type:	RCRA
Title Description:	Initial Permit Application - Units - INCIN1 and Tankstr1
Due Date:	Not reported
Comments:	Not reported
Unit Names:	INCIN1, TANKSTR1
Event Description:	New Operating Permit - FINAL PERMIT - WITHDRAWAL REQUEST RECEIVED

ALPHA RESINS (Continued) **1000238960**

Actual Date: 01/01/1989

EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Status: CLOSED
Activity Type: New Operating Permit
Permit Being Renewed: Not reported
Permit Being Modified: Not reported
Final Date: 1989-06-21 00:00:00
Type: RCRA
Title Description: Initial Permit Application - Units - INCIN1 and Tankstr1
Due Date: Not reported
Comments: Not reported
Unit Names: INCIN1, TANKSTR1
Event Description: New Operating Permit - APPLICATION PART A RECEIVED
Actual Date: 11/19/1980

EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Status: CLOSED
Activity Type: New Operating Permit
Permit Being Renewed: Not reported
Permit Being Modified: Not reported
Final Date: 1989-06-21 00:00:00
Type: RCRA
Title Description: Initial Permit Application - Units - INCIN1 and Tankstr1
Due Date: Not reported
Comments: Not reported
Unit Names: INCIN1, TANKSTR1
Event Description: New Operating Permit - 1ST NOTICE OF DEFICIENCY ISSUED
Actual Date: 02/14/1984

Closure:
EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Size: Not reported
Facility Status: CLOSED
Activity Type: Closure Final
Final Date: Not reported
Type: RCRA
Title Description: Closure1 - Units - INCIN1 and Tankstr1
Due Date: Not reported
Comments: Not reported
Unit Names: INCIN1, TANKSTR1
Event Description: Closure Final - ISSUE CLOSURE VERIFICATION

ALPHA RESINS (Continued) **1000238960**

Actual Date: 04/30/1990

EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Size: Not reported
Facility Status: CLOSED
Activity Type: Closure Final
Final Date: Not reported
Type: RCRA
Title Description: Closure1 - Units - INCIN1 and Tankstr1
Due Date: Not reported
Comments: Not reported
Unit Names: INCIN1, TANKSTR1
Event Description: Closure Final - RECEIVE CLOSURE CERTIFICATION
Actual Date: 12/28/1989

EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Size: Not reported
Facility Status: CLOSED
Activity Type: Closure Final
Final Date: Not reported
Type: RCRA
Title Description: Closure1 - Units - INCIN1 and Tankstr1
Due Date: Not reported
Comments: Not reported
Unit Names: INCIN1, TANKSTR1
Event Description: Closure Final - CLOSURE PLAN RECEIVED
Actual Date: 02/19/1985

EPA ID: CAD059270975
Facility Type: Historical - Non-Operating
Facility Name: AOC LLC
Project Manager: Not reported
Project Manager Lead: Not reported
Supervisor: Not reported
Facility Size: Not reported
Facility Status: CLOSED
Activity Type: Closure Final
Final Date: Not reported
Type: RCRA
Title Description: Closure1 - Units - INCIN1 and Tankstr1
Due Date: Not reported
Comments: Not reported
Unit Names: INCIN1, TANKSTR1
Event Description: Closure Final - PUBLIC COMMENT (END)
Actual Date: 03/08/1989

EPA ID: CAD059270975

ALPHA RESINS (Continued) **1000238960**

Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Facility Size:	Not reported
Facility Status:	CLOSED
Activity Type:	Closure Final
Final Date:	Not reported
Type:	RCRA
Title Description:	Closure1 - Units - INCIN1 and Tankstr1
Due Date:	Not reported
Comments:	Not reported
Unit Names:	INCIN1, TANKSTR1
Event Description:	Closure Final - PUBLIC COMMENT (BEGIN)
Actual Date:	02/06/1989

EPA ID:	CAD059270975
Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Facility Size:	Not reported
Facility Status:	CLOSED
Activity Type:	Closure Final
Final Date:	Not reported
Type:	RCRA
Title Description:	Closure1 - Units - INCIN1 and Tankstr1
Due Date:	Not reported
Comments:	Not reported
Unit Names:	INCIN1, TANKSTR1
Event Description:	Closure Final - CLOSURE PLAN APPROVED
Actual Date:	06/21/1989

Alias:

EPA ID:	CAD059270975
Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Facility Status:	CLOSED
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Alias Type:	FRS
Alias:	110000479385

EPA ID:	CAD059270975
Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Facility Status:	CLOSED
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Alias Type:	Project Code (Site Code)
Alias:	401231

EPA ID: CAD059270975

ALPHA RESINS (Continued) **1000238960**

Facility Type:	Historical - Non-Operating
Facility Name:	AOC LLC
Facility Status:	CLOSED
Project Manager:	Not reported
Project Manager Lead:	Not reported
Supervisor:	Not reported
Alias Type:	Project Code (Site Code)
Alias:	TBD

NPDES:

Name:	AOC LLC
Address:	19991 SEATON AVENUE
City,State,Zip:	PERRIS, CA 92570
Facility Status:	Active
NPDES Number:	CAS000001
Region:	8
Agency Number:	0
Regulatory Measure ID:	210684
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	8 33I001426
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/27/1992
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	19991 Seaton Avenue
Discharge Name:	AOC LLC
Discharge City:	Perris
Discharge State:	California
Discharge Zip:	92570
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	210684
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I001426
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported

ALPHA RESINS (Continued) **1000238960**

Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	03/27/1992
Status:	Active
Status Date:	03/27/1992
Place Size:	10
Place Size Unit:	Acres
Contact:	Juan Montalvo
Contact Title:	Environmental Health Safety Leader
Contact Phone:	951-943-9708
Contact Phone Ext:	Not reported
Contact Email:	jmontalvo@aoc-resins.com
Operator Name:	AOC LLC
Operator Address:	19991 Seaton Avenue
Operator City:	Perris
Operator State:	California
Operator Zip:	92570
Operator Contact:	JUAN MONTALVO
Operator Contact Title:	EHS Leader
Operator Contact Phone:	951-943-9708
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	jmontalvo@aoc-resins.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Perris
Certifier:	JUAN MONTALVO
Certifier Title:	EHS LEADER
Certification Date:	05-MAR-15

ALPHA RESINS (Continued) **1000238960**

Primary Sic:	2821-Plastics Material and Synthetic Resins, and Nonvulcanizable Elastomers
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	210684
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I001426
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/27/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	AOC LLC
Discharge Address:	19991 Seaton Avenue
Discharge City:	Perris
Discharge State:	California
Discharge Zip:	92570
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported

ALPHA RESINS (Continued) **1000238960**

Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	AOC LLC
Address:	19991 SEATON AVENUE
City,State,Zip:	PERRIS, CA 92570
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	8 33I001426
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	03/27/1992
Operator Name:	AOC LLC
Operator Address:	19991 Seaton Avenue
Operator City:	Perris
Operator State:	California
Operator Zip:	92570

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported

ALPHA RESINS (Continued) **1000238960**

Agency Number:	Not reported
Region:	8
Regulatory Measure ID:	210684
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	8 33I001426
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	03/27/1992
Status:	Active
Status Date:	03/27/1992
Place Size:	10
Place Size Unit:	Acres
Contact:	Juan Montalvo
Contact Title:	Environmental Health Safety Leader
Contact Phone:	951-943-9708
Contact Phone Ext:	Not reported
Contact Email:	jmontalvo@aoc-resins.com
Operator Name:	AOC LLC
Operator Address:	19991 Seaton Avenue
Operator City:	Perris
Operator State:	California
Operator Zip:	92570
Operator Contact:	JUAN MONTALVO
Operator Contact Title:	EHS Leader
Operator Contact Phone:	951-943-9708
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	jmontalvo@aoc-resins.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported

ALPHA RESINS (Continued) **1000238960**

Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Perris
Certifier:	JUAN MONTALVO
Certifier Title:	EHS LEADER
Certification Date:	05-MAR-15
Primary Sic:	2821-Plastics Material and Synthetic Resins, and Nonvulcanizable Elastomers
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	8
Regulatory Measure ID:	210684
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	8 33I001426
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	03/27/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	AOC LLC
Discharge Address:	19991 Seaton Avenue
Discharge City:	Perris
Discharge State:	California
Discharge Zip:	92570
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported

ALPHA RESINS (Continued) **1000238960**

Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Name:	AOC LLC
Address:	19991 SEATON AVENUE
City,State,Zip:	PERRIS, CA 92570
Agency:	AOC LLC
Agency Address:	19991 Seaton Avenue, Perris, CA 92570
Place/Project Type:	Industrial - Plastics Material and Synthetic Resins, and Nonvulcanizable Elastomers
SIC/NAICS:	2821
Region:	8
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	8 33I001426
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	03/27/1992
Termination Date:	Not reported

ALPHA RESINS (Continued) **1000238960**

Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.83092
Longitude:	-117.26161

CERS:

Name:	AOC LLC
Address:	19991 SEATON AVENUE
City,State,Zip:	PERRIS, CA 92570-8724
Site ID:	451612
CERS ID:	110000479385
CERS Description:	US EPA Air Emission Inventory System (EIS)

Affiliation:

Affiliation Type Desc:	Environmental Contact
Entity Name:	JUAN F MONTALVO
Entity Title:	ENVIRONMENTAL HEALTH AND SAFETY LEADER
Affiliation Address:	19991 SEATON AVENUE
Affiliation City:	PERRIS
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

Affiliation Type Desc:	Public Contact
Entity Name:	JAMES EARL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

Name:	AOC LLC
Address:	19991 SEATON AVENUE
City,State,Zip:	PERRIS, CA 92570
Site ID:	526382
CERS ID:	205955
CERS Description:	Industrial Facility Storm Water

Violations:

Site ID:	526382
Site Name:	AOC LLC
Violation Date:	01-01-2020
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	Failure to submit the Level 1 ERA report for Zinc for the reporting period of July 1, 2018 to June 30, 2019. This report was due on January 1, 2020. The discharger has not requested an automatic extension to July 1, 2020 for this report.
Violation Division:	Water Boards

ALPHA RESINS (Continued) **1000238960**

Violation Program: INDSTW
Violation Source: SMARTS,

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-18-2020
Violations Found: No
Eval Type: Industrial Storm Water Compliance Evaluation
Eval Notes: A site inspection was conducted by regional board staff Keith Elliott and Reyna Mendoza. Environmental Health & Safety Leader Juan Montalvo was present during the inspection. Housekeeping appeared in good condition. The site sampling point is in the grass area on the north side of the property. The SWPPP was reviewed along with the most recent BMP monthly inspection which was on January 28, 2020.
Eval Division: Water Boards
Eval Program: INDSTW
Eval Source: SMARTS,

Affiliation:
Affiliation Type Desc: Owner/Operator
Entity Name: AOC LLC
Entity Title: Operator
Affiliation Address: 19991 Seaton Avenue
Affiliation City: Perris
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92570
Affiliation Phone: ,

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/05/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/05/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/05/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 05/25/2021
Date Data Arrived at EDR: 06/24/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 06/27/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/05/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 26

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/05/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 26

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/08/2022
Date Data Arrived at EDR: 02/11/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 88

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/05/2022
Next Scheduled EDR Contact: 08/22/2022
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/21/2022
Date Data Arrived at EDR: 02/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/24/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/21/2022
Date Data Arrived at EDR: 02/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/04/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/14/2022
Date Data Arrived at EDR: 06/15/2022
Date Made Active in Reports: 06/21/2022
Number of Days to Update: 6

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/15/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 04/25/2022
Date Data Arrived at EDR: 04/26/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/26/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 04/25/2022
Date Data Arrived at EDR: 04/26/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/26/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/07/2022
Date Data Arrived at EDR: 02/08/2022
Date Made Active in Reports: 05/05/2022
Number of Days to Update: 86

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/09/2022
Next Scheduled EDR Contact: 08/22/2022
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List
Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 05/28/2021
Date Data Arrived at EDR: 06/22/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 90

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 10/14/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 02/01/2022
Number of Days to Update: 88
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/07/2022
Date Data Arrived at EDR: 03/08/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 86
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/07/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Semi-Annually

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 03/07/2022
Date Data Arrived at EDR: 03/08/2022
Date Made Active in Reports: 06/03/2022
Number of Days to Update: 87

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 06/09/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/09/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/06/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/14/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 05/28/2021
Date Data Arrived at EDR: 06/22/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 90

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 11/15/2021
Date Made Active in Reports: 02/08/2022
Number of Days to Update: 85

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

Lists of state and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142
Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/15/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 04/25/2022
Date Data Arrived at EDR: 04/26/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 80
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/26/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Quarterly

Lists of state and tribal brownfield sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 03/21/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/14/2022
Number of Days to Update: 85
Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/10/2022
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 0
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 03/07/2022
Date Data Arrived at EDR: 03/08/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 86

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/07/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 02/15/2022
Date Data Arrived at EDR: 02/24/2022
Date Made Active in Reports: 05/25/2022
Number of Days to Update: 90

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/19/2022
Next Scheduled EDR Contact: 08/22/2022
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/22/2022
Date Data Arrived at EDR: 02/23/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 76

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/24/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 04/25/2022
Date Data Arrived at EDR: 04/26/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/26/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 04/18/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/22/2022
Date Data Arrived at EDR: 02/23/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 76

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/24/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 03/07/2022
Date Data Arrived at EDR: 03/08/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 86

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/07/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 12/10/2021
Date Made Active in Reports: 02/25/2022
Number of Days to Update: 77

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 06/10/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 02/03/2022
Date Data Arrived at EDR: 02/04/2022
Date Made Active in Reports: 05/02/2022
Number of Days to Update: 87

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 04/18/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/24/2022
Date Data Arrived at EDR: 02/25/2022
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 12

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/25/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/05/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 02/28/2022
Date Made Active in Reports: 05/25/2022
Number of Days to Update: 86

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 05/31/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/21/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/14/2022
Number of Days to Update: 85

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 04/03/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/01/2021
Date Data Arrived at EDR: 02/15/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 84

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/17/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/06/2022
Next Scheduled EDR Contact: 08/22/2022
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/21/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/14/2022
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/06/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/20/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 01/19/2022
Date Data Arrived at EDR: 01/19/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 82

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/05/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 26

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/04/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/14/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 02/25/2022
Number of Days to Update: 22

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 64

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/11/2022
Date Data Arrived at EDR: 03/15/2022
Date Made Active in Reports: 06/14/2022
Number of Days to Update: 91

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 84
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 06/02/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 05/25/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/06/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 06/23/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/26/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 03/31/2022
Date Data Arrived at EDR: 04/14/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 89

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 23

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/16/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/05/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 03/21/2022
Date Data Arrived at EDR: 03/22/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 3

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 05/26/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Quarterly

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/01/2022
Date Data Arrived at EDR: 02/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 90

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/25/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/27/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/27/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/10/2022
Date Data Arrived at EDR: 03/10/2022
Date Made Active in Reports: 06/14/2022
Number of Days to Update: 96

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 05/13/2022
Date Data Arrived at EDR: 05/18/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 13

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 05/18/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 04/02/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/19/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/11/2022
Date Made Active in Reports: 02/14/2022
Number of Days to Update: 34
Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 07/07/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/17/2022
Date Data Arrived at EDR: 02/17/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 82
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/17/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan
Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6
Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List
The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 03/21/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/14/2022
Number of Days to Update: 85
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 12/07/2021
Date Data Arrived at EDR: 05/09/2022
Date Made Active in Reports: 05/17/2022
Number of Days to Update: 8
Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/09/2022
Next Scheduled EDR Contact: 08/22/2022
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities
A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/27/2021
Date Data Arrived at EDR: 09/01/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 79

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 06/01/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Annually

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/24/2022
Date Data Arrived at EDR: 02/25/2022
Date Made Active in Reports: 05/18/2022
Number of Days to Update: 82

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 05/25/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 02/17/2022
Date Data Arrived at EDR: 02/24/2022
Date Made Active in Reports: 05/18/2022
Number of Days to Update: 83

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 05/19/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Varies

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 06/10/2021
Date Made Active in Reports: 08/27/2021
Number of Days to Update: 78

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 04/12/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 42

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 04/19/2022
Date Data Arrived at EDR: 04/29/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/01/2022
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 02/24/2022
Date Made Active in Reports: 05/18/2022
Number of Days to Update: 83

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/19/2022
Next Scheduled EDR Contact: 08/22/2022
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/05/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/14/2022
Date Data Arrived at EDR: 02/15/2022
Date Made Active in Reports: 05/12/2022
Number of Days to Update: 86

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/17/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/14/2022
Date Data Arrived at EDR: 02/15/2022
Date Made Active in Reports: 05/12/2022
Number of Days to Update: 86

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/17/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/05/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 06/27/2022
Number of Days to Update: 83

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/05/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 03/07/2022
Date Data Arrived at EDR: 03/08/2022
Date Made Active in Reports: 06/01/2022
Number of Days to Update: 85

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/07/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 02/17/2022
Date Data Arrived at EDR: 02/28/2022
Date Made Active in Reports: 05/25/2022
Number of Days to Update: 86

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 05/31/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/07/2022
Date Data Arrived at EDR: 02/08/2022
Date Made Active in Reports: 05/05/2022
Number of Days to Update: 86

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/09/2022
Next Scheduled EDR Contact: 08/22/2022
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 02/28/2022
Date Made Active in Reports: 05/25/2022
Number of Days to Update: 86

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 05/31/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 03/07/2022
Date Data Arrived at EDR: 03/08/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 86

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/07/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 03/11/2022
Date Data Arrived at EDR: 03/15/2022
Date Made Active in Reports: 06/08/2022
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 06/09/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 03/07/2022
Date Data Arrived at EDR: 03/08/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 86

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/07/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/12/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 03/07/2022
Date Data Arrived at EDR: 03/08/2022
Date Made Active in Reports: 06/03/2022
Number of Days to Update: 87

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 06/07/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 02/28/2022
Date Made Active in Reports: 05/25/2022
Number of Days to Update: 86

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 05/31/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 04/18/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)

Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 05/23/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Varies

PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

MINES MRDS: Mineral Resources Data System

Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 05/27/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Varies

PCS INACTIVE: Listing of Inactive PCS Permits

An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

HWTS: Hazardous Waste Tracking System

DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 04/05/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 04/26/2022
Number of Days to Update: 21

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 07/06/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

PCS ENF: Enforcement data

No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 12/28/2021
Date Data Arrived at EDR: 12/28/2021
Date Made Active in Reports: 03/18/2022
Number of Days to Update: 80

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List

Cupa Facility List

Date of Government Version: 02/04/2022
Date Data Arrived at EDR: 02/04/2022
Date Made Active in Reports: 05/02/2022
Number of Days to Update: 87

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 05/12/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 03/17/2022
Date Data Arrived at EDR: 03/18/2022
Date Made Active in Reports: 06/08/2022
Number of Days to Update: 82

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 04/21/2022
Date Data Arrived at EDR: 04/22/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 81

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 01/10/2022
Date Data Arrived at EDR: 01/26/2022
Date Made Active in Reports: 04/14/2022
Number of Days to Update: 78

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 05/04/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/16/2022
Date Data Arrived at EDR: 02/17/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 82

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/28/2021
Date Data Arrived at EDR: 12/21/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 72

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/12/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/18/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/12/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 02/10/2022
Date Data Arrived at EDR: 02/11/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 82

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 02/10/2022
Date Data Arrived at EDR: 02/11/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 82

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/25/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 02/10/2022
Date Data Arrived at EDR: 02/11/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 82

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/07/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 06/09/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 04/04/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 04/13/2022
Number of Days to Update: 8

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 04/12/2022
Date Made Active in Reports: 07/05/2022
Number of Days to Update: 84

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/11/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2022
Date Data Arrived at EDR: 01/21/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 80

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/06/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills

This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 01/10/2022
Date Data Arrived at EDR: 01/12/2022
Date Made Active in Reports: 04/04/2022
Number of Days to Update: 82

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 07/06/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory

A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 01/13/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/15/2022
Number of Days to Update: 86

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/24/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory

A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 01/13/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/15/2022
Number of Days to Update: 86

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/24/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/26/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/14/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/06/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 04/21/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 82

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/12/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 06/22/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/19/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/15/2022
Date Data Arrived at EDR: 02/17/2022
Date Made Active in Reports: 05/11/2022
Number of Days to Update: 83

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 07/07/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 05/19/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 07/07/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/19/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/19/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 01/25/2022
Date Data Arrived at EDR: 01/26/2022
Date Made Active in Reports: 04/14/2022
Number of Days to Update: 78

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 01/14/2022
Date Data Arrived at EDR: 02/03/2022
Date Made Active in Reports: 04/14/2022
Number of Days to Update: 70

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/02/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 01/14/2022
Date Data Arrived at EDR: 02/04/2022
Date Made Active in Reports: 05/02/2022
Number of Days to Update: 87

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/02/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 01/14/2022
Date Data Arrived at EDR: 02/01/2022
Date Made Active in Reports: 04/18/2022
Number of Days to Update: 76

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/03/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 05/25/2022
Date Data Arrived at EDR: 05/26/2022
Date Made Active in Reports: 06/01/2022
Number of Days to Update: 6

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 05/25/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 03/31/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 04/08/2022
Number of Days to Update: 8

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/09/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 03/31/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 04/08/2022
Number of Days to Update: 8

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/09/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 06/18/2021
Date Data Arrived at EDR: 09/28/2021
Date Made Active in Reports: 12/14/2021
Number of Days to Update: 77

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 06/30/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/04/2022
Date Data Arrived at EDR: 06/30/2022
Date Made Active in Reports: 07/05/2022
Number of Days to Update: 5

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 06/30/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 04/29/2022
Date Data Arrived at EDR: 04/29/2022
Date Made Active in Reports: 05/05/2022
Number of Days to Update: 6

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 05/12/2022
Date Data Arrived at EDR: 05/12/2022
Date Made Active in Reports: 05/18/2022
Number of Days to Update: 6

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 02/28/2022
Date Made Active in Reports: 05/25/2022
Number of Days to Update: 86

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 05/31/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/27/2021
Date Data Arrived at EDR: 03/04/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 88

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/22/2021
Date Data Arrived at EDR: 10/19/2021
Date Made Active in Reports: 01/13/2022
Number of Days to Update: 86

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 05/25/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 02/03/2022
Date Data Arrived at EDR: 02/04/2022
Date Made Active in Reports: 02/11/2022
Number of Days to Update: 7

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 02/03/2022
Date Data Arrived at EDR: 02/04/2022
Date Made Active in Reports: 05/02/2022
Number of Days to Update: 87

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Quarterly

SAN FRANCISO COUNTY:

SAN FRANCISCO MAHER: Maher Ordinance Property Listing
a listing of properties that fall within a Maher Ordinance, for all of San Francisco

Date of Government Version: 01/18/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 04/27/2022
Number of Days to Update: 97

Source: San Francisco Planning
Telephone: 628-652-7483
Last EDR Contact: 07/05/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/09/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 02/15/2022
Date Data Arrived at EDR: 02/16/2022
Date Made Active in Reports: 05/13/2022
Number of Days to Update: 86

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/12/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/10/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/02/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/12/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/14/2022
Date Data Arrived at EDR: 02/16/2022
Date Made Active in Reports: 05/12/2022
Number of Days to Update: 85

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/12/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/19/2022
Next Scheduled EDR Contact: 09/05/2022
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/12/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/12/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/25/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/25/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2022
Date Data Arrived at EDR: 02/10/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 07/11/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 11/23/2021
Date Data Arrived at EDR: 11/29/2021
Date Made Active in Reports: 02/11/2022
Number of Days to Update: 74

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 05/25/2022
Next Scheduled EDR Contact: 09/12/2022
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 04/06/2021
Number of Days to Update: 82

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 04/18/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 04/26/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 08/15/2022
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 03/28/2022
Date Data Arrived at EDR: 04/28/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 78

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/22/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/04/2022
Next Scheduled EDR Contact: 08/22/2022
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 03/28/2022
Date Data Arrived at EDR: 04/28/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 78

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/28/2022
Date Data Arrived at EDR: 03/08/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 86

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/07/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 03/24/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 06/27/2022
Number of Days to Update: 88

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/22/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/26/2022
Date Data Arrived at EDR: 01/27/2022
Date Made Active in Reports: 04/14/2022
Number of Days to Update: 77

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 04/21/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/03/2021
Date Data Arrived at EDR: 02/11/2022
Date Made Active in Reports: 05/06/2022
Number of Days to Update: 84

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/09/2022
Next Scheduled EDR Contact: 08/22/2022
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 10/29/2021
Date Made Active in Reports: 01/19/2022
Number of Days to Update: 82

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 04/28/2022
Next Scheduled EDR Contact: 08/08/2022
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/06/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/16/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/03/2022
Next Scheduled EDR Contact: 09/19/2022
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

THRIFTY 9.48 ACRES PERRIS CA
23641 PLACENTIA AVENUE
PERRIS, CA 92570

TARGET PROPERTY COORDINATES

Latitude (North):	33.822084 - 33ˆ 49’ 19.50’’
Longitude (West):	117.249392 - 117ˆ 14’ 57.81’’
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	476920.8
UTM Y (Meters):	3742263.2
Elevation:	1545 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	12015907 PERRIS, CA
Version Date:	2018
West Map:	12015925 STEELE PEAK, CA
Version Date:	2018

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

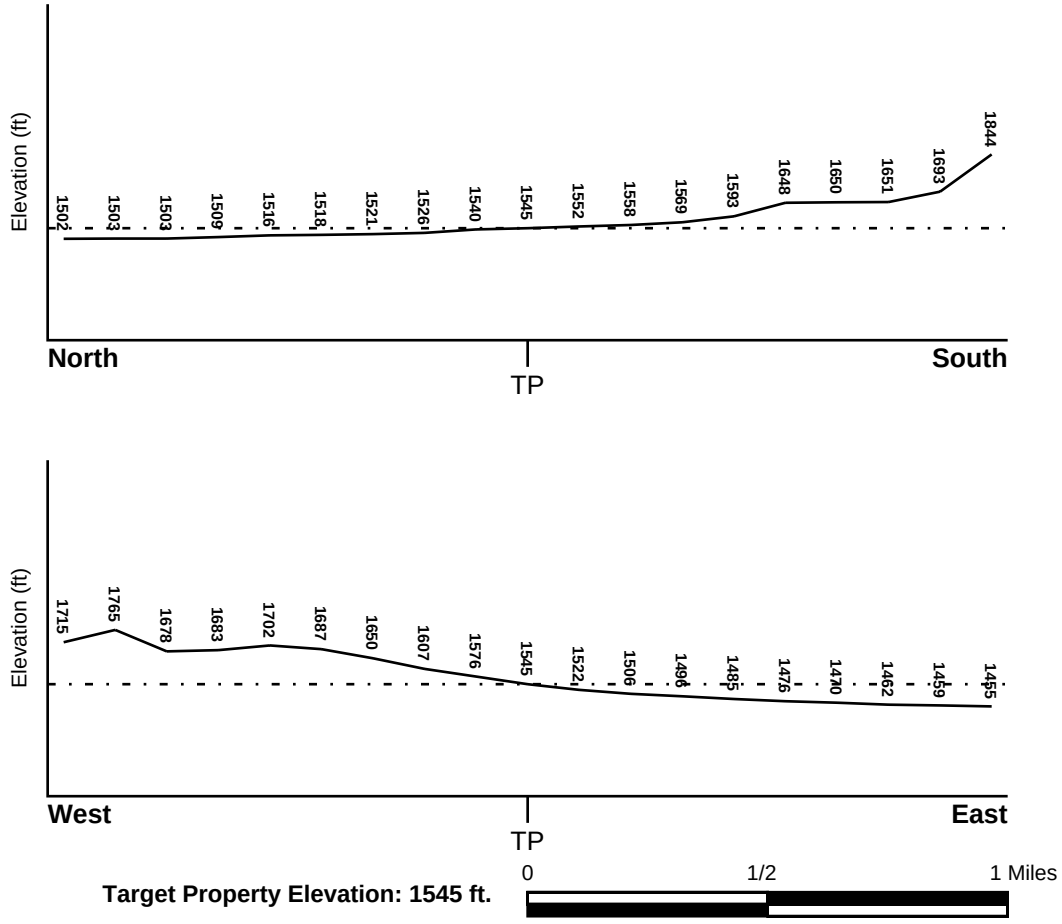
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 1545 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C1430H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C1410G	FEMA FIRM Flood data
0602451425A	FEMA Q3 Flood data
0602451450C	FEMA Q3 Flood data
06065C1440H	FEMA FIRM Flood data
0602580010D	FEMA Q3 Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
A1	1/8 - 1/4 Mile South	Not Reported
1G	1/8 - 1/4 Mile South	Not Reported

For additional site information, refer to Physical Setting Source Map Findings.

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

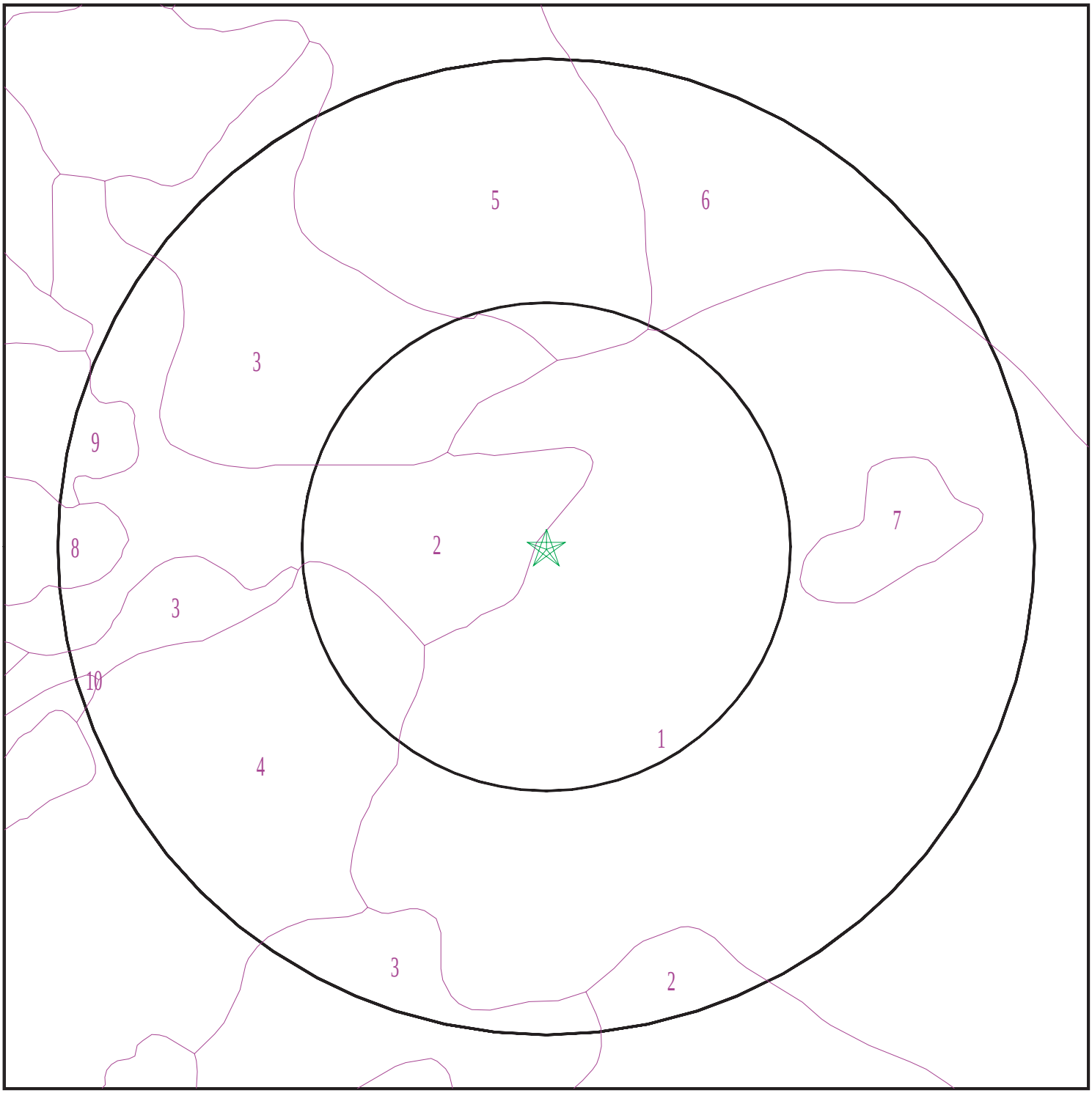
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 7056923.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Thrifty 9.48 Acres Perris CA	CLIENT:	Waterstone Environmental Inc
ADDRESS:	23641 Placentia Avenue Perris CA 92570	CONTACT:	RICHARD VOGL
		INQUIRY #:	7056923.2s
LAT/LONG:	33.822084 / 117.249392	DATE:	July 19, 2022 12:09 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
2	25 inches	42 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
3	42 inches	59 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
4	59 inches	72 inches	stratified loamy sand to sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Map ID: 2

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

Soil Map ID: 3

Soil Component Name: MONSERATE

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6
2	9 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	27 inches	44 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6
4	44 inches	57 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6
5	57 inches	70 inches	loamy coarse sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

Soil Map ID: 4

Soil Component Name: Cieneba

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	14 inches	22 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 5

Soil Component Name: FALLBROOK

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	7 inches	18 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	18 inches	22 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 6

Soil Component Name: RAMONA

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	14 inches	22 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
3	22 inches	68 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
4	68 inches	74 inches	gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6

Soil Map ID: 7

Soil Component Name: GORGONIO

Soil Surface Texture: stratified gravelly loamy sand to gravelly loamy fine sand

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	14 inches	59 inches	stratified gravelly loamy sand to gravelly loamy fine sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 5.6
2	0 inches	14 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 5.6

Soil Map ID: 8

Soil Component Name: FALLBROOK

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	7 inches	18 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	18 inches	22 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 9

Soil Component Name: FALLBROOK

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	5 inches	18 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	18 inches	22 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 10

Soil Component Name: VISTA

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	14 inches	24 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	24 inches	27 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

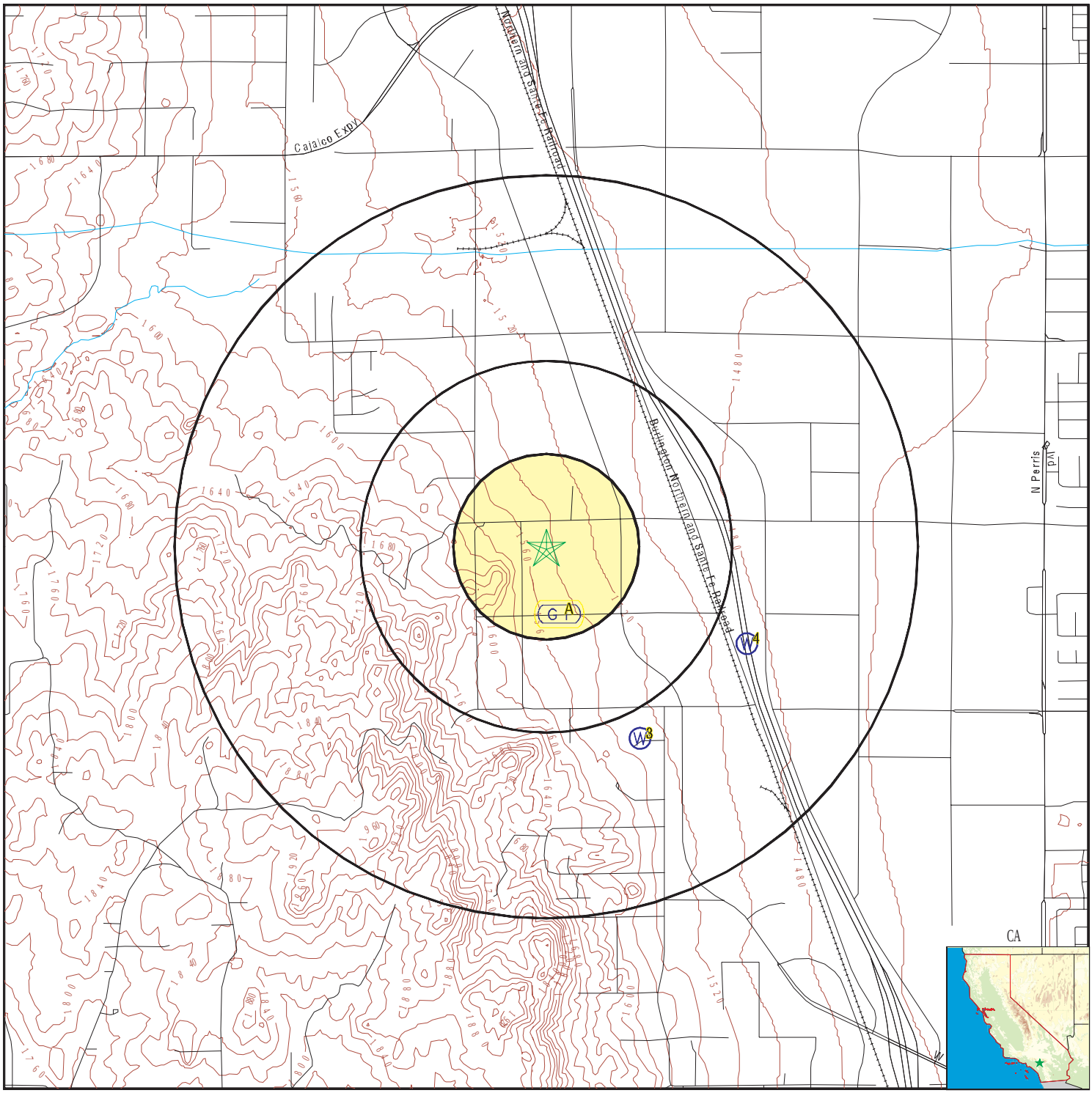
No PWS System Found

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
3	CADWR0000003220	1/2 - 1 Mile SSE
4	CADWR0000035571	1/2 - 1 Mile ESE

PHYSICAL SETTING SOURCE MAP - 7056923.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Thrifty 9.48 Acres Perris CA	CLIENT:	Waterstone Environmental Inc
ADDRESS:	23641 Placentia Avenue Perris CA 92570	CONTACT:	RICHARD VOGL
		INQUIRY #:	7056923.2s
LAT/LONG:	33.822084 / 117.249392	DATE:	July 19, 2022 12:09 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

			Database	EDR ID Number
A1 **South** **1/8 - 1/4 Mile** **Higher**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	083302019T Not Reported Not Reported Not Reported 100’ 05/15/1992	**AQUIFLOW**	**66414**
A2 **South** **1/8 - 1/4 Mile** **Higher**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	083302019T Not Reported Not Reported Not Reported <100 05/15/1992	**AQUIFLOW**	**37864**

3
SSE
1/2 - 1 Mile
Lower

CA WELLS **CADWR0000003220**

Well ID:	04S04W24A001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	04S04W24A001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=04S04W24A001S&store_num=		
GeoTracker Data:	Not Reported		

4
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADWR0000035571**

Well ID:	04S03W18N001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	04S03W18N001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=04S03W18N001S&store_num=		
GeoTracker Data:	Not Reported		

			Database	EDR ID Number
1G **South** **1/8 - 1/4 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	083302019T Not Reported Not Reported Not Reported 100’ 05/15/1992	**AQUIFLOW**	**66414**
2G **South** **1/8 - 1/4 Mile** **Lower**	Site ID: Groundwater Flow: Shallow Water Depth: Deep Water Depth: Average Water Depth: Date:	083302019T Not Reported Not Reported Not Reported <100 05/15/1992	**AQUIFLOW**	**37864**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92570	2	0

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

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Appendix C
Sanborn Map Report

Thrifty 9.48 Acres Perris CA

23641 Placentia Avenue

Perris, CA 92570

Inquiry Number: 7056923.3

July 19, 2022

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

07/19/22

Site Name:

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
EDR Inquiry # 7056923.3

Client Name:

Waterstone Environmental Inc
2936 E. Coronado Street
Anaheim, CA 92806
Contact: RICHARD VOGL

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Waterstone Environmental Inc were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 2609-4ADC-9D26

PO # 22-132

Project Thrifty 9.48 Acres Perris

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 2609-4ADC-9D26

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Appendix D
Aerial Photographs

Thrifty 9.48 Acres Perris CA

23641 Placentia Avenue

Perris, CA 92570

Inquiry Number: 7056923.11

July 19, 2022

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

07/19/22

Site Name:

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
EDR Inquiry # 7056923.11

Client Name:

Waterstone Environmental Inc
2936 E. Coronado Street
Anaheim, CA 92806
Contact: RICHARD VOGL

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2002	1"=500'	Acquisition Date: January 01, 2002	USGS/DOQQ
1997	1"=500'	Acquisition Date: January 01, 1997	USGS/DOQQ
1994	1"=500'	Acquisition Date: January 01, 1994	USGS/DOQQ
1990	1"=500'	Flight Date: September 06, 1990	USDA
1989	1"=500'	Flight Date: August 15, 1989	USDA
1985	1"=500'	Flight Date: February 24, 1985	USDA
1978	1"=500'	Flight Date: September 20, 1978	USDA
1974	1"=500'	Flight Date: November 06, 1974	USGS
1967	1"=500'	Flight Date: May 15, 1967	USDA
1961	1"=500'	Flight Date: June 14, 1961	USDA
1953	1"=500'	Flight Date: August 28, 1953	USDA
1949	1"=500'	Flight Date: May 08, 1949	USDA
1938	1"=500'	Flight Date: June 14, 1938	USDA

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INQUIRY #: 7056923.11
YEAR: 2016
= 500'
N
EDR


INQUIRY #: 7056923.11
YEAR: 2012
= 500'
N
EDR


INQUIRY #: 7056923.11
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 7056923.11
YEAR: 2006
= 500'
N
EDR


INQUIRY #: 7056923.11
YEAR: 2002
= 500'
N
EDR


UNMAPPED
UNMAPPED
UNMAPPED
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UNMAPPED
UNMAPPED
INQUIRY #: 7056923.11
YEAR: 1997
= 500'
N
EDR
Subject boundary not shown because it exceeds image extent or image is not georeferenced.



INQUIRY #: 7056923.11

YEAR: 1994

= 500'

N

EDR

UNMAPPED UNMAPPED
UNMAPPED UNMAPPED
UNMAPPED UNMAPPED
UNMAPPED UNMAPPED
UNMAPPED UNMAPPED
UNMAPPED UNMAPPED
UNMAPPED UNMAPPED
UNMAPPED UNMAPPED
UNMAPPED UNMAPPED
UNMAPPED UNMAPPED
UNMAPPED UNMAPPED
UNMAPPED UNMAPPED



INQUIRY #: 7056923.11

YEAR: 1990

= 500'

N

EDR


INQUIRY #: 7056923.11
YEAR: 1989
= 500'
N
EDR



INQUIRY #: 7056923.11

YEAR: 1985

= 500'

N

EDR



INQUIRY #: 7056923.11

YEAR: 1978

= 500'

N

EDR



INQUIRY #: 7056923.11

YEAR: 1974

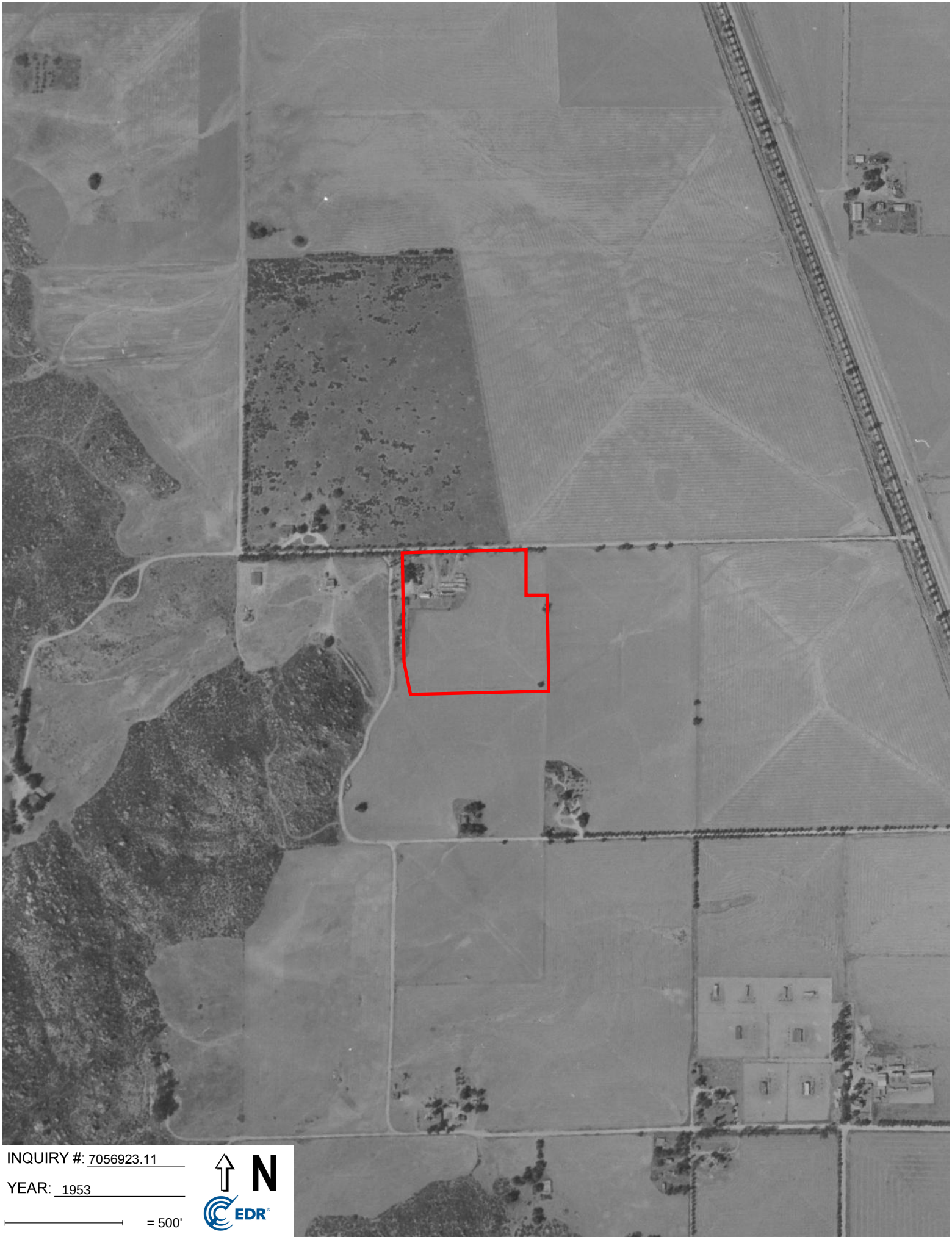
= 500'

N

EDR


INQUIRY #: 7056923.11
YEAR: 1967
= 500'
N
EDR


INQUIRY #: 7056923.11
YEAR: 1961
= 500'
N
EDR



INQUIRY #: 7056923.11

YEAR: 1953

= 500'

N

EDR



INQUIRY #: 7056923.11

YEAR: 1949

= 500'

N

EDR



INQUIRY #: 7056923.11

YEAR: 1938

= 500'

N

EDR

Appendix E
Topographic Map Report

Thrifty 9.48 Acres Perris CA

23641 Placentia Avenue

Perris, CA 92570

Inquiry Number: 7056923.4

July 19, 2022

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

07/19/22

Site Name:

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
EDR Inquiry # 7056923.4

Client Name:

Waterstone Environmental Inc
2936 E. Coronado Street
Anaheim, CA 92806
Contact: RICHARD VOGL

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Waterstone Environmental Inc were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# 22-132

Project: Thrifty 9.48 Acres Perris

Coordinates:

Latitude:	33.822084 33° 49' 20" North
Longitude:	-117.249392 -117° 14' 58" West
UTM Zone:	Zone 11 North
UTM X Meters:	476921.26
UTM Y Meters:	3742457.25
Elevation:	1543.65' above sea level

Maps Provided:

2018	1947
2015	1943
2012	1942
1979	1901
1978	
1973	
1967	
1953	

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Topo Sheet Key

□□□□□□DR□□□□□□M□□□R□□□r□□□□□□□□□d□□□□□□□□□

Topo Sheet Key

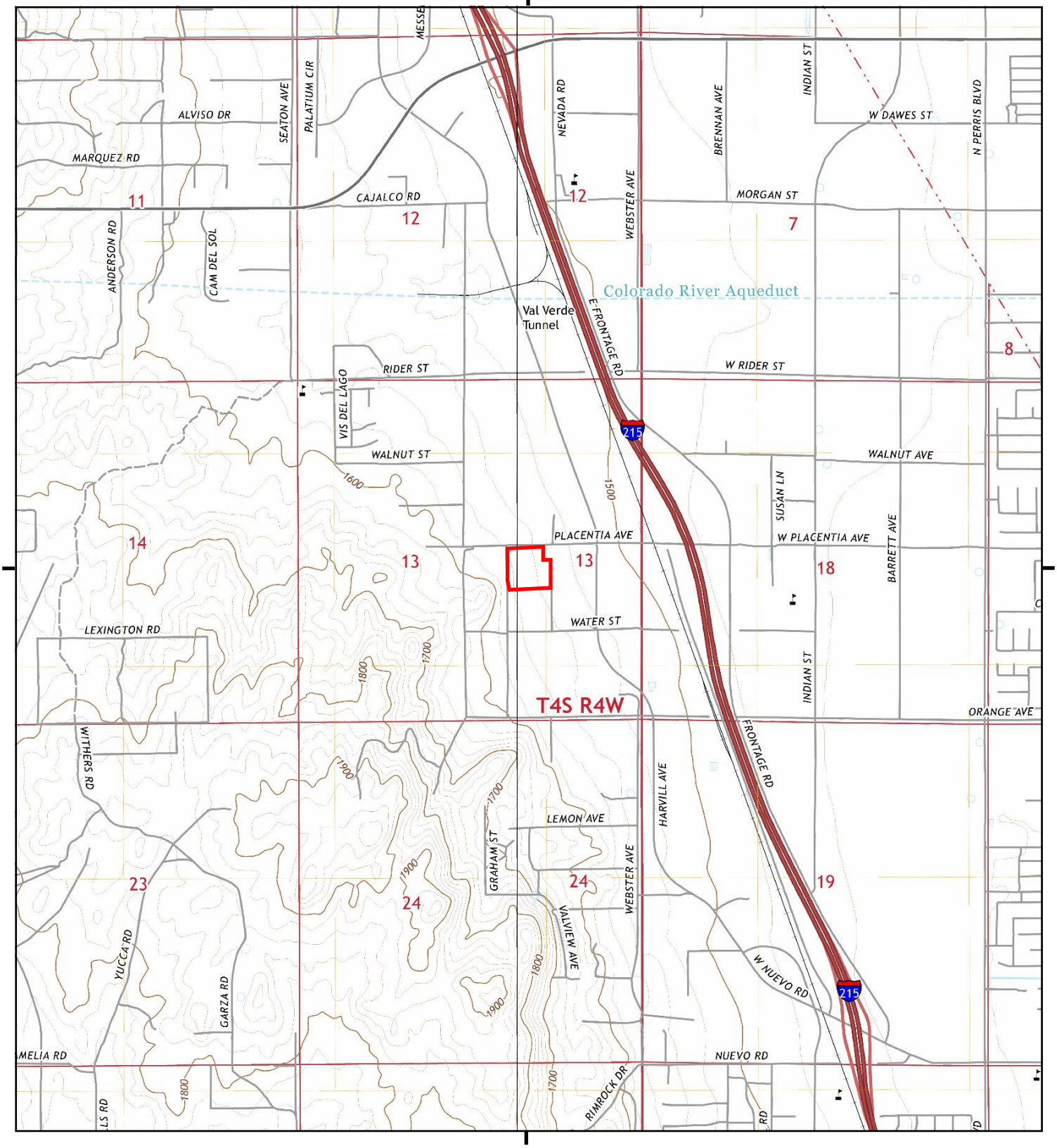
□□□□□□DR□□□□□□M□□□R□□□r□□□□□□□□□d□□□□□□□□□

Topo Sheet Key

□□□□□□DR□□□□□M□□□R□□□r□□□□□□□□□d□□□□□□□□□

Historical Topo Map

2018



0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Perris, 2018, 7.5-minute
W, Steele Peak, 2018, 7.5-minute

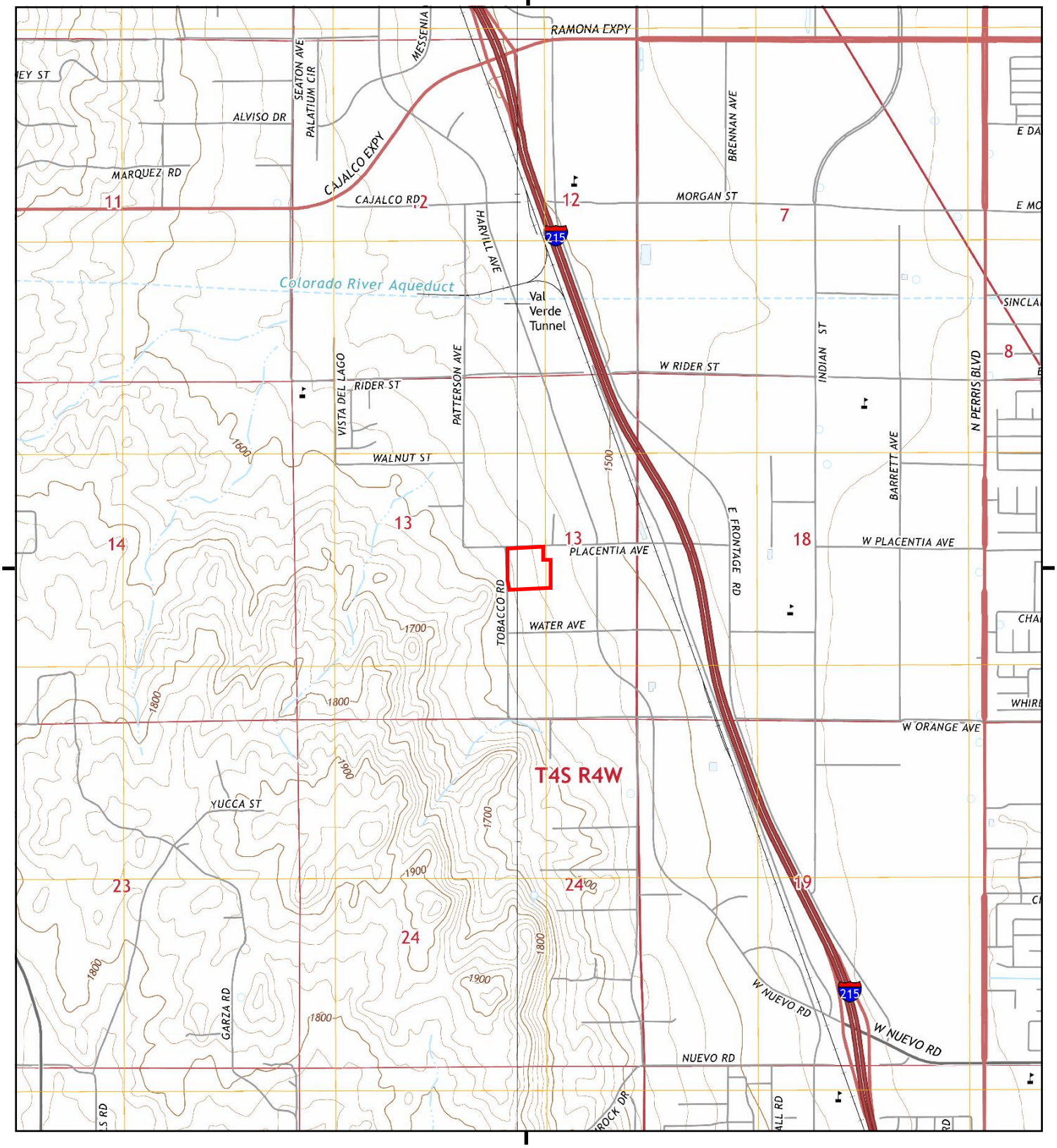
Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N

7056923 - 4 6

Historical Topo Map

2015



0 Miles 0.25 0.5 1 1.5

TP, Perris, 2015, 7.5-minute
W, Steele Peak, 2015, 7.5-minute

NW N NE
W E
SW S SE

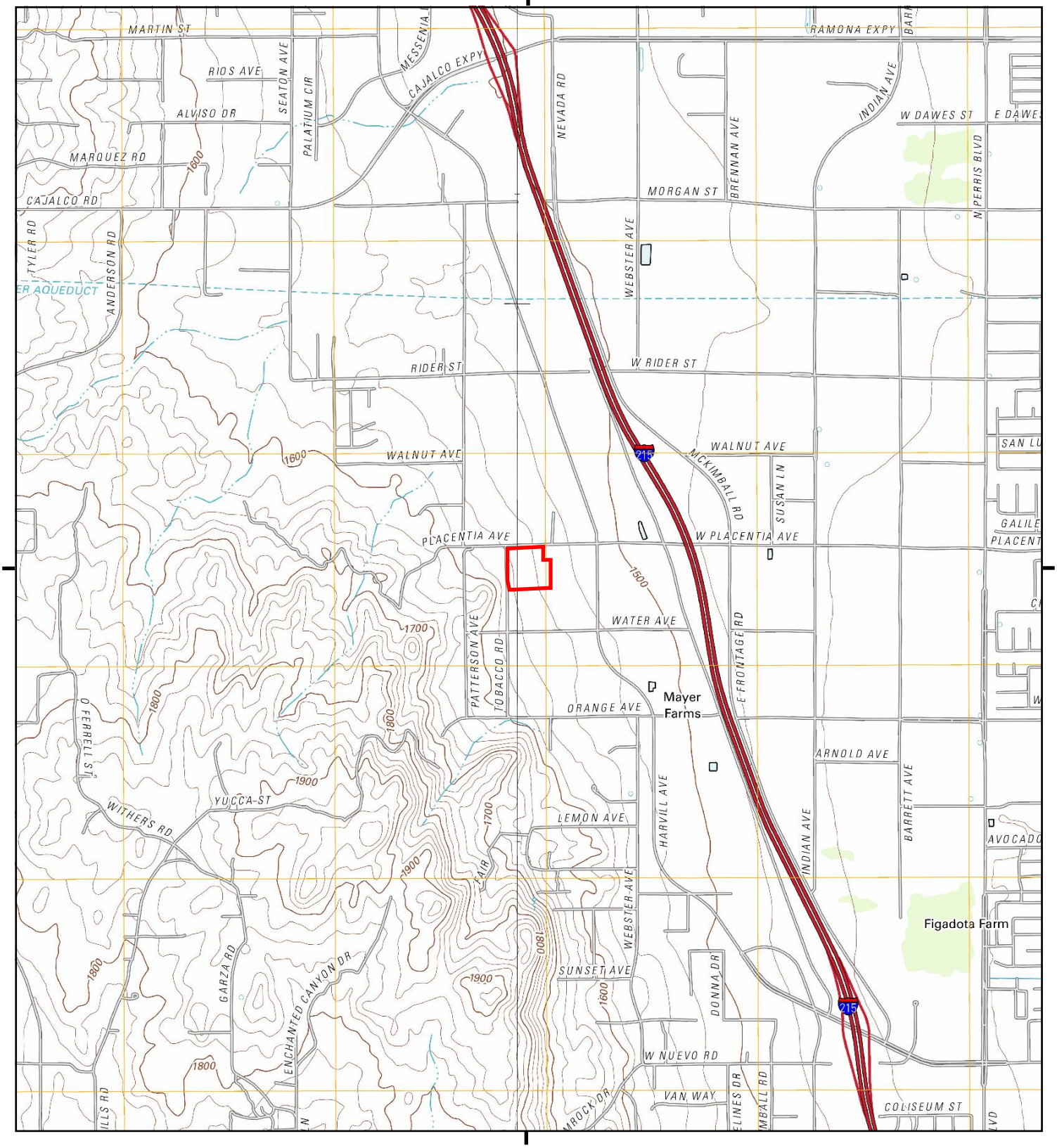
Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N

7056923 - 4 7

Historical Topo Map

2012



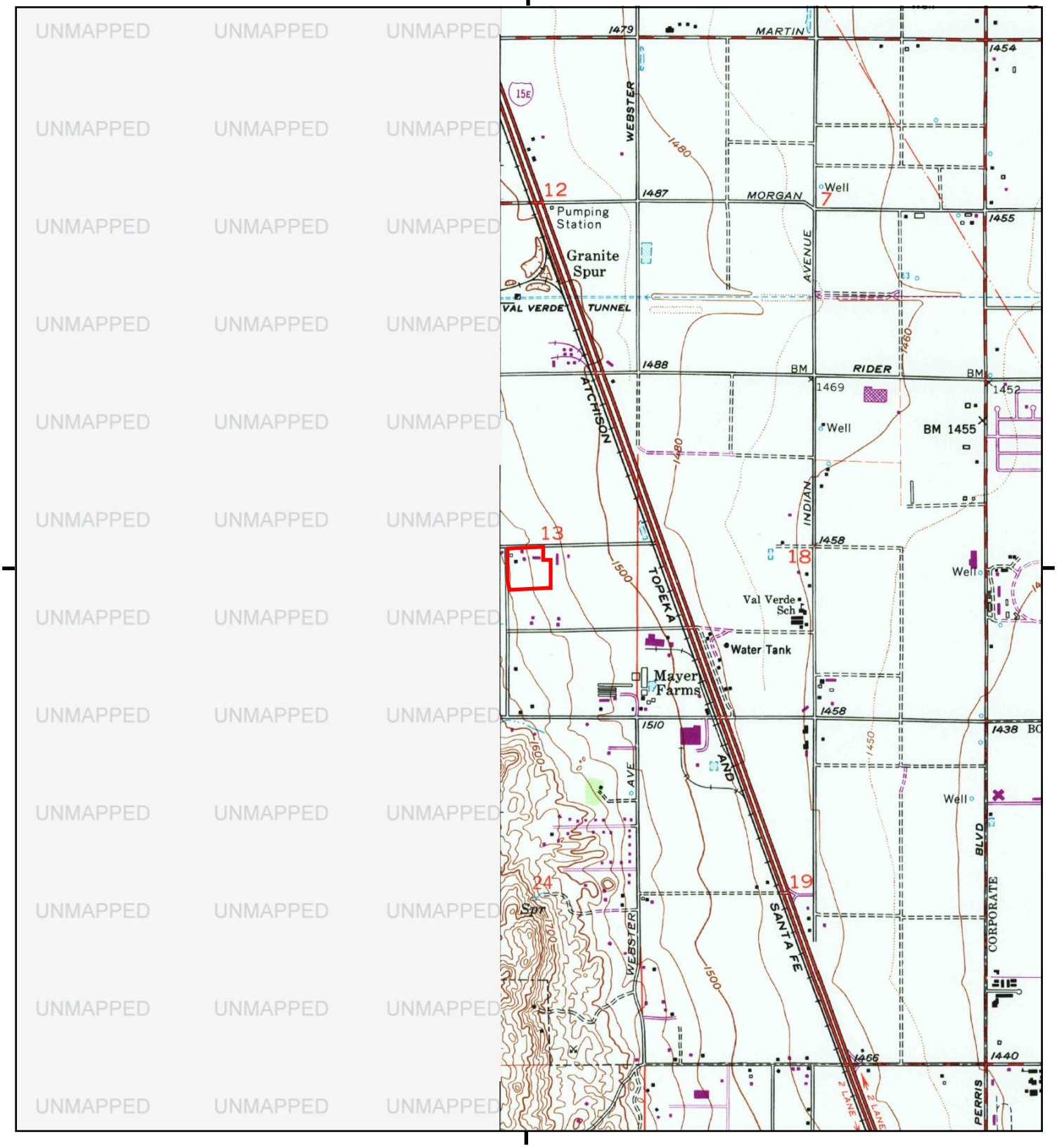
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Perris, 2012, 7.5-minute
W, Steele Peak, 2012, 7.5-minute

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N



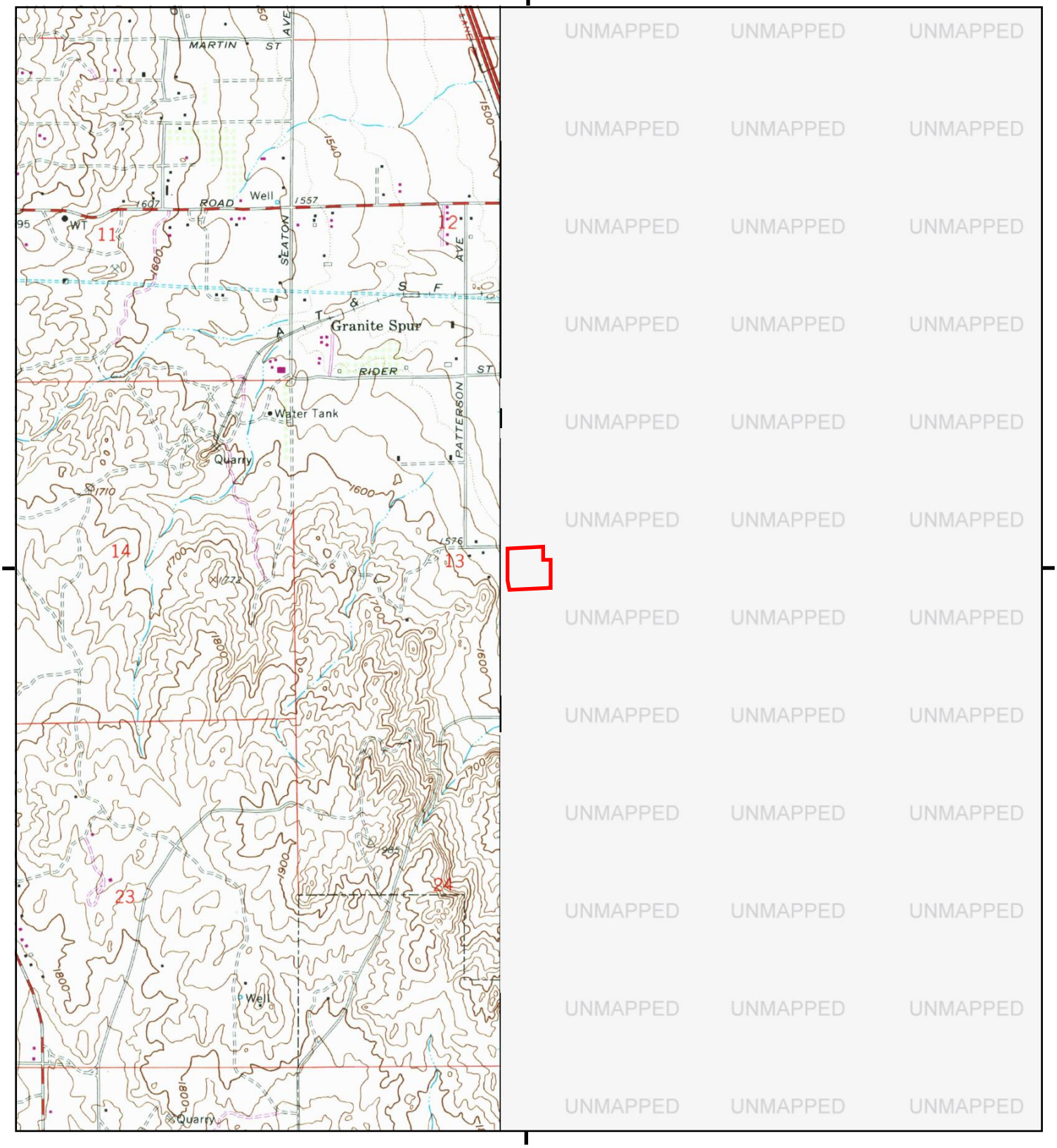
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Perris, 1979, 7.5-minute

M Thrifty 9.48 Acres Perris CA
DDR 23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N



0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

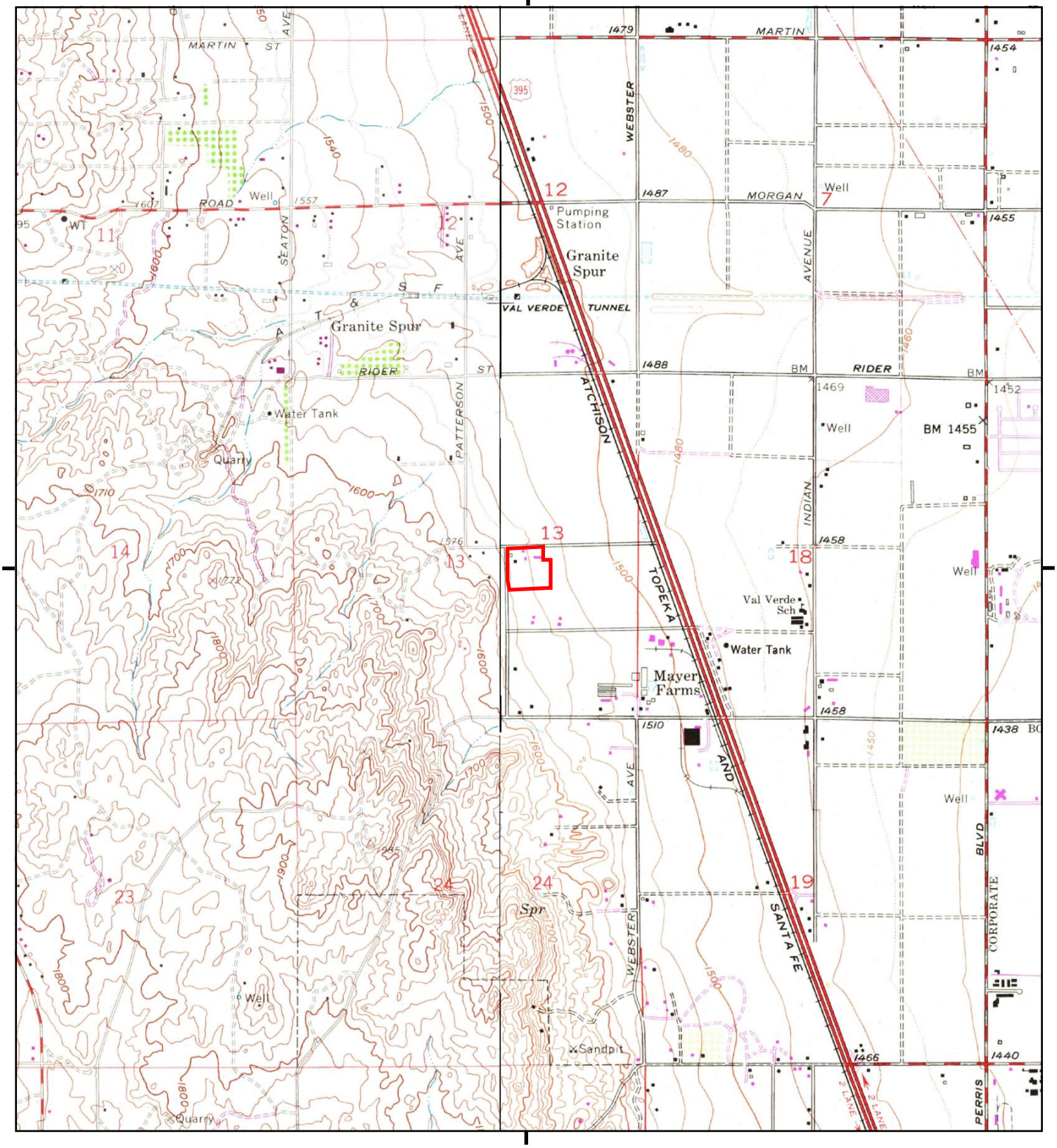
W, Steele Peak, 1978, 7.5-minute

Thrifty 9.48 Acres Perris CA
DDR
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N

Historical Topo Map

1973



0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Perris, 1973, 7.5-minute
W, Steele Peak, 1973, 7.5-minute

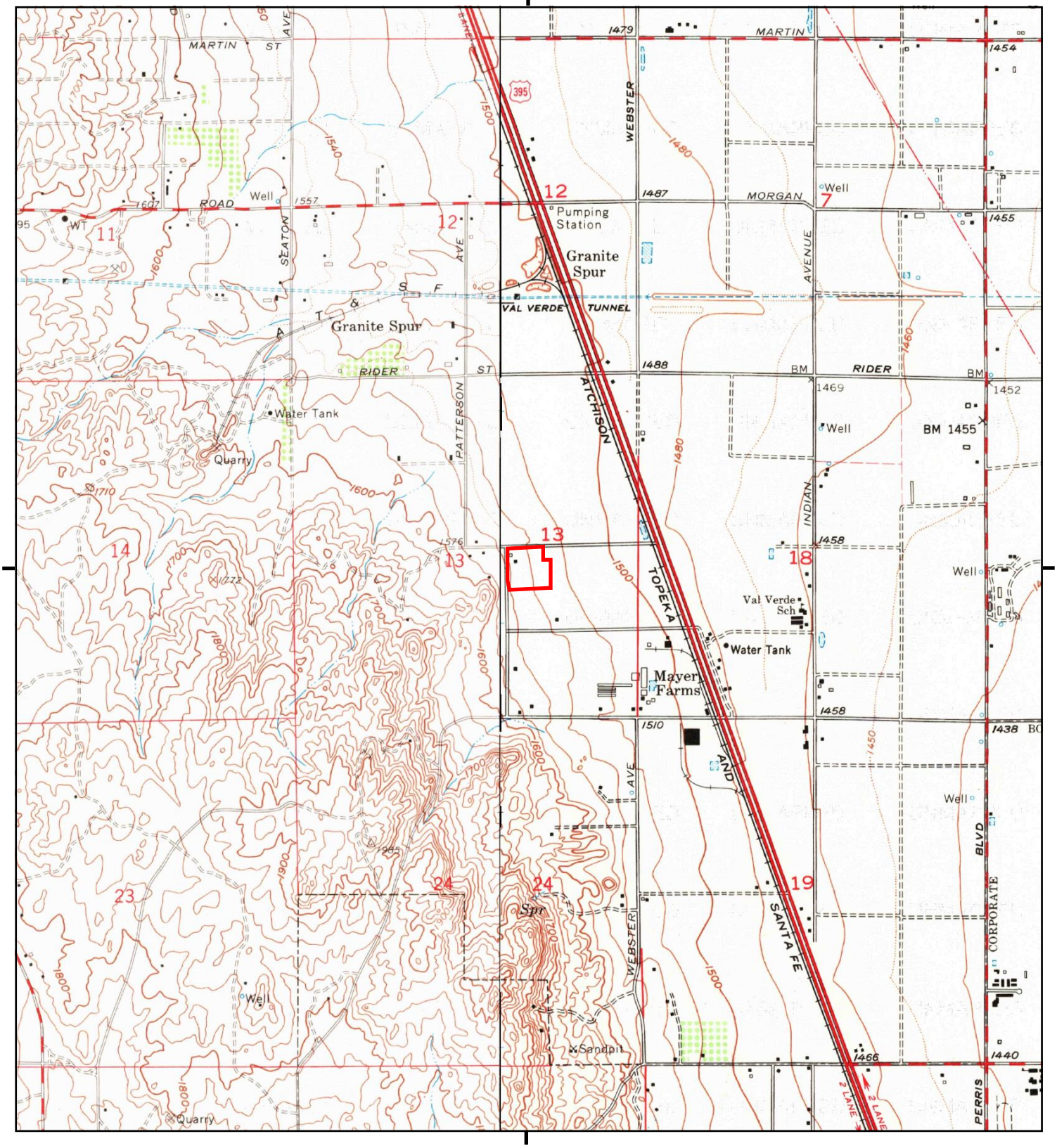
Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N

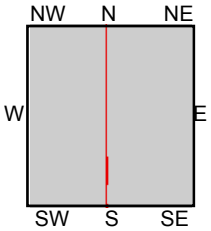
7056923 - 4 11

Historical Topo Map

1967



0 Miles 0.25 0.5 1 1.5



TP, Perris, 1967, 7.5-minute
W, Steele Peak, 1967, 7.5-minute

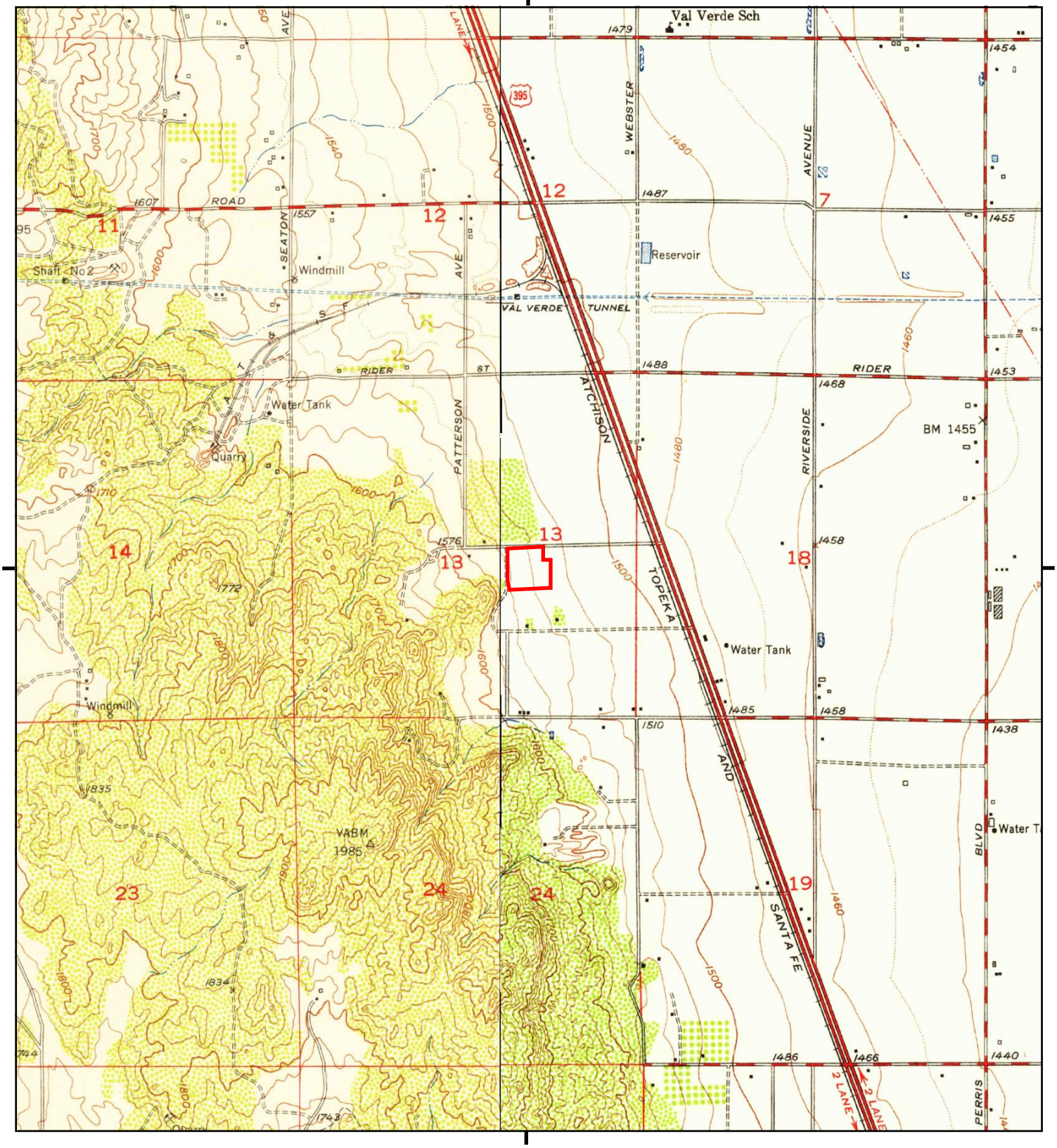
Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N

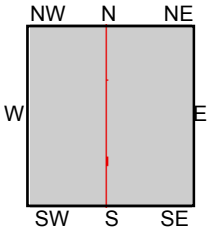
7056923 - 4 12

Historical Topo Map

1953



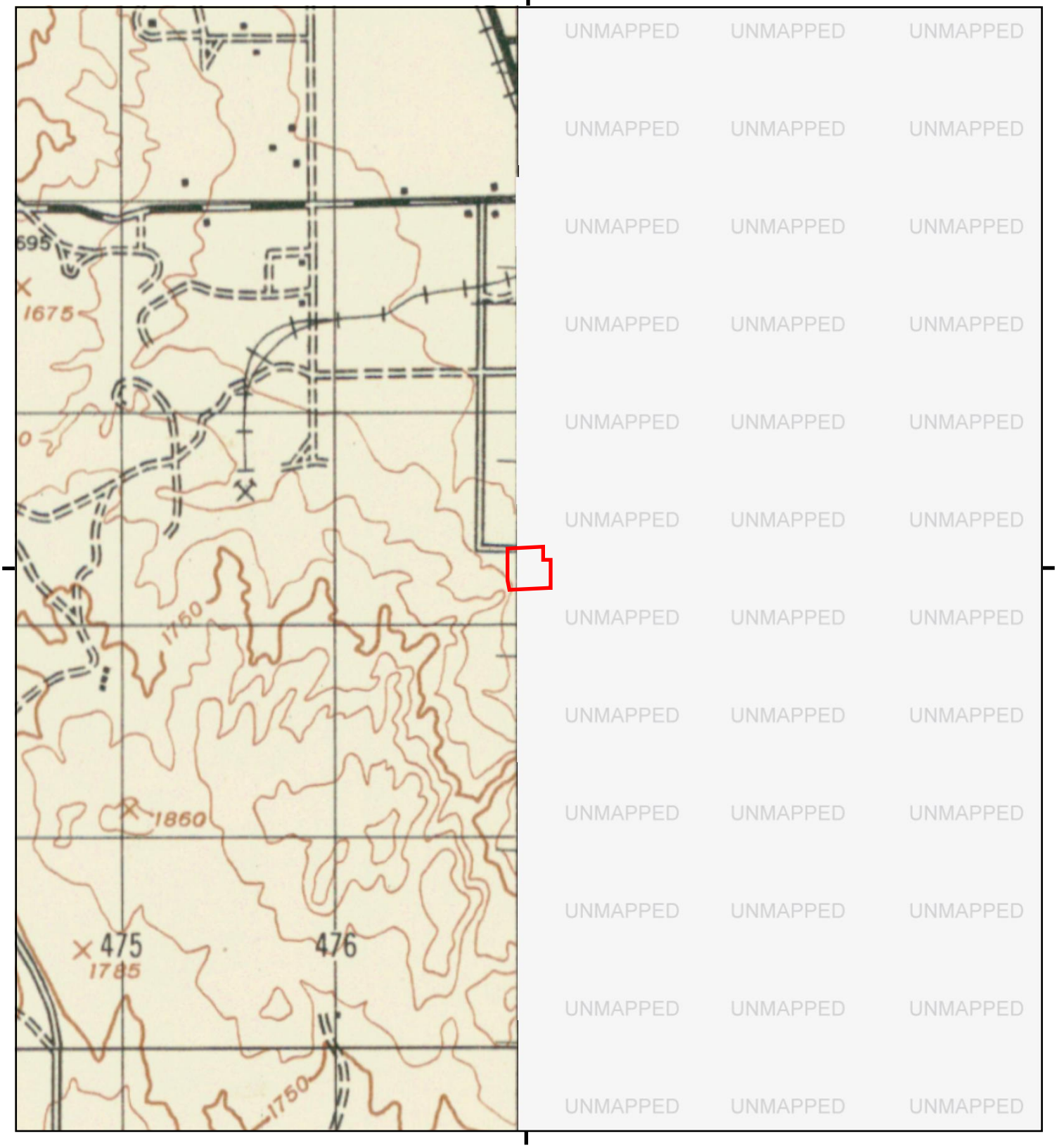
0 Miles 0.25 0.5 1 1.5



TP, Perris, 1953, 7.5-minute
W, Steele Peak, 1953, 7.5-minute

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N



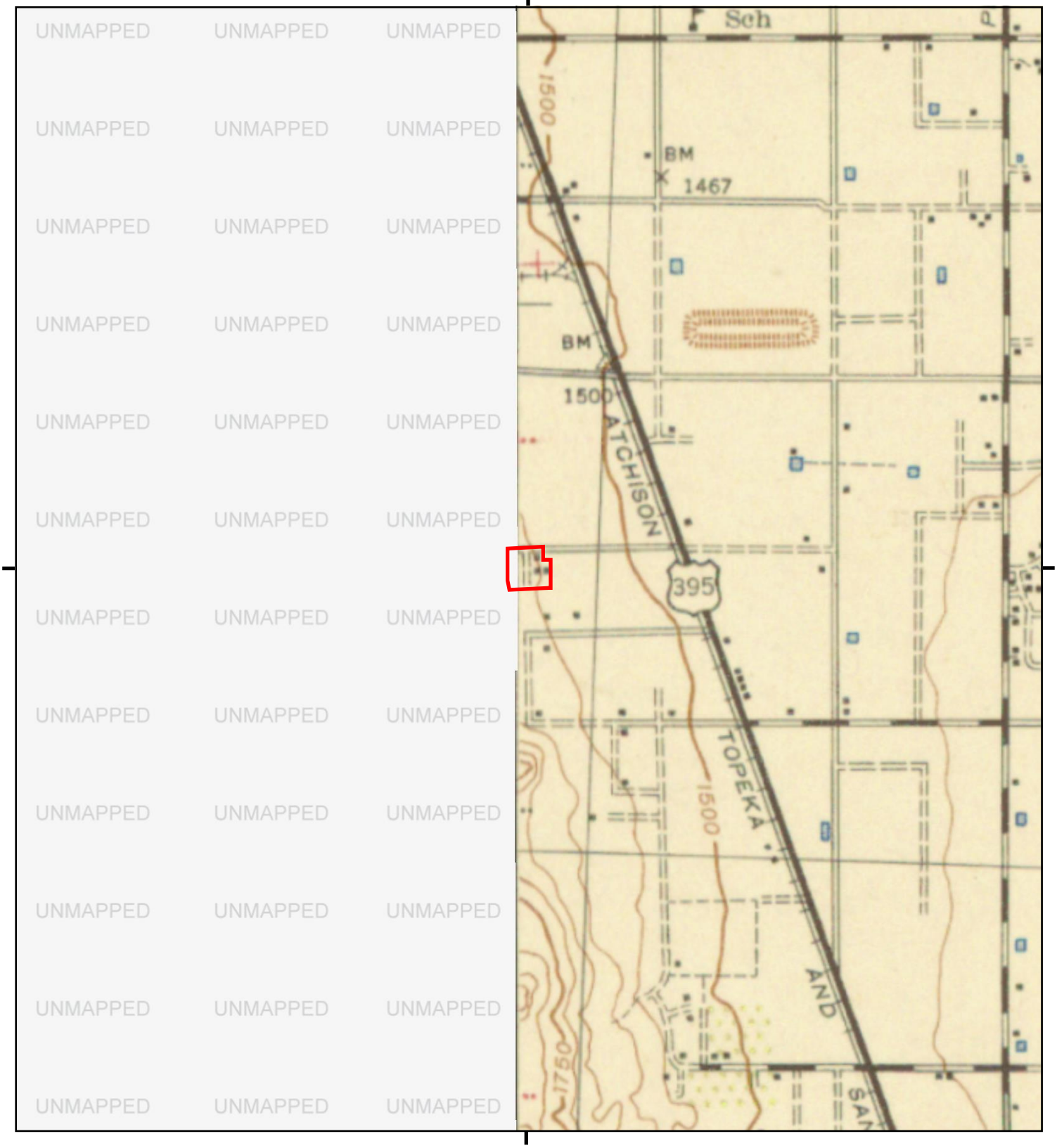
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

NW, RIVERSIDE, 1947, 15-minute

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N



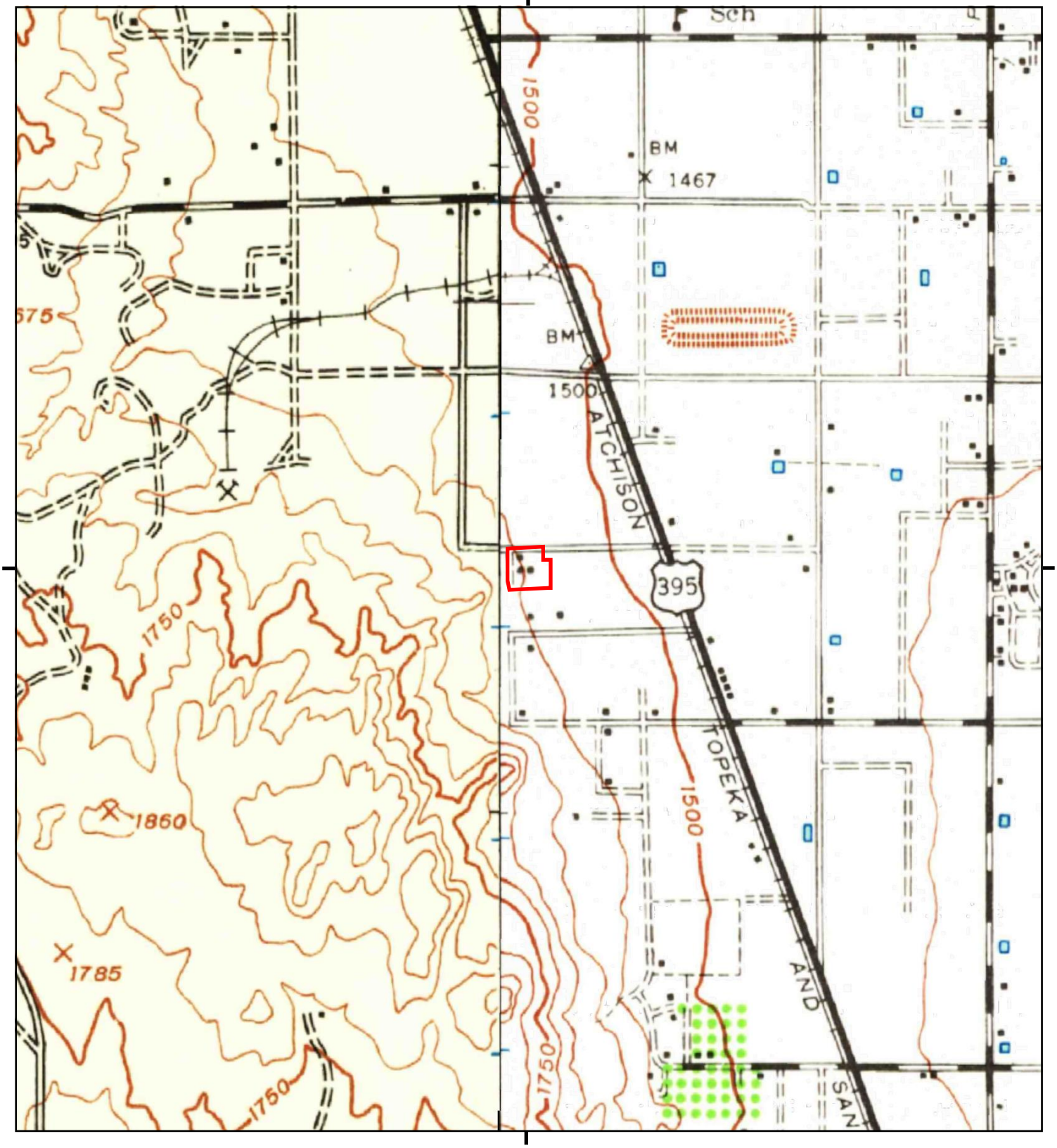
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, PERRIS, 1943, 15-minute

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N



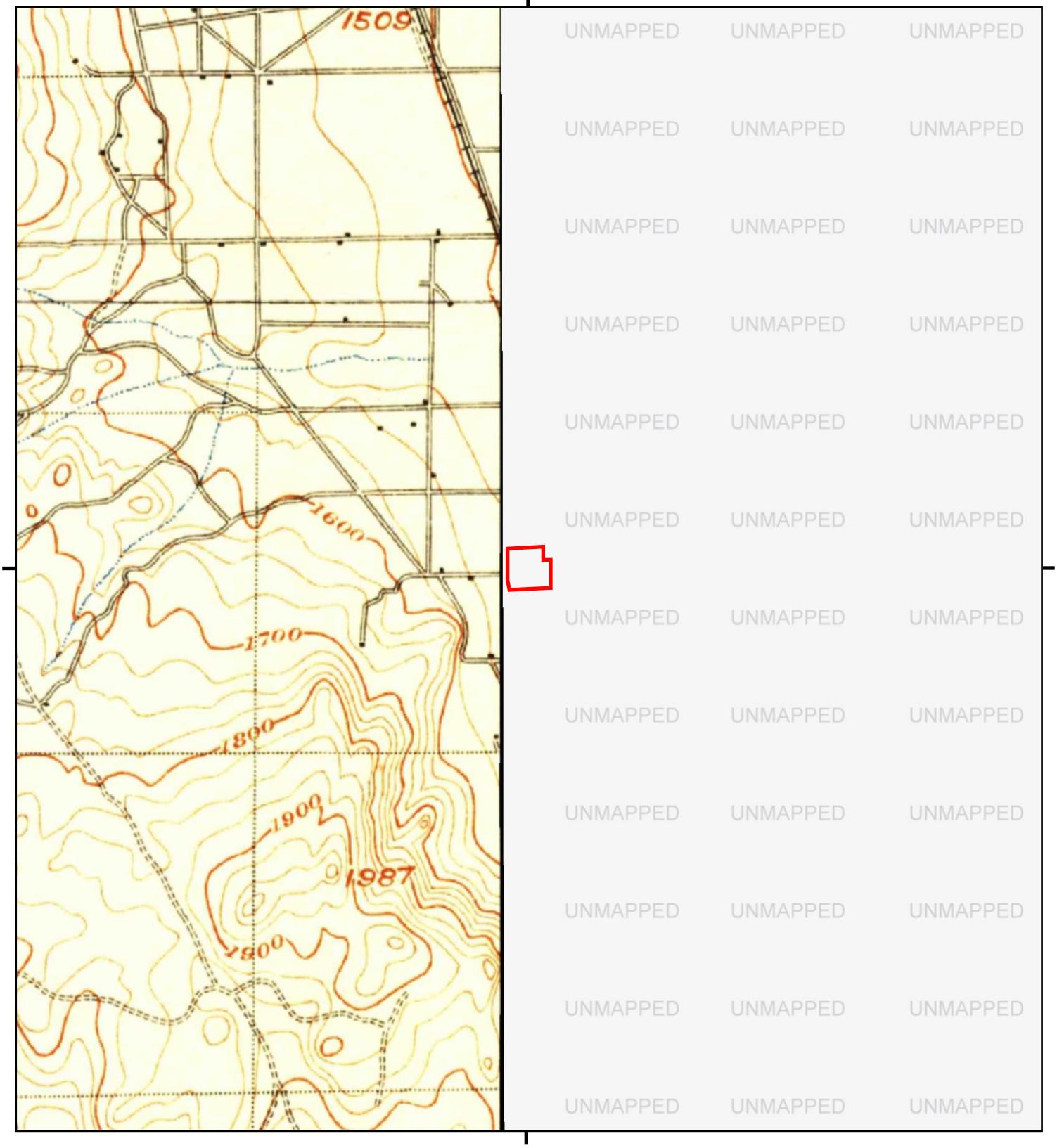
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Perris, 1942, 15-minute
NW, Riverside, 1942, 15-minute

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N



0 Miles 0.25 0.5 1 1.5

NW, Riverside, 1901, 15-minute

Thrifty 9.48 Acres Perris CA
DDR
23641 Placentia Avenue
Perris, CA 92570
Waterstone Environmental Inc

N

Appendix F
City Directory

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570

Inquiry Number: 7056923.5
July 19, 2022

The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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Data by
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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2017	☑	☐	EDR Digital Archive
2014	☑	☐	EDR Digital Archive
2010	☑	☐	EDR Digital Archive
2005	☑	☐	EDR Digital Archive
2000	☑	☐	EDR Digital Archive
1995	☑	☐	EDR Digital Archive
1992	☑	☐	EDR Digital Archive
1990	☑	☐	Haines Criss-Cross Directory
1985	☑	☐	Haines Criss-Cross Directory
1980	☑	☐	Haines Criss-Cross Directory
1976	☑	☐	Haines Criss-Cross Directory
1971	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

23641 Placentia Avenue
Perris, CA 92570

Year	*CD Image*	*Source*	
PLACENTIA AVE			
2017	pg A1	EDR Digital Archive	
2014	pg A2	EDR Digital Archive	
2010	pg A3	EDR Digital Archive	
2005	pg A4	EDR Digital Archive	
2000	pg A5	EDR Digital Archive	
1995	pg A6	EDR Digital Archive	
1992	pg A7	EDR Digital Archive	
1990	pg A8	Haines Criss-Cross Directory	
1985	pg A9	Haines Criss-Cross Directory	
1980	pg A10	Haines Criss-Cross Directory	
1976	pg A11	Haines Criss-Cross Directory	
1971	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

PLACENTIA AVE 2017

23251	TUTTLE, JUDY L
23430	RUBIO, ISABEL
23491	ROMERO, FLORINE M
23511	BARRIENTOS, GARCIA
23551	BRAMLETTE, ANITA A
23641	PRICE, JEREMY R

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

PLACENTIA AVE 2014

23251	TUTTLE, JUDY L
23430	BUENROSTRO, JAVIER
23491	OCCUPANT UNKNOWN,
23511	GOMEZ, CARLOS
23551	BRAMLETTE, ANITA A
23641	RASMUSSEN, ELMER
23745	RODRIGUEZ, JOSEF

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

PLACENTIA AVE 2010

23430	RUBIO, ISABEL
23491	ROMERO, FLORINE M
23511	OCCUPANT UNKNOWN,
23551	BRAMLETTE, ANITA A
23641	RASMUSSEN, AMY
23745	OCCUPANT UNKNOWN,
23815	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

PLACENTIA AVE 2005

23251 STCLAIR, JOHN P
23430 ZERMENO, LILIANA
23491 ROMERO, FLORINE M
23511 BARRIENTOS, JUAN G
23551 BRAMLETT, SIMS
23641 COOPER, THURMAN
23745 A 1 MOBILE TIRE & AXLE CO
OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

PLACENTIA AVE 2000

23430 MONTIEL, JESUS
23491 ROMERO, FLORINE M
23511 BARRIENTOS, JUAN G
23551 SIMS, ANITA A
23641 SEABRA, TORI
23745 OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

PLACENTIA AVE 1995

23641 MYERS, SEAN
23745 A 1 MOBILE TIRE & AXLE CO

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

PLACENTIA AVE 1992

23511 BARRIENTOS, JUAN G
23815 KARNES, DANA

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

PLACENTIA AVE 1990

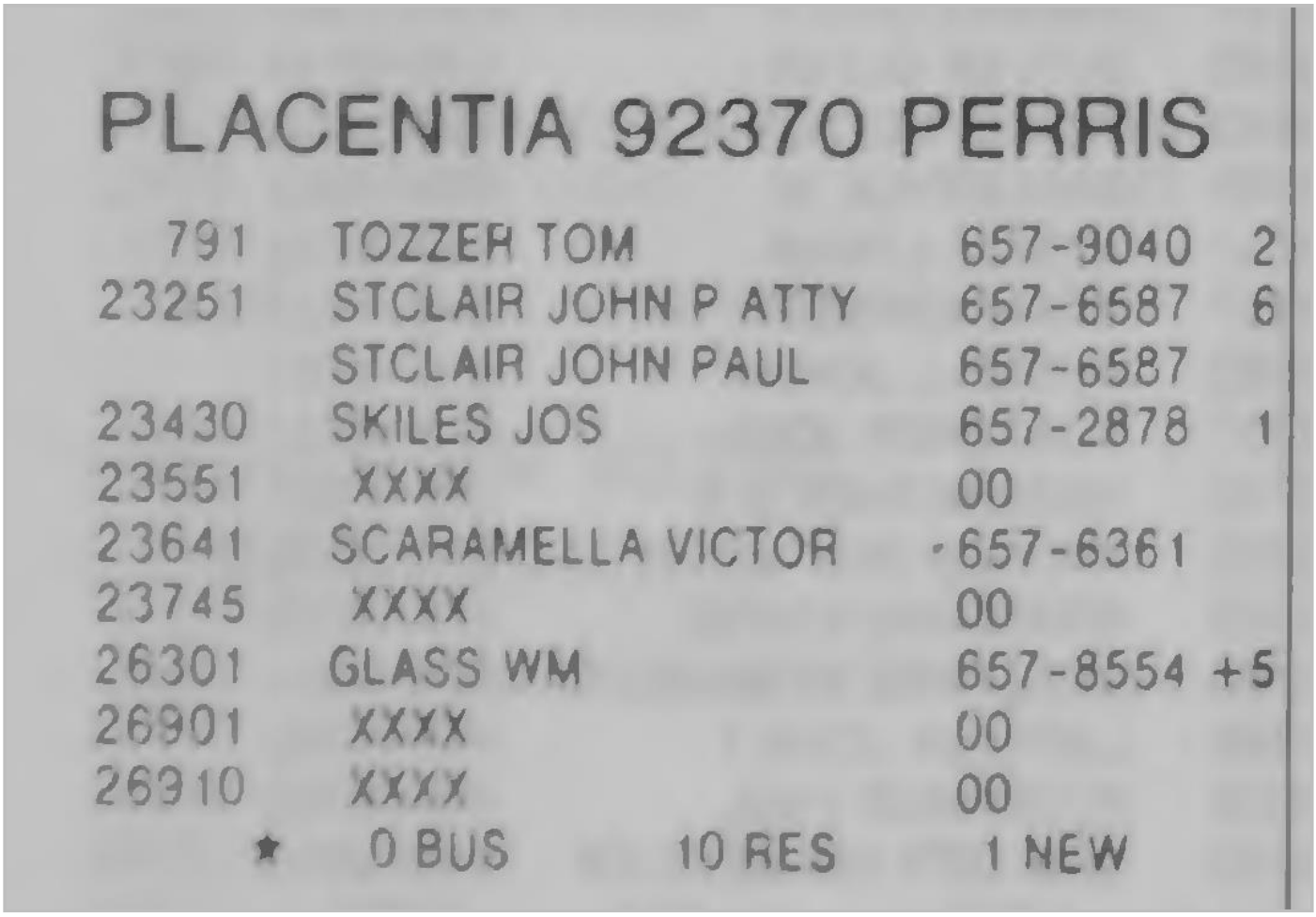
PLACENTIA 92370
PERRIS

421	REGAN Michael	943-4730	+0
431	POPE Russell J	00	+0
441	DAVIS Angela	943-2706	+0
471	ANGLE Edgar	943-6958	9
	HOLLAND Arville	943-6958	9
491	HIGGINBOTHAM Mark	00	
521	ROSE Bruce C	00	+0
531	MORGAN Tilford 2D	657-6859	7
551	★D&H DGNSTC IMAGING	943-7500	+0
791	TOZZER Patricia	657-9040	
	TOZZER Tom	657-9040	
23430	SKILES Jos	657-2878	1
23511	TOCCHI John	943-6604	+0
	TOCCHI L	943-6604	+0
23551	COURTNEY James R	00	4
23641	SCARAMELLA Victor	657-6361	
23745	ADAMS Stanley	657-8496	+0
	CUMMINGS Joan D	00	+0
23815	XXXX	00	
26301	MORFIN Jorge	00	5
26735	ESPARZA Crestino	00	6
26901	SHIRELL Ron	943-8407	9
26910	ENGLAND Donald C	00	4
NO #	★ROCKWIN CORPORATION	943-9119	+0

★ 2 BUS 22 RES 10 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

PLACENTIA AVE 1985



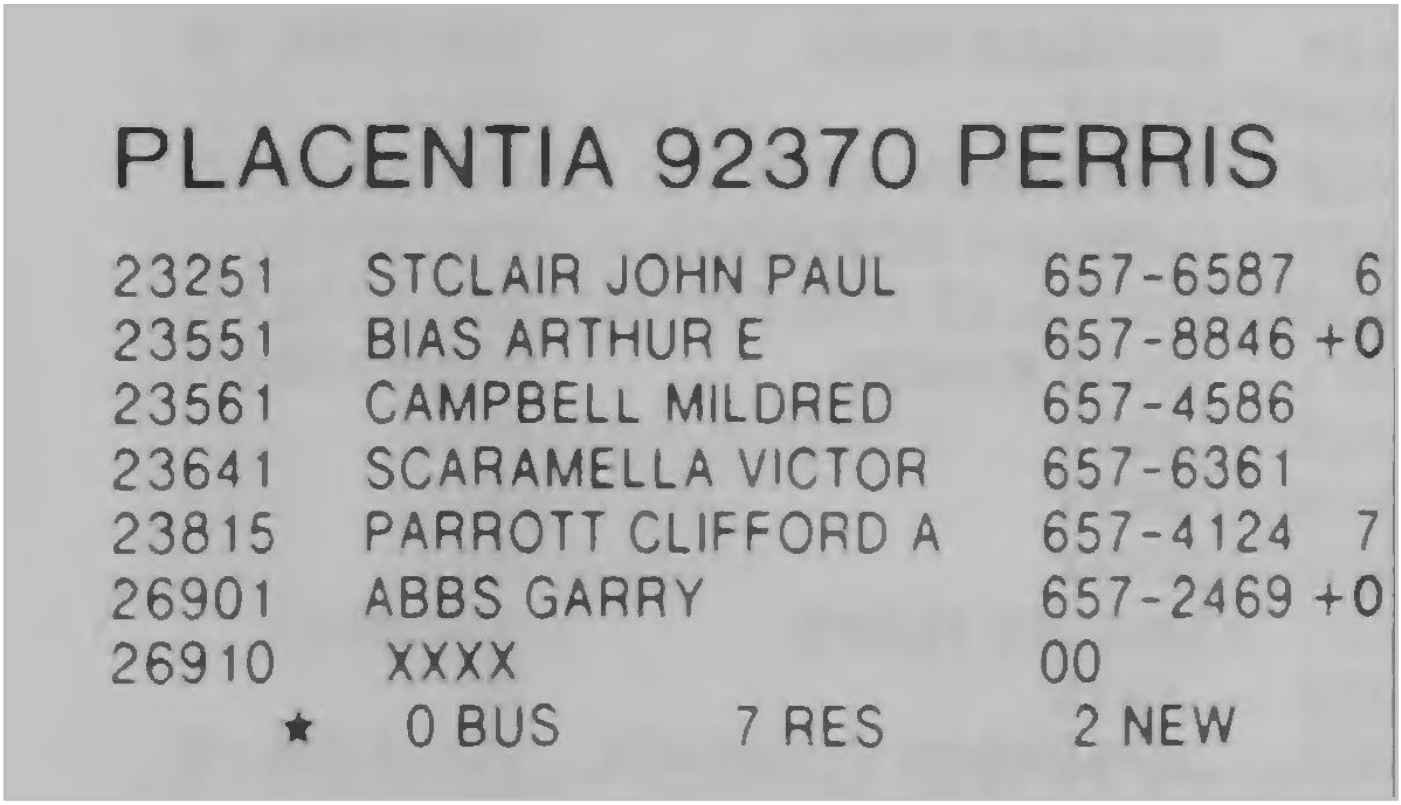
PLACENTIA 92370 PERRIS

791	TOZZER TOM	657-9040	2
23251	STCLAIR JOHN P ATTY	657-6587	6
	STCLAIR JOHN PAUL	657-6587	
23430	SKILES JOS	657-2878	1
23551	XXXX	00	
23641	SCARAMELLA VICTOR	657-6361	
23745	XXXX	00	
26301	GLASS WM	657-8554	+5
26901	XXXX	00	
26910	XXXX	00	

★ 0 BUS 10 RES 1 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

PLACENTIA AVE 1980



PLACENTIA 92370 PERRIS

23251	STCLAIR JOHN PAUL	657-6587	6
23551	BIAS ARTHUR E	657-8846	+0
23561	CAMPBELL MILDRED	657-4586	
23641	SCARAMELLA VICTOR	657-6361	
23815	PARROTT CLIFFORD A	657-4124	7
26901	ABBS GARRY	657-2469	+0
26910	XXXX	00	

★ 0 BUS 7 RES 2 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

PLACENTIA AVE 1976

PLACENTIA 92370 PERRIS

23251	STCLAIR JOHN PAUL	657-6587+6
23561	CAMPBELL MILDRED	657-4586
23641	SCARAMELLA VICTOR	657-6361
26901	HAMNER L L	657-2703
26910	UNDERWOOD FORD P	657-3497

* 0 BUS 5 RES 1 NEW

Appendix G
EDR Building Permit Report

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570

Inquiry Number: 7056923.8
July 19, 2022

EDR Building Permit Report

Target Property and Adjoining Properties

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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with any questions or comments.

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EDR BUILDING PERMIT REPORT

About This Report

The EDR Building Permit Report provides a practical and efficient method to search building department records for indications of environmental conditions. Generated via a search of municipal building permit records gathered from more than 1,600 cities nationwide, this report will assist you in meeting the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

Building permit data can be used to identify current and/or former operations and structures/features of environmental concern. The data can provide information on a target property and adjoining properties such as the presence of underground storage tanks, pump islands, sumps, drywells, etc., as well as information regarding water, sewer, natural gas, electrical connection dates, and current/former septic tanks.

ASTM and EPA Requirements

ASTM E 1527-13 lists building department records as a "standard historical source," as detailed in § 8.3.4.7: "Building Department Records - The term building department records means those records of the local government in which the property is located indicating permission of the local government to construct, alter, or demolish improvements on the property." ASTM also states that "Uses in the area surrounding the property shall be identified in the report, but this task is required only to the extent that this information is revealed in the course of researching the property itself."

EPA's Standards and Practices for All Appropriate Inquires (AAI) states: "§312.24: Reviews of historical sources of information. (a) Historical documents and records must be reviewed for the purposes of achieving the objectives and performance factors of §312.20(e) and (f). Historical documents and records may include, but are not limited to, aerial photographs, fire insurance maps, building department records, chain of title documents, and land use records."

Methodology

EDR has developed the EDR Building Permit Report through our partnership with BuildFax, the nation's largest repository of building department records. BuildFax collects, updates, and manages building department records from local municipal governments. The database now includes 30 million permits, on more than 10 million properties across 1,600 cities in the United States.

The EDR Building Permit Report comprises local municipal building permit records, gathered directly from local jurisdictions, including both target property and adjoining properties. Years of coverage vary by municipality. Data reported includes (where available): date of permit, permit type, permit number, status, valuation, contractor company, contractor name, and description.

Incoming permit data is checked at seven stages in a regimented quality control process, from initial data source interview, to data preparation, through final auditing. To ensure the building department is accurate, each of the seven quality control stages contains, on average, 15 additional quality checks, resulting in a process of approximately 105 quality control "touch points."

For more information about the EDR Building Permit Report, please contact your EDR Account Executive at (800) 352-0050.

EDR® Environmental Data Resources Inc

BUILD FAX PROPERTY HISTORY

EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

A search of building department records was conducted by Environmental Data Resources, Inc (EDR) on behalf of Waterstone Environmental Inc on Jul 19, 2022.

TARGET PROPERTY

23641 Placentia Avenue
Perris, CA 92570

SEARCH METHODS

EDR searches available lists for both the Target Property and Surrounding Properties.

RESEARCH SUMMARY

Building permits identified: **YES**

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Riverside County

Year	*Source*	*TP*	*Adjoining*
2022	Riverside County, Building and Safety		
2021	Riverside County, Building and Safety		X
2020	Riverside County, Building and Safety		
2019	Riverside County, Building and Safety		
2018	Riverside County, Building and Safety		
2017	Riverside County, Building and Safety	X	
2016	Riverside County, Building and Safety		X
2015	Riverside County, Building and Safety		
2014	Riverside County, Building and Safety		X
2013	Riverside County, Building and Safety		
2012	Riverside County, Building and Safety		
2011	Riverside County, Building and Safety		X
2010	Riverside County, Building and Safety		X
2009	Riverside County, Building and Safety		
2008	Riverside County, Building and Safety		
2007	Riverside County, Building and Safety		
2006	Riverside County, Building and Safety		X
2005	Riverside County, Building and Safety		
2004	Riverside County, Building and Safety		X
2003	Riverside County, Building and Safety		X
2002	Riverside County, Building and Safety		
2001	Riverside County, Building and Safety		X
2000	Riverside County, Building and Safety		
1999	Riverside County, Building and Safety		X
1998	Riverside County, Building and Safety		
1997	Riverside County, Building and Safety		
1996	Riverside County, Building and Safety		
1995	Riverside County, Building and Safety		

EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

Year	Source	TP	Adjoining
1994	Riverside County, Building and Safety		
1993	Riverside County, Building and Safety		
1992	Riverside County, Building and Safety		
1991	Riverside County, Building and Safety		
1990	Riverside County, Building and Safety		
1989	Riverside County, Building and Safety		
1988	Riverside County, Building and Safety		X
1987	Riverside County, Building and Safety		X
1986	Riverside County, Building and Safety		
1985	Riverside County, Building and Safety		
1984	Riverside County, Building and Safety		
1983	Riverside County, Building and Safety		
1982	Riverside County, Building and Safety		
1981	Riverside County, Building and Safety		
1980	Riverside County, Building and Safety		
1979	Riverside County, Building and Safety		X
1978	Riverside County, Building and Safety		
1977	Riverside County, Building and Safety		
1976	Riverside County, Building and Safety		
1975	Riverside County, Building and Safety		
1974	Riverside County, Building and Safety		
1973	Riverside County, Building and Safety		
1972	Riverside County, Building and Safety		
1971	Riverside County, Building and Safety		
1970	Riverside County, Building and Safety		
1969	Riverside County, Building and Safety		
1968	Riverside County, Building and Safety		
1967	Riverside County, Building and Safety		
1966	Riverside County, Building and Safety		
1965	Riverside County, Building and Safety		
1964	Riverside County, Building and Safety		
1963	Riverside County, Building and Safety		

Name: JurisdictionName
Years: Years
Source: Source
Phone: Phone

BUILDING DEPARTMENT RECORDS SEARCHED

Name: Riverside County
Years: 1963-2022
Source: Riverside County, Building and Safety, PERRIS, CA
Phone: (951) 955-6742

Name: Perris
Years: 1964-2022
Source: City of Perris, Development Services, PERRIS, CA
Phone: (951) 443-1029

TARGET PROPERTY FINDINGS

TARGET PROPERTY DETAIL

23641 Placentia Avenue
Perris, CA 92570

23641 PLACENTIA AVE

Date:	**1/24/2017**
Permit Type:	
Description:	**DEMO UTILITIES TO MH/4 SHEDS**

Permit Description:	**Demolition (BDE) - DEMO - Demolition Permit**
Work Class:	
Proposed Use:	
Permit Number:	BDE170006
Status:	Final
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Tafoya & Associates

ADJOINING PROPERTY FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

PLACENTIA AVE

23511 PLACENTIA AVE

Date:	**11/10/1987**
Permit Type:	**ARES**
Description:	**GAR CONV TO HABITABLE SPA/ADD GFI**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	174483
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**11/4/1987**
Permit Type:	********
Description:	**CODE COMP FOR CONV GAR TO BDROOM**
Permit Description:	**HISTORICAL PERMIT**
Work Class:	
Proposed Use:	
Permit Number:	174048
Status:	FINALED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

23745 PLACENTIA AVE

Date:	**6/15/2010**
Permit Type:	**REPR**
Description:	**MH INSTALLATION/924SF**
Permit Description:	**REPLACEMENT MANUFACTURED RES**
Work Class:	
Proposed Use:	
Permit Number:	BMR100194
Status:	FINAL
Valuation:	$84,416.64
Contractor Company:	
Contractor Name:	

Date:	**3/30/2010**
Permit Type:	**SPR**
Description:	**MH SITE PREP/REPLCMT 14X66 SINGLE WIDE**
Permit Description:	**SITE PREPARATION RESIDENTIAL**
Work Class:	
Proposed Use:	
Permit Number:	BMR100123
Status:	FINAL
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

Date:	**7/31/1979**
Permit Type:	
Description:	**AWNING TO MOBILE HOME**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	BZ372837
Status:	CANCELED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

SHARON ANN LN

20395 SHARON ANN LN

Date:	**5/11/2021**
Permit Type:	
Description:	**Demo existing Dwelling (BZ353584) and utilities w/ septic.**
Permit Description:	**Demolition (BDE) - DEMO - Demolition Permit**
Work Class:	
Proposed Use:	
Permit Number:	BDE2100013
Status:	Issued
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Three D Service

Date:	**1/12/2006**
Permit Type:	**ROOF**
Description:	**TEAR OFF COMP SHINGLE INSTALL #30 YEAR COMP**
Permit Description:	**RE-ROOF PERMIT**
Work Class:	
Proposed Use:	
Permit Number:	BXX064030
Status:	EXPIRED
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

20421 SHARON ANN LN

Date:	**5/11/2021**
Permit Type:	
Description:	**Demo dwelling (BZ353585), utilities and septic.**
Permit Description:	**Demolition (BDE) - DEMO - Demolition Permit**
Work Class:	
Proposed Use:	
Permit Number:	BDE2100017
Status:	Issued
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Three D Service

Date:	**3/8/2011**
Permit Type:	
Description:	**REQUEST FOR RECORDS**
Permit Description:	
Work Class:	
Proposed Use:	
Permit Number:	BHR110148
Status:	PAID
Valuation:	$0.00
Contractor Company:	
Contractor Name:	

ADJOINING PROPERTY FINDINGS

20463 SHARON ANN LN

Date:	**5/11/2021**
Permit Type:	
Description:	**Demo dwelling (BZ353588), pool (203771), utilities and septic.**
Permit Description:	**Demolition (BDE) - DEMO - Demolition Permit**
Work Class:	
Proposed Use:	
Permit Number:	BDE2100016
Status:	Issued
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Three D Service

Date:	**11/30/2016**
Permit Type:	
Description:	**REPLACE 5TON A/C COIL 90K BTU FURNACE AND 11 DUCTS**
Permit Description:	**Mechanical (BME) - RMEC - Residential Mechanical**
Work Class:	
Proposed Use:	
Permit Number:	BME160758
Status:	Final
Valuation:	$0.00
Contractor Company:	
Contractor Name:	Ken Starr Inc

ADJOINING PROPERTY FINDINGS

Date: **12/16/2014**
Permit Type: **BEL**
Description: **ROOF MOUNT PV SOLAR ON SFR**

Permit Description: **Electrical Permit**
Work Class:
Proposed Use: ROOF MOUNT SOLAR
Permit Number: BEL142809
Status: FINAL
Valuation: $0.00
Contractor Company:
Contractor Name:

Date: **8/30/2010**
Permit Type: **RPLU**
Description: **WATER HEATER CHANGEOUT**

Permit Description: **PLUMBING PERMIT RESIDENTIAL**
Work Class:
Proposed Use:
Permit Number: BPL100295
Status: EXPIRED
Valuation: $0.00
Contractor Company:
Contractor Name:

Date: **7/19/2004**
Permit Type: **ELEC**
Description: **200 AMP PANEL UPGRADE TO STICK BUILT**

Permit Description: **ELECTRICAL WORK ONLY**
Work Class:
Proposed Use:
Permit Number: BEL041014
Status: FINAL
Valuation: $0.00
Contractor Company:
Contractor Name:

ADJOINING PROPERTY FINDINGS

Date: **10/8/2003**
Permit Type: **ROOF**
Description: **REMOVE SHAKE ROOF INSTALL OSB/COMP SHINGLE**

Permit Description: **RE-ROOF PERMIT**
Work Class:
Proposed Use:
Permit Number: BXX041713
Status: FINAL
Valuation: $0.00
Contractor Company:
Contractor Name:

Date: **7/27/1988**
Permit Type: **NCOM**
Description: **POOL & GUNITE**

Permit Description: **NEW COMMERCIAL**
Work Class:
Proposed Use:
Permit Number: 203771
Status: FINALED
Valuation: $0.00
Contractor Company:
Contractor Name:

20491 SHARON ANN LN

Date: **5/11/2021**
Permit Type:
Description: **Demo Dwelling (BZ35587) and associated utilities w/ septic.**

Permit Description: **Demolition (BDE) - DEMO - Demolition Permit**
Work Class:
Proposed Use:
Permit Number: BDE2100014
Status: Issued
Valuation: $0.00
Contractor Company:
Contractor Name: Three D Service

ADJOINING PROPERTY FINDINGS

Date: **12/23/1999**
Permit Type: **PLUM**
Description: **EXPANSION OF SEEPAGE PIT**

Permit Description: **PLUMBING WORK ONLY**
Work Class:
Proposed Use:
Permit Number: BPL990634
Status: FINAL
Valuation: $0.00
Contractor Company:
Contractor Name:

TOBACCO RD

20601 TOBACCO RD

Date: **5/26/2006**
Permit Type: **ELEC**
Description: **METER RESET / EDISON DISCONNECTED**

Permit Description: **ELECTRICAL WORK ONLY**
Work Class:
Proposed Use:
Permit Number: BEL060709
Status: FINAL
Valuation: $0.00
Contractor Company:
Contractor Name:

ADJOINING PROPERTY FINDINGS

Date: **8/29/2003**
Permit Type: **ELEC**
Description: **RENEW BEL011301 TO RE-RELEASE SERVICE UPGRADE 100**

Permit Description: **ELECTRICAL WORK ONLY**
Work Class:
Proposed Use:
Permit Number: BEL031042
Status: VOID
Valuation: $0.00
Contractor Company:
Contractor Name:

Date: **12/26/2001**
Permit Type: **ELEC**
Description: **ELECTRICAL SERVICE UPGRADE (100 AMP)**

Permit Description: **ELECTRICAL WORK ONLY**
Work Class:
Proposed Use:
Permit Number: BEL011301
Status: FINAL
Valuation: $0.00
Contractor Company:
Contractor Name:

GLOSSARY

General Building Department concepts

- **ICC:** The International Code Council. The governing body for the building/development codes used by all jurisdictions who've adopted the ICC guidelines. MOST of the US has done this. Canada, Mexico, and other countries use ICC codes books and guides as well. There are a few states who have added guidelines to the ICC codes to better fit their needs. For example, California has added seismic retrofit requirements for most commercial structures.
- **Building Department (Permitting Authority, Building Codes, Inspections Department, Building and Inspections):** This is the department in a jurisdiction where an owner or contractor goes to obtain permits and inspections for building, tearing down, remodeling, adding to, re-roofing, moving or otherwise making changes to any structure, Residential or Commercial.
- **Jurisdiction:** This is the geographic area representing the properties over which a Permitting Authority has responsibility.
- **GC:** General Contractor. Usually the primary contractor hired for any Residential or Commercial construction work.
- **Sub:** Subordinate contracting companies or subcontractors. Usually a "trades" contractor working for the GC. These contractors generally have an area of expertise in which they are licensed like Plumbing, Electrical, Heating and Air systems, Gas Systems, Pools etc. (called "trades").
- **Journeymen:** Sub contractors who have their own personal licenses in one or more trades and work for different contracting companies, wherever they are needed or there is work.
- **HVAC (Mechanical, Heating & Air companies):** HVAC = Heating, Ventilation, and Air Conditioning.
- **ELEC (Electrical, TempPole, TPole, TPower, Temporary Power, Panel, AMP Change, Power Release):** Electrical permits can be pulled for many reasons. The most common reason is to increase the AMPs of power in an electrical power panel. This requires a permit in almost every jurisdiction. Other commons reason for Electrical permits is to insert a temporary power pole at a new construction site. Construction requires electricity, and in a new development, power has yet to be run to the lot. The temporary power pole is usually the very first permit pulled for new development. The power is released to the home owner when construction is complete and this sometimes takes the form of a Power Release permit or inspection.
- **"Pull" a permit:** To obtain and pay for a building permit.
- **CBO:** Chief Building Official
- **Planning Department:** The department in the development process where the building /structural plans are reviewed for their completeness and compliance with building codes
- **Zoning Department:** The department in the development process where the site plans are reviewed for their compliance with the regulations associated with the zoning district in which they are situated.
- **Zoning District:** A pre-determined geographic boundary within a jurisdiction where certain types of structures are permitted / prohibited. Examples are Residential structure, Commercial/Retail structures, Industrial/Manufacturing structures etc. Each zoning district has regulations associated with it like the sizes of the lots, the density of the structures on the lots, the number of parking spaces required for certain types of structures on the lots etc.
- **PIN (TMS, GIS ID, Parcel#):** Property Identification Number and Tax Map System number.
- **State Card (Business license):** A license card issued to a contractor to conduct business.
- **Building Inspector (Inspector):** The inspector is a building department employee that inspects building construction for compliance to codes.
- **C.O.:** Certificate of Occupancy. This is the end of the construction process and designates that the owners now have permission to occupy a structure after its building is complete. Sometimes also referred to as a Certificate of Compliance.

GLOSSARY

Permit Content Definitions

- Permit Number: The alphanumerical designation assigned to a permit for tracking within the building department system. Sometimes the permit number gives clues to its role, e.g. a "PL" prefix may designate a plumbing permit.
- Description: A field on the permit form that allows the building department to give a brief description of the work being done. More often than not, this is the most important field for EP's to find clues to the prior use (s) of the property.
- Permit Type: Generally a brief designation of the type of job being done. For example BLDG-RES, BLDG-COM, ELEC, MECH etc.

Sample Building Permit Data

Date: Nov 09, 2000
Permit Type: Bldg -
New Permit Number: 101000000405
Status: Valuation: $1,000,000.00
Contractor Company: OWNER-BUILDER
Contractor Name:

Description: New one store retail (SAV-ON) with drive-thru pharmacy. Certificate of Occupancy.

Appendix H
EDR Environmental Lien and AUL Search and Tax Map Report

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570

Inquiry Number: 7056923.7
July 20, 2022

EDR Environmental Lien and AUL Search

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

EDR Environmental Lien and AUL Search

The EDR Environmental Lien and AUL Search Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

23641 Placentia Avenue
Thrifty 9.48 Acres Perris CA
Perris, CA 92570

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

AULs: Found ☐ Not Found ☒

RESEARCH SOURCE

Source 1:

Riverside Recorder
Riverside, CA

PROPERTY INFORMATION

Deed 1:

Type of Deed:	Grant Deed
Title is vested in:	Thrifty Oil Company
Title received from:	Jacqueline E DePinto trustee
Deed Dated	1/31/2006
Deed Recorded:	9/5/2006
Book:	NA
Page:	NA
Volume:	NA
Instrument:	2006-0654318
Docket:	NA
Land Record Comments:	see exhibit
Miscellaneous Comments:	NA
Legal Description:	see exhibit
Legal Current Owner:	Thrifty Oil Company
Parcel # / Property Identifier:	317-260-017
Comments:	see exhibit

Deed Exhibit 1

RECORDING REQUESTED BY:
Stewart Title Guaranty.
WHEN RECORDED MAIL TO:

Thirfty Oil Company
13116 Imperial Highway
Santa Fe Springs, CA. 90670

ORDER NO. 514303587
ESCROW NO. 25137356RJ
APN. 317-260-017-5

DOC # 2006-0654318
09/05/2006 08:00A Fee:10.00
Page 1 of 2 Doc T Tax Paid
Recorded in Official Records
County of Riverside
Larry W. Ward
Assessor, County Clerk & Recorder

S	R	U	PAGE	SIZE	DA	MISC	LONG	RFD	COPY
1			2						
M	A	L	465	426	PCOR	NCOR	SMF	NCHG	EXAM
									010

TRA 098-111

GRANT DEED

10

T
010

THE UNDERSIGNED GRANTOR(s) DECLARE(s):
DOCUMENTARY TRANSFER TAX is: $990.00 CITY TAX $0.00
☐ Monument Preservation Fee is:
☒ computed on full value of property conveyed, or
☐ computed on full value less value of liens or encumbrances remaining at time of sale.
☒ Unincorporated area: ☐ City of _____, and

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,
Jacqueline E. Di Pinto, as Successor Trustee of Trust "C" of The Di Pinto Family Trust, dated June 10, 1992

hereby **GRANT(S)** to

Thifty Oil Company, a California Corporation

the following described real property in the Unincorporated Area, County of Riverside, State of California:

SEE EXHIBIT A ATTACHED HERETO AND MADE A PART HEREOF.

DATE: January 31, 2006

Jacqueline E. Di Pinto
Jacqueline E. Di Pinto, Trustee

STATE OF CALIFORNIA
COUNTY OF Orange

On 3-14-2006 before me, Anna L. Diaz Notary Public (here insert name and title of the officer),
personally appeared Jacqueline E Di Pinto

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s), whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that ~~he~~/she/~~they~~ executed the same in ~~his~~/her/~~their~~ authorized capacity(~~ies~~), and that by ~~his~~/her/~~their~~ signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

ANNA L. DIAZ
Commission # 1409252
Notary Public - California
Los Angeles County
My Comm. Expires Apr 5, 2007

WITNESS my hand and official seal.

Signature Anna L. Diaz (Seal)

MAIL TAX STATEMENTS AS DIRECTED ABOVE

EXHIBIT "A"

LEGAL DESCRIPTION

The land referred to herein is situated in the State of California, County of Riverside, described as follows:

LOT 3 OF OAKES AND SAWYERS SUBDIVISION AS PER MAP RECORDED IN BOOK 1, PAGE 5 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THE NORTH 230.00 FEET OF THE EAST 100.00 FEET, SAID 230.00 FEET BEING MEASURED ON THE CENTER LINE OF PLACENTIA STREET;

ALSO EXCEPT THAT PORTION DESCRIBED IN DEED TO THE COUNTY OF RIVERSIDE, RECORDED FEBRUARY 5, 1962 AS INSTRUMENT NO. 11202 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID LOT 3;

THENCE NORTH 00° 30' 04" WEST ALONG THE WEST LINE OF SAID LOT, A DISTANCE OF 150.00 FEET;

THENCE SOUTH 11° 50' 30" EAST, A DISTANCE OF 152.54 FEET TO THE SOUTH LINE OF SAID LOT.

THENCE SOUTH 88° 39' 22" WEST, ALONG SAID SOUTH LINE, A DISTANCE OF 30.00 FEET TO THE POINT OF BEGINNING.

EXCEPTING THEREFROM ANY MOBILE HOME LOCATED OR PLACED THEREON.

APN: 317-260-017

End of Legal Description

Thrifty 9.48 Acres Perris CA
23641 Placentia Avenue
Perris, CA 92570

Inquiry Number: 7056923.6
July 19, 2022

The EDR Property Tax Map Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

EDR Property Tax Map Report

Environmental Data Resources, Inc.'s EDR Property Tax Map Report is designed to assist environmental professionals in evaluating potential environmental conditions on a target property by understanding property boundaries and other characteristics. The report includes a search of available property tax maps, which include information on boundaries for the target property and neighboring properties, addresses, parcel identification numbers, as well as other data typically used in property location and identification.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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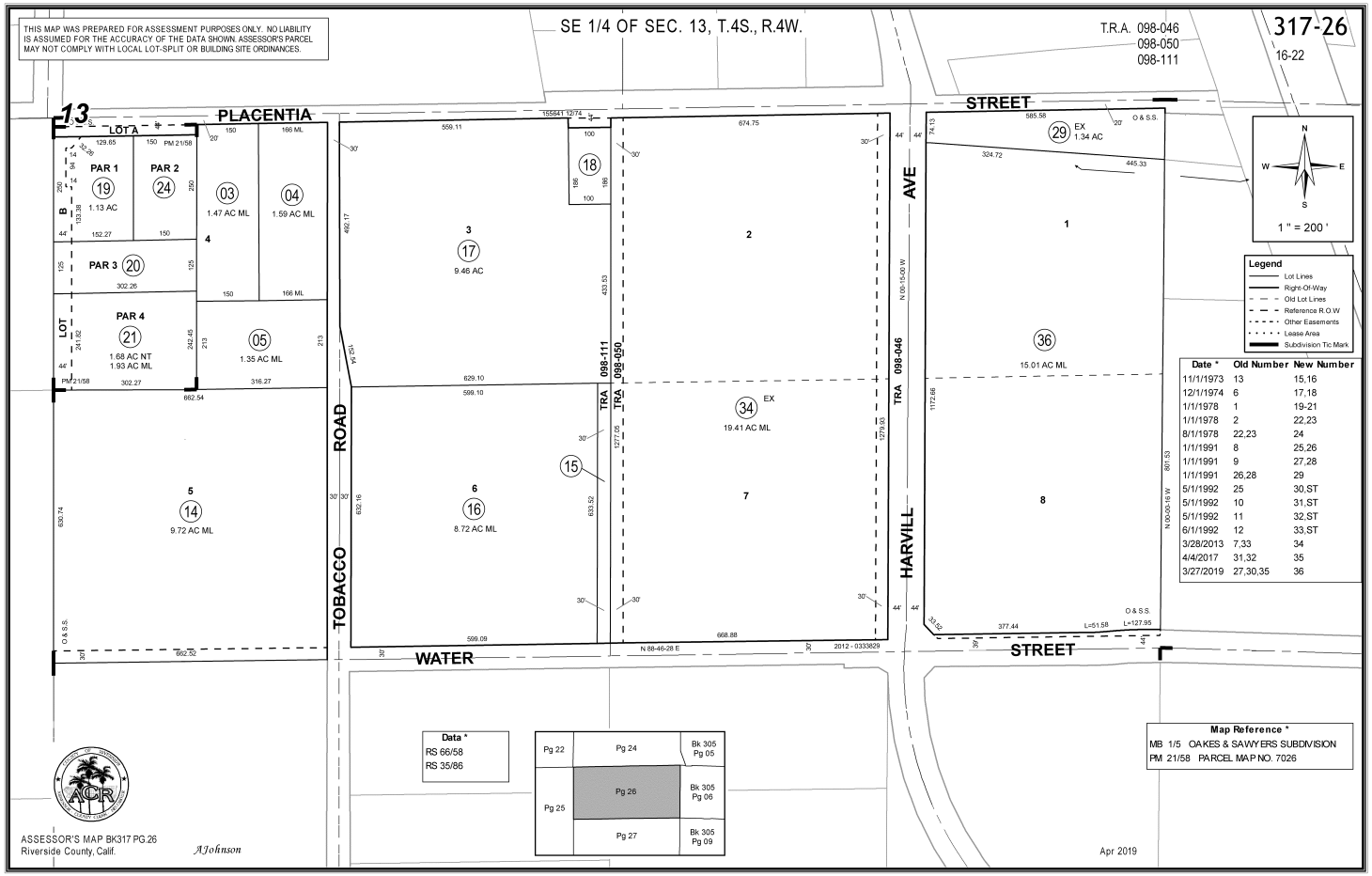
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA SHOWN. ASSESSORS PARCEL MAY NOT COMPLY WITH LOCAL LOT-SPLIT OR BUILDING SITE ORDINANCES.
SE 1/4 OF SEC. 13, T.4S., R.4W.
T.R.A. 098-046
098-050
098-111
317-26
16-22
13
PLACENTIA
STREET
LOT A
PAR 1
PAR 2
PAR 3
PAR 4
1.13 AC
1.47 AC ML
1.59 AC ML
1.68 AC NT
1.93 AC ML
1.35 AC ML
9.46 AC
9.72 AC ML
8.72 AC ML
19.41 AC ML
1.34 AC
15.01 AC ML
TOBACCO ROAD
HARVILL AVE
WATER
STREET
098-111
098-050
098-046
TRA
1 " = 200 '
Legend
Lot Lines
Right-Of-Way
Old Lot Lines
Reference R.O.W
Other Easements
Lease Area
Subdivision Tic Mark
Date * Old Number New Number
11/1/1973 13 15,16
12/1/1974 6 17,18
1/1/1978 1 19-21
1/1/1978 2 22,23
8/1/1978 22,23 24
1/1/1991 8 25,26
1/1/1991 9 27,28
1/1/1991 26,28 29
5/1/1992 25 30,ST
5/1/1992 10 31,ST
5/1/1992 11 32,ST
6/1/1992 12 33,ST
3/28/2013 7,33 34
4/4/2017 31,32 35
3/27/2019 27,30,35 36
Data *
RS 66/58
RS 35/86
Pg 22
Pg 24
Bk 305 Pg 05
Pg 25
Pg 26
Bk 305 Pg 06
Pg 27
Bk 305 Pg 09
Map Reference *
MB 1/5 OAKES & SAWYERS SUBDIVISION
PM 21/58 PARCEL MAP NO. 7026
ASSESSOR'S MAP BK317 PG.26
Riverside County, Calif.
AJohnson
Apr 2019

Appendix I
Subject Property Photographs and Environmental Records Request

Appendix I - Subject Property Photographs



View South from Placentia Avenue

Appendix I - Subject Property Photographs



View Southeast from Placentia Avenue

Appendix I - Subject Property Photographs



View East Along Placentia Avenue of Neighboring Property Across Tobacco Road

Appendix I - Subject Property Photographs



View East Along Placentia Avenue of Neighboring Property in the Distance

Appendix I - Subject Property Photographs



View South on Placentia Avenue of Possible Residential Well Location

County of Riverside
DEPARTMENT OF ENVIRONMENTAL HEALTH

www.rivcoeh.org

REQUEST FOR RECORDS

To help expedite your request, mark the program for which you are requesting records (Call 951-358-5172 if you are uncertain):

☒ Hazardous Materials / Underground Storage Tanks

☒ Land Use / Water Resources / Body Art / Medical Waste / Solid Waste

☐ Food facility / Public Pools and Water Features / Retail Tobacco

- Requests will be responded to within ten (10) business days per California Government Code, sections 6253 and 6256.
- Pursuant to California Government Code section 6254 (f), records of pending investigations and informants' names, addresses, and telephone numbers will not be released.
- **This form is for acquisition of any existing records. Any consultation in reference to these records may be subject to a consultation fee (pursuant to Riverside County Ordinance 640).**
- For access to electronic records available online, visit the public information section at www.rivcoeh.org for more details.

NAME OF REQUESTING PARTY: Heather Fields	DATE OF REQUEST: 7/29/22
BUSINESS NAME (IF ANY): Waterstone Environmental	TELEPHONE NUMBER: ( ) (714) 414-1122
RETURN LEGAL MAILING ADDRESS: 2936 E. Coronado Street	EMAIL ADDRESS: hfields@waterstone-env.com
CITY: Anaheim	STATE: CA / ZIP: 92806

The following information is required. **List each street address separately.**

INFORMATION REQUESTED: Any available records for the property	PERIOD OF TIME TO BE RESEARCHED (If applicable) FROM: / TO:
SITE STREET ADDRESS (1): 23641 Placentia Avenue	CITY: Perris, CA 92570
SITE STREET ADDRESS (2):	CITY:
SITE STREET ADDRESS (3):	CITY:
SITE STREET ADDRESS (4):	CITY:
SITE STREET ADDRESS (5):	CITY:
SITE STREET ADDRESS (6):	CITY:
APN (**For Land Use and Water Resources ONLY**): 317260017	

Email this completed form to:

Land Use/Water Resources (WEST): landuse@rivco.org
Land Use/Water Resources (DESERT): landusedesert@rivco.org
Hazardous Materials: DEHRecordsMgmt@rivco.org
All other programs: dehwebmaster@rivco.org

To mail this form, go to http://rivcoeh.org/Contactus for the address of the DEH office closest to the requested location(s).

Duplication costs for records researched and duplicated must be paid upon receipt of records.

FOR OFFICE USE ONLY		
COST OF REPRODUCTION: $_____	EACH ADDITIONAL PAGE: $_____	TOTAL: $_____
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RECORDS RECEIVED BY	DATE	

*** IF RECORD REQUEST IS MADE USING ALTERNATE METHOD AND NOT THIS FORM, ATTACH A COPY OF REQUEST TO THIS FORM.**

For our office locations call us at (888) 722-4234 or visit our website at www.rivcoeh.org

Heather Fields

From: Records <records@RIVCO.ORG>
Sent: Monday, August 1, 2022 8:17 AM
To: Heather Fields
Subject: RE: Building and Safety Records Request

Hello Heather,

We have completed our research of your requested address/APN and have found the following records:

PERMIT#	DESCRIPTION
BZ162815	DEMOLISH BUILDING
BZ163744	CATTLE PENS
BZ170438	TRAILER HOOKUP
BZ174014	DETACHED GARAGE
BZ175927	SEWER SYSTEM
BZ196844	TRAILER HOOKUP
BZ199385	PLAN CHECK
BZ200645	MEAT PROCESSING BUILDING

If you would like to purchase copies of these records, we can either call you and have you pay with one of our cashiers over the phone or you can pay online. I'll include the instructions below.
The total will be $26.50. If you choose to pay online, please be sure to reply and let us know that you've created an account through our plus online website so that we can send you your invoice#.
Once you've paid, we will send you the permit records by email.

How to open an account through Plus Online for invoice payment:
Go to www.rctlma.org
Click on the Plus Online icon



Then click on "Login or Register"
If you are new to Plus Online, you may create an account by choosing "Register"
You will enter your email first. Be sure to verify your email by opening your email account, locating the registration email and choosing "confirm" at the end of your email.
Next, the system will try and match your email with any existing contact information. If it is correct, you may click "continue". If there is no match, click "Register".
Lastly, fill out your contact information making sure to complete all fields.
Once you have completed your account, call us so that we can invoice your account.

For more detailed instructions, click on this link: https://rctlma.org/Portals/8/How_To_Register.pdf?ver=2019-02-20-133121-273

Department of Toxic Substances Control

Jared Blumenfeld
Secretary for
Environmental Protection

Meredith Williams, Ph.D.
Director
5796 Corporate Avenue
Cypress, California 90630

Gavin Newsom
Governor

August 1, 2022

Heather Fields
WATERSTONE ENVIRONMENTAL
hfields@waterstone-env.com

PR4-072922-04
23641 PLACENTIA AVE, PERRIS, CA

Dear Requestor:

We have received your Public Records Act Request from the Department of Toxic Substances Control (DTSC). After a thorough review of our files, no site records were found pertaining to the sites/facilities referenced above.

A large number of our records are available on EnviroStor, an online database that provides non-confidential, public access to DTSCs Data Management System. It tracks our cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. EnviroStor is available 24/7, 365 days a year. The data reflects the latest updates as they are entered in the system. Access it from your computer or smartphone, the local library – anywhere Internet access is available. Just go to www.envirostor.dtsc.ca.gov. You'll find a step-by-step tour of EnviroStor under the "How to Use EnviroStor" menu on the website.

If you have any questions or would like further information regarding your request, please contact me at 714-4845337 or via email at CypressFileRoom@dtsc.ca.gov.

Sincerely,

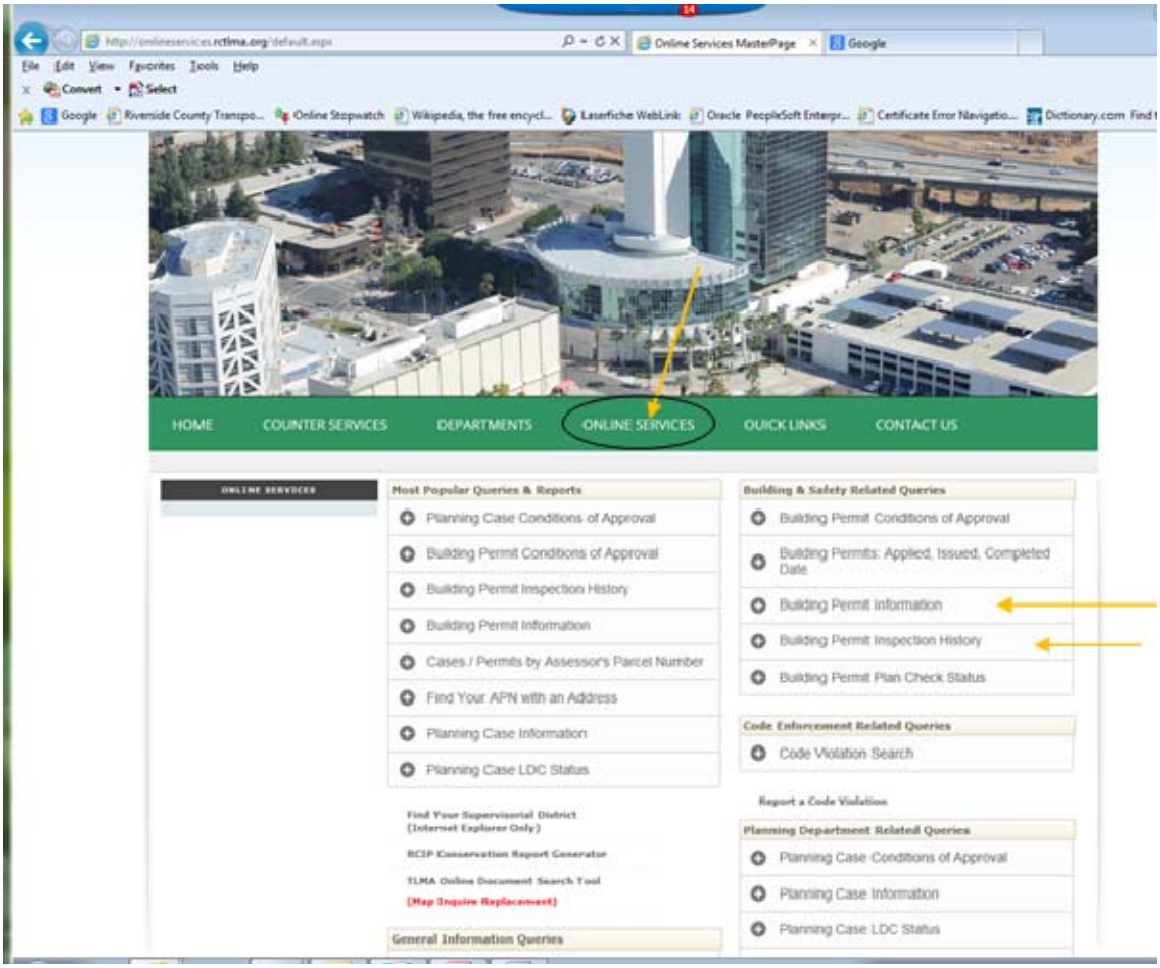
Julie Chandler
Julie Chandler
Regional Records Coordinator

The following record(s) are available online:

PERMIT#	DESCRIPTION
BDE170006	DEMO UTILITIES TO MOBILE HOME/ 4 SHEDS

To view/print from web site:

Go to www.rctlma.org
Click on "ONLINE SERVICES"
Scroll down
Click on "Building Permit Information" (right-hand side of page)
Enter permit number to view and / or print.
Click "Submit"
Print page
Repeat steps on "Building Permit Inspection history to see individual inspections.



If you have any questions contact us at (951) 955-2017 or with a reply email.

Thank you,

J hqh#
County of Riverside
Transportation and Land Management Agency
Records And Information Management
(951) 955-2017
records@rivco.org

How are we doing? **Click the Link and tell us**

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From: hfields@waterstone-env.com <hfields@waterstone-env.com>
Sent: Friday, July 29, 2022 9:53 AM
To: Records <records@RIVCO.ORG>
Cc: hfields@waterstone-env.com
Subject: Building and Safety Records Request

Requestor's Name:	Heather Fields
Company:	Waterstone Environmental
Requestor's Phone No (format example 951-000-0000):	714-414-1122
Current Mailing Address:	2936 E. Coronado Street
City:	Anaheim
State:	California
Zip:	92806
E-Mail:	hfields@waterstone-env.com
ADDRESS TO BE RESEARCHED:	23641 Placentia Avenue, Perris, CA 92570
ASSESSOR'S PARCEL NUMBER (APN) (format example 123-456-789):	317-260-17

Year Built:

REQUESTING ALL PERMITS: Yes

If not please specify type of permit(s) below:

Additional Comments:

Confidentiality Disclaimer

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County of Riverside California

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

January 14, 2025

Krista Mason, Project Planner
County of Riverside, Planning Department
4080 Lemon Street,
Riverside, CA 92501

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Lake Elsinore

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Jackie Vega

County Administrative Center
4080 Lemon St., 14th Floor.
Riverside, CA 92501
(951) 955-5132

www.rcaluc.org

RE: AIRPORT LAND USE COMMISSION (ALUC) DEVELOPMENT REVIEW

File No.:	ZAP1629MA24
Related File No.:	CZ2300030 (Change of Zone), PP230048 (Plot Plan)
Compatibility Zone:	Zone C2
APNs:	317-260-017, 317-260-018

Dear Ms. Mason:

On January 9, 2025, the Riverside County Airport Land Use Commission (ALUC) found County of Riverside Case Nos. CZ2300030 (Change of Zone), PP230048 (Plot Plan), a proposal to construct a 185,912 square foot manufacturing building with office space on 9.89 acres, located on southerly of Placentia Street, easterly of Patterson Avenue, and westerly of Tobacco Road and also proposing to construct 151,440 square foot photovoltaic (PV) panel structures located on the rooftop of the proposed industrial building and eight Carport sunshades totaling 22,060 square feet located on the parking lot, and change the sites zoning from Rural Residential (R-R) to Industrial Park (IP), **CONSISTENT** with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, subject to the following conditions:

CONDITIONS:

1. Any outdoor lighting installed shall be hooded or shielded so as to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward facing.

2. The following uses/activities are not included in the proposed project and shall be prohibited at this site.

   (a) Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight or circling climb following takeoff or toward an aircraft engaged in a straight or circling final approach toward a landing at an airport, other than a DoD or FAA-approved navigational signal light or visual approach slope indicator.

   (b) Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport to the extent as to result in a potential for temporary after-image greater than the low (“green”) level.

   (c) Any use which would generate smoke or water vapor or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, production of cereal grains, sunflower, and row crops, composting operations, wastewater management facilities, artificial marshes, trash transfer

stations that are open on one or more sides, recycling centers containing putrescible wastes, construction and demolition debris facilities, fly ash disposal, and incinerators.)

(d) Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

(e) Highly noise-sensitive outdoor nonresidential uses. Examples of noise-sensitive outdoor nonresidential uses that are prohibited include, but are not limited to, major spectator-oriented sports stadiums, amphitheaters, concert halls and drive-in theaters.

(f) Hazards to Flight.

3. The attached notice shall be provided to all prospective purchasers of the property and tenants of the building, and shall be recorded as a deed notice.

4. Any proposed stormwater basins or facilities shall be designed and maintained to provide for a maximum 48-hour detention period following the design storm, and remain totally dry between rainfalls. Vegetation in and around the stormwater basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous canopy, when mature. Landscaping in and around the stormwater basin(s) shall not include trees or shrubs that produce seeds, fruits, or berries.

5. Landscaping in the stormwater basin, if not rip-rap, should be in accordance with the guidance provided in ALUC "LANDSCAPING NEAR AIRPORTS" brochure, and the "AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT" brochure available at RCALUC.ORG which list acceptable plants from Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist.

   A notice sign, in a form similar to that attached hereto, shall be permanently affixed to the stormwater basin with the following language: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and not attract birds. Proper maintenance is necessary to avoid bird strikes". The sign will also include the name, telephone number or other contact information of the person or entity responsible to monitor the stormwater basin

6. March Air Reserve Base must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers, access gates, etc.

7. All solar arrays installed on the project site shall consist of smooth glass photovoltaic solar panels without anti-reflective coating, a fixed tilt of 10 degrees and orientation of 180 degrees. Solar panels shall be limited to a total of 151,440 square feet of solar panels on the proposed building rooftop and the eight Carport sunshades totaling 22,060 square feet, and the locations and coordinates shall be as specified in the glare study. Any deviation from these specifications (other than reduction in square footage of panels), including change in orientation, shall require a new solar glare analysis to ensure that the amended project does not result in any glare impacting the air traffic

control tower or creation of any “yellow” or “red” level glare in the flight paths, and shall require a new hearing by the Airport Land Use Commission.

8. In the event that any glint, glare, or flash affecting the safety of air navigation occurs as a result of project operation, upon notification to the airport operator of an event, the airport operator shall notify the project operator in writing. Within 30 days of written notice, the project operator shall be required to promptly take all measures necessary to eliminate such glint, glare, or flash. An “event” includes any situation that results in an accident, incident, “near-miss,” or specific safety complaint regarding an in-flight experience to the airport operator or to federal, state, or county authorities responsible for the safety of air navigation. The project operator shall work with the airport operator to prevent recurrence of the incidence. Suggested measures may include, but are not limited to, changing the orientation and/or tilt of the source, covering the source at the time of day when events of glare occur, or wholly removing the source to diminish or eliminate the source of the glint, glare, or flash. For each such event made known to the project operator, the necessary remediation shall only be considered to have been fulfilled when the airport operator states in writing that the situation has been remediated to the airport operator’s satisfaction.

9. In the event that any electrical interference affecting the safety of air navigation occurs as a result of project operation, upon notification to the airport operator of an event, the airport operator shall notify the project operator in writing. Within 30 days of written notice, the project operator shall be required to promptly take all measures necessary to eliminate such interference. An “event” includes any situation that results in an accident, incident, “near-miss,” report by airport personnel, or specific safety complaint to the airport operator or to federal, state, or county authorities responsible for the safety of air navigation. The project operator shall work with the airport operator to prevent recurrence of the event. For each such event made known to the project operator, the necessary remediation shall only be considered to have been fulfilled when the airport operator states in writing that the situation has been remediated to the airport operator’s satisfaction.

10. The project has been evaluated to construct a 185,912 square foot manufacturing building with office space on 9.89 acres, 151,440 square foot photovoltaic (PV) panel structures located on the rooftop of the proposed industrial building and eight Carport sunshades totaling 22,060 square feet located on the parking lot, and also proposes to change the sites zoning from Rural Residential (R-R) to Industrial Park (IP). Any increase in building area, change in use to any higher intensity use, change in building location, or modification of the tentative parcel map lot lines and areas will require an amended review to evaluate consistency with the ALUCP compatibility criteria**,** at the discretion of the ALUC Director.

Supporting documentation was provided to the Airport Land Use Commission and is available online at www.rcaluc.org, click Agendas 1-9-25 Agenda, Bookmark Agenda Item No. 3.2.

If you have any questions, please contact me at (951) 955-6893.

Sincerely,
RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION



Paul Rull, ALUC Director

Attachments: Notice of Airport in Vicinity

cc: Thrifty Oil Company (applicant/property owner)
Nick Johnson (representative)
Gary Gosliga, March Inland Port Airport Authority
Major David Shaw, Base Civil Engineer, March Air Reserve Base
ALUC Case File

X:\AIRPORT CASE FILES\March\ZAP1629MA24\ZAP1629MA24.LTR.doc

THERE IS AN AIRPORT NEARBY.

THIS STORM WATER BASIN IS DESIGNED TO HOLD STORM WATER FOR ONLY 48 HOURS AND NOT TO ATTRACT BIRDS

PROPER MAINTENANCE IS NECESSARY TO AVOID BIRD STRIKES

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION ALUC

IF THIS BASIN IS OVERGROWN, PLEASE CONTACT:

Name: _____ Phone: _____

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)

PRELIMINARY ON-SITE HYDROLOGY STUDY

FOR

The Orden Company – Perris North Development

Southeast corner of Placentia Avenue and Tobacco Road
PPT230048

IN THE

COUNTY OF RIVERSIDE, CALIFORNIA

Original Report Date: December 4, 2023
Revision Dates: March 27, 2024; November 1, 2024



Armstrong & Brooks Consulting Engineers
1350 East Chase Drive
Corona, CA 92881

PREPARED BY:

Bill Brooks
R.C.E. 53114
EXPIRES 6/30/25

JN 123.2177

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INTRODUCTION

The purpose of this on-site hydrology study is to ensure that the proposed drainage system effectively mitigates increased runoff caused by the proposed development. Onsite runoff generated by the proposed development will be routed through an underground CMP detention/infiltration facility to meet both RCFC/WCD requirements for pre/post development peak flow attenuation and WQMP requirements for stormwater treatment. Additionally, the project's grading shall be designed to meet Riverside County Flood Control & Water Conservation District (R.C.F.C. & W.C.D.) criteria, guidelines and the Master Drainage Plan (M.D.P.) for Perris Valley.

Thrifty Oil currently owns project parcels APN 317-260-017 and APN 317-260-018. This project entails grading of the existing site for the development of an industrial facility at the southeast corner of Placentia Avenue and Tobacco Road. A hydrologic analysis of pre and post development conditions was conducted to determine pre/post project peak flow rates occurring during the specified return storm frequencies and durations. A routing analysis was run for the proposed CMP detention system to ensure peak outlet discharges were equal to or below pre-development flows.

Despite the very low flow rates leaving the proposed detention facility during the 100-year event, a hydraulic analysis was nonetheless performed to ensure that Line H-10.1 (Placentia Avenue) is adequately designed to accept the development's routed/attenuated flows. Calculations support the conclusion that Line H-10.1 has sufficient capacity to accept **routed** post-development Q_{100} flows from the site.

DESIGN CRITERIA

This Drainage Study was based on the following Design Criteria identified by Riverside County Flood Control:

1. The storms to be studied include the 1-hour, 3-hour, 6-hour, and 24-hour, duration events for the 2-year, 5-year, and 10-year return frequencies via synthetic unit hydrograph analyses. The underground detention chamber must ensure none of these storm events have a higher **routed** peak discharge in the post-developed condition than in the pre-developed condition.

2. The underground detention facility will be capable of passing the 100-year return frequency storm (1,3,6, and 24-hour durations) without damage to the facility.

3. To determine the loss rate for the 2-year and 5-year events, an AMC I condition will be used. For the 10-year event and 100-year event, an AMC II condition will be used. This applies for both pre-development and post-development analyses.

4. The underground detention facility will drain in 72 hours or less.

DESIGN METHODOLOGY

1. **SYNTHETIC UNIT HYDROGRAPH** – Synthetic Unit Hydrographs were used to determine the peak discharge for the study area. Civil Design Software by Bonadiman and Associates was used to model the RCFC & WCD synthetic unit hydrographs for the project site. The following design data was used within our model:

    A. Rainfall (Rational) – Plate D4.1 of Riverside County Hydrology Manual was used to provide duration vs. intensity data for Perris.

    B. Antecedent Moisture Content (AMC) –AMC I was used for the 2 and 5-year frequency storm. AMC II was used for the 10 and 100-year frequency storms based on Riverside County Hydrology Manual's recommendations for use with the selected frequency storms (Pg. C-4).

    C. Infiltration – Soil Type "A" underlies the site area based on a review of the hydrologic soils group map for Perris.

2. **FLOOD HYDROGRAPH ROUTING** – Flood hydrographs routing was used to model depth vs storage and depth vs outflow for the underground chambers. Civil Design Software by Bonadiman and Associates was used to model these relationships.

3. **WSPGW** – Water Surface Pressure Gradient Package (WSPGW program) software by Bonadiman and Associates was used for hydraulic calculations.

NARRATIVE

Hydrology-Existing Conditions

Watershed "A"

Watershed "A" is comprised of the 8.7 acres tributary to the easterly neighboring property (APN:317-260-034). The existing area consists of sparsely spread weeds and grasses. The existing site ranges in elevation from approximately 1557 feet at the southwesterly corner to approximately 1530 feet at the easterly property line. The site generally sheet flows easterly. Storm water runoff continues to sheet flow and is conveyed via street flow toward the Perris Valley Channel.

Watershed "A" generates the following peak flows under existing, undeveloped conditions:

	EXIST. UNDEVELOPED UNIT HYDROGRAPH PEAK FLOW (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	5.8	9.8	12.9	23.2
3 HR DURATION	1.3	3.5	5.2	10.9
6 HR DURATION	0.9	2.8	4.4	9.6
24 HR DURATION	0.2	0.3	0.4	2.1

Hydrology-Proposed Conditions

PPT230048 entails grading the site to accommodate an industrial warehouse development. The grading will emulate the existing west to east drainage pattern while providing an underground infiltration/detention facility along the eastern parking area of the site to treat and attenuate the overwhelming majority of on-site flows. An infiltration trench and drywell are also proposed to treat runoff from two additional small onsite watersheds per WQMP requirements.

The remaining 0.4 acres from the proposed site will consist of landscaped slopes near the eastern property line that will continue to drain easterly offsite as in existing pre-development conditions. This area is a self-treating area and does not need to be conveyed to any BMP for treatment.

On-site flows will be conveyed/routed to the underground facility via proposed on-site storm drains. Overflow runoff produced by the studied storm events will be discharged via a proposed 24" RCP lateral into Lateral H-10.1 in Placentia Avenue in order to discharge routed overflow stormwater runoff from the site. The flood hydrograph routing analyses for the required storm events demonstrate that flows being discharged from the underground facility will be less than pre-developed flows for the required study storm events.

Watershed "A"

Watershed "A" is defined by the 0.77-acre area tributary to the infiltration trench. Runoff will be conveyed to this facility via an overland vegetated swale. The post-developed peak flows have been tabulated below.

WATERSHED A	DEVELOPED **NON-ROUTED** UNIT HYDROGRAPH PEAK DISCHARGE (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	0.6	1.0	1.2	2.2
3 HR DURATION	0.2	0.4	0.5	1.0
6 HR DURATION	0.2	0.3	0.5	0.9
24 HR DURATION	0.1	0.1	0.1	0.2

Watershed "B"

Watershed "B" is defined by the 7.2-acre area tributary to the underground CMP detention/infiltration facility. Runoff will be discharged into to this facility via two inlet manifolds on each side of the chamber system. Pipes leading from area drains and catch basins around the site will convey site runoff to these inlet manifolds. The post-developed **non-routed** peak flows have been tabulated below.

WATERSHED B	DEVELOPED **NON-ROUTED** UNIT HYDROGRAPH PEAK DISCHARGE (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	8.4	11.8	14.5	23.3
3 HR DURATION	4.8	6.5	7.9	12.5
6 HR DURATION	4.5	6.1	7.5	12.0
24 HR DURATION	1.7	2.4	3.0	4.9

Watershed "C"

Watershed "C" is defined by the 0.33-acre area tributary to the Maxwell Drywell. Runoff will be conveyed to this facility via a catch basin and 6" PVC storm drain in the parking lot directly adjacent to the Drywell. The post-developed peak flows have been tabulated below.

WATERSHED C	DEVELOPED **NON-ROUTED** UNIT HYDROGRAPH PEAK DISCHARGE (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	0.5	0.7	0.9	1.4
3 HR DURATION	0.2	0.3	0.4	0.6
6 HR DURATION	0.2	0.3	0.4	0.6
24 HR DURATION	0.1	0.1	0.1	0.2

Underground Chamber Flood Hydrograph Routing: WATERSHED "B"

Flood Hydrograph Routing was used to determine the peak discharge of the underground detention facility. One 18" PVC outlet structure with sized perforations at specific elevations will ensure peak flow attenuation. This 18" PVC outlet structure will connect to the 24" RCP lateral using a 18" x 24" reducer.

The calculated peak discharge values leaving the facility are less than those calculated for the existing site using synthetic unit hydrograph analyses for the required study storm events. The 100-year storm event can pass through the facility without damage.

	ROUTED DETENTION FACILITY PEAK OUTFLOW (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	0.0	0.1	0.1	0.2
3 HR DURATION	0.1	0.2	0.2	0.3
6 HR DURATION	0.2	0.3	0.3	0.4
24 HR DURATION	0.2	0.3	0.4	3.6

Routing Analyses for Watershed "A" (Infiltration Trench) and Watershed "C", (in order to determine the peak Q100 flow leaving these BMP facilities) did not need to be performed due to the minute scale of these watersheds and the conservative approach employed through hydrograph summation. Since very minor flows are

being generated by Watersheds “A” and “C,” routing analyses in order to determine routed/attenuated flows are not warranted for these facilities. Thus, the **non-routed** hydrographs from Watersheds “A” and “C” have simply been added to the **routed** hydrograph of Watershed “B” to determine an conservative estimate for peak discharge for the site.

To elaborate, the critical 100-year storm for this study is the 24-hour 100-year storm as it produces the highest outflow flow rate leaving the underground detention facility. For the routed hydrograph of Watershed “B”, the peak 3.6 CFS outflow from the underground facility occurs at time 15:00. The non-routed flow rates for Watershed “A” and “”C” at time 15:00 are 0.17 CFS and 0.16 CFS, respectively.

Therefore, summing these three discharge rates at time 15:00 produces a peak site outflow of 3.93 CFS which is proposed to be discharged to the existing 36” RCP Lateral H10.1 in Placentia Avenue through a 24” RCP lateral connection from the development.

Drawdown Requirements

The site’s lowest measured infiltration rate (see Appendix “I”) is 4.7 inches per hour. With a factor of safety of 3 per Riverside County guidelines, the design factored infiltration rate is 1.57 inches per hour. With a maximum facility water surface level of 60 inches, the underground detention facility, even without its proposed outlet, would drain in a maximum duration of 38 hours. With a maximum effective design depth of water of 2-feet (24 inches), the infiltration trench will drain in a maximum duration of 16 hours. With a maximum facility water depth of 8-feet (96 inches), the proposed drywell will drain in a maximum duration of 61 hours. These facilities will be constructed on native soil ensuring that these infiltration rates will remain applicable.

Perris Valley MDP Line H10.1 Hydraulic Analysis

In order to ensure that Line H-10.1 had sufficient capacity to accept the attenuated 100-year flows from the project, a hydraulic analysis of Line H-10.1 (36-inch RCP storm drain) was performed and is included in

The original design hydraulic conditions of Line H-10.1 were modeled using WSPGW and confirmed the hydraulic data as shown in the original Perris Valley MDP Lines H-10.1 and H-11 drainage report. The input water surface elevation (HGL) of the system outlet was set at 1495.5 (STA 1+06.38 per **Line H.10** plans). The input water surface elevation of the system headworks was set at (STA 26+94.48 per **Line H.10.1** plans – DWG 4-1173). To verify that there will continue to exist adequate freeboard for downstream manholes and catch basins, the hydraulic grade line (HGL) of original design conditions and under proposed connection conditions was modeled.

As previously stated, the total peak Q_{100} for the developed site was calculated to be 3.93 CFS. A point of connection into Line H-10.1 (STA 20+21.44) was then modeled to create a proposed condition for Line H-10.1. The largest increase in HGL was calculated to be a mere **0.4-feet** at STA 12+74.07 per the WSPGW output file

(from to 1501.34 to 1501.73). The HGL along Line H-10.1 remains below the top of the 36-inch RCP mainline in addition to being well below the rim manhole elevations.

The HGL under proposed conditions at the proposed **single** point of connection to the existing storm drain line in Placentia Avenue is 1525.27 (STA 20+21.44). The outlet inverts of the onsite BMPs have been set **higher** than the HGL of the public storm drain. This ensures that stormwater within the public storm drain ***will not*** flow back into the onsite BMPs creating a backwater condition. Within the onsite BMPs, the invert elevation of the infiltration trench overflow storm drain has been set at 1528.00, the invert elevation of the detention facility outlet structure has been set at 1531.50, and the invert elevation of the drywell overflow storm drain has been set at 1533.00. Thus, these onsite BMP invert elevations have been set sufficiently above the calculated HGL at the development's **single** point of connection to the public storm drain.

Thus, there is adequate freeboard between the proposed drainage facilities and calculated water surface level/HGL in Line H-10.1. Consequently, the additional 3.93 CFS from the subject development has minimal impacts on existing drainage infrastructure can be adequately accepted and conveyed by Line H-10.1 based on these hydraulic calculations and conclusions.

Half-Street Flows Along Frontage

The Rational Method was used to calculate peak flows for the half-street of Tobacco Road and Placentia Avenue adjacent to PPT230048. The 10-year and 100-year events were considered in this analysis. These hydrologic calculations can be found in Appendix C-4.

The 10-year and 100-year peak flow for Tobacco Road tributary to the proposed catch basin on Tobacco Road was calculated to be 1.37 CFS and 2.00 CFS, respectively. These half-street flows will be intercepted by this catch basin and conveyed to Lateral H10.1 in Placentia Avenue. The design of this catch basin and lateral will be per separate storm drain plans.

The 10-year and 100-year peak flow for Placentia Avenue was calculated to be 1.37 CFS and 1.99 CFS, respectively. These half-street flows will continue to flow easterly towards the intersection of Placentia Avenue and Harvill Avenue where flows will be intercepted by an existing catch basin at this intersection.

Under both the 10-year and 100-year events for the subject streets, flows are kept well below the top of curb elevation. Hydraulic calculations can be found in Appendix C-4.

Conclusion

The narrative and supporting calculations in this report support the conclusion that the proposed site design and on-site detention facility mitigate the impacts of increased flows caused by development. In addition, hydraulic capacity of existing Lateral H-10.1 to accept routed/attenuated post-project flows has also been supported by relevant calculations and analysis.

Appendix “A” - Existing Conditions Calculations:

Unit Hydrograph Runs

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.70	0.50	4.35

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.70	1.30	11.31

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 0.500(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.500(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	47.4	0.597	0.000	0.597	1.000	0.597
					Sum (F) =	0.597

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443

```
               3   0.250        788.537          6.619              0.580
               4   0.333       1051.383          1.593              0.140
                                                                 Sum =
100.000   Sum=       8.768
------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1.	0.08	4.20	0.252	(0.597)	0.227	0.025
2.	0.17	4.30	0.258	(0.597)	0.232	0.026
3.	0.25	5.00	0.300	(0.597)	0.270	0.030
4.	0.33	5.00	0.300	(0.597)	0.270	0.030
5.	0.42	5.80	0.348	(0.597)	0.313	0.035
6.	0.50	6.50	0.390	(0.597)	0.351	0.039
7.	0.58	7.40	0.444	(0.597)	0.400	0.044
8.	0.67	8.60	0.516	(0.597)	0.464	0.052
9.	0.75	12.30	0.738	0.597	(0.664)	0.140
10.	0.83	29.10	1.746	0.597	(1.571)	1.148
11.	0.92	6.80	0.408	(0.597)	0.367	0.041
12.	1.00	5.00	0.300	(0.597)	0.270	0.030
			(Loss Rate Not Used)			
Sum =		100.0			Sum =	1.6

```
 Flood volume = Effective rainfall      0.14(In)
  times area       8.7(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
 Total soil loss =      0.36(In)
 Total soil loss =     0.263(Ac.Ft)
 Total rainfall =      0.50(In)
 Flood volume =        4317.2 Cubic Feet
 Total soil loss =       11472.1 Cubic Feet
 ------------------------------------------------------------------------
  Peak flow rate of this hydrograph =      5.811(CFS)
 ------------------------------------------------------------------------
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                          1 - H O U R   S T O R M
                                  R u n o f f     H y d r o g r a p h
 ------------------------------------------------------------------------
                           Hydrograph in   5   Minute intervals ((CFS))

 ------------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5
10.0
  ----------------------------------------------------------------------
    0+ 5       0.0008      0.12  Q         |         |         |         |
    0+10       0.0022      0.21  Q         |         |         |         |
    0+15       0.0039      0.24  QV        |         |         |         |
    0+20       0.0057      0.26  |QV       |         |         |         |
    0+25       0.0076      0.28  |Q V      |         |         |         |
    0+30       0.0098      0.32  |Q V      |         |         |         |
```

```
    0+35       0.0123      0.36  |Q  V     |          |          |          |
    0+40       0.0152      0.42  |Q    V   |          |          |          |
    0+45       0.0211      0.86  |  Q    V |          |          |          |
    0+50       0.0611      5.81  |          |          |  QV      |          |
    0+55       0.0903      4.23  |          |     Q    |          |     V    |
    1+ 0       0.0969      0.97  |  Q       |          |          |         V|
    1+ 5       0.0989      0.29  |Q         |          |          |         V|
    1+10       0.0991      0.02  Q          |          |          |         V|
    1+15       0.0991      0.00  Q          |          |          |          V
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	0.80	7.80

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	2.00	19.50

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.800(In)
Area Averaged 100-Year Rainfall = 2.000(In)

Point rain (area averaged) = 0.800(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 0.800(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	47.4	0.597	0.000	0.597	1.000	0.597
					Sum (F) =	0.597

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	1.30	0.125	(0.597)	0.112	0.012
2. 0.17	1.30	0.125	(0.597)	0.112	0.012
3. 0.25	1.10	0.106	(0.597)	0.095	0.011
4. 0.33	1.50	0.144	(0.597)	0.130	0.014
5. 0.42	1.50	0.144	(0.597)	0.130	0.014
6. 0.50	1.80	0.173	(0.597)	0.156	0.017
7. 0.58	1.50	0.144	(0.597)	0.130	0.014
8. 0.67	1.80	0.173	(0.597)	0.156	0.017
9. 0.75	1.80	0.173	(0.597)	0.156	0.017
10. 0.83	1.50	0.144	(0.597)	0.130	0.014
11. 0.92	1.60	0.154	(0.597)	0.138	0.015
12. 1.00	1.80	0.173	(0.597)	0.156	0.017
13. 1.08	2.20	0.211	(0.597)	0.190	0.021
14. 1.17	2.20	0.211	(0.597)	0.190	0.021
15. 1.25	2.20	0.211	(0.597)	0.190	0.021
16. 1.33	2.00	0.192	(0.597)	0.173	0.019
17. 1.42	2.60	0.250	(0.597)	0.225	0.025
18. 1.50	2.70	0.259	(0.597)	0.233	0.026
19. 1.58	2.40	0.230	(0.597)	0.207	0.023
20. 1.67	2.70	0.259	(0.597)	0.233	0.026
21. 1.75	3.30	0.317	(0.597)	0.285	0.032
22. 1.83	3.10	0.298	(0.597)	0.268	0.030
23. 1.92	2.90	0.278	(0.597)	0.251	0.028
24. 2.00	3.00	0.288	(0.597)	0.259	0.029
25. 2.08	3.10	0.298	(0.597)	0.268	0.030
26. 2.17	4.20	0.403	(0.597)	0.363	0.040
27. 2.25	5.00	0.480	(0.597)	0.432	0.048
28. 2.33	3.50	0.336	(0.597)	0.302	0.034
29. 2.42	6.80	0.653	(0.597)	0.587	0.065
30. 2.50	7.30	0.701	0.597	(0.631)	0.103
31. 2.58	8.20	0.787	0.597	(0.708)	0.190
32. 2.67	5.90	0.566	(0.597)	0.510	0.057
33. 2.75	2.00	0.192	(0.597)	0.173	0.019
34. 2.83	1.80	0.173	(0.597)	0.156	0.017
35. 2.92	1.80	0.173	(0.597)	0.156	0.017
36. 3.00	0.60	0.058	(0.597)	0.052	0.006
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	1.1

Flood volume = Effective rainfall 0.09(In)
times area 8.7(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.71(In)
Total soil loss = 0.513(Ac.Ft)

Total rainfall = 0.80(In)
Flood volume = 2905.9 Cubic Feet
Total soil loss = 22358.0 Cubic Feet

Peak flow rate of this hydrograph = 1.272(CFS)

++

3 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0004	0.06	Q
0+10	0.0011	0.10	Q
0+15	0.0018	0.10	QV
0+20	0.0025	0.11	QV
0+25	0.0034	0.12	Q V
0+30	0.0043	0.14	Q V
0+35	0.0053	0.14	Q V
0+40	0.0063	0.14	Q V
0+45	0.0073	0.15	Q V
0+50	0.0082	0.14	Q V
0+55	0.0092	0.13	Q V
1+ 0	0.0101	0.14	Q V
1+ 5	0.0113	0.17	Q V
1+10	0.0126	0.18	Q V
1+15	0.0138	0.18	Q V
1+20	0.0150	0.18	Q V
1+25	0.0164	0.20	Q V
1+30	0.0179	0.22	Q V
1+35	0.0194	0.21	Q V
1+40	0.0209	0.22	Q V
1+45	0.0226	0.25	Q V
1+50	0.0244	0.26	Q V
1+55	0.0262	0.25	Q V
2+ 0	0.0279	0.25	Q V
2+ 5	0.0297	0.26	Q V
2+10	0.0318	0.31	Q V
2+15	0.0344	0.38	Q V
2+20	0.0368	0.35	Q V
2+25	0.0399	0.45	Q V
2+30	0.0449	0.73	Q V
2+35	0.0537	1.27	Q V
2+40	0.0604	0.98	Q V
2+45	0.0633	0.41	Q V
2+50	0.0647	0.21	Q V
2+55	0.0658	0.16	Q V
3+ 0	0.0664	0.10	Q V
3+ 5	0.0667	0.03	Q V
3+10	0.0667	0.01	Q V

3+15	0.0667	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	1.10	10.73

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	2.75	26.81

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.100(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 1.100(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.100(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	47.4	0.597	0.000	0.597	1.000	0.597
					Sum (F) =	0.597

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.50	0.066	(0.597)	0.059	0.007
2. 0.17	0.60	0.079	(0.597)	0.071	0.008
3. 0.25	0.60	0.079	(0.597)	0.071	0.008
4. 0.33	0.60	0.079	(0.597)	0.071	0.008
5. 0.42	0.60	0.079	(0.597)	0.071	0.008
6. 0.50	0.70	0.092	(0.597)	0.083	0.009
7. 0.58	0.70	0.092	(0.597)	0.083	0.009
8. 0.67	0.70	0.092	(0.597)	0.083	0.009
9. 0.75	0.70	0.092	(0.597)	0.083	0.009
10. 0.83	0.70	0.092	(0.597)	0.083	0.009
11. 0.92	0.70	0.092	(0.597)	0.083	0.009
12. 1.00	0.80	0.106	(0.597)	0.095	0.011
13. 1.08	0.80	0.106	(0.597)	0.095	0.011
14. 1.17	0.80	0.106	(0.597)	0.095	0.011
15. 1.25	0.80	0.106	(0.597)	0.095	0.011
16. 1.33	0.80	0.106	(0.597)	0.095	0.011
17. 1.42	0.80	0.106	(0.597)	0.095	0.011
18. 1.50	0.80	0.106	(0.597)	0.095	0.011
19. 1.58	0.80	0.106	(0.597)	0.095	0.011
20. 1.67	0.80	0.106	(0.597)	0.095	0.011
21. 1.75	0.80	0.106	(0.597)	0.095	0.011
22. 1.83	0.80	0.106	(0.597)	0.095	0.011
23. 1.92	0.80	0.106	(0.597)	0.095	0.011
24. 2.00	0.90	0.119	(0.597)	0.107	0.012
25. 2.08	0.80	0.106	(0.597)	0.095	0.011
26. 2.17	0.90	0.119	(0.597)	0.107	0.012
27. 2.25	0.90	0.119	(0.597)	0.107	0.012
28. 2.33	0.90	0.119	(0.597)	0.107	0.012
29. 2.42	0.90	0.119	(0.597)	0.107	0.012
30. 2.50	0.90	0.119	(0.597)	0.107	0.012
31. 2.58	0.90	0.119	(0.597)	0.107	0.012
32. 2.67	0.90	0.119	(0.597)	0.107	0.012
33. 2.75	1.00	0.132	(0.597)	0.119	0.013
34. 2.83	1.00	0.132	(0.597)	0.119	0.013
35. 2.92	1.00	0.132	(0.597)	0.119	0.013
36. 3.00	1.00	0.132	(0.597)	0.119	0.013
37. 3.08	1.00	0.132	(0.597)	0.119	0.013
38. 3.17	1.10	0.145	(0.597)	0.131	0.015
39. 3.25	1.10	0.145	(0.597)	0.131	0.015
40. 3.33	1.10	0.145	(0.597)	0.131	0.015
41. 3.42	1.20	0.158	(0.597)	0.143	0.016
42. 3.50	1.30	0.172	(0.597)	0.154	0.017

43.	3.58	1.40	0.185	(0.597)	0.166	0.018
44.	3.67	1.40	0.185	(0.597)	0.166	0.018
45.	3.75	1.50	0.198	(0.597)	0.178	0.020
46.	3.83	1.50	0.198	(0.597)	0.178	0.020
47.	3.92	1.60	0.211	(0.597)	0.190	0.021
48.	4.00	1.60	0.211	(0.597)	0.190	0.021
49.	4.08	1.70	0.224	(0.597)	0.202	0.022
50.	4.17	1.80	0.238	(0.597)	0.214	0.024
51.	4.25	1.90	0.251	(0.597)	0.226	0.025
52.	4.33	2.00	0.264	(0.597)	0.238	0.026
53.	4.42	2.10	0.277	(0.597)	0.249	0.028
54.	4.50	2.10	0.277	(0.597)	0.249	0.028
55.	4.58	2.20	0.290	(0.597)	0.261	0.029
56.	4.67	2.30	0.304	(0.597)	0.273	0.030
57.	4.75	2.40	0.317	(0.597)	0.285	0.032
58.	4.83	2.40	0.317	(0.597)	0.285	0.032
59.	4.92	2.50	0.330	(0.597)	0.297	0.033
60.	5.00	2.60	0.343	(0.597)	0.309	0.034
61.	5.08	3.10	0.409	(0.597)	0.368	0.041
62.	5.17	3.60	0.475	(0.597)	0.428	0.048
63.	5.25	3.90	0.515	(0.597)	0.463	0.051
64.	5.33	4.20	0.554	(0.597)	0.499	0.055
65.	5.42	4.70	0.620	(0.597)	0.558	0.062
66.	5.50	5.60	0.739	0.597	(0.665)	0.142
67.	5.58	1.90	0.251	(0.597)	0.226	0.025
68.	5.67	0.90	0.119	(0.597)	0.107	0.012
69.	5.75	0.60	0.079	(0.597)	0.071	0.008
70.	5.83	0.50	0.066	(0.597)	0.059	0.007
71.	5.92	0.30	0.040	(0.597)	0.036	0.004
72.	6.00	0.20	0.026	(0.597)	0.024	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 1.4

Flood volume = Effective rainfall 0.12(In)
times area 8.7(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.98(In)
Total soil loss = 0.714(Ac.Ft)
Total rainfall = 1.10(In)
Flood volume = 3652.2 Cubic Feet
Total soil loss = 31085.9 Cubic Feet

Peak flow rate of this hydrograph = 0.906(CFS)

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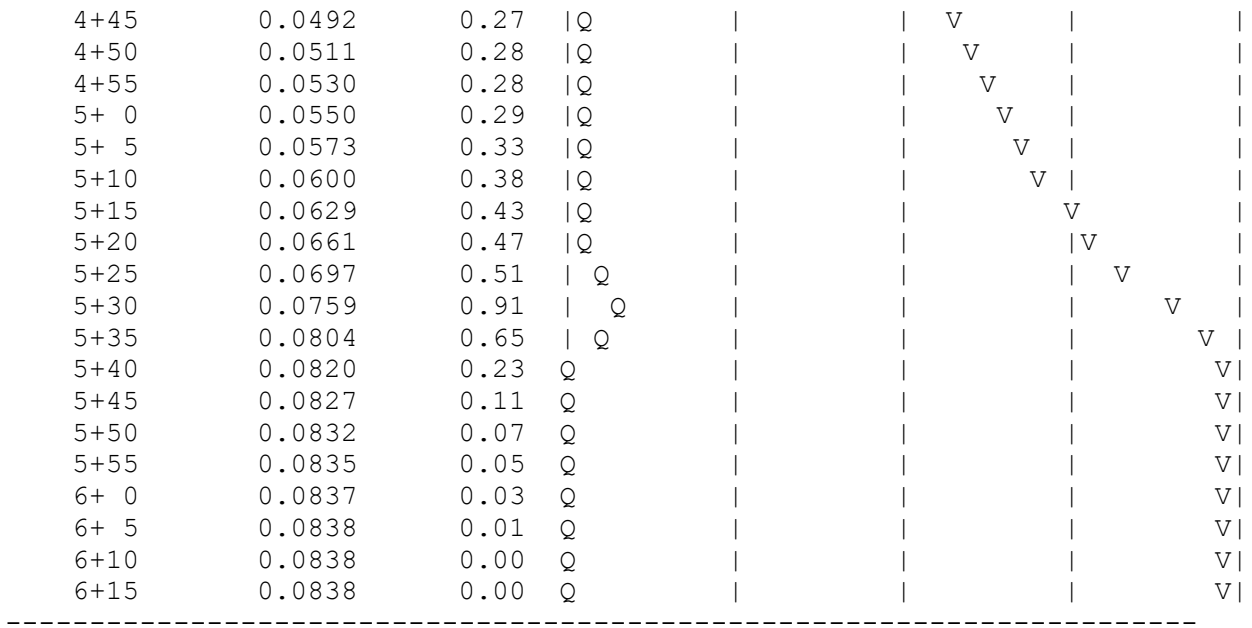
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q	|	|	|	|
0+10	0.0006	0.06	Q	|	|	|	|

```
0+15       0.0011      0.07  Q          |          |          |          |
0+20       0.0016      0.07  Q          |          |          |          |
0+25       0.0020      0.07  Q          |          |          |          |
0+30       0.0026      0.08  QV         |          |          |          |
0+35       0.0031      0.08  QV         |          |          |          |
0+40       0.0037      0.08  QV         |          |          |          |
0+45       0.0042      0.08  Q V        |          |          |          |
0+50       0.0048      0.08  Q V        |          |          |          |
0+55       0.0053      0.08  Q V        |          |          |          |
1+ 0       0.0059      0.09  Q V        |          |          |          |
1+ 5       0.0066      0.09  Q  V       |          |          |          |
1+10       0.0072      0.09  Q  V       |          |          |          |
1+15       0.0078      0.09  Q  V       |          |          |          |
1+20       0.0085      0.09  Q   V      |          |          |          |
1+25       0.0091      0.09  Q   V      |          |          |          |
1+30       0.0098      0.09  Q   V      |          |          |          |
1+35       0.0104      0.09  Q   V      |          |          |          |
1+40       0.0110      0.09  Q    V     |          |          |          |
1+45       0.0117      0.09  Q    V     |          |          |          |
1+50       0.0123      0.09  Q    V     |          |          |          |
1+55       0.0130      0.09  Q     V    |          |          |          |
2+ 0       0.0136      0.10  Q     V    |          |          |          |
2+ 5       0.0143      0.10  Q     V    |          |          |          |
2+10       0.0150      0.10  Q      V   |          |          |          |
2+15       0.0157      0.10  Q      V   |          |          |          |
2+20       0.0164      0.10  Q      V   |          |          |          |
2+25       0.0171      0.10  Q       V  |          |          |          |
2+30       0.0179      0.10  Q       V  |          |          |          |
2+35       0.0186      0.10  Q       V  |          |          |          |
2+40       0.0193      0.10  Q        V|          |          |          |
2+45       0.0200      0.11  Q        V|          |          |          |
2+50       0.0208      0.11  Q        V|          |          |          |
2+55       0.0216      0.12  Q         V          |          |          |
3+ 0       0.0224      0.12  Q         V          |          |          |
3+ 5       0.0232      0.12  Q          |V         |          |          |
3+10       0.0241      0.12  Q          |V         |          |          |
3+15       0.0249      0.13  Q          |V         |          |          |
3+20       0.0258      0.13  Q          | V        |          |          |
3+25       0.0267      0.13  Q          | V        |          |          |
3+30       0.0277      0.14  Q          |  V       |          |          |
3+35       0.0288      0.16  Q          |  V       |          |          |
3+40       0.0299      0.16  Q          |   V      |          |          |
3+45       0.0311      0.17  Q          |   V      |          |          |
3+50       0.0323      0.17  Q          |    V     |          |          |
3+55       0.0335      0.18  Q          |    V     |          |          |
4+ 0       0.0348      0.18  Q          |     V    |          |          |
4+ 5       0.0361      0.19  Q          |      V   |          |          |
4+10       0.0375      0.20  Q          |      V   |          |          |
4+15       0.0389      0.21  Q          |       V  |          |          |
4+20       0.0405      0.22  Q          |        V|          |          |
4+25       0.0421      0.24  Q          |         V          |          |
4+30       0.0438      0.24  Q          |         V          |          |
4+35       0.0455      0.25  Q          |         |V         |          |
4+40       0.0473      0.26  |Q         |         | V        |          |
```


4+45 0.0492 0.27
4+50 0.0511 0.28
4+55 0.0530 0.28
5+ 0 0.0550 0.29
5+ 5 0.0573 0.33
5+10 0.0600 0.38
5+15 0.0629 0.43
5+20 0.0661 0.47
5+25 0.0697 0.51
5+30 0.0759 0.91
5+35 0.0804 0.65
5+40 0.0820 0.23
5+45 0.0827 0.11
5+50 0.0832 0.07
5+55 0.0835 0.05
6+ 0 0.0837 0.03
6+ 5 0.0838 0.01
6+10 0.0838 0.00
6+15 0.0838 0.00

U n i t H y d r o g r a p h A n a l y s i s

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Study date 11/30/23 File: 2177euh242.out

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	1.90	18.52

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	5.50	53.63

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.900(In)
Area Averaged 100-Year Rainfall = 5.500(In)

Point rain (area averaged) = 1.900(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.900(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	47.4	0.597	0.000	0.597	1.000	0.597
					Sum (F) =	0.597

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.07	0.015	(1.059)	0.014	0.002
2. 0.17	0.07	0.015	(1.055)	0.014	0.002
3. 0.25	0.07	0.015	(1.051)	0.014	0.002
4. 0.33	0.10	0.023	(1.047)	0.021	0.002
5. 0.42	0.10	0.023	(1.043)	0.021	0.002
6. 0.50	0.10	0.023	(1.039)	0.021	0.002
7. 0.58	0.10	0.023	(1.035)	0.021	0.002
8. 0.67	0.10	0.023	(1.031)	0.021	0.002
9. 0.75	0.10	0.023	(1.027)	0.021	0.002
10. 0.83	0.13	0.030	(1.023)	0.027	0.003
11. 0.92	0.13	0.030	(1.019)	0.027	0.003
12. 1.00	0.13	0.030	(1.015)	0.027	0.003
13. 1.08	0.10	0.023	(1.011)	0.021	0.002
14. 1.17	0.10	0.023	(1.007)	0.021	0.002
15. 1.25	0.10	0.023	(1.003)	0.021	0.002
16. 1.33	0.10	0.023	(0.999)	0.021	0.002
17. 1.42	0.10	0.023	(0.995)	0.021	0.002
18. 1.50	0.10	0.023	(0.991)	0.021	0.002
19. 1.58	0.10	0.023	(0.987)	0.021	0.002
20. 1.67	0.10	0.023	(0.983)	0.021	0.002
21. 1.75	0.10	0.023	(0.979)	0.021	0.002
22. 1.83	0.13	0.030	(0.975)	0.027	0.003
23. 1.92	0.13	0.030	(0.971)	0.027	0.003
24. 2.00	0.13	0.030	(0.967)	0.027	0.003
25. 2.08	0.13	0.030	(0.963)	0.027	0.003
26. 2.17	0.13	0.030	(0.959)	0.027	0.003
27. 2.25	0.13	0.030	(0.955)	0.027	0.003
28. 2.33	0.13	0.030	(0.951)	0.027	0.003
29. 2.42	0.13	0.030	(0.947)	0.027	0.003
30. 2.50	0.13	0.030	(0.944)	0.027	0.003
31. 2.58	0.17	0.038	(0.940)	0.034	0.004
32. 2.67	0.17	0.038	(0.936)	0.034	0.004
33. 2.75	0.17	0.038	(0.932)	0.034	0.004
34. 2.83	0.17	0.038	(0.928)	0.034	0.004
35. 2.92	0.17	0.038	(0.924)	0.034	0.004
36. 3.00	0.17	0.038	(0.921)	0.034	0.004
37. 3.08	0.17	0.038	(0.917)	0.034	0.004
38. 3.17	0.17	0.038	(0.913)	0.034	0.004
39. 3.25	0.17	0.038	(0.909)	0.034	0.004
40. 3.33	0.17	0.038	(0.905)	0.034	0.004
41. 3.42	0.17	0.038	(0.902)	0.034	0.004
42. 3.50	0.17	0.038	(0.898)	0.034	0.004

43. 3.58	0.17	0.038	(0.894)	0.034	0.004
44. 3.67	0.17	0.038	(0.890)	0.034	0.004
45. 3.75	0.17	0.038	(0.887)	0.034	0.004
46. 3.83	0.20	0.046	(0.883)	0.041	0.005
47. 3.92	0.20	0.046	(0.879)	0.041	0.005
48. 4.00	0.20	0.046	(0.875)	0.041	0.005
49. 4.08	0.20	0.046	(0.872)	0.041	0.005
50. 4.17	0.20	0.046	(0.868)	0.041	0.005
51. 4.25	0.20	0.046	(0.864)	0.041	0.005
52. 4.33	0.23	0.053	(0.861)	0.048	0.005
53. 4.42	0.23	0.053	(0.857)	0.048	0.005
54. 4.50	0.23	0.053	(0.853)	0.048	0.005
55. 4.58	0.23	0.053	(0.850)	0.048	0.005
56. 4.67	0.23	0.053	(0.846)	0.048	0.005
57. 4.75	0.23	0.053	(0.842)	0.048	0.005
58. 4.83	0.27	0.061	(0.839)	0.055	0.006
59. 4.92	0.27	0.061	(0.835)	0.055	0.006
60. 5.00	0.27	0.061	(0.831)	0.055	0.006
61. 5.08	0.20	0.046	(0.828)	0.041	0.005
62. 5.17	0.20	0.046	(0.824)	0.041	0.005
63. 5.25	0.20	0.046	(0.821)	0.041	0.005
64. 5.33	0.23	0.053	(0.817)	0.048	0.005
65. 5.42	0.23	0.053	(0.813)	0.048	0.005
66. 5.50	0.23	0.053	(0.810)	0.048	0.005
67. 5.58	0.27	0.061	(0.806)	0.055	0.006
68. 5.67	0.27	0.061	(0.803)	0.055	0.006
69. 5.75	0.27	0.061	(0.799)	0.055	0.006
70. 5.83	0.27	0.061	(0.796)	0.055	0.006
71. 5.92	0.27	0.061	(0.792)	0.055	0.006
72. 6.00	0.27	0.061	(0.789)	0.055	0.006
73. 6.08	0.30	0.068	(0.785)	0.062	0.007
74. 6.17	0.30	0.068	(0.782)	0.062	0.007
75. 6.25	0.30	0.068	(0.778)	0.062	0.007
76. 6.33	0.30	0.068	(0.775)	0.062	0.007
77. 6.42	0.30	0.068	(0.771)	0.062	0.007
78. 6.50	0.30	0.068	(0.768)	0.062	0.007
79. 6.58	0.33	0.076	(0.764)	0.068	0.008
80. 6.67	0.33	0.076	(0.761)	0.068	0.008
81. 6.75	0.33	0.076	(0.757)	0.068	0.008
82. 6.83	0.33	0.076	(0.754)	0.068	0.008
83. 6.92	0.33	0.076	(0.751)	0.068	0.008
84. 7.00	0.33	0.076	(0.747)	0.068	0.008
85. 7.08	0.33	0.076	(0.744)	0.068	0.008
86. 7.17	0.33	0.076	(0.740)	0.068	0.008
87. 7.25	0.33	0.076	(0.737)	0.068	0.008
88. 7.33	0.37	0.084	(0.734)	0.075	0.008
89. 7.42	0.37	0.084	(0.730)	0.075	0.008
90. 7.50	0.37	0.084	(0.727)	0.075	0.008
91. 7.58	0.40	0.091	(0.724)	0.082	0.009
92. 7.67	0.40	0.091	(0.720)	0.082	0.009
93. 7.75	0.40	0.091	(0.717)	0.082	0.009
94. 7.83	0.43	0.099	(0.714)	0.089	0.010
95. 7.92	0.43	0.099	(0.710)	0.089	0.010
96. 8.00	0.43	0.099	(0.707)	0.089	0.010

97.	8.08	0.50	0.114	(0.704)	0.103	0.011
98.	8.17	0.50	0.114	(0.701)	0.103	0.011
99.	8.25	0.50	0.114	(0.697)	0.103	0.011
100.	8.33	0.50	0.114	(0.694)	0.103	0.011
101.	8.42	0.50	0.114	(0.691)	0.103	0.011
102.	8.50	0.50	0.114	(0.688)	0.103	0.011
103.	8.58	0.53	0.122	(0.684)	0.109	0.012
104.	8.67	0.53	0.122	(0.681)	0.109	0.012
105.	8.75	0.53	0.122	(0.678)	0.109	0.012
106.	8.83	0.57	0.129	(0.675)	0.116	0.013
107.	8.92	0.57	0.129	(0.671)	0.116	0.013
108.	9.00	0.57	0.129	(0.668)	0.116	0.013
109.	9.08	0.63	0.144	(0.665)	0.130	0.014
110.	9.17	0.63	0.144	(0.662)	0.130	0.014
111.	9.25	0.63	0.144	(0.659)	0.130	0.014
112.	9.33	0.67	0.152	(0.656)	0.137	0.015
113.	9.42	0.67	0.152	(0.653)	0.137	0.015
114.	9.50	0.67	0.152	(0.649)	0.137	0.015
115.	9.58	0.70	0.160	(0.646)	0.144	0.016
116.	9.67	0.70	0.160	(0.643)	0.144	0.016
117.	9.75	0.70	0.160	(0.640)	0.144	0.016
118.	9.83	0.73	0.167	(0.637)	0.150	0.017
119.	9.92	0.73	0.167	(0.634)	0.150	0.017
120.	10.00	0.73	0.167	(0.631)	0.150	0.017
121.	10.08	0.50	0.114	(0.628)	0.103	0.011
122.	10.17	0.50	0.114	(0.625)	0.103	0.011
123.	10.25	0.50	0.114	(0.622)	0.103	0.011
124.	10.33	0.50	0.114	(0.619)	0.103	0.011
125.	10.42	0.50	0.114	(0.616)	0.103	0.011
126.	10.50	0.50	0.114	(0.613)	0.103	0.011
127.	10.58	0.67	0.152	(0.610)	0.137	0.015
128.	10.67	0.67	0.152	(0.607)	0.137	0.015
129.	10.75	0.67	0.152	(0.604)	0.137	0.015
130.	10.83	0.67	0.152	(0.601)	0.137	0.015
131.	10.92	0.67	0.152	(0.598)	0.137	0.015
132.	11.00	0.67	0.152	(0.595)	0.137	0.015
133.	11.08	0.63	0.144	(0.592)	0.130	0.014
134.	11.17	0.63	0.144	(0.589)	0.130	0.014
135.	11.25	0.63	0.144	(0.586)	0.130	0.014
136.	11.33	0.63	0.144	(0.583)	0.130	0.014
137.	11.42	0.63	0.144	(0.580)	0.130	0.014
138.	11.50	0.63	0.144	(0.578)	0.130	0.014
139.	11.58	0.57	0.129	(0.575)	0.116	0.013
140.	11.67	0.57	0.129	(0.572)	0.116	0.013
141.	11.75	0.57	0.129	(0.569)	0.116	0.013
142.	11.83	0.60	0.137	(0.566)	0.123	0.014
143.	11.92	0.60	0.137	(0.563)	0.123	0.014
144.	12.00	0.60	0.137	(0.561)	0.123	0.014
145.	12.08	0.83	0.190	(0.558)	0.171	0.019
146.	12.17	0.83	0.190	(0.555)	0.171	0.019
147.	12.25	0.83	0.190	(0.552)	0.171	0.019
148.	12.33	0.87	0.198	(0.549)	0.178	0.020
149.	12.42	0.87	0.198	(0.547)	0.178	0.020
150.	12.50	0.87	0.198	(0.544)	0.178	0.020

151.	12.58	0.93	0.213	(0.541)	0.192	0.021
152.	12.67	0.93	0.213	(0.538)	0.192	0.021
153.	12.75	0.93	0.213	(0.536)	0.192	0.021
154.	12.83	0.97	0.220	(0.533)	0.198	0.022
155.	12.92	0.97	0.220	(0.530)	0.198	0.022
156.	13.00	0.97	0.220	(0.528)	0.198	0.022
157.	13.08	1.13	0.258	(0.525)	0.233	0.026
158.	13.17	1.13	0.258	(0.522)	0.233	0.026
159.	13.25	1.13	0.258	(0.520)	0.233	0.026
160.	13.33	1.13	0.258	(0.517)	0.233	0.026
161.	13.42	1.13	0.258	(0.514)	0.233	0.026
162.	13.50	1.13	0.258	(0.512)	0.233	0.026
163.	13.58	0.77	0.175	(0.509)	0.157	0.017
164.	13.67	0.77	0.175	(0.507)	0.157	0.017
165.	13.75	0.77	0.175	(0.504)	0.157	0.017
166.	13.83	0.77	0.175	(0.501)	0.157	0.017
167.	13.92	0.77	0.175	(0.499)	0.157	0.017
168.	14.00	0.77	0.175	(0.496)	0.157	0.017
169.	14.08	0.90	0.205	(0.494)	0.185	0.021
170.	14.17	0.90	0.205	(0.491)	0.185	0.021
171.	14.25	0.90	0.205	(0.489)	0.185	0.021
172.	14.33	0.87	0.198	(0.486)	0.178	0.020
173.	14.42	0.87	0.198	(0.484)	0.178	0.020
174.	14.50	0.87	0.198	(0.481)	0.178	0.020
175.	14.58	0.87	0.198	(0.479)	0.178	0.020
176.	14.67	0.87	0.198	(0.476)	0.178	0.020
177.	14.75	0.87	0.198	(0.474)	0.178	0.020
178.	14.83	0.83	0.190	(0.471)	0.171	0.019
179.	14.92	0.83	0.190	(0.469)	0.171	0.019
180.	15.00	0.83	0.190	(0.467)	0.171	0.019
181.	15.08	0.80	0.182	(0.464)	0.164	0.018
182.	15.17	0.80	0.182	(0.462)	0.164	0.018
183.	15.25	0.80	0.182	(0.460)	0.164	0.018
184.	15.33	0.77	0.175	(0.457)	0.157	0.017
185.	15.42	0.77	0.175	(0.455)	0.157	0.017
186.	15.50	0.77	0.175	(0.452)	0.157	0.017
187.	15.58	0.63	0.144	(0.450)	0.130	0.014
188.	15.67	0.63	0.144	(0.448)	0.130	0.014
189.	15.75	0.63	0.144	(0.446)	0.130	0.014
190.	15.83	0.63	0.144	(0.443)	0.130	0.014
191.	15.92	0.63	0.144	(0.441)	0.130	0.014
192.	16.00	0.63	0.144	(0.439)	0.130	0.014
193.	16.08	0.13	0.030	(0.437)	0.027	0.003
194.	16.17	0.13	0.030	(0.434)	0.027	0.003
195.	16.25	0.13	0.030	(0.432)	0.027	0.003
196.	16.33	0.13	0.030	(0.430)	0.027	0.003
197.	16.42	0.13	0.030	(0.428)	0.027	0.003
198.	16.50	0.13	0.030	(0.425)	0.027	0.003
199.	16.58	0.10	0.023	(0.423)	0.021	0.002
200.	16.67	0.10	0.023	(0.421)	0.021	0.002
201.	16.75	0.10	0.023	(0.419)	0.021	0.002
202.	16.83	0.10	0.023	(0.417)	0.021	0.002
203.	16.92	0.10	0.023	(0.415)	0.021	0.002
204.	17.00	0.10	0.023	(0.413)	0.021	0.002

205. 17.08	0.17	0.038	(0.411)	0.034	0.004
206. 17.17	0.17	0.038	(0.409)	0.034	0.004
207. 17.25	0.17	0.038	(0.407)	0.034	0.004
208. 17.33	0.17	0.038	(0.404)	0.034	0.004
209. 17.42	0.17	0.038	(0.402)	0.034	0.004
210. 17.50	0.17	0.038	(0.400)	0.034	0.004
211. 17.58	0.17	0.038	(0.398)	0.034	0.004
212. 17.67	0.17	0.038	(0.396)	0.034	0.004
213. 17.75	0.17	0.038	(0.394)	0.034	0.004
214. 17.83	0.13	0.030	(0.392)	0.027	0.003
215. 17.92	0.13	0.030	(0.391)	0.027	0.003
216. 18.00	0.13	0.030	(0.389)	0.027	0.003
217. 18.08	0.13	0.030	(0.387)	0.027	0.003
218. 18.17	0.13	0.030	(0.385)	0.027	0.003
219. 18.25	0.13	0.030	(0.383)	0.027	0.003
220. 18.33	0.13	0.030	(0.381)	0.027	0.003
221. 18.42	0.13	0.030	(0.379)	0.027	0.003
222. 18.50	0.13	0.030	(0.377)	0.027	0.003
223. 18.58	0.10	0.023	(0.376)	0.021	0.002
224. 18.67	0.10	0.023	(0.374)	0.021	0.002
225. 18.75	0.10	0.023	(0.372)	0.021	0.002
226. 18.83	0.07	0.015	(0.370)	0.014	0.002
227. 18.92	0.07	0.015	(0.368)	0.014	0.002
228. 19.00	0.07	0.015	(0.367)	0.014	0.002
229. 19.08	0.10	0.023	(0.365)	0.021	0.002
230. 19.17	0.10	0.023	(0.363)	0.021	0.002
231. 19.25	0.10	0.023	(0.361)	0.021	0.002
232. 19.33	0.13	0.030	(0.360)	0.027	0.003
233. 19.42	0.13	0.030	(0.358)	0.027	0.003
234. 19.50	0.13	0.030	(0.356)	0.027	0.003
235. 19.58	0.10	0.023	(0.355)	0.021	0.002
236. 19.67	0.10	0.023	(0.353)	0.021	0.002
237. 19.75	0.10	0.023	(0.352)	0.021	0.002
238. 19.83	0.07	0.015	(0.350)	0.014	0.002
239. 19.92	0.07	0.015	(0.348)	0.014	0.002
240. 20.00	0.07	0.015	(0.347)	0.014	0.002
241. 20.08	0.10	0.023	(0.345)	0.021	0.002
242. 20.17	0.10	0.023	(0.344)	0.021	0.002
243. 20.25	0.10	0.023	(0.342)	0.021	0.002
244. 20.33	0.10	0.023	(0.341)	0.021	0.002
245. 20.42	0.10	0.023	(0.339)	0.021	0.002
246. 20.50	0.10	0.023	(0.338)	0.021	0.002
247. 20.58	0.10	0.023	(0.337)	0.021	0.002
248. 20.67	0.10	0.023	(0.335)	0.021	0.002
249. 20.75	0.10	0.023	(0.334)	0.021	0.002
250. 20.83	0.07	0.015	(0.332)	0.014	0.002
251. 20.92	0.07	0.015	(0.331)	0.014	0.002
252. 21.00	0.07	0.015	(0.330)	0.014	0.002
253. 21.08	0.10	0.023	(0.328)	0.021	0.002
254. 21.17	0.10	0.023	(0.327)	0.021	0.002
255. 21.25	0.10	0.023	(0.326)	0.021	0.002
256. 21.33	0.07	0.015	(0.325)	0.014	0.002
257. 21.42	0.07	0.015	(0.323)	0.014	0.002
258. 21.50	0.07	0.015	(0.322)	0.014	0.002

259.	21.58	0.10	0.023	(0.321)	0.021	0.002
260.	21.67	0.10	0.023	(0.320)	0.021	0.002
261.	21.75	0.10	0.023	(0.319)	0.021	0.002
262.	21.83	0.07	0.015	(0.318)	0.014	0.002
263.	21.92	0.07	0.015	(0.317)	0.014	0.002
264.	22.00	0.07	0.015	(0.315)	0.014	0.002
265.	22.08	0.10	0.023	(0.314)	0.021	0.002
266.	22.17	0.10	0.023	(0.313)	0.021	0.002
267.	22.25	0.10	0.023	(0.312)	0.021	0.002
268.	22.33	0.07	0.015	(0.311)	0.014	0.002
269.	22.42	0.07	0.015	(0.310)	0.014	0.002
270.	22.50	0.07	0.015	(0.310)	0.014	0.002
271.	22.58	0.07	0.015	(0.309)	0.014	0.002
272.	22.67	0.07	0.015	(0.308)	0.014	0.002
273.	22.75	0.07	0.015	(0.307)	0.014	0.002
274.	22.83	0.07	0.015	(0.306)	0.014	0.002
275.	22.92	0.07	0.015	(0.305)	0.014	0.002
276.	23.00	0.07	0.015	(0.305)	0.014	0.002
277.	23.08	0.07	0.015	(0.304)	0.014	0.002
278.	23.17	0.07	0.015	(0.303)	0.014	0.002
279.	23.25	0.07	0.015	(0.303)	0.014	0.002
280.	23.33	0.07	0.015	(0.302)	0.014	0.002
281.	23.42	0.07	0.015	(0.301)	0.014	0.002
282.	23.50	0.07	0.015	(0.301)	0.014	0.002
283.	23.58	0.07	0.015	(0.300)	0.014	0.002
284.	23.67	0.07	0.015	(0.300)	0.014	0.002
285.	23.75	0.07	0.015	(0.300)	0.014	0.002
286.	23.83	0.07	0.015	(0.299)	0.014	0.002
287.	23.92	0.07	0.015	(0.299)	0.014	0.002
288.	24.00	0.07	0.015	(0.299)	0.014	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 2.3

Flood volume = Effective rainfall 0.19(In)
times area 8.7(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 1.71(In)
Total soil loss = 1.240(Ac.Ft)
Total rainfall = 1.90(In)
Flood volume = 6000.3 Cubic Feet
Total soil loss = 54002.6 Cubic Feet

Peak flow rate of this hydrograph = 0.227(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.01	Q	|	|	|	|
0+10	0.0001	0.01	Q	|	|	|	|

0+15	0.0002	0.01	Q	|	|	|	|
0+20	0.0003	0.02	Q	|	|	|	|
0+25	0.0005	0.02	Q	|	|	|	|
0+30	0.0006	0.02	Q	|	|	|	|
0+35	0.0007	0.02	Q	|	|	|	|
0+40	0.0009	0.02	Q	|	|	|	|
0+45	0.0010	0.02	Q	|	|	|	|
0+50	0.0012	0.02	Q	|	|	|	|
0+55	0.0014	0.03	Q	|	|	|	|
1+ 0	0.0015	0.03	Q	|	|	|	|
1+ 5	0.0017	0.02	Q	|	|	|	|
1+10	0.0018	0.02	Q	|	|	|	|
1+15	0.0020	0.02	Q	|	|	|	|
1+20	0.0021	0.02	Q	|	|	|	|
1+25	0.0023	0.02	Q	|	|	|	|
1+30	0.0024	0.02	Q	|	|	|	|
1+35	0.0025	0.02	Q	|	|	|	|
1+40	0.0027	0.02	Q	|	|	|	|
1+45	0.0028	0.02	Q	|	|	|	|
1+50	0.0030	0.02	Q	|	|	|	|
1+55	0.0032	0.03	Q	|	|	|	|
2+ 0	0.0033	0.03	Q	|	|	|	|
2+ 5	0.0035	0.03	QV	|	|	|	|
2+10	0.0037	0.03	QV	|	|	|	|
2+15	0.0039	0.03	QV	|	|	|	|
2+20	0.0041	0.03	QV	|	|	|	|
2+25	0.0043	0.03	QV	|	|	|	|
2+30	0.0044	0.03	QV	|	|	|	|
2+35	0.0046	0.03	QV	|	|	|	|
2+40	0.0049	0.03	QV	|	|	|	|
2+45	0.0051	0.03	QV	|	|	|	|
2+50	0.0053	0.03	QV	|	|	|	|
2+55	0.0056	0.03	QV	|	|	|	|
3+ 0	0.0058	0.03	QV	|	|	|	|
3+ 5	0.0060	0.03	QV	|	|	|	|
3+10	0.0063	0.03	QV	|	|	|	|
3+15	0.0065	0.03	QV	|	|	|	|
3+20	0.0067	0.03	QV	|	|	|	|
3+25	0.0069	0.03	Q V	|	|	|	|
3+30	0.0072	0.03	Q V	|	|	|	|
3+35	0.0074	0.03	Q V	|	|	|	|
3+40	0.0076	0.03	Q V	|	|	|	|
3+45	0.0079	0.03	Q V	|	|	|	|
3+50	0.0081	0.04	Q V	|	|	|	|
3+55	0.0084	0.04	Q V	|	|	|	|
4+ 0	0.0087	0.04	Q V	|	|	|	|
4+ 5	0.0089	0.04	Q V	|	|	|	|
4+10	0.0092	0.04	Q V	|	|	|	|
4+15	0.0095	0.04	Q V	|	|	|	|
4+20	0.0098	0.04	Q V	|	|	|	|
4+25	0.0101	0.05	Q V	|	|	|	|
4+30	0.0104	0.05	Q V	|	|	|	|
4+35	0.0107	0.05	Q V	|	|	|	|
4+40	0.0111	0.05	Q V	|	|	|	|

4+45	0.0114	0.05	Q	V				
4+50	0.0117	0.05	Q	V				
4+55	0.0121	0.05	Q	V				
5+ 0	0.0125	0.05	Q	V				
5+ 5	0.0128	0.05	Q	V				
5+10	0.0131	0.04	Q	V				
5+15	0.0133	0.04	Q	V				
5+20	0.0136	0.04	Q	V				
5+25	0.0140	0.05	Q	V				
5+30	0.0143	0.05	Q	V				
5+35	0.0146	0.05	Q	V				
5+40	0.0150	0.05	Q	V				
5+45	0.0154	0.05	Q	V				
5+50	0.0157	0.05	Q	V				
5+55	0.0161	0.05	Q	V				
6+ 0	0.0165	0.05	Q	V				
6+ 5	0.0168	0.06	Q	V				
6+10	0.0173	0.06	Q	V				
6+15	0.0177	0.06	Q	V				
6+20	0.0181	0.06	Q	V				
6+25	0.0185	0.06	Q	V				
6+30	0.0189	0.06	Q	V				
6+35	0.0193	0.06	Q	V				
6+40	0.0198	0.07	Q	V				
6+45	0.0203	0.07	Q	V				
6+50	0.0207	0.07	Q	V				
6+55	0.0212	0.07	Q	V				
7+ 0	0.0216	0.07	Q	V				
7+ 5	0.0221	0.07	Q	V				
7+10	0.0226	0.07	Q	V				
7+15	0.0230	0.07	Q	V				
7+20	0.0235	0.07	Q	V				
7+25	0.0240	0.07	Q	V				
7+30	0.0245	0.07	Q	V				
7+35	0.0250	0.08	Q	V				
7+40	0.0256	0.08	Q	V				
7+45	0.0261	0.08	Q	V				
7+50	0.0267	0.08	Q	V				
7+55	0.0273	0.09	Q	V				
8+ 0	0.0279	0.09	Q	V				
8+ 5	0.0285	0.09	Q	V				
8+10	0.0292	0.10	Q	V				
8+15	0.0299	0.10	Q	V				
8+20	0.0306	0.10	Q	V				
8+25	0.0313	0.10	Q	V				
8+30	0.0320	0.10	Q	V				
8+35	0.0327	0.10	Q	V				
8+40	0.0334	0.11	Q	V				
8+45	0.0342	0.11	Q	V				
8+50	0.0349	0.11	Q	V				
8+55	0.0357	0.11	Q	V				
9+ 0	0.0365	0.11	Q	V				
9+ 5	0.0373	0.12	Q	V				
9+10	0.0382	0.13	Q	V				

9+15	0.0390	0.13	Q	V			
9+20	0.0399	0.13	Q	V			
9+25	0.0408	0.13	Q	V			
9+30	0.0418	0.13	Q	V			
9+35	0.0427	0.14	Q	V			
9+40	0.0437	0.14	Q	V			
9+45	0.0446	0.14	Q	V			
9+50	0.0456	0.14	Q	V			
9+55	0.0466	0.15	Q	V			
10+ 0	0.0476	0.15	Q	V			
10+ 5	0.0485	0.12	Q	V			
10+10	0.0492	0.10	Q	V			
10+15	0.0499	0.10	Q	V			
10+20	0.0506	0.10	Q	V			
10+25	0.0513	0.10	Q	V			
10+30	0.0519	0.10	Q	V			
10+35	0.0528	0.12	Q	V			
10+40	0.0537	0.13	Q	V			
10+45	0.0546	0.13	Q	V			
10+50	0.0555	0.13	Q	V			
10+55	0.0564	0.13	Q	V			
11+ 0	0.0573	0.13	Q	V			
11+ 5	0.0582	0.13	Q	V			
11+10	0.0591	0.13	Q	V			
11+15	0.0600	0.13	Q	V			
11+20	0.0608	0.13	Q	V			
11+25	0.0617	0.13	Q	V			
11+30	0.0626	0.13	Q	V			
11+35	0.0634	0.12	Q	V			
11+40	0.0642	0.11	Q	V			
11+45	0.0650	0.11	Q	V			
11+50	0.0658	0.12	Q	V			
11+55	0.0666	0.12	Q	V			
12+ 0	0.0674	0.12	Q	V			
12+ 5	0.0684	0.14	Q	V			
12+10	0.0696	0.16	Q	V			
12+15	0.0707	0.17	Q	V			
12+20	0.0719	0.17	Q	V			
12+25	0.0731	0.17	Q	V			
12+30	0.0743	0.17	Q	V			
12+35	0.0755	0.18	Q	V			
12+40	0.0768	0.19	Q	V			
12+45	0.0781	0.19	Q	V			
12+50	0.0794	0.19	Q	V			
12+55	0.0807	0.19	Q	V			
13+ 0	0.0820	0.19	Q	V			
13+ 5	0.0835	0.21	Q	V			
13+10	0.0850	0.22	Q	V			
13+15	0.0866	0.23	Q	V			
13+20	0.0881	0.23	Q	V			
13+25	0.0897	0.23	Q	V			
13+30	0.0913	0.23	Q	V			
13+35	0.0926	0.19	Q	V			
13+40	0.0937	0.16	Q	V			

13+45	0.0947	0.15	Q	|	|	V |	|
13+50	0.0958	0.15	Q	|	|	V |	|
13+55	0.0968	0.15	Q	|	|	V |	|
14+ 0	0.0979	0.15	Q	|	|	V |	|
14+ 5	0.0990	0.17	Q	|	|	V |	|
14+10	0.1003	0.18	Q	|	|	V|	|
14+15	0.1015	0.18	Q	|	|	V|	|
14+20	0.1027	0.18	Q	|	|	V|	|
14+25	0.1039	0.17	Q	|	|	V	|
14+30	0.1051	0.17	Q	|	|	V	|
14+35	0.1063	0.17	Q	|	|	V	|
14+40	0.1075	0.17	Q	|	|	|V	|
14+45	0.1087	0.17	Q	|	|	|V	|
14+50	0.1099	0.17	Q	|	|	|V	|
14+55	0.1110	0.17	Q	|	|	| V	|
15+ 0	0.1122	0.17	Q	|	|	| V	|
15+ 5	0.1133	0.16	Q	|	|	| V	|
15+10	0.1144	0.16	Q	|	|	| V	|
15+15	0.1155	0.16	Q	|	|	| V	|
15+20	0.1166	0.16	Q	|	|	| V	|
15+25	0.1176	0.15	Q	|	|	| V	|
15+30	0.1187	0.15	Q	|	|	| V	|
15+35	0.1196	0.14	Q	|	|	| V	|
15+40	0.1205	0.13	Q	|	|	| V	|
15+45	0.1214	0.13	Q	|	|	| V	|
15+50	0.1223	0.13	Q	|	|	| V	|
15+55	0.1232	0.13	Q	|	|	| V	|
16+ 0	0.1240	0.13	Q	|	|	| V	|
16+ 5	0.1245	0.07	Q	|	|	| V	|
16+10	0.1248	0.03	Q	|	|	| V	|
16+15	0.1250	0.03	Q	|	|	| V	|
16+20	0.1252	0.03	Q	|	|	| V	|
16+25	0.1253	0.03	Q	|	|	| V	|
16+30	0.1255	0.03	Q	|	|	| V	|
16+35	0.1257	0.02	Q	|	|	| V	|
16+40	0.1258	0.02	Q	|	|	| V	|
16+45	0.1260	0.02	Q	|	|	| V	|
16+50	0.1261	0.02	Q	|	|	| V	|
16+55	0.1262	0.02	Q	|	|	| V	|
17+ 0	0.1264	0.02	Q	|	|	| V	|
17+ 5	0.1266	0.03	Q	|	|	| V	|
17+10	0.1268	0.03	Q	|	|	| V	|
17+15	0.1270	0.03	Q	|	|	| V	|
17+20	0.1272	0.03	Q	|	|	| V	|
17+25	0.1275	0.03	Q	|	|	| V	|
17+30	0.1277	0.03	Q	|	|	| V	|
17+35	0.1279	0.03	Q	|	|	| V	|
17+40	0.1282	0.03	Q	|	|	| V	|
17+45	0.1284	0.03	Q	|	|	| V	|
17+50	0.1286	0.03	Q	|	|	| V	|
17+55	0.1288	0.03	Q	|	|	| V	|
18+ 0	0.1290	0.03	Q	|	|	| V	|
18+ 5	0.1291	0.03	Q	|	|	| V	|
18+10	0.1293	0.03	Q	|	|	| V	|

18+15	0.1295	0.03	Q	|	|	|	V |
18+20	0.1297	0.03	Q	|	|	|	V |
18+25	0.1299	0.03	Q	|	|	|	V |
18+30	0.1301	0.03	Q	|	|	|	V |
18+35	0.1302	0.02	Q	|	|	|	V |
18+40	0.1304	0.02	Q	|	|	|	V |
18+45	0.1305	0.02	Q	|	|	|	V |
18+50	0.1306	0.02	Q	|	|	|	V |
18+55	0.1307	0.01	Q	|	|	|	V |
19+ 0	0.1308	0.01	Q	|	|	|	V |
19+ 5	0.1309	0.02	Q	|	|	|	V |
19+10	0.1311	0.02	Q	|	|	|	V |
19+15	0.1312	0.02	Q	|	|	|	V |
19+20	0.1314	0.02	Q	|	|	|	V |
19+25	0.1315	0.03	Q	|	|	|	V |
19+30	0.1317	0.03	Q	|	|	|	V |
19+35	0.1319	0.02	Q	|	|	|	V |
19+40	0.1320	0.02	Q	|	|	|	V |
19+45	0.1322	0.02	Q	|	|	|	V |
19+50	0.1323	0.02	Q	|	|	|	V |
19+55	0.1324	0.01	Q	|	|	|	V |
20+ 0	0.1325	0.01	Q	|	|	|	V |
20+ 5	0.1326	0.02	Q	|	|	|	V |
20+10	0.1327	0.02	Q	|	|	|	V |
20+15	0.1328	0.02	Q	|	|	|	V |
20+20	0.1330	0.02	Q	|	|	|	V |
20+25	0.1331	0.02	Q	|	|	|	V |
20+30	0.1333	0.02	Q	|	|	|	V |
20+35	0.1334	0.02	Q	|	|	|	V |
20+40	0.1335	0.02	Q	|	|	|	V |
20+45	0.1337	0.02	Q	|	|	|	V |
20+50	0.1338	0.02	Q	|	|	|	V |
20+55	0.1339	0.01	Q	|	|	|	V |
21+ 0	0.1340	0.01	Q	|	|	|	V |
21+ 5	0.1341	0.02	Q	|	|	|	V |
21+10	0.1342	0.02	Q	|	|	|	V |
21+15	0.1344	0.02	Q	|	|	|	V|
21+20	0.1345	0.02	Q	|	|	|	V|
21+25	0.1346	0.01	Q	|	|	|	V|
21+30	0.1347	0.01	Q	|	|	|	V|
21+35	0.1348	0.02	Q	|	|	|	V|
21+40	0.1349	0.02	Q	|	|	|	V|
21+45	0.1351	0.02	Q	|	|	|	V|
21+50	0.1352	0.02	Q	|	|	|	V|
21+55	0.1353	0.01	Q	|	|	|	V|
22+ 0	0.1354	0.01	Q	|	|	|	V|
22+ 5	0.1355	0.02	Q	|	|	|	V|
22+10	0.1356	0.02	Q	|	|	|	V|
22+15	0.1357	0.02	Q	|	|	|	V|
22+20	0.1359	0.02	Q	|	|	|	V|
22+25	0.1359	0.01	Q	|	|	|	V|
22+30	0.1360	0.01	Q	|	|	|	V|
22+35	0.1361	0.01	Q	|	|	|	V|
22+40	0.1362	0.01	Q	|	|	|	V|

22+45	0.1363	0.01	Q	|	|	|	V|
22+50	0.1364	0.01	Q	|	|	|	V|
22+55	0.1365	0.01	Q	|	|	|	V|
23+ 0	0.1366	0.01	Q	|	|	|	V|
23+ 5	0.1367	0.01	Q	|	|	|	V|
23+10	0.1368	0.01	Q	|	|	|	V|
23+15	0.1369	0.01	Q	|	|	|	V|
23+20	0.1370	0.01	Q	|	|	|	V|
23+25	0.1371	0.01	Q	|	|	|	V|
23+30	0.1371	0.01	Q	|	|	|	V|
23+35	0.1372	0.01	Q	|	|	|	V|
23+40	0.1373	0.01	Q	|	|	|	V|
23+45	0.1374	0.01	Q	|	|	|	V|
23+50	0.1375	0.01	Q	|	|	|	V|
23+55	0.1376	0.01	Q	|	|	|	V|
24+ 0	0.1377	0.01	Q	|	|	|	V|
24+ 5	0.1377	0.01	Q	|	|	|	V|
24+10	0.1377	0.00	Q	|	|	|	V|
24+15	0.1377	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.70	0.50	4.35

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.70	1.30	11.31

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 0.687(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.687(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	47.4	0.597	0.000	0.597	1.000	0.597
					Sum (F) =	0.597

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443

```
                3   0.250        788.537          6.619              0.580
                4   0.333       1051.383          1.593              0.140
                                                                  Sum =
100.000   Sum=       8.768
-----------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum
calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain
value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
   1. 0.08     4.20      0.346       (  0.597)       0.312        0.035
   2. 0.17     4.30      0.355       (  0.597)       0.319        0.035
   3. 0.25     5.00      0.412       (  0.597)       0.371        0.041
   4. 0.33     5.00      0.412       (  0.597)       0.371        0.041
   5. 0.42     5.80      0.478       (  0.597)       0.431        0.048
   6. 0.50     6.50      0.536       (  0.597)       0.483        0.054
   7. 0.58     7.40      0.610       (  0.597)       0.549        0.061
   8. 0.67     8.60      0.709          0.597    (  0.638)        0.112
   9. 0.75    12.30      1.014          0.597    (  0.913)        0.417
  10. 0.83    29.10      2.400          0.597    (  2.160)        1.803
  11. 0.92     6.80      0.561       (  0.597)       0.505        0.056
  12. 1.00     5.00      0.412       (  0.597)       0.371        0.041
                  (Loss Rate Not Used)
     Sum =     100.0                                  Sum =     2.7
      Flood volume = Effective rainfall      0.23(In)
       times area       8.7(Ac.)/[(In)/(Ft.)] =       0.2(Ac.Ft)
      Total soil loss =      0.46(In)
      Total soil loss =     0.333(Ac.Ft)
      Total rainfall =      0.69(In)
      Flood volume =        7221.3 Cubic Feet
      Total soil loss =       14485.1 Cubic Feet
      ------------------------------------------------------------------
       Peak flow rate of this hydrograph =      9.815(CFS)
      ------------------------------------------------------------------
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                                1 - H O U R   S T O R M
                                       R u n o f f     H y d r o g r a p h
      ------------------------------------------------------------------
                             Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5
10.0
  ---------------------------------------------------------------------
    0+ 5       0.0011      0.16  Q         |         |         |         |
    0+10       0.0030      0.28  VQ        |         |         |         |
    0+15       0.0053      0.33  |Q        |         |         |         |
    0+20       0.0078      0.36  |Q        |         |         |         |
    0+25       0.0105      0.39  |QV       |         |         |         |
    0+30       0.0135      0.44  |Q V      |         |         |         |
```

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    0+35       0.0170      0.50  |Q  V     |          |          |          |
    0+40       0.0222      0.76  |  Q V    |          |          |          |
    0+45       0.0384      2.35  |         Q|          |          |          |
    0+50       0.1060      9.82  |          |          |    V     |         Q|
    0+55       0.1523      6.73  |          |          |     Q    |     V    |
    1+ 0       0.1626      1.49  |    Q     |          |          |         V|
    1+ 5       0.1655      0.43  |Q         |          |          |         V|
    1+10       0.1657      0.03  Q          |          |          |         V|
    1+15       0.1658      0.01  Q          |          |          |         V|
-------------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	0.80	7.80

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	2.00	19.50

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.800(In)
Area Averaged 100-Year Rainfall = 2.000(In)

Point rain (area averaged) = 1.081(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.081(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	47.4	0.597	0.000	0.597	1.000	0.597
					Sum (F) =	0.597

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	1.30	0.169	(0.597)	0.152	0.017
2. 0.17	1.30	0.169	(0.597)	0.152	0.017
3. 0.25	1.10	0.143	(0.597)	0.128	0.014
4. 0.33	1.50	0.195	(0.597)	0.175	0.019
5. 0.42	1.50	0.195	(0.597)	0.175	0.019
6. 0.50	1.80	0.234	(0.597)	0.210	0.023
7. 0.58	1.50	0.195	(0.597)	0.175	0.019
8. 0.67	1.80	0.234	(0.597)	0.210	0.023
9. 0.75	1.80	0.234	(0.597)	0.210	0.023
10. 0.83	1.50	0.195	(0.597)	0.175	0.019
11. 0.92	1.60	0.208	(0.597)	0.187	0.021
12. 1.00	1.80	0.234	(0.597)	0.210	0.023
13. 1.08	2.20	0.285	(0.597)	0.257	0.029
14. 1.17	2.20	0.285	(0.597)	0.257	0.029
15. 1.25	2.20	0.285	(0.597)	0.257	0.029
16. 1.33	2.00	0.259	(0.597)	0.234	0.026
17. 1.42	2.60	0.337	(0.597)	0.304	0.034
18. 1.50	2.70	0.350	(0.597)	0.315	0.035
19. 1.58	2.40	0.311	(0.597)	0.280	0.031
20. 1.67	2.70	0.350	(0.597)	0.315	0.035
21. 1.75	3.30	0.428	(0.597)	0.385	0.043
22. 1.83	3.10	0.402	(0.597)	0.362	0.040
23. 1.92	2.90	0.376	(0.597)	0.339	0.038
24. 2.00	3.00	0.389	(0.597)	0.350	0.039
25. 2.08	3.10	0.402	(0.597)	0.362	0.040
26. 2.17	4.20	0.545	(0.597)	0.490	0.054
27. 2.25	5.00	0.649	(0.597)	0.584	0.065
28. 2.33	3.50	0.454	(0.597)	0.409	0.045
29. 2.42	6.80	0.882	0.597	(0.794)	0.285
30. 2.50	7.30	0.947	0.597	(0.852)	0.350
31. 2.58	8.20	1.064	0.597	(0.957)	0.466
32. 2.67	5.90	0.765	0.597	(0.689)	0.168
33. 2.75	2.00	0.259	(0.597)	0.234	0.026
34. 2.83	1.80	0.234	(0.597)	0.210	0.023
35. 2.92	1.80	0.234	(0.597)	0.210	0.023
36. 3.00	0.60	0.078	(0.597)	0.070	0.008
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	2.2

Flood volume = Effective rainfall 0.18(In)
times area 8.7(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.90(In)
Total soil loss = 0.651(Ac.Ft)

Total rainfall = 1.08(In)
Flood volume = 5789.0 Cubic Feet
Total soil loss = 28350.9 Cubic Feet

Peak flow rate of this hydrograph = 3.524(CFS)

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3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0005	0.08	Q
0+10	0.0015	0.14	Q
0+15	0.0024	0.13	Q
0+20	0.0034	0.15	QV
0+25	0.0046	0.17	QV
0+30	0.0059	0.19	QV
0+35	0.0071	0.18	Q V
0+40	0.0085	0.19	Q V
0+45	0.0099	0.20	Q V
0+50	0.0111	0.19	Q V
0+55	0.0124	0.18	Q V
1+ 0	0.0137	0.19	Q V
1+ 5	0.0153	0.23	Q V
1+10	0.0170	0.25	Q V
1+15	0.0187	0.25	Q V
1+20	0.0203	0.24	Q V
1+25	0.0222	0.27	|Q V
1+30	0.0242	0.30	|Q V
1+35	0.0262	0.29	|Q V
1+40	0.0282	0.29	|Q V
1+45	0.0305	0.34	|Q V
1+50	0.0330	0.36	|Q V
1+55	0.0354	0.34	|Q V
2+ 0	0.0377	0.34	|Q V
2+ 5	0.0401	0.35	|Q V
2+10	0.0430	0.42	|Q V
2+15	0.0465	0.52	| Q V
2+20	0.0497	0.47	|Q V
2+25	0.0602	1.51	| Q V
2+30	0.0782	2.63	| Q V
2+35	0.1025	3.52	| Q V
2+40	0.1206	2.62	| Q V
2+45	0.1276	1.02	| Q V
2+50	0.1301	0.36	|Q V
2+55	0.1316	0.23	Q V
3+ 0	0.1325	0.13	Q V
3+ 5	0.1328	0.04	Q V
3+10	0.1329	0.01	Q V

3+15	0.1329	0.00	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	1.10	10.73

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	2.75	26.81

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.100(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 1.486(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.486(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	47.4	0.597	0.000	0.597	1.000	0.597
					Sum (F) =	0.597

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	(Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1.	0.08	0.50	0.089	(0.597)		0.080	0.009
2.	0.17	0.60	0.107	(0.597)		0.096	0.011
3.	0.25	0.60	0.107	(0.597)		0.096	0.011
4.	0.33	0.60	0.107	(0.597)		0.096	0.011
5.	0.42	0.60	0.107	(0.597)		0.096	0.011
6.	0.50	0.70	0.125	(0.597)		0.112	0.012
7.	0.58	0.70	0.125	(0.597)		0.112	0.012
8.	0.67	0.70	0.125	(0.597)		0.112	0.012
9.	0.75	0.70	0.125	(0.597)		0.112	0.012
10.	0.83	0.70	0.125	(0.597)		0.112	0.012
11.	0.92	0.70	0.125	(0.597)		0.112	0.012
12.	1.00	0.80	0.143	(0.597)		0.128	0.014
13.	1.08	0.80	0.143	(0.597)		0.128	0.014
14.	1.17	0.80	0.143	(0.597)		0.128	0.014
15.	1.25	0.80	0.143	(0.597)		0.128	0.014
16.	1.33	0.80	0.143	(0.597)		0.128	0.014
17.	1.42	0.80	0.143	(0.597)		0.128	0.014
18.	1.50	0.80	0.143	(0.597)		0.128	0.014
19.	1.58	0.80	0.143	(0.597)		0.128	0.014
20.	1.67	0.80	0.143	(0.597)		0.128	0.014
21.	1.75	0.80	0.143	(0.597)		0.128	0.014
22.	1.83	0.80	0.143	(0.597)		0.128	0.014
23.	1.92	0.80	0.143	(0.597)		0.128	0.014
24.	2.00	0.90	0.161	(0.597)		0.144	0.016
25.	2.08	0.80	0.143	(0.597)		0.128	0.014
26.	2.17	0.90	0.161	(0.597)		0.144	0.016
27.	2.25	0.90	0.161	(0.597)		0.144	0.016
28.	2.33	0.90	0.161	(0.597)		0.144	0.016
29.	2.42	0.90	0.161	(0.597)		0.144	0.016
30.	2.50	0.90	0.161	(0.597)		0.144	0.016
31.	2.58	0.90	0.161	(0.597)		0.144	0.016
32.	2.67	0.90	0.161	(0.597)		0.144	0.016
33.	2.75	1.00	0.178	(0.597)		0.161	0.018
34.	2.83	1.00	0.178	(0.597)		0.161	0.018
35.	2.92	1.00	0.178	(0.597)		0.161	0.018
36.	3.00	1.00	0.178	(0.597)		0.161	0.018
37.	3.08	1.00	0.178	(0.597)		0.161	0.018
38.	3.17	1.10	0.196	(0.597)		0.177	0.020
39.	3.25	1.10	0.196	(0.597)		0.177	0.020
40.	3.33	1.10	0.196	(0.597)		0.177	0.020
41.	3.42	1.20	0.214	(0.597)		0.193	0.021
42.	3.50	1.30	0.232	(0.597)		0.209	0.023

43.	3.58	1.40	0.250	(0.597)	0.225	0.025
44.	3.67	1.40	0.250	(0.597)	0.225	0.025
45.	3.75	1.50	0.268	(0.597)	0.241	0.027
46.	3.83	1.50	0.268	(0.597)	0.241	0.027
47.	3.92	1.60	0.285	(0.597)	0.257	0.029
48.	4.00	1.60	0.285	(0.597)	0.257	0.029
49.	4.08	1.70	0.303	(0.597)	0.273	0.030
50.	4.17	1.80	0.321	(0.597)	0.289	0.032
51.	4.25	1.90	0.339	(0.597)	0.305	0.034
52.	4.33	2.00	0.357	(0.597)	0.321	0.036
53.	4.42	2.10	0.375	(0.597)	0.337	0.037
54.	4.50	2.10	0.375	(0.597)	0.337	0.037
55.	4.58	2.20	0.392	(0.597)	0.353	0.039
56.	4.67	2.30	0.410	(0.597)	0.369	0.041
57.	4.75	2.40	0.428	(0.597)	0.385	0.043
58.	4.83	2.40	0.428	(0.597)	0.385	0.043
59.	4.92	2.50	0.446	(0.597)	0.401	0.045
60.	5.00	2.60	0.464	(0.597)	0.417	0.046
61.	5.08	3.10	0.553	(0.597)	0.498	0.055
62.	5.17	3.60	0.642	(0.597)	0.578	0.064
63.	5.25	3.90	0.696	0.597	(0.626)	0.098
64.	5.33	4.20	0.749	0.597	(0.674)	0.152
65.	5.42	4.70	0.838	0.597	(0.755)	0.241
66.	5.50	5.60	0.999	0.597	(0.899)	0.401
67.	5.58	1.90	0.339	(0.597)	0.305	0.034
68.	5.67	0.90	0.161	(0.597)	0.144	0.016
69.	5.75	0.60	0.107	(0.597)	0.096	0.011
70.	5.83	0.50	0.089	(0.597)	0.080	0.009
71.	5.92	0.30	0.054	(0.597)	0.048	0.005
72.	6.00	0.20	0.036	(0.597)	0.032	0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 2.3

Flood volume = Effective rainfall 0.20(In)
times area 8.7(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 1.29(In)
Total soil loss = 0.936(Ac.Ft)
Total rainfall = 1.49(In)
Flood volume = 6178.3 Cubic Feet
Total soil loss = 40764.5 Cubic Feet

Peak flow rate of this hydrograph = 2.781(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q	|	|	|	|
0+10	0.0008	0.08	Q	|	|	|	|

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0+15       0.0015      0.09  Q          |          |          |          |
0+20       0.0021      0.09  Q          |          |          |          |
0+25       0.0028      0.09  Q          |          |          |          |
0+30       0.0035      0.10  Q          |          |          |          |
0+35       0.0042      0.11  QV         |          |          |          |
0+40       0.0050      0.11  QV         |          |          |          |
0+45       0.0057      0.11  QV         |          |          |          |
0+50       0.0065      0.11  QV         |          |          |          |
0+55       0.0072      0.11  Q V        |          |          |          |
1+ 0       0.0080      0.12  Q V        |          |          |          |
1+ 5       0.0089      0.12  Q V        |          |          |          |
1+10       0.0097      0.12  Q V        |          |          |          |
1+15       0.0106      0.13  Q V        |          |          |          |
1+20       0.0115      0.13  Q  V       |          |          |          |
1+25       0.0123      0.13  Q  V       |          |          |          |
1+30       0.0132      0.13  Q  V       |          |          |          |
1+35       0.0141      0.13  Q  V       |          |          |          |
1+40       0.0149      0.13  Q   V      |          |          |          |
1+45       0.0158      0.13  Q   V      |          |          |          |
1+50       0.0166      0.13  Q   V      |          |          |          |
1+55       0.0175      0.13  Q   V      |          |          |          |
2+ 0       0.0184      0.13  Q    V     |          |          |          |
2+ 5       0.0193      0.13  Q    V     |          |          |          |
2+10       0.0203      0.13  Q    V     |          |          |          |
2+15       0.0212      0.14  Q    V     |          |          |          |
2+20       0.0222      0.14  Q     V    |          |          |          |
2+25       0.0232      0.14  Q     V    |          |          |          |
2+30       0.0241      0.14  Q     V    |          |          |          |
2+35       0.0251      0.14  Q      V   |          |          |          |
2+40       0.0261      0.14  Q      V   |          |          |          |
2+45       0.0271      0.15  Q      V   |          |          |          |
2+50       0.0282      0.16  Q      V   |          |          |          |
2+55       0.0292      0.16  Q       V  |          |          |          |
3+ 0       0.0303      0.16  Q       V  |          |          |          |
3+ 5       0.0314      0.16  Q       V  |          |          |          |
3+10       0.0325      0.16  Q        V |          |          |          |
3+15       0.0337      0.17  Q        V |          |          |          |
3+20       0.0349      0.17  Q        V |          |          |          |
3+25       0.0361      0.18  Q         V          |          |          |
3+30       0.0375      0.19  Q         V          |          |          |
3+35       0.0389      0.21  Q         V          |          |          |
3+40       0.0404      0.22  Q         |V         |          |          |
3+45       0.0420      0.23  Q         |V         |          |          |
3+50       0.0436      0.23  Q         | V        |          |          |
3+55       0.0453      0.24  Q         | V        |          |          |
4+ 0       0.0470      0.25  Q         |  V       |          |          |
4+ 5       0.0487      0.26  |Q        |  V       |          |          |
4+10       0.0506      0.27  |Q        |   V      |          |          |
4+15       0.0526      0.29  |Q        |   V      |          |          |
4+20       0.0547      0.30  |Q        |    V     |          |          |
4+25       0.0569      0.32  |Q        |     V    |          |          |
4+30       0.0592      0.33  |Q        |     V    |          |          |
4+35       0.0615      0.34  |Q        |      V   |          |          |
4+40       0.0639      0.35  |Q        |       V  |          |          |
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    4+45       0.0664      0.37  |Q        |       V |         |         |
    4+50       0.0690      0.37  |Q        |        V|         |         |
    4+55       0.0716      0.38  |Q        |         V         |         |
    5+ 0       0.0744      0.40  |Q        |         V         |         |
    5+ 5       0.0775      0.45  |Q        |         |V        |         |
    5+10       0.0810      0.52  | Q       |         | V       |         |
    5+15       0.0859      0.71  | Q       |         |   V     |         |
    5+20       0.0934      1.08  |   Q     |         |     V   |         |
    5+25       0.1051      1.70  |     Q   |         |         V|         |
    5+30       0.1242      2.78  |         |Q        |         |    V    |
    5+35       0.1359      1.70  |     Q   |         |         |       V |
    5+40       0.1391      0.46  |Q        |         |         |        V|
    5+45       0.1403      0.18  Q         |         |         |        V|
    5+50       0.1410      0.09  Q         |         |         |        V|
    5+55       0.1414      0.06  Q         |         |         |        V|
    6+ 0       0.1417      0.04  Q         |         |         |        V|
    6+ 5       0.1418      0.02  Q         |         |         |        V|
    6+10       0.1418      0.00  Q         |         |         |        V|
    6+15       0.1418      0.00  Q         |         |         |        V|
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U n i t H y d r o g r a p h A n a l y s i s

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Study date 11/30/23 File: 2177euh245.out

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	1.90	18.52

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	5.50	53.63

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.900(In)
Area Averaged 100-Year Rainfall = 5.500(In)

Point rain (area averaged) = 2.743(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.743(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	47.4	0.597	0.000	0.597	1.000	0.597
					Sum (F) =	0.597

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.07	0.022	(1.059)	0.020	0.002
2. 0.17	0.07	0.022	(1.055)	0.020	0.002
3. 0.25	0.07	0.022	(1.051)	0.020	0.002
4. 0.33	0.10	0.033	(1.047)	0.030	0.003
5. 0.42	0.10	0.033	(1.043)	0.030	0.003
6. 0.50	0.10	0.033	(1.039)	0.030	0.003
7. 0.58	0.10	0.033	(1.035)	0.030	0.003
8. 0.67	0.10	0.033	(1.031)	0.030	0.003
9. 0.75	0.10	0.033	(1.027)	0.030	0.003
10. 0.83	0.13	0.044	(1.023)	0.040	0.004
11. 0.92	0.13	0.044	(1.019)	0.040	0.004
12. 1.00	0.13	0.044	(1.015)	0.040	0.004
13. 1.08	0.10	0.033	(1.011)	0.030	0.003
14. 1.17	0.10	0.033	(1.007)	0.030	0.003
15. 1.25	0.10	0.033	(1.003)	0.030	0.003
16. 1.33	0.10	0.033	(0.999)	0.030	0.003
17. 1.42	0.10	0.033	(0.995)	0.030	0.003
18. 1.50	0.10	0.033	(0.991)	0.030	0.003
19. 1.58	0.10	0.033	(0.987)	0.030	0.003
20. 1.67	0.10	0.033	(0.983)	0.030	0.003
21. 1.75	0.10	0.033	(0.979)	0.030	0.003
22. 1.83	0.13	0.044	(0.975)	0.040	0.004
23. 1.92	0.13	0.044	(0.971)	0.040	0.004
24. 2.00	0.13	0.044	(0.967)	0.040	0.004
25. 2.08	0.13	0.044	(0.963)	0.040	0.004
26. 2.17	0.13	0.044	(0.959)	0.040	0.004
27. 2.25	0.13	0.044	(0.955)	0.040	0.004
28. 2.33	0.13	0.044	(0.951)	0.040	0.004
29. 2.42	0.13	0.044	(0.947)	0.040	0.004
30. 2.50	0.13	0.044	(0.944)	0.040	0.004
31. 2.58	0.17	0.055	(0.940)	0.049	0.005
32. 2.67	0.17	0.055	(0.936)	0.049	0.005
33. 2.75	0.17	0.055	(0.932)	0.049	0.005
34. 2.83	0.17	0.055	(0.928)	0.049	0.005
35. 2.92	0.17	0.055	(0.924)	0.049	0.005
36. 3.00	0.17	0.055	(0.921)	0.049	0.005
37. 3.08	0.17	0.055	(0.917)	0.049	0.005
38. 3.17	0.17	0.055	(0.913)	0.049	0.005
39. 3.25	0.17	0.055	(0.909)	0.049	0.005
40. 3.33	0.17	0.055	(0.905)	0.049	0.005
41. 3.42	0.17	0.055	(0.902)	0.049	0.005
42. 3.50	0.17	0.055	(0.898)	0.049	0.005

43. 3.58	0.17	0.055	(0.894)	0.049	0.005
44. 3.67	0.17	0.055	(0.890)	0.049	0.005
45. 3.75	0.17	0.055	(0.887)	0.049	0.005
46. 3.83	0.20	0.066	(0.883)	0.059	0.007
47. 3.92	0.20	0.066	(0.879)	0.059	0.007
48. 4.00	0.20	0.066	(0.875)	0.059	0.007
49. 4.08	0.20	0.066	(0.872)	0.059	0.007
50. 4.17	0.20	0.066	(0.868)	0.059	0.007
51. 4.25	0.20	0.066	(0.864)	0.059	0.007
52. 4.33	0.23	0.077	(0.861)	0.069	0.008
53. 4.42	0.23	0.077	(0.857)	0.069	0.008
54. 4.50	0.23	0.077	(0.853)	0.069	0.008
55. 4.58	0.23	0.077	(0.850)	0.069	0.008
56. 4.67	0.23	0.077	(0.846)	0.069	0.008
57. 4.75	0.23	0.077	(0.842)	0.069	0.008
58. 4.83	0.27	0.088	(0.839)	0.079	0.009
59. 4.92	0.27	0.088	(0.835)	0.079	0.009
60. 5.00	0.27	0.088	(0.831)	0.079	0.009
61. 5.08	0.20	0.066	(0.828)	0.059	0.007
62. 5.17	0.20	0.066	(0.824)	0.059	0.007
63. 5.25	0.20	0.066	(0.821)	0.059	0.007
64. 5.33	0.23	0.077	(0.817)	0.069	0.008
65. 5.42	0.23	0.077	(0.813)	0.069	0.008
66. 5.50	0.23	0.077	(0.810)	0.069	0.008
67. 5.58	0.27	0.088	(0.806)	0.079	0.009
68. 5.67	0.27	0.088	(0.803)	0.079	0.009
69. 5.75	0.27	0.088	(0.799)	0.079	0.009
70. 5.83	0.27	0.088	(0.796)	0.079	0.009
71. 5.92	0.27	0.088	(0.792)	0.079	0.009
72. 6.00	0.27	0.088	(0.789)	0.079	0.009
73. 6.08	0.30	0.099	(0.785)	0.089	0.010
74. 6.17	0.30	0.099	(0.782)	0.089	0.010
75. 6.25	0.30	0.099	(0.778)	0.089	0.010
76. 6.33	0.30	0.099	(0.775)	0.089	0.010
77. 6.42	0.30	0.099	(0.771)	0.089	0.010
78. 6.50	0.30	0.099	(0.768)	0.089	0.010
79. 6.58	0.33	0.110	(0.764)	0.099	0.011
80. 6.67	0.33	0.110	(0.761)	0.099	0.011
81. 6.75	0.33	0.110	(0.757)	0.099	0.011
82. 6.83	0.33	0.110	(0.754)	0.099	0.011
83. 6.92	0.33	0.110	(0.751)	0.099	0.011
84. 7.00	0.33	0.110	(0.747)	0.099	0.011
85. 7.08	0.33	0.110	(0.744)	0.099	0.011
86. 7.17	0.33	0.110	(0.740)	0.099	0.011
87. 7.25	0.33	0.110	(0.737)	0.099	0.011
88. 7.33	0.37	0.121	(0.734)	0.109	0.012
89. 7.42	0.37	0.121	(0.730)	0.109	0.012
90. 7.50	0.37	0.121	(0.727)	0.109	0.012
91. 7.58	0.40	0.132	(0.724)	0.119	0.013
92. 7.67	0.40	0.132	(0.720)	0.119	0.013
93. 7.75	0.40	0.132	(0.717)	0.119	0.013
94. 7.83	0.43	0.143	(0.714)	0.128	0.014
95. 7.92	0.43	0.143	(0.710)	0.128	0.014
96. 8.00	0.43	0.143	(0.707)	0.128	0.014

97.	8.08	0.50	0.165	(0.704)	0.148	0.016
98.	8.17	0.50	0.165	(0.701)	0.148	0.016
99.	8.25	0.50	0.165	(0.697)	0.148	0.016
100.	8.33	0.50	0.165	(0.694)	0.148	0.016
101.	8.42	0.50	0.165	(0.691)	0.148	0.016
102.	8.50	0.50	0.165	(0.688)	0.148	0.016
103.	8.58	0.53	0.176	(0.684)	0.158	0.018
104.	8.67	0.53	0.176	(0.681)	0.158	0.018
105.	8.75	0.53	0.176	(0.678)	0.158	0.018
106.	8.83	0.57	0.187	(0.675)	0.168	0.019
107.	8.92	0.57	0.187	(0.671)	0.168	0.019
108.	9.00	0.57	0.187	(0.668)	0.168	0.019
109.	9.08	0.63	0.208	(0.665)	0.188	0.021
110.	9.17	0.63	0.208	(0.662)	0.188	0.021
111.	9.25	0.63	0.208	(0.659)	0.188	0.021
112.	9.33	0.67	0.219	(0.656)	0.198	0.022
113.	9.42	0.67	0.219	(0.653)	0.198	0.022
114.	9.50	0.67	0.219	(0.649)	0.198	0.022
115.	9.58	0.70	0.230	(0.646)	0.207	0.023
116.	9.67	0.70	0.230	(0.643)	0.207	0.023
117.	9.75	0.70	0.230	(0.640)	0.207	0.023
118.	9.83	0.73	0.241	(0.637)	0.217	0.024
119.	9.92	0.73	0.241	(0.634)	0.217	0.024
120.	10.00	0.73	0.241	(0.631)	0.217	0.024
121.	10.08	0.50	0.165	(0.628)	0.148	0.016
122.	10.17	0.50	0.165	(0.625)	0.148	0.016
123.	10.25	0.50	0.165	(0.622)	0.148	0.016
124.	10.33	0.50	0.165	(0.619)	0.148	0.016
125.	10.42	0.50	0.165	(0.616)	0.148	0.016
126.	10.50	0.50	0.165	(0.613)	0.148	0.016
127.	10.58	0.67	0.219	(0.610)	0.198	0.022
128.	10.67	0.67	0.219	(0.607)	0.198	0.022
129.	10.75	0.67	0.219	(0.604)	0.198	0.022
130.	10.83	0.67	0.219	(0.601)	0.198	0.022
131.	10.92	0.67	0.219	(0.598)	0.198	0.022
132.	11.00	0.67	0.219	(0.595)	0.198	0.022
133.	11.08	0.63	0.208	(0.592)	0.188	0.021
134.	11.17	0.63	0.208	(0.589)	0.188	0.021
135.	11.25	0.63	0.208	(0.586)	0.188	0.021
136.	11.33	0.63	0.208	(0.583)	0.188	0.021
137.	11.42	0.63	0.208	(0.580)	0.188	0.021
138.	11.50	0.63	0.208	(0.578)	0.188	0.021
139.	11.58	0.57	0.187	(0.575)	0.168	0.019
140.	11.67	0.57	0.187	(0.572)	0.168	0.019
141.	11.75	0.57	0.187	(0.569)	0.168	0.019
142.	11.83	0.60	0.198	(0.566)	0.178	0.020
143.	11.92	0.60	0.198	(0.563)	0.178	0.020
144.	12.00	0.60	0.198	(0.561)	0.178	0.020
145.	12.08	0.83	0.274	(0.558)	0.247	0.027
146.	12.17	0.83	0.274	(0.555)	0.247	0.027
147.	12.25	0.83	0.274	(0.552)	0.247	0.027
148.	12.33	0.87	0.285	(0.549)	0.257	0.029
149.	12.42	0.87	0.285	(0.547)	0.257	0.029
150.	12.50	0.87	0.285	(0.544)	0.257	0.029

151.	12.58	0.93	0.307	(0.541)	0.277	0.031
152.	12.67	0.93	0.307	(0.538)	0.277	0.031
153.	12.75	0.93	0.307	(0.536)	0.277	0.031
154.	12.83	0.97	0.318	(0.533)	0.286	0.032
155.	12.92	0.97	0.318	(0.530)	0.286	0.032
156.	13.00	0.97	0.318	(0.528)	0.286	0.032
157.	13.08	1.13	0.373	(0.525)	0.336	0.037
158.	13.17	1.13	0.373	(0.522)	0.336	0.037
159.	13.25	1.13	0.373	(0.520)	0.336	0.037
160.	13.33	1.13	0.373	(0.517)	0.336	0.037
161.	13.42	1.13	0.373	(0.514)	0.336	0.037
162.	13.50	1.13	0.373	(0.512)	0.336	0.037
163.	13.58	0.77	0.252	(0.509)	0.227	0.025
164.	13.67	0.77	0.252	(0.507)	0.227	0.025
165.	13.75	0.77	0.252	(0.504)	0.227	0.025
166.	13.83	0.77	0.252	(0.501)	0.227	0.025
167.	13.92	0.77	0.252	(0.499)	0.227	0.025
168.	14.00	0.77	0.252	(0.496)	0.227	0.025
169.	14.08	0.90	0.296	(0.494)	0.267	0.030
170.	14.17	0.90	0.296	(0.491)	0.267	0.030
171.	14.25	0.90	0.296	(0.489)	0.267	0.030
172.	14.33	0.87	0.285	(0.486)	0.257	0.029
173.	14.42	0.87	0.285	(0.484)	0.257	0.029
174.	14.50	0.87	0.285	(0.481)	0.257	0.029
175.	14.58	0.87	0.285	(0.479)	0.257	0.029
176.	14.67	0.87	0.285	(0.476)	0.257	0.029
177.	14.75	0.87	0.285	(0.474)	0.257	0.029
178.	14.83	0.83	0.274	(0.471)	0.247	0.027
179.	14.92	0.83	0.274	(0.469)	0.247	0.027
180.	15.00	0.83	0.274	(0.467)	0.247	0.027
181.	15.08	0.80	0.263	(0.464)	0.237	0.026
182.	15.17	0.80	0.263	(0.462)	0.237	0.026
183.	15.25	0.80	0.263	(0.460)	0.237	0.026
184.	15.33	0.77	0.252	(0.457)	0.227	0.025
185.	15.42	0.77	0.252	(0.455)	0.227	0.025
186.	15.50	0.77	0.252	(0.452)	0.227	0.025
187.	15.58	0.63	0.208	(0.450)	0.188	0.021
188.	15.67	0.63	0.208	(0.448)	0.188	0.021
189.	15.75	0.63	0.208	(0.446)	0.188	0.021
190.	15.83	0.63	0.208	(0.443)	0.188	0.021
191.	15.92	0.63	0.208	(0.441)	0.188	0.021
192.	16.00	0.63	0.208	(0.439)	0.188	0.021
193.	16.08	0.13	0.044	(0.437)	0.040	0.004
194.	16.17	0.13	0.044	(0.434)	0.040	0.004
195.	16.25	0.13	0.044	(0.432)	0.040	0.004
196.	16.33	0.13	0.044	(0.430)	0.040	0.004
197.	16.42	0.13	0.044	(0.428)	0.040	0.004
198.	16.50	0.13	0.044	(0.425)	0.040	0.004
199.	16.58	0.10	0.033	(0.423)	0.030	0.003
200.	16.67	0.10	0.033	(0.421)	0.030	0.003
201.	16.75	0.10	0.033	(0.419)	0.030	0.003
202.	16.83	0.10	0.033	(0.417)	0.030	0.003
203.	16.92	0.10	0.033	(0.415)	0.030	0.003
204.	17.00	0.10	0.033	(0.413)	0.030	0.003

205. 17.08	0.17	0.055	(0.411)	0.049	0.005
206. 17.17	0.17	0.055	(0.409)	0.049	0.005
207. 17.25	0.17	0.055	(0.407)	0.049	0.005
208. 17.33	0.17	0.055	(0.404)	0.049	0.005
209. 17.42	0.17	0.055	(0.402)	0.049	0.005
210. 17.50	0.17	0.055	(0.400)	0.049	0.005
211. 17.58	0.17	0.055	(0.398)	0.049	0.005
212. 17.67	0.17	0.055	(0.396)	0.049	0.005
213. 17.75	0.17	0.055	(0.394)	0.049	0.005
214. 17.83	0.13	0.044	(0.392)	0.040	0.004
215. 17.92	0.13	0.044	(0.391)	0.040	0.004
216. 18.00	0.13	0.044	(0.389)	0.040	0.004
217. 18.08	0.13	0.044	(0.387)	0.040	0.004
218. 18.17	0.13	0.044	(0.385)	0.040	0.004
219. 18.25	0.13	0.044	(0.383)	0.040	0.004
220. 18.33	0.13	0.044	(0.381)	0.040	0.004
221. 18.42	0.13	0.044	(0.379)	0.040	0.004
222. 18.50	0.13	0.044	(0.377)	0.040	0.004
223. 18.58	0.10	0.033	(0.376)	0.030	0.003
224. 18.67	0.10	0.033	(0.374)	0.030	0.003
225. 18.75	0.10	0.033	(0.372)	0.030	0.003
226. 18.83	0.07	0.022	(0.370)	0.020	0.002
227. 18.92	0.07	0.022	(0.368)	0.020	0.002
228. 19.00	0.07	0.022	(0.367)	0.020	0.002
229. 19.08	0.10	0.033	(0.365)	0.030	0.003
230. 19.17	0.10	0.033	(0.363)	0.030	0.003
231. 19.25	0.10	0.033	(0.361)	0.030	0.003
232. 19.33	0.13	0.044	(0.360)	0.040	0.004
233. 19.42	0.13	0.044	(0.358)	0.040	0.004
234. 19.50	0.13	0.044	(0.356)	0.040	0.004
235. 19.58	0.10	0.033	(0.355)	0.030	0.003
236. 19.67	0.10	0.033	(0.353)	0.030	0.003
237. 19.75	0.10	0.033	(0.352)	0.030	0.003
238. 19.83	0.07	0.022	(0.350)	0.020	0.002
239. 19.92	0.07	0.022	(0.348)	0.020	0.002
240. 20.00	0.07	0.022	(0.347)	0.020	0.002
241. 20.08	0.10	0.033	(0.345)	0.030	0.003
242. 20.17	0.10	0.033	(0.344)	0.030	0.003
243. 20.25	0.10	0.033	(0.342)	0.030	0.003
244. 20.33	0.10	0.033	(0.341)	0.030	0.003
245. 20.42	0.10	0.033	(0.339)	0.030	0.003
246. 20.50	0.10	0.033	(0.338)	0.030	0.003
247. 20.58	0.10	0.033	(0.337)	0.030	0.003
248. 20.67	0.10	0.033	(0.335)	0.030	0.003
249. 20.75	0.10	0.033	(0.334)	0.030	0.003
250. 20.83	0.07	0.022	(0.332)	0.020	0.002
251. 20.92	0.07	0.022	(0.331)	0.020	0.002
252. 21.00	0.07	0.022	(0.330)	0.020	0.002
253. 21.08	0.10	0.033	(0.328)	0.030	0.003
254. 21.17	0.10	0.033	(0.327)	0.030	0.003
255. 21.25	0.10	0.033	(0.326)	0.030	0.003
256. 21.33	0.07	0.022	(0.325)	0.020	0.002
257. 21.42	0.07	0.022	(0.323)	0.020	0.002
258. 21.50	0.07	0.022	(0.322)	0.020	0.002

259.	21.58	0.10	0.033	(0.321)	0.030	0.003
260.	21.67	0.10	0.033	(0.320)	0.030	0.003
261.	21.75	0.10	0.033	(0.319)	0.030	0.003
262.	21.83	0.07	0.022	(0.318)	0.020	0.002
263.	21.92	0.07	0.022	(0.317)	0.020	0.002
264.	22.00	0.07	0.022	(0.315)	0.020	0.002
265.	22.08	0.10	0.033	(0.314)	0.030	0.003
266.	22.17	0.10	0.033	(0.313)	0.030	0.003
267.	22.25	0.10	0.033	(0.312)	0.030	0.003
268.	22.33	0.07	0.022	(0.311)	0.020	0.002
269.	22.42	0.07	0.022	(0.310)	0.020	0.002
270.	22.50	0.07	0.022	(0.310)	0.020	0.002
271.	22.58	0.07	0.022	(0.309)	0.020	0.002
272.	22.67	0.07	0.022	(0.308)	0.020	0.002
273.	22.75	0.07	0.022	(0.307)	0.020	0.002
274.	22.83	0.07	0.022	(0.306)	0.020	0.002
275.	22.92	0.07	0.022	(0.305)	0.020	0.002
276.	23.00	0.07	0.022	(0.305)	0.020	0.002
277.	23.08	0.07	0.022	(0.304)	0.020	0.002
278.	23.17	0.07	0.022	(0.303)	0.020	0.002
279.	23.25	0.07	0.022	(0.303)	0.020	0.002
280.	23.33	0.07	0.022	(0.302)	0.020	0.002
281.	23.42	0.07	0.022	(0.301)	0.020	0.002
282.	23.50	0.07	0.022	(0.301)	0.020	0.002
283.	23.58	0.07	0.022	(0.300)	0.020	0.002
284.	23.67	0.07	0.022	(0.300)	0.020	0.002
285.	23.75	0.07	0.022	(0.300)	0.020	0.002
286.	23.83	0.07	0.022	(0.299)	0.020	0.002
287.	23.92	0.07	0.022	(0.299)	0.020	0.002
288.	24.00	0.07	0.022	(0.299)	0.020	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.3

Flood volume = Effective rainfall 0.27(In)
times area 8.7(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 2.47(In)
Total soil loss = 1.790(Ac.Ft)
Total rainfall = 2.74(In)
Flood volume = 8663.2 Cubic Feet
Total soil loss = 77968.6 Cubic Feet

Peak flow rate of this hydrograph = 0.327(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0002	0.02	Q	|	|	|	|

0+15	0.0003	0.02	Q	|	|	|	|
0+20	0.0005	0.02	Q	|	|	|	|
0+25	0.0007	0.03	Q	|	|	|	|
0+30	0.0009	0.03	Q	|	|	|	|
0+35	0.0011	0.03	Q	|	|	|	|
0+40	0.0013	0.03	Q	|	|	|	|
0+45	0.0015	0.03	Q	|	|	|	|
0+50	0.0017	0.03	Q	|	|	|	|
0+55	0.0020	0.04	Q	|	|	|	|
1+ 0	0.0022	0.04	Q	|	|	|	|
1+ 5	0.0025	0.03	Q	|	|	|	|
1+10	0.0027	0.03	Q	|	|	|	|
1+15	0.0029	0.03	Q	|	|	|	|
1+20	0.0031	0.03	Q	|	|	|	|
1+25	0.0033	0.03	Q	|	|	|	|
1+30	0.0035	0.03	Q	|	|	|	|
1+35	0.0037	0.03	Q	|	|	|	|
1+40	0.0039	0.03	Q	|	|	|	|
1+45	0.0041	0.03	Q	|	|	|	|
1+50	0.0043	0.03	Q	|	|	|	|
1+55	0.0046	0.04	Q	|	|	|	|
2+ 0	0.0048	0.04	Q	|	|	|	|
2+ 5	0.0051	0.04	QV	|	|	|	|
2+10	0.0054	0.04	QV	|	|	|	|
2+15	0.0056	0.04	QV	|	|	|	|
2+20	0.0059	0.04	QV	|	|	|	|
2+25	0.0061	0.04	QV	|	|	|	|
2+30	0.0064	0.04	QV	|	|	|	|
2+35	0.0067	0.04	QV	|	|	|	|
2+40	0.0070	0.05	QV	|	|	|	|
2+45	0.0074	0.05	QV	|	|	|	|
2+50	0.0077	0.05	QV	|	|	|	|
2+55	0.0080	0.05	QV	|	|	|	|
3+ 0	0.0084	0.05	QV	|	|	|	|
3+ 5	0.0087	0.05	QV	|	|	|	|
3+10	0.0090	0.05	QV	|	|	|	|
3+15	0.0094	0.05	QV	|	|	|	|
3+20	0.0097	0.05	QV	|	|	|	|
3+25	0.0100	0.05	Q V	|	|	|	|
3+30	0.0104	0.05	Q V	|	|	|	|
3+35	0.0107	0.05	Q V	|	|	|	|
3+40	0.0110	0.05	Q V	|	|	|	|
3+45	0.0113	0.05	Q V	|	|	|	|
3+50	0.0117	0.05	Q V	|	|	|	|
3+55	0.0121	0.06	Q V	|	|	|	|
4+ 0	0.0125	0.06	Q V	|	|	|	|
4+ 5	0.0129	0.06	Q V	|	|	|	|
4+10	0.0133	0.06	Q V	|	|	|	|
4+15	0.0137	0.06	Q V	|	|	|	|
4+20	0.0141	0.06	Q V	|	|	|	|
4+25	0.0146	0.07	Q V	|	|	|	|
4+30	0.0150	0.07	Q V	|	|	|	|
4+35	0.0155	0.07	Q V	|	|	|	|
4+40	0.0160	0.07	Q V	|	|	|	|

4+45	0.0164	0.07	Q	V	|	|	|	|
4+50	0.0169	0.07	Q	V	|	|	|	|
4+55	0.0175	0.08	Q	V	|	|	|	|
5+ 0	0.0180	0.08	Q	V	|	|	|	|
5+ 5	0.0185	0.07	Q	V	|	|	|	|
5+10	0.0189	0.06	Q	V	|	|	|	|
5+15	0.0193	0.06	Q	V	|	|	|	|
5+20	0.0197	0.06	Q	V	|	|	|	|
5+25	0.0202	0.07	Q	V	|	|	|	|
5+30	0.0206	0.07	Q	V	|	|	|	|
5+35	0.0211	0.07	Q	V	|	|	|	|
5+40	0.0216	0.08	Q	V	|	|	|	|
5+45	0.0222	0.08	Q	V	|	|	|	|
5+50	0.0227	0.08	Q	V	|	|	|	|
5+55	0.0232	0.08	Q	V	|	|	|	|
6+ 0	0.0238	0.08	Q	V	|	|	|	|
6+ 5	0.0243	0.08	Q	V	|	|	|	|
6+10	0.0249	0.09	Q	V	|	|	|	|
6+15	0.0255	0.09	Q	V	|	|	|	|
6+20	0.0261	0.09	Q	V	|	|	|	|
6+25	0.0267	0.09	Q	V	|	|	|	|
6+30	0.0273	0.09	Q	V	|	|	|	|
6+35	0.0279	0.09	Q	V	|	|	|	|
6+40	0.0286	0.10	Q	V	|	|	|	|
6+45	0.0293	0.10	Q	V	|	|	|	|
6+50	0.0299	0.10	Q	V	|	|	|	|
6+55	0.0306	0.10	Q	V	|	|	|	|
7+ 0	0.0312	0.10	Q	V	|	|	|	|
7+ 5	0.0319	0.10	Q	V	|	|	|	|
7+10	0.0326	0.10	Q	V	|	|	|	|
7+15	0.0332	0.10	Q	V	|	|	|	|
7+20	0.0339	0.10	Q	V	|	|	|	|
7+25	0.0347	0.11	Q	V	|	|	|	|
7+30	0.0354	0.11	Q	V	|	|	|	|
7+35	0.0361	0.11	Q	V	|	|	|	|
7+40	0.0369	0.11	Q	V	|	|	|	|
7+45	0.0377	0.12	Q	V	|	|	|	|
7+50	0.0386	0.12	Q	V	|	|	|	|
7+55	0.0394	0.12	Q	V	|	|	|	|
8+ 0	0.0403	0.12	Q	V	|	|	|	|
8+ 5	0.0412	0.14	Q	V	|	|	|	|
8+10	0.0422	0.14	Q	V	|	|	|	|
8+15	0.0432	0.14	Q	V	|	|	|	|
8+20	0.0442	0.14	Q	V	|	|	|	|
8+25	0.0452	0.14	Q	V	|	|	|	|
8+30	0.0462	0.14	Q	V	|	|	|	|
8+35	0.0472	0.15	Q	V	|	|	|	|
8+40	0.0483	0.15	Q	V	|	|	|	|
8+45	0.0493	0.15	Q	V	|	|	|	|
8+50	0.0504	0.16	Q	V	|	|	|	|
8+55	0.0515	0.16	Q	V	|	|	|	|
9+ 0	0.0527	0.16	Q	V	|	|	|	|
9+ 5	0.0539	0.17	Q	V	|	|	|	|
9+10	0.0551	0.18	Q	V	|	|	|	|

9+15	0.0564	0.18	Q	V			
9+20	0.0577	0.19	Q	V			
9+25	0.0590	0.19	Q	V			
9+30	0.0603	0.19	Q	V			
9+35	0.0617	0.20	Q	V			
9+40	0.0630	0.20	Q	V			
9+45	0.0644	0.20	Q	V			
9+50	0.0659	0.21	Q	V			
9+55	0.0673	0.21	Q	V			
10+ 0	0.0688	0.21	Q	V			
10+ 5	0.0700	0.18	Q	V			
10+10	0.0710	0.15	Q	V			
10+15	0.0720	0.15	Q	V			
10+20	0.0730	0.14	Q	V			
10+25	0.0740	0.14	Q	V			
10+30	0.0750	0.14	Q	V			
10+35	0.0762	0.17	Q	V			
10+40	0.0775	0.19	Q	V			
10+45	0.0788	0.19	Q	V			
10+50	0.0801	0.19	Q	V			
10+55	0.0814	0.19	Q	V			
11+ 0	0.0828	0.19	Q	V			
11+ 5	0.0841	0.19	Q	V			
11+10	0.0853	0.18	Q	V			
11+15	0.0866	0.18	Q	V			
11+20	0.0878	0.18	Q	V			
11+25	0.0891	0.18	Q	V			
11+30	0.0904	0.18	Q	V			
11+35	0.0916	0.17	Q	V			
11+40	0.0927	0.17	Q	V			
11+45	0.0938	0.16	Q	V			
11+50	0.0950	0.17	Q	V			
11+55	0.0962	0.17	Q	V			
12+ 0	0.0974	0.17	Q	V			
12+ 5	0.0988	0.21	Q	V			
12+10	0.1004	0.24	Q	V			
12+15	0.1021	0.24	Q	V			
12+20	0.1038	0.25	Q	V			
12+25	0.1055	0.25	Q	V			
12+30	0.1072	0.25	Q	V			
12+35	0.1090	0.26	Q	V			
12+40	0.1108	0.27	Q	V			
12+45	0.1127	0.27	Q	V			
12+50	0.1146	0.27	Q	V			
12+55	0.1165	0.28	Q	V			
13+ 0	0.1184	0.28	Q	V			
13+ 5	0.1205	0.30	Q	V			
13+10	0.1227	0.32	Q	V			
13+15	0.1250	0.33	Q	V			
13+20	0.1273	0.33	Q	V			
13+25	0.1295	0.33	Q	V			
13+30	0.1318	0.33	Q	V			
13+35	0.1336	0.27	Q	V			
13+40	0.1352	0.23	Q	V			

13+45	0.1368	0.22	Q	|	|	V |	|
13+50	0.1383	0.22	Q	|	|	V |	|
13+55	0.1398	0.22	Q	|	|	V |	|
14+ 0	0.1413	0.22	Q	|	|	V |	|
14+ 5	0.1430	0.24	Q	|	|	V |	|
14+10	0.1448	0.26	|Q	|	|	V|	|
14+15	0.1465	0.26	|Q	|	|	V|	|
14+20	0.1483	0.25	|Q	|	|	V|	|
14+25	0.1500	0.25	|Q	|	|	V	|
14+30	0.1518	0.25	|Q	|	|	V	|
14+35	0.1535	0.25	|Q	|	|	V	|
14+40	0.1552	0.25	|Q	|	|	|V	|
14+45	0.1569	0.25	|Q	|	|	|V	|
14+50	0.1586	0.25	Q	|	|	|V	|
14+55	0.1603	0.24	Q	|	|	| V	|
15+ 0	0.1619	0.24	Q	|	|	| V	|
15+ 5	0.1636	0.24	Q	|	|	| V	|
15+10	0.1652	0.23	Q	|	|	| V	|
15+15	0.1667	0.23	Q	|	|	| V	|
15+20	0.1683	0.23	Q	|	|	| V	|
15+25	0.1698	0.22	Q	|	|	| V	|
15+30	0.1714	0.22	Q	|	|	| V	|
15+35	0.1727	0.20	Q	|	|	| V	|
15+40	0.1740	0.19	Q	|	|	| V	|
15+45	0.1753	0.18	Q	|	|	| V	|
15+50	0.1765	0.18	Q	|	|	| V	|
15+55	0.1778	0.18	Q	|	|	| V	|
16+ 0	0.1791	0.18	Q	|	|	| V	|
16+ 5	0.1798	0.11	Q	|	|	| V	|
16+10	0.1801	0.05	Q	|	|	| V	|
16+15	0.1804	0.04	Q	|	|	| V	|
16+20	0.1807	0.04	Q	|	|	| V	|
16+25	0.1810	0.04	Q	|	|	| V	|
16+30	0.1812	0.04	Q	|	|	| V	|
16+35	0.1815	0.03	Q	|	|	| V	|
16+40	0.1817	0.03	Q	|	|	| V	|
16+45	0.1819	0.03	Q	|	|	| V	|
16+50	0.1821	0.03	Q	|	|	| V	|
16+55	0.1823	0.03	Q	|	|	| V	|
17+ 0	0.1825	0.03	Q	|	|	| V	|
17+ 5	0.1827	0.04	Q	|	|	| V	|
17+10	0.1830	0.05	Q	|	|	| V	|
17+15	0.1834	0.05	Q	|	|	| V	|
17+20	0.1837	0.05	Q	|	|	| V	|
17+25	0.1840	0.05	Q	|	|	| V	|
17+30	0.1844	0.05	Q	|	|	| V	|
17+35	0.1847	0.05	Q	|	|	| V	|
17+40	0.1850	0.05	Q	|	|	| V	|
17+45	0.1854	0.05	Q	|	|	| V	|
17+50	0.1857	0.04	Q	|	|	| V	|
17+55	0.1859	0.04	Q	|	|	| V	|
18+ 0	0.1862	0.04	Q	|	|	| V	|
18+ 5	0.1865	0.04	Q	|	|	| V	|
18+10	0.1867	0.04	Q	|	|	| V	|

18+15	0.1870	0.04	Q	|	|	|	V |
18+20	0.1873	0.04	Q	|	|	|	V |
18+25	0.1875	0.04	Q	|	|	|	V |
18+30	0.1878	0.04	Q	|	|	|	V |
18+35	0.1880	0.03	Q	|	|	|	V |
18+40	0.1882	0.03	Q	|	|	|	V |
18+45	0.1884	0.03	Q	|	|	|	V |
18+50	0.1886	0.02	Q	|	|	|	V |
18+55	0.1887	0.02	Q	|	|	|	V |
19+ 0	0.1889	0.02	Q	|	|	|	V |
19+ 5	0.1890	0.02	Q	|	|	|	V |
19+10	0.1892	0.03	Q	|	|	|	V |
19+15	0.1894	0.03	Q	|	|	|	V |
19+20	0.1897	0.03	Q	|	|	|	V |
19+25	0.1899	0.04	Q	|	|	|	V |
19+30	0.1902	0.04	Q	|	|	|	V |
19+35	0.1904	0.03	Q	|	|	|	V |
19+40	0.1906	0.03	Q	|	|	|	V |
19+45	0.1908	0.03	Q	|	|	|	V |
19+50	0.1910	0.02	Q	|	|	|	V |
19+55	0.1911	0.02	Q	|	|	|	V |
20+ 0	0.1912	0.02	Q	|	|	|	V |
20+ 5	0.1914	0.02	Q	|	|	|	V |
20+10	0.1916	0.03	Q	|	|	|	V |
20+15	0.1918	0.03	Q	|	|	|	V |
20+20	0.1920	0.03	Q	|	|	|	V |
20+25	0.1922	0.03	Q	|	|	|	V |
20+30	0.1924	0.03	Q	|	|	|	V |
20+35	0.1926	0.03	Q	|	|	|	V |
20+40	0.1928	0.03	Q	|	|	|	V |
20+45	0.1930	0.03	Q	|	|	|	V |
20+50	0.1932	0.02	Q	|	|	|	V |
20+55	0.1933	0.02	Q	|	|	|	V |
21+ 0	0.1934	0.02	Q	|	|	|	V |
21+ 5	0.1936	0.02	Q	|	|	|	V |
21+10	0.1938	0.03	Q	|	|	|	V |
21+15	0.1940	0.03	Q	|	|	|	V|
21+20	0.1942	0.02	Q	|	|	|	V|
21+25	0.1943	0.02	Q	|	|	|	V|
21+30	0.1944	0.02	Q	|	|	|	V|
21+35	0.1946	0.02	Q	|	|	|	V|
21+40	0.1948	0.03	Q	|	|	|	V|
21+45	0.1950	0.03	Q	|	|	|	V|
21+50	0.1952	0.02	Q	|	|	|	V|
21+55	0.1953	0.02	Q	|	|	|	V|
22+ 0	0.1954	0.02	Q	|	|	|	V|
22+ 5	0.1956	0.02	Q	|	|	|	V|
22+10	0.1958	0.03	Q	|	|	|	V|
22+15	0.1960	0.03	Q	|	|	|	V|
22+20	0.1961	0.02	Q	|	|	|	V|
22+25	0.1963	0.02	Q	|	|	|	V|
22+30	0.1964	0.02	Q	|	|	|	V|
22+35	0.1965	0.02	Q	|	|	|	V|
22+40	0.1967	0.02	Q	|	|	|	V|

22+45	0.1968	0.02	Q	|	|	|	V|
22+50	0.1969	0.02	Q	|	|	|	V|
22+55	0.1971	0.02	Q	|	|	|	V|
23+ 0	0.1972	0.02	Q	|	|	|	V|
23+ 5	0.1973	0.02	Q	|	|	|	V|
23+10	0.1975	0.02	Q	|	|	|	V|
23+15	0.1976	0.02	Q	|	|	|	V|
23+20	0.1977	0.02	Q	|	|	|	V|
23+25	0.1979	0.02	Q	|	|	|	V|
23+30	0.1980	0.02	Q	|	|	|	V|
23+35	0.1981	0.02	Q	|	|	|	V|
23+40	0.1983	0.02	Q	|	|	|	V|
23+45	0.1984	0.02	Q	|	|	|	V|
23+50	0.1985	0.02	Q	|	|	|	V|
23+55	0.1987	0.02	Q	|	|	|	V|
24+ 0	0.1988	0.02	Q	|	|	|	V|
24+ 5	0.1989	0.01	Q	|	|	|	V|
24+10	0.1989	0.00	Q	|	|	|	V|
24+15	0.1989	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.70	0.50	4.35

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.70	1.30	11.31

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 0.829(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.829(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394
					Sum (F) =	0.394

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605

```
                2   0.167        525.692         39.271              3.443
                3   0.250        788.537          6.619              0.580
                4   0.333       1051.383          1.593              0.140
                                                                 Sum =
100.000   Sum=       8.768
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	4.20	0.418	(0.597)	0.376	0.042
2. 0.17	4.30	0.428	(0.597)	0.385	0.043
3. 0.25	5.00	0.497	(0.597)	0.448	0.050
4. 0.33	5.00	0.497	(0.597)	0.448	0.050
5. 0.42	5.80	0.577	(0.597)	0.519	0.058
6. 0.50	6.50	0.647	(0.597)	0.582	0.065
7. 0.58	7.40	0.736	0.597	(0.663)	0.139
8. 0.67	8.60	0.856	0.597	(0.770)	0.258
9. 0.75	12.30	1.224	0.597	(1.101)	0.626
10. 0.83	29.10	2.895	0.597	(2.606)	2.298
11. 0.92	6.80	0.677	0.597	(0.609)	0.079
12. 1.00	5.00	0.497	(0.597)	0.448	0.050

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.8

```
 Flood volume = Effective rainfall      0.31(In)
  times area       8.7(Ac.)/[(In)/(Ft.)] =       0.2(Ac.Ft)
 Total soil loss =      0.52(In)
 Total soil loss =     0.374(Ac.Ft)
 Total rainfall =      0.83(In)
 Flood volume =        9884.5 Cubic Feet
 Total soil loss =       16298.1 Cubic Feet
 ---------------------------------------------------------------------
  Peak flow rate of this hydrograph =     12.912(CFS)
 ---------------------------------------------------------------------
 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                          1 - H O U R   S T O R M
                                  R u n o f f     H y d r o g r a p h
 ---------------------------------------------------------------------
                          Hydrograph in   5   Minute intervals ((CFS))

 ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0
20.0
  ------------------------------------------------------------------
    0+ 5       0.0013      0.19  Q         |         |         |         |
    0+10       0.0037      0.34  Q         |         |         |         |
    0+15       0.0064      0.40  QV        |         |         |         |
    0+20       0.0094      0.43  QV        |         |         |         |
    0+25       0.0127      0.47  Q V       |         |         |         |
```

```
    0+30       0.0163      0.53  |QV       |          |          |          |
    0+35       0.0225      0.90  |Q V      |          |          |          |
    0+40       0.0343      1.71  |  Q  V   |          |          |          |
    0+45       0.0609      3.86  |       Q  V         |          |          |
    0+50       0.1499     12.91  |          |         |    QV    |          |
    0+55       0.2096      8.68  |          |      Q  |          |     V    |
    1+ 0       0.2229      1.92  |  Q       |         |          |         V|
    1+ 5       0.2266      0.54  |Q         |         |          |         V|
    1+10       0.2269      0.04  Q          |         |          |         V|
    1+15       0.2269      0.01  Q          |         |          |         V|
---------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	0.80	7.80

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	2.00	19.50

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.800(In)
Area Averaged 100-Year Rainfall = 2.000(In)

Point rain (area averaged) = 1.294(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.294(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394
					Sum (F) =	0.394

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1. 0.08	1.30	0.202	(0.597)	0.182	0.020
2. 0.17	1.30	0.202	(0.597)	0.182	0.020
3. 0.25	1.10	0.171	(0.597)	0.154	0.017
4. 0.33	1.50	0.233	(0.597)	0.210	0.023
5. 0.42	1.50	0.233	(0.597)	0.210	0.023
6. 0.50	1.80	0.279	(0.597)	0.251	0.028
7. 0.58	1.50	0.233	(0.597)	0.210	0.023
8. 0.67	1.80	0.279	(0.597)	0.251	0.028
9. 0.75	1.80	0.279	(0.597)	0.251	0.028
10. 0.83	1.50	0.233	(0.597)	0.210	0.023
11. 0.92	1.60	0.248	(0.597)	0.224	0.025
12. 1.00	1.80	0.279	(0.597)	0.251	0.028
13. 1.08	2.20	0.342	(0.597)	0.307	0.034
14. 1.17	2.20	0.342	(0.597)	0.307	0.034
15. 1.25	2.20	0.342	(0.597)	0.307	0.034
16. 1.33	2.00	0.310	(0.597)	0.279	0.031
17. 1.42	2.60	0.404	(0.597)	0.363	0.040
18. 1.50	2.70	0.419	(0.597)	0.377	0.042
19. 1.58	2.40	0.373	(0.597)	0.335	0.037
20. 1.67	2.70	0.419	(0.597)	0.377	0.042
21. 1.75	3.30	0.512	(0.597)	0.461	0.051
22. 1.83	3.10	0.481	(0.597)	0.433	0.048
23. 1.92	2.90	0.450	(0.597)	0.405	0.045
24. 2.00	3.00	0.466	(0.597)	0.419	0.047
25. 2.08	3.10	0.481	(0.597)	0.433	0.048
26. 2.17	4.20	0.652	(0.597)	0.587	0.065
27. 2.25	5.00	0.776	0.597	(0.699)	0.179
28. 2.33	3.50	0.543	(0.597)	0.489	0.054
29. 2.42	6.80	1.056	0.597	(0.950)	0.458
30. 2.50	7.30	1.133	0.597	(1.020)	0.536
31. 2.58	8.20	1.273	0.597	(1.146)	0.675
32. 2.67	5.90	0.916	0.597	(0.824)	0.318
33. 2.75	2.00	0.310	(0.597)	0.279	0.031
34. 2.83	1.80	0.279	(0.597)	0.251	0.028
35. 2.92	1.80	0.279	(0.597)	0.251	0.028
36. 3.00	0.60	0.093	(0.597)	0.084	0.009
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	3.2

Flood volume = Effective rainfall 0.27(In)
times area 8.7(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 1.03(In)
Total soil loss = 0.744(Ac.Ft)

Total rainfall = 1.29(In)
Flood volume = 8430.7 Cubic Feet
Total soil loss = 32423.8 Cubic Feet

Peak flow rate of this hydrograph = 5.231(CFS)

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3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0006	0.09	Q				
0+10	0.0018	0.16	Q				
0+15	0.0029	0.16	Q				
0+20	0.0041	0.18	Q				
0+25	0.0055	0.20	QV				
0+30	0.0070	0.22	QV				
0+35	0.0085	0.22	QV				
0+40	0.0101	0.23	Q V				
0+45	0.0118	0.24	Q V				
0+50	0.0133	0.22	Q V				
0+55	0.0148	0.21	Q V				
1+ 0	0.0164	0.23	Q V				
1+ 5	0.0183	0.27	Q V				
1+10	0.0203	0.29	Q V				
1+15	0.0224	0.30	Q V				
1+20	0.0243	0.29	Q V				
1+25	0.0265	0.32	Q V				
1+30	0.0290	0.35	Q V				
1+35	0.0313	0.34	Q V				
1+40	0.0337	0.35	Q V				
1+45	0.0366	0.41	Q V				
1+50	0.0395	0.43	Q V				
1+55	0.0423	0.41	Q V				
2+ 0	0.0451	0.40	Q V				
2+ 5	0.0480	0.42	Q V				
2+10	0.0514	0.50	Q V				
2+15	0.0589	1.08	Q V				
2+20	0.0651	0.91	Q V				
2+25	0.0817	2.41	Q V				
2+30	0.1100	4.10	Q V				
2+35	0.1460	5.23	Q V				
2+40	0.1747	4.17	Q V				
2+45	0.1865	1.71	Q V				
2+50	0.1900	0.51	Q V				
2+55	0.1920	0.29	Q V				
3+ 0	0.1931	0.16	Q V				
3+ 5	0.1935	0.05	Q V				
3+10	0.1935	0.01	Q V				

3+15	0.1935	0.00	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	1.10	10.73

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	2.75	26.81

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.100(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 1.779(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.779(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394

Sum (F) = 0.394

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.50	0.107	(0.597)	0.096	0.011
2. 0.17	0.60	0.128	(0.597)	0.115	0.013
3. 0.25	0.60	0.128	(0.597)	0.115	0.013
4. 0.33	0.60	0.128	(0.597)	0.115	0.013
5. 0.42	0.60	0.128	(0.597)	0.115	0.013
6. 0.50	0.70	0.149	(0.597)	0.134	0.015
7. 0.58	0.70	0.149	(0.597)	0.134	0.015
8. 0.67	0.70	0.149	(0.597)	0.134	0.015
9. 0.75	0.70	0.149	(0.597)	0.134	0.015
10. 0.83	0.70	0.149	(0.597)	0.134	0.015
11. 0.92	0.70	0.149	(0.597)	0.134	0.015
12. 1.00	0.80	0.171	(0.597)	0.154	0.017
13. 1.08	0.80	0.171	(0.597)	0.154	0.017
14. 1.17	0.80	0.171	(0.597)	0.154	0.017
15. 1.25	0.80	0.171	(0.597)	0.154	0.017
16. 1.33	0.80	0.171	(0.597)	0.154	0.017
17. 1.42	0.80	0.171	(0.597)	0.154	0.017
18. 1.50	0.80	0.171	(0.597)	0.154	0.017
19. 1.58	0.80	0.171	(0.597)	0.154	0.017
20. 1.67	0.80	0.171	(0.597)	0.154	0.017
21. 1.75	0.80	0.171	(0.597)	0.154	0.017
22. 1.83	0.80	0.171	(0.597)	0.154	0.017
23. 1.92	0.80	0.171	(0.597)	0.154	0.017
24. 2.00	0.90	0.192	(0.597)	0.173	0.019
25. 2.08	0.80	0.171	(0.597)	0.154	0.017
26. 2.17	0.90	0.192	(0.597)	0.173	0.019
27. 2.25	0.90	0.192	(0.597)	0.173	0.019
28. 2.33	0.90	0.192	(0.597)	0.173	0.019
29. 2.42	0.90	0.192	(0.597)	0.173	0.019
30. 2.50	0.90	0.192	(0.597)	0.173	0.019
31. 2.58	0.90	0.192	(0.597)	0.173	0.019
32. 2.67	0.90	0.192	(0.597)	0.173	0.019
33. 2.75	1.00	0.213	(0.597)	0.192	0.021
34. 2.83	1.00	0.213	(0.597)	0.192	0.021
35. 2.92	1.00	0.213	(0.597)	0.192	0.021
36. 3.00	1.00	0.213	(0.597)	0.192	0.021
37. 3.08	1.00	0.213	(0.597)	0.192	0.021
38. 3.17	1.10	0.235	(0.597)	0.211	0.023
39. 3.25	1.10	0.235	(0.597)	0.211	0.023
40. 3.33	1.10	0.235	(0.597)	0.211	0.023
41. 3.42	1.20	0.256	(0.597)	0.231	0.026
42. 3.50	1.30	0.277	(0.597)	0.250	0.028

43. 3.58	1.40	0.299	(0.597)	0.269	0.030	
44. 3.67	1.40	0.299	(0.597)	0.269	0.030	
45. 3.75	1.50	0.320	(0.597)	0.288	0.032	
46. 3.83	1.50	0.320	(0.597)	0.288	0.032	
47. 3.92	1.60	0.342	(0.597)	0.307	0.034	
48. 4.00	1.60	0.342	(0.597)	0.307	0.034	
49. 4.08	1.70	0.363	(0.597)	0.327	0.036	
50. 4.17	1.80	0.384	(0.597)	0.346	0.038	
51. 4.25	1.90	0.406	(0.597)	0.365	0.041	
52. 4.33	2.00	0.427	(0.597)	0.384	0.043	
53. 4.42	2.10	0.448	(0.597)	0.403	0.045	
54. 4.50	2.10	0.448	(0.597)	0.403	0.045	
55. 4.58	2.20	0.470	(0.597)	0.423	0.047	
56. 4.67	2.30	0.491	(0.597)	0.442	0.049	
57. 4.75	2.40	0.512	(0.597)	0.461	0.051	
58. 4.83	2.40	0.512	(0.597)	0.461	0.051	
59. 4.92	2.50	0.534	(0.597)	0.480	0.053	
60. 5.00	2.60	0.555	(0.597)	0.499	0.055	
61. 5.08	3.10	0.662	(0.597)	0.596	0.066	
62. 5.17	3.60	0.768	0.597	(0.692)	0.171	
63. 5.25	3.90	0.832	0.597	(0.749)	0.235	
64. 5.33	4.20	0.897	0.597	(0.807)	0.299	
65. 5.42	4.70	1.003	0.597	(0.903)	0.406	
66. 5.50	5.60	1.195	0.597	(1.076)	0.598	
67. 5.58	1.90	0.406	(0.597)	0.365	0.041	
68. 5.67	0.90	0.192	(0.597)	0.173	0.019	
69. 5.75	0.60	0.128	(0.597)	0.115	0.013	
70. 5.83	0.50	0.107	(0.597)	0.096	0.011	
71. 5.92	0.30	0.064	(0.597)	0.058	0.006	
72. 6.00	0.20	0.043	(0.597)	0.038	0.004	

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.4

Flood volume = Effective rainfall 0.28(In)
times area 8.7(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 1.50(In)
Total soil loss = 1.086(Ac.Ft)
Total rainfall = 1.78(In)
Flood volume = 8878.2 Cubic Feet
Total soil loss = 47297.2 Cubic Feet

Peak flow rate of this hydrograph = 4.359(CFS)

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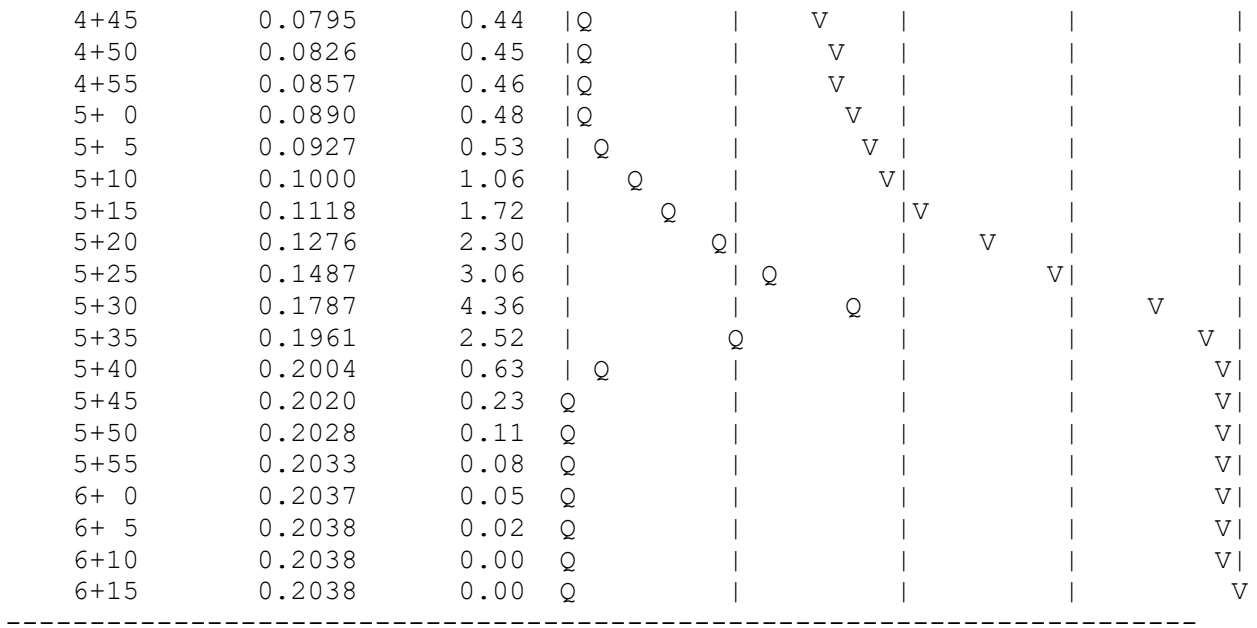
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.05	Q	|	|	|	|
0+10	0.0010	0.10	Q	|	|	|	|

```
0+15       0.0018      0.11  Q          |          |          |          |
0+20       0.0025      0.11  Q          |          |          |          |
0+25       0.0033      0.11  Q          |          |          |          |
0+30       0.0041      0.12  Q          |          |          |          |
0+35       0.0050      0.13  Q          |          |          |          |
0+40       0.0059      0.13  QV         |          |          |          |
0+45       0.0068      0.13  QV         |          |          |          |
0+50       0.0077      0.13  QV         |          |          |          |
0+55       0.0086      0.13  QV         |          |          |          |
1+ 0       0.0096      0.14  QV         |          |          |          |
1+ 5       0.0106      0.15  Q V        |          |          |          |
1+10       0.0117      0.15  Q V        |          |          |          |
1+15       0.0127      0.15  Q V        |          |          |          |
1+20       0.0137      0.15  Q V        |          |          |          |
1+25       0.0148      0.15  Q V        |          |          |          |
1+30       0.0158      0.15  Q  V       |          |          |          |
1+35       0.0168      0.15  Q  V       |          |          |          |
1+40       0.0179      0.15  Q  V       |          |          |          |
1+45       0.0189      0.15  Q  V       |          |          |          |
1+50       0.0199      0.15  Q  V       |          |          |          |
1+55       0.0209      0.15  Q   V      |          |          |          |
2+ 0       0.0220      0.16  Q   V      |          |          |          |
2+ 5       0.0231      0.16  Q   V      |          |          |          |
2+10       0.0242      0.16  Q   V      |          |          |          |
2+15       0.0254      0.17  Q   V      |          |          |          |
2+20       0.0265      0.17  Q    V     |          |          |          |
2+25       0.0277      0.17  Q    V     |          |          |          |
2+30       0.0289      0.17  Q    V     |          |          |          |
2+35       0.0300      0.17  Q    V     |          |          |          |
2+40       0.0312      0.17  Q     V    |          |          |          |
2+45       0.0324      0.18  Q     V    |          |          |          |
2+50       0.0337      0.19  Q     V    |          |          |          |
2+55       0.0350      0.19  Q     V    |          |          |          |
3+ 0       0.0363      0.19  Q      V   |          |          |          |
3+ 5       0.0376      0.19  Q      V   |          |          |          |
3+10       0.0389      0.20  Q      V   |          |          |          |
3+15       0.0403      0.20  Q      V   |          |          |          |
3+20       0.0417      0.21  Q       V  |          |          |          |
3+25       0.0432      0.22  Q       V  |          |          |          |
3+30       0.0448      0.23  Q       V  |          |          |          |
3+35       0.0466      0.25  |Q       V|          |          |          |
3+40       0.0484      0.26  |Q       V|          |          |          |
3+45       0.0502      0.27  |Q       V|          |          |          |
3+50       0.0522      0.28  |Q        V          |          |          |
3+55       0.0542      0.29  |Q        V          |          |          |
4+ 0       0.0562      0.30  |Q        |V         |          |          |
4+ 5       0.0583      0.31  |Q        |V         |          |          |
4+10       0.0606      0.33  |Q        |V         |          |          |
4+15       0.0630      0.35  |Q        | V        |          |          |
4+20       0.0655      0.36  |Q        | V        |          |          |
4+25       0.0681      0.38  |Q        |  V       |          |          |
4+30       0.0708      0.39  |Q        |  V       |          |          |
4+35       0.0736      0.40  |Q        |   V      |          |          |
4+40       0.0765      0.42  |Q        |    V     |          |          |
```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4+50 0.0826 0.45
4+55 0.0857 0.46
5+ 0 0.0890 0.48
5+ 5 0.0927 0.53
5+10 0.1000 1.06
5+15 0.1118 1.72
5+20 0.1276 2.30
5+25 0.1487 3.06
5+30 0.1787 4.36
5+35 0.1961 2.52
5+40 0.2004 0.63
5+45 0.2020 0.23
5+50 0.2028 0.11
5+55 0.2033 0.08
6+ 0 0.2037 0.05
6+ 5 0.2038 0.02
6+10 0.2038 0.00
6+15 0.2038 0.00

U n i t H y d r o g r a p h A n a l y s i s

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Study date 11/30/23 File: 2177euh2410.out

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	1.90	18.52

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	5.50	53.63

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.900(In)
Area Averaged 100-Year Rainfall = 5.500(In)

Point rain (area averaged) = 3.381(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.381(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394
					Sum (F) =	0.394

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.07	0.027	(1.059)	0.024	0.003
2. 0.17	0.07	0.027	(1.055)	0.024	0.003
3. 0.25	0.07	0.027	(1.051)	0.024	0.003
4. 0.33	0.10	0.041	(1.047)	0.037	0.004
5. 0.42	0.10	0.041	(1.043)	0.037	0.004
6. 0.50	0.10	0.041	(1.039)	0.037	0.004
7. 0.58	0.10	0.041	(1.035)	0.037	0.004
8. 0.67	0.10	0.041	(1.031)	0.037	0.004
9. 0.75	0.10	0.041	(1.027)	0.037	0.004
10. 0.83	0.13	0.054	(1.023)	0.049	0.005
11. 0.92	0.13	0.054	(1.019)	0.049	0.005
12. 1.00	0.13	0.054	(1.015)	0.049	0.005
13. 1.08	0.10	0.041	(1.011)	0.037	0.004
14. 1.17	0.10	0.041	(1.007)	0.037	0.004
15. 1.25	0.10	0.041	(1.003)	0.037	0.004
16. 1.33	0.10	0.041	(0.999)	0.037	0.004
17. 1.42	0.10	0.041	(0.995)	0.037	0.004
18. 1.50	0.10	0.041	(0.991)	0.037	0.004
19. 1.58	0.10	0.041	(0.987)	0.037	0.004
20. 1.67	0.10	0.041	(0.983)	0.037	0.004
21. 1.75	0.10	0.041	(0.979)	0.037	0.004
22. 1.83	0.13	0.054	(0.975)	0.049	0.005
23. 1.92	0.13	0.054	(0.971)	0.049	0.005
24. 2.00	0.13	0.054	(0.967)	0.049	0.005
25. 2.08	0.13	0.054	(0.963)	0.049	0.005
26. 2.17	0.13	0.054	(0.959)	0.049	0.005
27. 2.25	0.13	0.054	(0.955)	0.049	0.005
28. 2.33	0.13	0.054	(0.951)	0.049	0.005
29. 2.42	0.13	0.054	(0.947)	0.049	0.005
30. 2.50	0.13	0.054	(0.944)	0.049	0.005
31. 2.58	0.17	0.068	(0.940)	0.061	0.007
32. 2.67	0.17	0.068	(0.936)	0.061	0.007
33. 2.75	0.17	0.068	(0.932)	0.061	0.007
34. 2.83	0.17	0.068	(0.928)	0.061	0.007
35. 2.92	0.17	0.068	(0.924)	0.061	0.007
36. 3.00	0.17	0.068	(0.921)	0.061	0.007
37. 3.08	0.17	0.068	(0.917)	0.061	0.007
38. 3.17	0.17	0.068	(0.913)	0.061	0.007
39. 3.25	0.17	0.068	(0.909)	0.061	0.007
40. 3.33	0.17	0.068	(0.905)	0.061	0.007
41. 3.42	0.17	0.068	(0.902)	0.061	0.007
42. 3.50	0.17	0.068	(0.898)	0.061	0.007

43. 3.58	0.17	0.068	(0.894)	0.061	0.007
44. 3.67	0.17	0.068	(0.890)	0.061	0.007
45. 3.75	0.17	0.068	(0.887)	0.061	0.007
46. 3.83	0.20	0.081	(0.883)	0.073	0.008
47. 3.92	0.20	0.081	(0.879)	0.073	0.008
48. 4.00	0.20	0.081	(0.875)	0.073	0.008
49. 4.08	0.20	0.081	(0.872)	0.073	0.008
50. 4.17	0.20	0.081	(0.868)	0.073	0.008
51. 4.25	0.20	0.081	(0.864)	0.073	0.008
52. 4.33	0.23	0.095	(0.861)	0.085	0.009
53. 4.42	0.23	0.095	(0.857)	0.085	0.009
54. 4.50	0.23	0.095	(0.853)	0.085	0.009
55. 4.58	0.23	0.095	(0.850)	0.085	0.009
56. 4.67	0.23	0.095	(0.846)	0.085	0.009
57. 4.75	0.23	0.095	(0.842)	0.085	0.009
58. 4.83	0.27	0.108	(0.839)	0.097	0.011
59. 4.92	0.27	0.108	(0.835)	0.097	0.011
60. 5.00	0.27	0.108	(0.831)	0.097	0.011
61. 5.08	0.20	0.081	(0.828)	0.073	0.008
62. 5.17	0.20	0.081	(0.824)	0.073	0.008
63. 5.25	0.20	0.081	(0.821)	0.073	0.008
64. 5.33	0.23	0.095	(0.817)	0.085	0.009
65. 5.42	0.23	0.095	(0.813)	0.085	0.009
66. 5.50	0.23	0.095	(0.810)	0.085	0.009
67. 5.58	0.27	0.108	(0.806)	0.097	0.011
68. 5.67	0.27	0.108	(0.803)	0.097	0.011
69. 5.75	0.27	0.108	(0.799)	0.097	0.011
70. 5.83	0.27	0.108	(0.796)	0.097	0.011
71. 5.92	0.27	0.108	(0.792)	0.097	0.011
72. 6.00	0.27	0.108	(0.789)	0.097	0.011
73. 6.08	0.30	0.122	(0.785)	0.110	0.012
74. 6.17	0.30	0.122	(0.782)	0.110	0.012
75. 6.25	0.30	0.122	(0.778)	0.110	0.012
76. 6.33	0.30	0.122	(0.775)	0.110	0.012
77. 6.42	0.30	0.122	(0.771)	0.110	0.012
78. 6.50	0.30	0.122	(0.768)	0.110	0.012
79. 6.58	0.33	0.135	(0.764)	0.122	0.014
80. 6.67	0.33	0.135	(0.761)	0.122	0.014
81. 6.75	0.33	0.135	(0.757)	0.122	0.014
82. 6.83	0.33	0.135	(0.754)	0.122	0.014
83. 6.92	0.33	0.135	(0.751)	0.122	0.014
84. 7.00	0.33	0.135	(0.747)	0.122	0.014
85. 7.08	0.33	0.135	(0.744)	0.122	0.014
86. 7.17	0.33	0.135	(0.740)	0.122	0.014
87. 7.25	0.33	0.135	(0.737)	0.122	0.014
88. 7.33	0.37	0.149	(0.734)	0.134	0.015
89. 7.42	0.37	0.149	(0.730)	0.134	0.015
90. 7.50	0.37	0.149	(0.727)	0.134	0.015
91. 7.58	0.40	0.162	(0.724)	0.146	0.016
92. 7.67	0.40	0.162	(0.720)	0.146	0.016
93. 7.75	0.40	0.162	(0.717)	0.146	0.016
94. 7.83	0.43	0.176	(0.714)	0.158	0.018
95. 7.92	0.43	0.176	(0.710)	0.158	0.018
96. 8.00	0.43	0.176	(0.707)	0.158	0.018

97.	8.08	0.50	0.203	(0.704)	0.183	0.020
98.	8.17	0.50	0.203	(0.701)	0.183	0.020
99.	8.25	0.50	0.203	(0.697)	0.183	0.020
100.	8.33	0.50	0.203	(0.694)	0.183	0.020
101.	8.42	0.50	0.203	(0.691)	0.183	0.020
102.	8.50	0.50	0.203	(0.688)	0.183	0.020
103.	8.58	0.53	0.216	(0.684)	0.195	0.022
104.	8.67	0.53	0.216	(0.681)	0.195	0.022
105.	8.75	0.53	0.216	(0.678)	0.195	0.022
106.	8.83	0.57	0.230	(0.675)	0.207	0.023
107.	8.92	0.57	0.230	(0.671)	0.207	0.023
108.	9.00	0.57	0.230	(0.668)	0.207	0.023
109.	9.08	0.63	0.257	(0.665)	0.231	0.026
110.	9.17	0.63	0.257	(0.662)	0.231	0.026
111.	9.25	0.63	0.257	(0.659)	0.231	0.026
112.	9.33	0.67	0.270	(0.656)	0.243	0.027
113.	9.42	0.67	0.270	(0.653)	0.243	0.027
114.	9.50	0.67	0.270	(0.649)	0.243	0.027
115.	9.58	0.70	0.284	(0.646)	0.256	0.028
116.	9.67	0.70	0.284	(0.643)	0.256	0.028
117.	9.75	0.70	0.284	(0.640)	0.256	0.028
118.	9.83	0.73	0.298	(0.637)	0.268	0.030
119.	9.92	0.73	0.298	(0.634)	0.268	0.030
120.	10.00	0.73	0.298	(0.631)	0.268	0.030
121.	10.08	0.50	0.203	(0.628)	0.183	0.020
122.	10.17	0.50	0.203	(0.625)	0.183	0.020
123.	10.25	0.50	0.203	(0.622)	0.183	0.020
124.	10.33	0.50	0.203	(0.619)	0.183	0.020
125.	10.42	0.50	0.203	(0.616)	0.183	0.020
126.	10.50	0.50	0.203	(0.613)	0.183	0.020
127.	10.58	0.67	0.270	(0.610)	0.243	0.027
128.	10.67	0.67	0.270	(0.607)	0.243	0.027
129.	10.75	0.67	0.270	(0.604)	0.243	0.027
130.	10.83	0.67	0.270	(0.601)	0.243	0.027
131.	10.92	0.67	0.270	(0.598)	0.243	0.027
132.	11.00	0.67	0.270	(0.595)	0.243	0.027
133.	11.08	0.63	0.257	(0.592)	0.231	0.026
134.	11.17	0.63	0.257	(0.589)	0.231	0.026
135.	11.25	0.63	0.257	(0.586)	0.231	0.026
136.	11.33	0.63	0.257	(0.583)	0.231	0.026
137.	11.42	0.63	0.257	(0.580)	0.231	0.026
138.	11.50	0.63	0.257	(0.578)	0.231	0.026
139.	11.58	0.57	0.230	(0.575)	0.207	0.023
140.	11.67	0.57	0.230	(0.572)	0.207	0.023
141.	11.75	0.57	0.230	(0.569)	0.207	0.023
142.	11.83	0.60	0.243	(0.566)	0.219	0.024
143.	11.92	0.60	0.243	(0.563)	0.219	0.024
144.	12.00	0.60	0.243	(0.561)	0.219	0.024
145.	12.08	0.83	0.338	(0.558)	0.304	0.034
146.	12.17	0.83	0.338	(0.555)	0.304	0.034
147.	12.25	0.83	0.338	(0.552)	0.304	0.034
148.	12.33	0.87	0.352	(0.549)	0.316	0.035
149.	12.42	0.87	0.352	(0.547)	0.316	0.035
150.	12.50	0.87	0.352	(0.544)	0.316	0.035

151.	12.58	0.93	0.379	(0.541)	0.341	0.038
152.	12.67	0.93	0.379	(0.538)	0.341	0.038
153.	12.75	0.93	0.379	(0.536)	0.341	0.038
154.	12.83	0.97	0.392	(0.533)	0.353	0.039
155.	12.92	0.97	0.392	(0.530)	0.353	0.039
156.	13.00	0.97	0.392	(0.528)	0.353	0.039
157.	13.08	1.13	0.460	(0.525)	0.414	0.046
158.	13.17	1.13	0.460	(0.522)	0.414	0.046
159.	13.25	1.13	0.460	(0.520)	0.414	0.046
160.	13.33	1.13	0.460	(0.517)	0.414	0.046
161.	13.42	1.13	0.460	(0.514)	0.414	0.046
162.	13.50	1.13	0.460	(0.512)	0.414	0.046
163.	13.58	0.77	0.311	(0.509)	0.280	0.031
164.	13.67	0.77	0.311	(0.507)	0.280	0.031
165.	13.75	0.77	0.311	(0.504)	0.280	0.031
166.	13.83	0.77	0.311	(0.501)	0.280	0.031
167.	13.92	0.77	0.311	(0.499)	0.280	0.031
168.	14.00	0.77	0.311	(0.496)	0.280	0.031
169.	14.08	0.90	0.365	(0.494)	0.329	0.037
170.	14.17	0.90	0.365	(0.491)	0.329	0.037
171.	14.25	0.90	0.365	(0.489)	0.329	0.037
172.	14.33	0.87	0.352	(0.486)	0.316	0.035
173.	14.42	0.87	0.352	(0.484)	0.316	0.035
174.	14.50	0.87	0.352	(0.481)	0.316	0.035
175.	14.58	0.87	0.352	(0.479)	0.316	0.035
176.	14.67	0.87	0.352	(0.476)	0.316	0.035
177.	14.75	0.87	0.352	(0.474)	0.316	0.035
178.	14.83	0.83	0.338	(0.471)	0.304	0.034
179.	14.92	0.83	0.338	(0.469)	0.304	0.034
180.	15.00	0.83	0.338	(0.467)	0.304	0.034
181.	15.08	0.80	0.325	(0.464)	0.292	0.032
182.	15.17	0.80	0.325	(0.462)	0.292	0.032
183.	15.25	0.80	0.325	(0.460)	0.292	0.032
184.	15.33	0.77	0.311	(0.457)	0.280	0.031
185.	15.42	0.77	0.311	(0.455)	0.280	0.031
186.	15.50	0.77	0.311	(0.452)	0.280	0.031
187.	15.58	0.63	0.257	(0.450)	0.231	0.026
188.	15.67	0.63	0.257	(0.448)	0.231	0.026
189.	15.75	0.63	0.257	(0.446)	0.231	0.026
190.	15.83	0.63	0.257	(0.443)	0.231	0.026
191.	15.92	0.63	0.257	(0.441)	0.231	0.026
192.	16.00	0.63	0.257	(0.439)	0.231	0.026
193.	16.08	0.13	0.054	(0.437)	0.049	0.005
194.	16.17	0.13	0.054	(0.434)	0.049	0.005
195.	16.25	0.13	0.054	(0.432)	0.049	0.005
196.	16.33	0.13	0.054	(0.430)	0.049	0.005
197.	16.42	0.13	0.054	(0.428)	0.049	0.005
198.	16.50	0.13	0.054	(0.425)	0.049	0.005
199.	16.58	0.10	0.041	(0.423)	0.037	0.004
200.	16.67	0.10	0.041	(0.421)	0.037	0.004
201.	16.75	0.10	0.041	(0.419)	0.037	0.004
202.	16.83	0.10	0.041	(0.417)	0.037	0.004
203.	16.92	0.10	0.041	(0.415)	0.037	0.004
204.	17.00	0.10	0.041	(0.413)	0.037	0.004

205. 17.08	0.17	0.068	(0.411)	0.061	0.007
206. 17.17	0.17	0.068	(0.409)	0.061	0.007
207. 17.25	0.17	0.068	(0.407)	0.061	0.007
208. 17.33	0.17	0.068	(0.404)	0.061	0.007
209. 17.42	0.17	0.068	(0.402)	0.061	0.007
210. 17.50	0.17	0.068	(0.400)	0.061	0.007
211. 17.58	0.17	0.068	(0.398)	0.061	0.007
212. 17.67	0.17	0.068	(0.396)	0.061	0.007
213. 17.75	0.17	0.068	(0.394)	0.061	0.007
214. 17.83	0.13	0.054	(0.392)	0.049	0.005
215. 17.92	0.13	0.054	(0.391)	0.049	0.005
216. 18.00	0.13	0.054	(0.389)	0.049	0.005
217. 18.08	0.13	0.054	(0.387)	0.049	0.005
218. 18.17	0.13	0.054	(0.385)	0.049	0.005
219. 18.25	0.13	0.054	(0.383)	0.049	0.005
220. 18.33	0.13	0.054	(0.381)	0.049	0.005
221. 18.42	0.13	0.054	(0.379)	0.049	0.005
222. 18.50	0.13	0.054	(0.377)	0.049	0.005
223. 18.58	0.10	0.041	(0.376)	0.037	0.004
224. 18.67	0.10	0.041	(0.374)	0.037	0.004
225. 18.75	0.10	0.041	(0.372)	0.037	0.004
226. 18.83	0.07	0.027	(0.370)	0.024	0.003
227. 18.92	0.07	0.027	(0.368)	0.024	0.003
228. 19.00	0.07	0.027	(0.367)	0.024	0.003
229. 19.08	0.10	0.041	(0.365)	0.037	0.004
230. 19.17	0.10	0.041	(0.363)	0.037	0.004
231. 19.25	0.10	0.041	(0.361)	0.037	0.004
232. 19.33	0.13	0.054	(0.360)	0.049	0.005
233. 19.42	0.13	0.054	(0.358)	0.049	0.005
234. 19.50	0.13	0.054	(0.356)	0.049	0.005
235. 19.58	0.10	0.041	(0.355)	0.037	0.004
236. 19.67	0.10	0.041	(0.353)	0.037	0.004
237. 19.75	0.10	0.041	(0.352)	0.037	0.004
238. 19.83	0.07	0.027	(0.350)	0.024	0.003
239. 19.92	0.07	0.027	(0.348)	0.024	0.003
240. 20.00	0.07	0.027	(0.347)	0.024	0.003
241. 20.08	0.10	0.041	(0.345)	0.037	0.004
242. 20.17	0.10	0.041	(0.344)	0.037	0.004
243. 20.25	0.10	0.041	(0.342)	0.037	0.004
244. 20.33	0.10	0.041	(0.341)	0.037	0.004
245. 20.42	0.10	0.041	(0.339)	0.037	0.004
246. 20.50	0.10	0.041	(0.338)	0.037	0.004
247. 20.58	0.10	0.041	(0.337)	0.037	0.004
248. 20.67	0.10	0.041	(0.335)	0.037	0.004
249. 20.75	0.10	0.041	(0.334)	0.037	0.004
250. 20.83	0.07	0.027	(0.332)	0.024	0.003
251. 20.92	0.07	0.027	(0.331)	0.024	0.003
252. 21.00	0.07	0.027	(0.330)	0.024	0.003
253. 21.08	0.10	0.041	(0.328)	0.037	0.004
254. 21.17	0.10	0.041	(0.327)	0.037	0.004
255. 21.25	0.10	0.041	(0.326)	0.037	0.004
256. 21.33	0.07	0.027	(0.325)	0.024	0.003
257. 21.42	0.07	0.027	(0.323)	0.024	0.003
258. 21.50	0.07	0.027	(0.322)	0.024	0.003

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 259. 21.58     0.10      0.041       (  0.321)       0.037         0.004
 260. 21.67     0.10      0.041       (  0.320)       0.037         0.004
 261. 21.75     0.10      0.041       (  0.319)       0.037         0.004
 262. 21.83     0.07      0.027       (  0.318)       0.024         0.003
 263. 21.92     0.07      0.027       (  0.317)       0.024         0.003
 264. 22.00     0.07      0.027       (  0.315)       0.024         0.003
 265. 22.08     0.10      0.041       (  0.314)       0.037         0.004
 266. 22.17     0.10      0.041       (  0.313)       0.037         0.004
 267. 22.25     0.10      0.041       (  0.312)       0.037         0.004
 268. 22.33     0.07      0.027       (  0.311)       0.024         0.003
 269. 22.42     0.07      0.027       (  0.310)       0.024         0.003
 270. 22.50     0.07      0.027       (  0.310)       0.024         0.003
 271. 22.58     0.07      0.027       (  0.309)       0.024         0.003
 272. 22.67     0.07      0.027       (  0.308)       0.024         0.003
 273. 22.75     0.07      0.027       (  0.307)       0.024         0.003
 274. 22.83     0.07      0.027       (  0.306)       0.024         0.003
 275. 22.92     0.07      0.027       (  0.305)       0.024         0.003
 276. 23.00     0.07      0.027       (  0.305)       0.024         0.003
 277. 23.08     0.07      0.027       (  0.304)       0.024         0.003
 278. 23.17     0.07      0.027       (  0.303)       0.024         0.003
 279. 23.25     0.07      0.027       (  0.303)       0.024         0.003
 280. 23.33     0.07      0.027       (  0.302)       0.024         0.003
 281. 23.42     0.07      0.027       (  0.301)       0.024         0.003
 282. 23.50     0.07      0.027       (  0.301)       0.024         0.003
 283. 23.58     0.07      0.027       (  0.300)       0.024         0.003
 284. 23.67     0.07      0.027       (  0.300)       0.024         0.003
 285. 23.75     0.07      0.027       (  0.300)       0.024         0.003
 286. 23.83     0.07      0.027       (  0.299)       0.024         0.003
 287. 23.92     0.07      0.027       (  0.299)       0.024         0.003
 288. 24.00     0.07      0.027       (  0.299)       0.024         0.003
                  (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     4.1
     Flood volume = Effective rainfall      0.34(In)
      times area       8.7(Ac.)/[(In)/(Ft.)] =       0.2(Ac.Ft)
     Total soil loss =      3.04(In)
     Total soil loss =     2.206(Ac.Ft)
     Total rainfall =      3.38(In)
     Flood volume =       10677.6 Cubic Feet
     Total soil loss =       96098.2 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =      0.403(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                              24 - H O U R    S T O R M
                                    R u n o f f     H y d r o g r a p h
     ---------------------------------------------------------------------
                            Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5
10.0
  ---------------------------------------------------------------------
    0+ 5       0.0001      0.01  Q         |         |         |         |
    0+10       0.0002      0.02  Q         |         |         |         |
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0+15	0.0004	0.02	Q	|	|	|	|
0+20	0.0006	0.03	Q	|	|	|	|
0+25	0.0008	0.03	Q	|	|	|	|
0+30	0.0011	0.04	Q	|	|	|	|
0+35	0.0013	0.04	Q	|	|	|	|
0+40	0.0016	0.04	Q	|	|	|	|
0+45	0.0018	0.04	Q	|	|	|	|
0+50	0.0021	0.04	Q	|	|	|	|
0+55	0.0024	0.05	Q	|	|	|	|
1+ 0	0.0028	0.05	Q	|	|	|	|
1+ 5	0.0030	0.04	Q	|	|	|	|
1+10	0.0033	0.04	Q	|	|	|	|
1+15	0.0035	0.04	Q	|	|	|	|
1+20	0.0038	0.04	Q	|	|	|	|
1+25	0.0040	0.04	Q	|	|	|	|
1+30	0.0043	0.04	Q	|	|	|	|
1+35	0.0045	0.04	Q	|	|	|	|
1+40	0.0048	0.04	Q	|	|	|	|
1+45	0.0050	0.04	Q	|	|	|	|
1+50	0.0053	0.04	Q	|	|	|	|
1+55	0.0056	0.05	Q	|	|	|	|
2+ 0	0.0059	0.05	Q	|	|	|	|
2+ 5	0.0063	0.05	QV	|	|	|	|
2+10	0.0066	0.05	QV	|	|	|	|
2+15	0.0069	0.05	QV	|	|	|	|
2+20	0.0072	0.05	QV	|	|	|	|
2+25	0.0076	0.05	QV	|	|	|	|
2+30	0.0079	0.05	QV	|	|	|	|
2+35	0.0083	0.05	QV	|	|	|	|
2+40	0.0087	0.06	QV	|	|	|	|
2+45	0.0091	0.06	QV	|	|	|	|
2+50	0.0095	0.06	QV	|	|	|	|
2+55	0.0099	0.06	QV	|	|	|	|
3+ 0	0.0103	0.06	QV	|	|	|	|
3+ 5	0.0107	0.06	QV	|	|	|	|
3+10	0.0111	0.06	QV	|	|	|	|
3+15	0.0115	0.06	QV	|	|	|	|
3+20	0.0119	0.06	QV	|	|	|	|
3+25	0.0123	0.06	Q V	|	|	|	|
3+30	0.0128	0.06	Q V	|	|	|	|
3+35	0.0132	0.06	Q V	|	|	|	|
3+40	0.0136	0.06	Q V	|	|	|	|
3+45	0.0140	0.06	Q V	|	|	|	|
3+50	0.0144	0.07	Q V	|	|	|	|
3+55	0.0149	0.07	Q V	|	|	|	|
4+ 0	0.0154	0.07	Q V	|	|	|	|
4+ 5	0.0159	0.07	Q V	|	|	|	|
4+10	0.0164	0.07	Q V	|	|	|	|
4+15	0.0169	0.07	Q V	|	|	|	|
4+20	0.0174	0.08	Q V	|	|	|	|
4+25	0.0180	0.08	Q V	|	|	|	|
4+30	0.0185	0.08	Q V	|	|	|	|
4+35	0.0191	0.08	Q V	|	|	|	|
4+40	0.0197	0.08	Q V	|	|	|	|

4+45	0.0203	0.08	Q	V	|	|	|	|
4+50	0.0209	0.09	Q	V	|	|	|	|
4+55	0.0215	0.09	Q	V	|	|	|	|
5+ 0	0.0222	0.09	Q	V	|	|	|	|
5+ 5	0.0227	0.08	Q	V	|	|	|	|
5+10	0.0232	0.07	Q	V	|	|	|	|
5+15	0.0237	0.07	Q	V	|	|	|	|
5+20	0.0243	0.08	Q	V	|	|	|	|
5+25	0.0248	0.08	Q	V	|	|	|	|
5+30	0.0254	0.08	Q	V	|	|	|	|
5+35	0.0260	0.09	Q	V	|	|	|	|
5+40	0.0267	0.09	Q	V	|	|	|	|
5+45	0.0273	0.09	Q	V	|	|	|	|
5+50	0.0280	0.09	Q	V	|	|	|	|
5+55	0.0286	0.09	Q	V	|	|	|	|
6+ 0	0.0293	0.09	Q	V	|	|	|	|
6+ 5	0.0300	0.10	Q	V	|	|	|	|
6+10	0.0307	0.11	Q	V	|	|	|	|
6+15	0.0314	0.11	Q	V	|	|	|	|
6+20	0.0322	0.11	Q	V	|	|	|	|
6+25	0.0329	0.11	Q	V	|	|	|	|
6+30	0.0337	0.11	Q	V	|	|	|	|
6+35	0.0344	0.11	Q	V	|	|	|	|
6+40	0.0352	0.12	Q	V	|	|	|	|
6+45	0.0361	0.12	Q	V	|	|	|	|
6+50	0.0369	0.12	Q	V	|	|	|	|
6+55	0.0377	0.12	Q	V	|	|	|	|
7+ 0	0.0385	0.12	Q	V	|	|	|	|
7+ 5	0.0393	0.12	Q	V	|	|	|	|
7+10	0.0401	0.12	Q	V	|	|	|	|
7+15	0.0410	0.12	Q	V	|	|	|	|
7+20	0.0418	0.12	Q	V	|	|	|	|
7+25	0.0427	0.13	Q	V	|	|	|	|
7+30	0.0436	0.13	Q	V	|	|	|	|
7+35	0.0445	0.14	Q	V	|	|	|	|
7+40	0.0455	0.14	Q	V	|	|	|	|
7+45	0.0465	0.14	Q	V	|	|	|	|
7+50	0.0475	0.15	Q	V	|	|	|	|
7+55	0.0486	0.15	Q	V	|	|	|	|
8+ 0	0.0496	0.15	Q	V	|	|	|	|
8+ 5	0.0508	0.17	Q	V	|	|	|	|
8+10	0.0520	0.18	Q	V	|	|	|	|
8+15	0.0532	0.18	Q	V	|	|	|	|
8+20	0.0545	0.18	Q	V	|	|	|	|
8+25	0.0557	0.18	Q	V	|	|	|	|
8+30	0.0569	0.18	Q	V	|	|	|	|
8+35	0.0582	0.18	Q	V	|	|	|	|
8+40	0.0595	0.19	Q	V	|	|	|	|
8+45	0.0608	0.19	Q	V	|	|	|	|
8+50	0.0621	0.20	Q	V	|	|	|	|
8+55	0.0635	0.20	Q	V	|	|	|	|
9+ 0	0.0649	0.20	Q	V	|	|	|	|
9+ 5	0.0664	0.21	Q	V	|	|	|	|
9+10	0.0679	0.22	Q	V	|	|	|	|

9+15	0.0695	0.23	Q	V			
9+20	0.0711	0.23	Q	V			
9+25	0.0727	0.24	Q	V			
9+30	0.0743	0.24	Q	V			
9+35	0.0760	0.24	Q	V			
9+40	0.0777	0.25	Q	V			
9+45	0.0794	0.25	Q	V			
9+50	0.0812	0.26	Q	V			
9+55	0.0830	0.26	Q	V			
10+ 0	0.0848	0.26	Q	V			
10+ 5	0.0863	0.22	Q	V			
10+10	0.0875	0.18	Q	V			
10+15	0.0888	0.18	Q	V			
10+20	0.0900	0.18	Q	V			
10+25	0.0912	0.18	Q	V			
10+30	0.0924	0.18	Q	V			
10+35	0.0939	0.21	Q	V			
10+40	0.0955	0.23	Q	V			
10+45	0.0971	0.24	Q	V			
10+50	0.0987	0.24	Q	V			
10+55	0.1004	0.24	Q	V			
11+ 0	0.1020	0.24	Q	V			
11+ 5	0.1036	0.23	Q	V			
11+10	0.1052	0.23	Q	V			
11+15	0.1067	0.23	Q	V			
11+20	0.1083	0.23	Q	V			
11+25	0.1098	0.23	Q	V			
11+30	0.1114	0.23	Q	V			
11+35	0.1128	0.21	Q	V			
11+40	0.1142	0.20	Q	V			
11+45	0.1156	0.20	Q	V			
11+50	0.1171	0.21	Q	V			
11+55	0.1185	0.21	Q	V			
12+ 0	0.1200	0.21	Q	V			
12+ 5	0.1218	0.26	Q	V			
12+10	0.1238	0.29	Q	V			
12+15	0.1258	0.30	Q	V			
12+20	0.1279	0.30	Q	V			
12+25	0.1300	0.31	Q	V			
12+30	0.1321	0.31	Q	V			
12+35	0.1343	0.32	Q	V			
12+40	0.1366	0.33	Q	V			
12+45	0.1389	0.33	Q	V			
12+50	0.1412	0.34	Q	V			
12+55	0.1436	0.34	Q	V			
13+ 0	0.1460	0.34	Q	V			
13+ 5	0.1485	0.38	Q	V			
13+10	0.1513	0.40	Q	V			
13+15	0.1541	0.40	Q	V			
13+20	0.1568	0.40	Q	V			
13+25	0.1596	0.40	Q	V			
13+30	0.1624	0.40	Q	V			
13+35	0.1647	0.33	Q	V			
13+40	0.1667	0.28	Q	V			

13+45	0.1685	0.27	|Q	|	|	V |	|
13+50	0.1704	0.27	|Q	|	|	V |	|
13+55	0.1723	0.27	|Q	|	|	V |	|
14+ 0	0.1742	0.27	|Q	|	|	V |	|
14+ 5	0.1762	0.30	|Q	|	|	V |	|
14+10	0.1784	0.32	|Q	|	|	V|	|
14+15	0.1806	0.32	|Q	|	|	V|	|
14+20	0.1828	0.31	|Q	|	|	V|	|
14+25	0.1849	0.31	|Q	|	|	V	|
14+30	0.1870	0.31	|Q	|	|	V	|
14+35	0.1892	0.31	|Q	|	|	V	|
14+40	0.1913	0.31	|Q	|	|	|V	|
14+45	0.1934	0.31	|Q	|	|	|V	|
14+50	0.1955	0.30	|Q	|	|	|V	|
14+55	0.1975	0.30	|Q	|	|	| V	|
15+ 0	0.1996	0.30	|Q	|	|	| V	|
15+ 5	0.2016	0.29	|Q	|	|	| V	|
15+10	0.2036	0.29	|Q	|	|	| V	|
15+15	0.2055	0.28	|Q	|	|	| V	|
15+20	0.2074	0.28	|Q	|	|	| V	|
15+25	0.2093	0.27	|Q	|	|	| V	|
15+30	0.2112	0.27	|Q	|	|	| V	|
15+35	0.2129	0.25	Q	|	|	| V	|
15+40	0.2145	0.23	Q	|	|	| V	|
15+45	0.2160	0.23	Q	|	|	| V	|
15+50	0.2176	0.23	Q	|	|	| V	|
15+55	0.2191	0.23	Q	|	|	| V	|
16+ 0	0.2207	0.23	Q	|	|	| V	|
16+ 5	0.2216	0.13	Q	|	|	| V	|
16+10	0.2220	0.06	Q	|	|	| V	|
16+15	0.2224	0.05	Q	|	|	| V	|
16+20	0.2227	0.05	Q	|	|	| V	|
16+25	0.2230	0.05	Q	|	|	| V	|
16+30	0.2234	0.05	Q	|	|	| V	|
16+35	0.2236	0.04	Q	|	|	| V	|
16+40	0.2239	0.04	Q	|	|	| V	|
16+45	0.2241	0.04	Q	|	|	| V	|
16+50	0.2244	0.04	Q	|	|	| V	|
16+55	0.2246	0.04	Q	|	|	| V	|
17+ 0	0.2249	0.04	Q	|	|	| V	|
17+ 5	0.2252	0.05	Q	|	|	| V	|
17+10	0.2256	0.06	Q	|	|	| V	|
17+15	0.2260	0.06	Q	|	|	| V	|
17+20	0.2264	0.06	Q	|	|	| V	|
17+25	0.2268	0.06	Q	|	|	| V	|
17+30	0.2272	0.06	Q	|	|	| V	|
17+35	0.2276	0.06	Q	|	|	| V	|
17+40	0.2281	0.06	Q	|	|	| V	|
17+45	0.2285	0.06	Q	|	|	| V	|
17+50	0.2288	0.05	Q	|	|	| V	|
17+55	0.2292	0.05	Q	|	|	| V	|
18+ 0	0.2295	0.05	Q	|	|	| V	|
18+ 5	0.2298	0.05	Q	|	|	| V	|
18+10	0.2301	0.05	Q	|	|	| V	|

18+15	0.2305	0.05	Q	|	|	|	V |
18+20	0.2308	0.05	Q	|	|	|	V |
18+25	0.2311	0.05	Q	|	|	|	V |
18+30	0.2315	0.05	Q	|	|	|	V |
18+35	0.2317	0.04	Q	|	|	|	V |
18+40	0.2320	0.04	Q	|	|	|	V |
18+45	0.2322	0.04	Q	|	|	|	V |
18+50	0.2324	0.03	Q	|	|	|	V |
18+55	0.2326	0.02	Q	|	|	|	V |
19+ 0	0.2328	0.02	Q	|	|	|	V |
19+ 5	0.2330	0.03	Q	|	|	|	V |
19+10	0.2332	0.03	Q	|	|	|	V |
19+15	0.2335	0.04	Q	|	|	|	V |
19+20	0.2338	0.04	Q	|	|	|	V |
19+25	0.2341	0.05	Q	|	|	|	V |
19+30	0.2344	0.05	Q	|	|	|	V |
19+35	0.2347	0.04	Q	|	|	|	V |
19+40	0.2349	0.04	Q	|	|	|	V |
19+45	0.2352	0.04	Q	|	|	|	V |
19+50	0.2354	0.03	Q	|	|	|	V |
19+55	0.2356	0.02	Q	|	|	|	V |
20+ 0	0.2357	0.02	Q	|	|	|	V |
20+ 5	0.2359	0.03	Q	|	|	|	V |
20+10	0.2362	0.03	Q	|	|	|	V |
20+15	0.2364	0.04	Q	|	|	|	V |
20+20	0.2366	0.04	Q	|	|	|	V |
20+25	0.2369	0.04	Q	|	|	|	V |
20+30	0.2371	0.04	Q	|	|	|	V |
20+35	0.2374	0.04	Q	|	|	|	V |
20+40	0.2376	0.04	Q	|	|	|	V |
20+45	0.2379	0.04	Q	|	|	|	V |
20+50	0.2381	0.03	Q	|	|	|	V |
20+55	0.2382	0.02	Q	|	|	|	V |
21+ 0	0.2384	0.02	Q	|	|	|	V |
21+ 5	0.2386	0.03	Q	|	|	|	V |
21+10	0.2389	0.03	Q	|	|	|	V |
21+15	0.2391	0.04	Q	|	|	|	V|
21+20	0.2393	0.03	Q	|	|	|	V|
21+25	0.2395	0.02	Q	|	|	|	V|
21+30	0.2396	0.02	Q	|	|	|	V|
21+35	0.2398	0.03	Q	|	|	|	V|
21+40	0.2401	0.03	Q	|	|	|	V|
21+45	0.2403	0.04	Q	|	|	|	V|
21+50	0.2405	0.03	Q	|	|	|	V|
21+55	0.2407	0.02	Q	|	|	|	V|
22+ 0	0.2409	0.02	Q	|	|	|	V|
22+ 5	0.2411	0.03	Q	|	|	|	V|
22+10	0.2413	0.03	Q	|	|	|	V|
22+15	0.2416	0.04	Q	|	|	|	V|
22+20	0.2418	0.03	Q	|	|	|	V|
22+25	0.2419	0.02	Q	|	|	|	V|
22+30	0.2421	0.02	Q	|	|	|	V|
22+35	0.2423	0.02	Q	|	|	|	V|
22+40	0.2424	0.02	Q	|	|	|	V|

22+45	0.2426	0.02	Q	|	|	|	V|
22+50	0.2427	0.02	Q	|	|	|	V|
22+55	0.2429	0.02	Q	|	|	|	V|
23+ 0	0.2431	0.02	Q	|	|	|	V|
23+ 5	0.2432	0.02	Q	|	|	|	V|
23+10	0.2434	0.02	Q	|	|	|	V|
23+15	0.2436	0.02	Q	|	|	|	V|
23+20	0.2437	0.02	Q	|	|	|	V|
23+25	0.2439	0.02	Q	|	|	|	V|
23+30	0.2440	0.02	Q	|	|	|	V|
23+35	0.2442	0.02	Q	|	|	|	V|
23+40	0.2444	0.02	Q	|	|	|	V|
23+45	0.2445	0.02	Q	|	|	|	V|
23+50	0.2447	0.02	Q	|	|	|	V|
23+55	0.2449	0.02	Q	|	|	|	V|
24+ 0	0.2450	0.02	Q	|	|	|	V|
24+ 5	0.2451	0.01	Q	|	|	|	V|
24+10	0.2451	0.00	Q	|	|	|	V|
24+15	0.2451	0.00	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.70	0.50	4.35

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
8.70	1.30	11.31

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 1.300(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.300(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394
					Sum (F) =	0.394

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605

```
                2   0.167        525.692         39.271              3.443
                3   0.250        788.537          6.619              0.580
                4   0.333       1051.383          1.593              0.140
                                                                  Sum =
100.000   Sum=       8.768
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

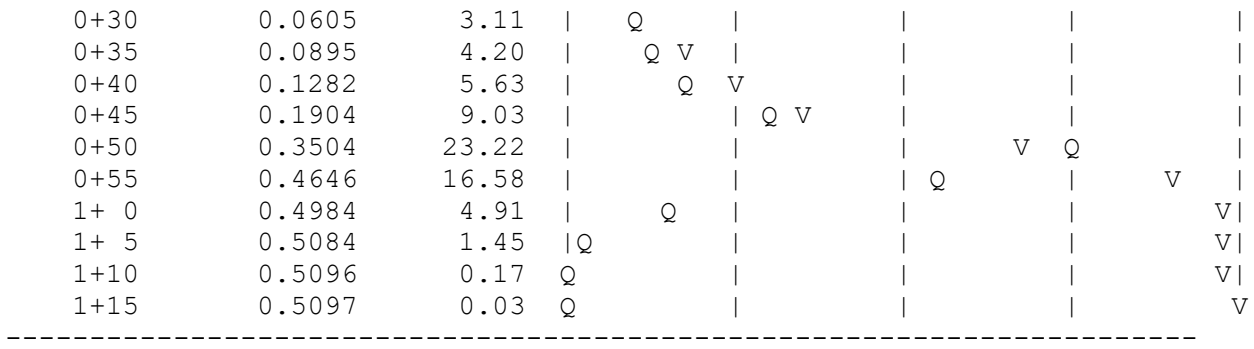
Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	4.20	0.655	(0.597)	0.590	0.066
2. 0.17	4.30	0.671	0.597	(0.604)	0.073
3. 0.25	5.00	0.780	0.597	(0.702)	0.182
4. 0.33	5.00	0.780	0.597	(0.702)	0.182
5. 0.42	5.80	0.905	0.597	(0.814)	0.307
6. 0.50	6.50	1.014	0.597	(0.913)	0.416
7. 0.58	7.40	1.154	0.597	(1.039)	0.557
8. 0.67	8.60	1.341	0.597	(1.207)	0.744
9. 0.75	12.30	1.919	0.597	(1.727)	1.321
10. 0.83	29.10	4.539	0.597	(4.085)	3.942
11. 0.92	6.80	1.061	0.597	(0.955)	0.463
12. 1.00	5.00	0.780	0.597	(0.702)	0.182

(Loss Rate Not Used)

Sum = 100.0 Sum = 8.4

```
 Flood volume = Effective rainfall      0.70(In)
  times area       8.7(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
 Total soil loss =      0.60(In)
 Total soil loss =     0.433(Ac.Ft)
 Total rainfall =      1.30(In)
 Flood volume =       22203.7 Cubic Feet
 Total soil loss =       18848.4 Cubic Feet
 ---------------------------------------------------------------------
  Peak flow rate of this hydrograph =     23.221(CFS)
 ---------------------------------------------------------------------
 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                          1 - H O U R   S T O R M
                                  R u n o f f     H y d r o g r a p h
 ---------------------------------------------------------------------
                          Hydrograph in   5   Minute intervals ((CFS))

 ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5
30.0
  ------------------------------------------------------------------
    0+ 5       0.0021      0.30  Q         |         |         |         |
    0+10       0.0060      0.56  Q         |         |         |         |
    0+15       0.0137      1.13  |Q        |         |         |         |
    0+20       0.0242      1.52  |VQ       |         |         |         |
    0+25       0.0391      2.16  | QV      |         |         |         |
```


0+30 0.0605 3.11
0+35 0.0895 4.20
0+40 0.1282 5.63
0+45 0.1904 9.03
0+50 0.3504 23.22
0+55 0.4646 16.58
1+ 0 0.4984 4.91
1+ 5 0.5084 1.45
1+10 0.5096 0.17
1+15 0.5097 0.03

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	0.80	7.80

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	2.00	19.50

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.800(In)
Area Averaged 100-Year Rainfall = 2.000(In)

Point rain (area averaged) = 2.000(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.000(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394

Sum (F) = 0.394

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1. 0.08	1.30	0.312	(0.597)	0.281	0.031
2. 0.17	1.30	0.312	(0.597)	0.281	0.031
3. 0.25	1.10	0.264	(0.597)	0.238	0.026
4. 0.33	1.50	0.360	(0.597)	0.324	0.036
5. 0.42	1.50	0.360	(0.597)	0.324	0.036
6. 0.50	1.80	0.432	(0.597)	0.389	0.043
7. 0.58	1.50	0.360	(0.597)	0.324	0.036
8. 0.67	1.80	0.432	(0.597)	0.389	0.043
9. 0.75	1.80	0.432	(0.597)	0.389	0.043
10. 0.83	1.50	0.360	(0.597)	0.324	0.036
11. 0.92	1.60	0.384	(0.597)	0.346	0.038
12. 1.00	1.80	0.432	(0.597)	0.389	0.043
13. 1.08	2.20	0.528	(0.597)	0.475	0.053
14. 1.17	2.20	0.528	(0.597)	0.475	0.053
15. 1.25	2.20	0.528	(0.597)	0.475	0.053
16. 1.33	2.00	0.480	(0.597)	0.432	0.048
17. 1.42	2.60	0.624	(0.597)	0.562	0.062
18. 1.50	2.70	0.648	(0.597)	0.583	0.065
19. 1.58	2.40	0.576	(0.597)	0.518	0.058
20. 1.67	2.70	0.648	(0.597)	0.583	0.065
21. 1.75	3.30	0.792	0.597	(0.713)	0.194
22. 1.83	3.10	0.744	0.597	(0.670)	0.146
23. 1.92	2.90	0.696	0.597	(0.626)	0.098
24. 2.00	3.00	0.720	0.597	(0.648)	0.122
25. 2.08	3.10	0.744	0.597	(0.670)	0.146
26. 2.17	4.20	1.008	0.597	(0.907)	0.410
27. 2.25	5.00	1.200	0.597	(1.080)	0.602
28. 2.33	3.50	0.840	0.597	(0.756)	0.242
29. 2.42	6.80	1.632	0.597	(1.469)	1.034
30. 2.50	7.30	1.752	0.597	(1.577)	1.154
31. 2.58	8.20	1.968	0.597	(1.771)	1.370
32. 2.67	5.90	1.416	0.597	(1.274)	0.818
33. 2.75	2.00	0.480	(0.597)	0.432	0.048
34. 2.83	1.80	0.432	(0.597)	0.389	0.043
35. 2.92	1.80	0.432	(0.597)	0.389	0.043
36. 3.00	0.60	0.144	(0.597)	0.130	0.014
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	7.4

Flood volume = Effective rainfall 0.62(In)
times area 8.7(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 1.38(In)
Total soil loss = 1.003(Ac.Ft)

Total rainfall = 2.00(In)
Flood volume = 19449.9 Cubic Feet
Total soil loss = 43709.7 Cubic Feet

Peak flow rate of this hydrograph = 10.925(CFS)

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3 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 5.0 10.0 15.0 20.0
0+ 5	0.0010	0.14	Q
0+10	0.0027	0.25	Q
0+15	0.0044	0.25	Q
0+20	0.0063	0.28	Q
0+25	0.0085	0.31	Q
0+30	0.0109	0.35	Q
0+35	0.0132	0.34	QV
0+40	0.0156	0.35	QV
0+45	0.0182	0.37	QV
0+50	0.0206	0.34	QV
0+55	0.0229	0.33	Q V
1+ 0	0.0254	0.36	Q V
1+ 5	0.0282	0.42	Q V
1+10	0.0314	0.46	Q V
1+15	0.0346	0.46	Q V
1+20	0.0376	0.44	Q V
1+25	0.0410	0.49	Q V
1+30	0.0448	0.55	Q V
1+35	0.0484	0.53	Q V
1+40	0.0522	0.54	Q V
1+45	0.0602	1.16	Q V
1+50	0.0697	1.39	Q V
1+55	0.0772	1.08	Q V
2+ 0	0.0842	1.02	Q V
2+ 5	0.0923	1.17	Q V
2+10	0.1094	2.48	Q V
2+15	0.1389	4.29	Q V
2+20	0.1627	3.45	Q V
2+25	0.2041	6.01	Q V
2+30	0.2668	9.11	Q V
2+35	0.3420	10.93	Q V
2+40	0.4061	9.31	Q V
2+45	0.4337	4.00	Q V
2+50	0.4408	1.03	Q V
2+55	0.4441	0.49	Q V
3+ 0	0.4458	0.25	Q V
3+ 5	0.4464	0.08	Q V
3+10	0.4465	0.01	Q V

3+15	0.4465	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	1.10	10.73

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	2.75	26.81

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.100(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 2.750(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.750(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394
					Sum (F) =	0.394

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.50	0.165	(0.597)	0.148	0.016
2. 0.17	0.60	0.198	(0.597)	0.178	0.020
3. 0.25	0.60	0.198	(0.597)	0.178	0.020
4. 0.33	0.60	0.198	(0.597)	0.178	0.020
5. 0.42	0.60	0.198	(0.597)	0.178	0.020
6. 0.50	0.70	0.231	(0.597)	0.208	0.023
7. 0.58	0.70	0.231	(0.597)	0.208	0.023
8. 0.67	0.70	0.231	(0.597)	0.208	0.023
9. 0.75	0.70	0.231	(0.597)	0.208	0.023
10. 0.83	0.70	0.231	(0.597)	0.208	0.023
11. 0.92	0.70	0.231	(0.597)	0.208	0.023
12. 1.00	0.80	0.264	(0.597)	0.238	0.026
13. 1.08	0.80	0.264	(0.597)	0.238	0.026
14. 1.17	0.80	0.264	(0.597)	0.238	0.026
15. 1.25	0.80	0.264	(0.597)	0.238	0.026
16. 1.33	0.80	0.264	(0.597)	0.238	0.026
17. 1.42	0.80	0.264	(0.597)	0.238	0.026
18. 1.50	0.80	0.264	(0.597)	0.238	0.026
19. 1.58	0.80	0.264	(0.597)	0.238	0.026
20. 1.67	0.80	0.264	(0.597)	0.238	0.026
21. 1.75	0.80	0.264	(0.597)	0.238	0.026
22. 1.83	0.80	0.264	(0.597)	0.238	0.026
23. 1.92	0.80	0.264	(0.597)	0.238	0.026
24. 2.00	0.90	0.297	(0.597)	0.267	0.030
25. 2.08	0.80	0.264	(0.597)	0.238	0.026
26. 2.17	0.90	0.297	(0.597)	0.267	0.030
27. 2.25	0.90	0.297	(0.597)	0.267	0.030
28. 2.33	0.90	0.297	(0.597)	0.267	0.030
29. 2.42	0.90	0.297	(0.597)	0.267	0.030
30. 2.50	0.90	0.297	(0.597)	0.267	0.030
31. 2.58	0.90	0.297	(0.597)	0.267	0.030
32. 2.67	0.90	0.297	(0.597)	0.267	0.030
33. 2.75	1.00	0.330	(0.597)	0.297	0.033
34. 2.83	1.00	0.330	(0.597)	0.297	0.033
35. 2.92	1.00	0.330	(0.597)	0.297	0.033
36. 3.00	1.00	0.330	(0.597)	0.297	0.033
37. 3.08	1.00	0.330	(0.597)	0.297	0.033
38. 3.17	1.10	0.363	(0.597)	0.327	0.036
39. 3.25	1.10	0.363	(0.597)	0.327	0.036
40. 3.33	1.10	0.363	(0.597)	0.327	0.036
41. 3.42	1.20	0.396	(0.597)	0.356	0.040
42. 3.50	1.30	0.429	(0.597)	0.386	0.043

43.	3.58	1.40	0.462	(0.597)	0.416	0.046
44.	3.67	1.40	0.462	(0.597)	0.416	0.046
45.	3.75	1.50	0.495	(0.597)	0.445	0.049
46.	3.83	1.50	0.495	(0.597)	0.445	0.049
47.	3.92	1.60	0.528	(0.597)	0.475	0.053
48.	4.00	1.60	0.528	(0.597)	0.475	0.053
49.	4.08	1.70	0.561	(0.597)	0.505	0.056
50.	4.17	1.80	0.594	(0.597)	0.535	0.059
51.	4.25	1.90	0.627	(0.597)	0.564	0.063
52.	4.33	2.00	0.660	(0.597)	0.594	0.066
53.	4.42	2.10	0.693	0.597	(0.624)	0.095
54.	4.50	2.10	0.693	0.597	(0.624)	0.095
55.	4.58	2.20	0.726	0.597	(0.653)	0.128
56.	4.67	2.30	0.759	0.597	(0.683)	0.161
57.	4.75	2.40	0.792	0.597	(0.713)	0.194
58.	4.83	2.40	0.792	0.597	(0.713)	0.194
59.	4.92	2.50	0.825	0.597	(0.742)	0.227
60.	5.00	2.60	0.858	0.597	(0.772)	0.260
61.	5.08	3.10	1.023	0.597	(0.921)	0.425
62.	5.17	3.60	1.188	0.597	(1.069)	0.590
63.	5.25	3.90	1.287	0.597	(1.158)	0.689
64.	5.33	4.20	1.386	0.597	(1.247)	0.788
65.	5.42	4.70	1.551	0.597	(1.396)	0.953
66.	5.50	5.60	1.848	0.597	(1.663)	1.250
67.	5.58	1.90	0.627	(0.597)	0.564	0.063
68.	5.67	0.90	0.297	(0.597)	0.267	0.030
69.	5.75	0.60	0.198	(0.597)	0.178	0.020
70.	5.83	0.50	0.165	(0.597)	0.148	0.016
71.	5.92	0.30	0.099	(0.597)	0.089	0.010
72.	6.00	0.20	0.066	(0.597)	0.059	0.007

(Loss Rate Not Used)

Sum = 100.0 Sum = 7.9

Flood volume = Effective rainfall 0.66(In)
times area 8.7(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft)
Total soil loss = 2.09(In)
Total soil loss = 1.516(Ac.Ft)
Total rainfall = 2.75(In)
Flood volume = 20826.9 Cubic Feet
Total soil loss = 66018.3 Cubic Feet

Peak flow rate of this hydrograph = 9.600(CFS)

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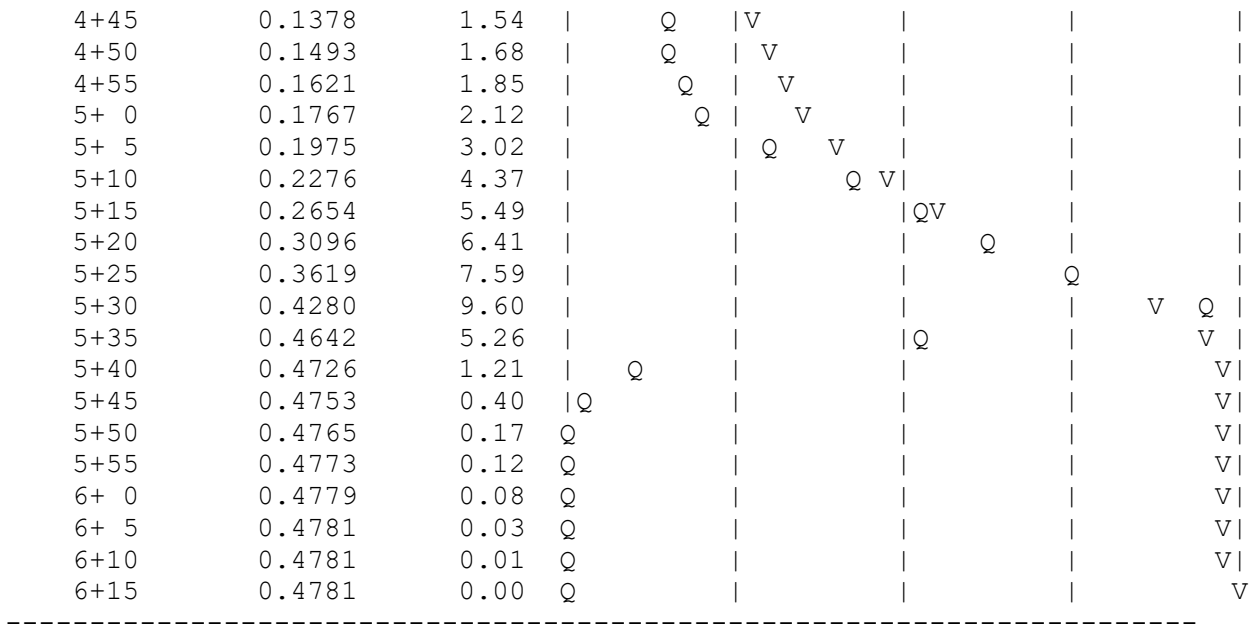
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0005	0.08	Q	|	|	|	|
0+10	0.0015	0.15	Q	|	|	|	|

0+15	0.0027	0.17	Q	|	|	|	|
0+20	0.0039	0.17	Q	|	|	|	|
0+25	0.0051	0.17	Q	|	|	|	|
0+30	0.0064	0.19	Q	|	|	|	|
0+35	0.0078	0.20	Q	|	|	|	|
0+40	0.0092	0.20	Q	|	|	|	|
0+45	0.0106	0.20	Q	|	|	|	|
0+50	0.0120	0.20	QV	|	|	|	|
0+55	0.0134	0.20	QV	|	|	|	|
1+ 0	0.0149	0.22	QV	|	|	|	|
1+ 5	0.0164	0.23	QV	|	|	|	|
1+10	0.0180	0.23	QV	|	|	|	|
1+15	0.0196	0.23	QV	|	|	|	|
1+20	0.0212	0.23	QV	|	|	|	|
1+25	0.0228	0.23	QV	|	|	|	|
1+30	0.0244	0.23	Q V	|	|	|	|
1+35	0.0260	0.23	Q V	|	|	|	|
1+40	0.0276	0.23	Q V	|	|	|	|
1+45	0.0292	0.23	Q V	|	|	|	|
1+50	0.0308	0.23	Q V	|	|	|	|
1+55	0.0324	0.23	Q V	|	|	|	|
2+ 0	0.0341	0.25	Q V	|	|	|	|
2+ 5	0.0358	0.24	Q V	|	|	|	|
2+10	0.0375	0.25	Q V	|	|	|	|
2+15	0.0392	0.26	|Q V	|	|	|	|
2+20	0.0410	0.26	|Q V	|	|	|	|
2+25	0.0428	0.26	|Q V	|	|	|	|
2+30	0.0446	0.26	|Q V	|	|	|	|
2+35	0.0464	0.26	|Q V	|	|	|	|
2+40	0.0482	0.26	|Q V	|	|	|	|
2+45	0.0501	0.28	|Q V	|	|	|	|
2+50	0.0521	0.29	|Q V	|	|	|	|
2+55	0.0541	0.29	|Q V	|	|	|	|
3+ 0	0.0561	0.29	|Q V	|	|	|	|
3+ 5	0.0581	0.29	|Q V	|	|	|	|
3+10	0.0602	0.30	|Q V	|	|	|	|
3+15	0.0623	0.32	|Q V	|	|	|	|
3+20	0.0645	0.32	|Q V	|	|	|	|
3+25	0.0668	0.33	|Q V	|	|	|	|
3+30	0.0693	0.36	|Q V	|	|	|	|
3+35	0.0720	0.39	|Q V	|	|	|	|
3+40	0.0748	0.40	|Q V	|	|	|	|
3+45	0.0777	0.42	|Q V	|	|	|	|
3+50	0.0806	0.43	|Q V	|	|	|	|
3+55	0.0837	0.45	|Q V	|	|	|	|
4+ 0	0.0869	0.46	|Q V	|	|	|	|
4+ 5	0.0902	0.48	|Q V	|	|	|	|
4+10	0.0937	0.50	| Q V	|	|	|	|
4+15	0.0973	0.53	| Q V |	|	|	|
4+20	0.1012	0.56	| Q V |	|	|	|
4+25	0.1061	0.71	| Q V |	|	|	|
4+30	0.1117	0.82	| Q V|	|	|	|
4+35	0.1185	0.99	| Q V|	|	|	|
4+40	0.1272	1.26	| Q V	|	|	|	|


4+45 0.1378 1.54
4+50 0.1493 1.68
4+55 0.1621 1.85
5+ 0 0.1767 2.12
5+ 5 0.1975 3.02
5+10 0.2276 4.37
5+15 0.2654 5.49
5+20 0.3096 6.41
5+25 0.3619 7.59
5+30 0.4280 9.60
5+35 0.4642 5.26
5+40 0.4726 1.21
5+45 0.4753 0.40
5+50 0.4765 0.17
5+55 0.4773 0.12
6+ 0 0.4779 0.08
6+ 5 0.4781 0.03
6+10 0.4781 0.01
6+15 0.4781 0.00

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	1.90	18.52

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.75	5.50	53.63

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.900(In)
Area Averaged 100-Year Rainfall = 5.500(In)

Point rain (area averaged) = 5.500(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 5.500(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
8.700	67.00	0.000

Total Area Entered = 8.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394
					Sum (F) =	0.394

Area averaged mean soil loss (F) (In/Hr) = 0.597
Minimum soil loss rate ((In/Hr)) = 0.299
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	262.846	52.517	4.605
2	0.167	525.692	39.271	3.443
3	0.250	788.537	6.619	0.580
4	0.333	1051.383	1.593	0.140

Sum =
100.000 Sum= 8.768

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.07	0.044	(1.059)	0.040	0.004
2. 0.17	0.07	0.044	(1.055)	0.040	0.004
3. 0.25	0.07	0.044	(1.051)	0.040	0.004
4. 0.33	0.10	0.066	(1.047)	0.059	0.007
5. 0.42	0.10	0.066	(1.043)	0.059	0.007
6. 0.50	0.10	0.066	(1.039)	0.059	0.007
7. 0.58	0.10	0.066	(1.035)	0.059	0.007
8. 0.67	0.10	0.066	(1.031)	0.059	0.007
9. 0.75	0.10	0.066	(1.027)	0.059	0.007
10. 0.83	0.13	0.088	(1.023)	0.079	0.009
11. 0.92	0.13	0.088	(1.019)	0.079	0.009
12. 1.00	0.13	0.088	(1.015)	0.079	0.009
13. 1.08	0.10	0.066	(1.011)	0.059	0.007
14. 1.17	0.10	0.066	(1.007)	0.059	0.007
15. 1.25	0.10	0.066	(1.003)	0.059	0.007
16. 1.33	0.10	0.066	(0.999)	0.059	0.007
17. 1.42	0.10	0.066	(0.995)	0.059	0.007
18. 1.50	0.10	0.066	(0.991)	0.059	0.007
19. 1.58	0.10	0.066	(0.987)	0.059	0.007
20. 1.67	0.10	0.066	(0.983)	0.059	0.007
21. 1.75	0.10	0.066	(0.979)	0.059	0.007
22. 1.83	0.13	0.088	(0.975)	0.079	0.009
23. 1.92	0.13	0.088	(0.971)	0.079	0.009
24. 2.00	0.13	0.088	(0.967)	0.079	0.009
25. 2.08	0.13	0.088	(0.963)	0.079	0.009
26. 2.17	0.13	0.088	(0.959)	0.079	0.009
27. 2.25	0.13	0.088	(0.955)	0.079	0.009
28. 2.33	0.13	0.088	(0.951)	0.079	0.009
29. 2.42	0.13	0.088	(0.947)	0.079	0.009
30. 2.50	0.13	0.088	(0.944)	0.079	0.009
31. 2.58	0.17	0.110	(0.940)	0.099	0.011
32. 2.67	0.17	0.110	(0.936)	0.099	0.011
33. 2.75	0.17	0.110	(0.932)	0.099	0.011
34. 2.83	0.17	0.110	(0.928)	0.099	0.011
35. 2.92	0.17	0.110	(0.924)	0.099	0.011
36. 3.00	0.17	0.110	(0.921)	0.099	0.011
37. 3.08	0.17	0.110	(0.917)	0.099	0.011
38. 3.17	0.17	0.110	(0.913)	0.099	0.011
39. 3.25	0.17	0.110	(0.909)	0.099	0.011
40. 3.33	0.17	0.110	(0.905)	0.099	0.011
41. 3.42	0.17	0.110	(0.902)	0.099	0.011
42. 3.50	0.17	0.110	(0.898)	0.099	0.011

43. 3.58	0.17	0.110	(0.894)	0.099	0.011
44. 3.67	0.17	0.110	(0.890)	0.099	0.011
45. 3.75	0.17	0.110	(0.887)	0.099	0.011
46. 3.83	0.20	0.132	(0.883)	0.119	0.013
47. 3.92	0.20	0.132	(0.879)	0.119	0.013
48. 4.00	0.20	0.132	(0.875)	0.119	0.013
49. 4.08	0.20	0.132	(0.872)	0.119	0.013
50. 4.17	0.20	0.132	(0.868)	0.119	0.013
51. 4.25	0.20	0.132	(0.864)	0.119	0.013
52. 4.33	0.23	0.154	(0.861)	0.139	0.015
53. 4.42	0.23	0.154	(0.857)	0.139	0.015
54. 4.50	0.23	0.154	(0.853)	0.139	0.015
55. 4.58	0.23	0.154	(0.850)	0.139	0.015
56. 4.67	0.23	0.154	(0.846)	0.139	0.015
57. 4.75	0.23	0.154	(0.842)	0.139	0.015
58. 4.83	0.27	0.176	(0.839)	0.158	0.018
59. 4.92	0.27	0.176	(0.835)	0.158	0.018
60. 5.00	0.27	0.176	(0.831)	0.158	0.018
61. 5.08	0.20	0.132	(0.828)	0.119	0.013
62. 5.17	0.20	0.132	(0.824)	0.119	0.013
63. 5.25	0.20	0.132	(0.821)	0.119	0.013
64. 5.33	0.23	0.154	(0.817)	0.139	0.015
65. 5.42	0.23	0.154	(0.813)	0.139	0.015
66. 5.50	0.23	0.154	(0.810)	0.139	0.015
67. 5.58	0.27	0.176	(0.806)	0.158	0.018
68. 5.67	0.27	0.176	(0.803)	0.158	0.018
69. 5.75	0.27	0.176	(0.799)	0.158	0.018
70. 5.83	0.27	0.176	(0.796)	0.158	0.018
71. 5.92	0.27	0.176	(0.792)	0.158	0.018
72. 6.00	0.27	0.176	(0.789)	0.158	0.018
73. 6.08	0.30	0.198	(0.785)	0.178	0.020
74. 6.17	0.30	0.198	(0.782)	0.178	0.020
75. 6.25	0.30	0.198	(0.778)	0.178	0.020
76. 6.33	0.30	0.198	(0.775)	0.178	0.020
77. 6.42	0.30	0.198	(0.771)	0.178	0.020
78. 6.50	0.30	0.198	(0.768)	0.178	0.020
79. 6.58	0.33	0.220	(0.764)	0.198	0.022
80. 6.67	0.33	0.220	(0.761)	0.198	0.022
81. 6.75	0.33	0.220	(0.757)	0.198	0.022
82. 6.83	0.33	0.220	(0.754)	0.198	0.022
83. 6.92	0.33	0.220	(0.751)	0.198	0.022
84. 7.00	0.33	0.220	(0.747)	0.198	0.022
85. 7.08	0.33	0.220	(0.744)	0.198	0.022
86. 7.17	0.33	0.220	(0.740)	0.198	0.022
87. 7.25	0.33	0.220	(0.737)	0.198	0.022
88. 7.33	0.37	0.242	(0.734)	0.218	0.024
89. 7.42	0.37	0.242	(0.730)	0.218	0.024
90. 7.50	0.37	0.242	(0.727)	0.218	0.024
91. 7.58	0.40	0.264	(0.724)	0.238	0.026
92. 7.67	0.40	0.264	(0.720)	0.238	0.026
93. 7.75	0.40	0.264	(0.717)	0.238	0.026
94. 7.83	0.43	0.286	(0.714)	0.257	0.029
95. 7.92	0.43	0.286	(0.710)	0.257	0.029
96. 8.00	0.43	0.286	(0.707)	0.257	0.029

97.	8.08	0.50	0.330	(0.704)	0.297	0.033
98.	8.17	0.50	0.330	(0.701)	0.297	0.033
99.	8.25	0.50	0.330	(0.697)	0.297	0.033
100.	8.33	0.50	0.330	(0.694)	0.297	0.033
101.	8.42	0.50	0.330	(0.691)	0.297	0.033
102.	8.50	0.50	0.330	(0.688)	0.297	0.033
103.	8.58	0.53	0.352	(0.684)	0.317	0.035
104.	8.67	0.53	0.352	(0.681)	0.317	0.035
105.	8.75	0.53	0.352	(0.678)	0.317	0.035
106.	8.83	0.57	0.374	(0.675)	0.337	0.037
107.	8.92	0.57	0.374	(0.671)	0.337	0.037
108.	9.00	0.57	0.374	(0.668)	0.337	0.037
109.	9.08	0.63	0.418	(0.665)	0.376	0.042
110.	9.17	0.63	0.418	(0.662)	0.376	0.042
111.	9.25	0.63	0.418	(0.659)	0.376	0.042
112.	9.33	0.67	0.440	(0.656)	0.396	0.044
113.	9.42	0.67	0.440	(0.653)	0.396	0.044
114.	9.50	0.67	0.440	(0.649)	0.396	0.044
115.	9.58	0.70	0.462	(0.646)	0.416	0.046
116.	9.67	0.70	0.462	(0.643)	0.416	0.046
117.	9.75	0.70	0.462	(0.640)	0.416	0.046
118.	9.83	0.73	0.484	(0.637)	0.436	0.048
119.	9.92	0.73	0.484	(0.634)	0.436	0.048
120.	10.00	0.73	0.484	(0.631)	0.436	0.048
121.	10.08	0.50	0.330	(0.628)	0.297	0.033
122.	10.17	0.50	0.330	(0.625)	0.297	0.033
123.	10.25	0.50	0.330	(0.622)	0.297	0.033
124.	10.33	0.50	0.330	(0.619)	0.297	0.033
125.	10.42	0.50	0.330	(0.616)	0.297	0.033
126.	10.50	0.50	0.330	(0.613)	0.297	0.033
127.	10.58	0.67	0.440	(0.610)	0.396	0.044
128.	10.67	0.67	0.440	(0.607)	0.396	0.044
129.	10.75	0.67	0.440	(0.604)	0.396	0.044
130.	10.83	0.67	0.440	(0.601)	0.396	0.044
131.	10.92	0.67	0.440	(0.598)	0.396	0.044
132.	11.00	0.67	0.440	(0.595)	0.396	0.044
133.	11.08	0.63	0.418	(0.592)	0.376	0.042
134.	11.17	0.63	0.418	(0.589)	0.376	0.042
135.	11.25	0.63	0.418	(0.586)	0.376	0.042
136.	11.33	0.63	0.418	(0.583)	0.376	0.042
137.	11.42	0.63	0.418	(0.580)	0.376	0.042
138.	11.50	0.63	0.418	(0.578)	0.376	0.042
139.	11.58	0.57	0.374	(0.575)	0.337	0.037
140.	11.67	0.57	0.374	(0.572)	0.337	0.037
141.	11.75	0.57	0.374	(0.569)	0.337	0.037
142.	11.83	0.60	0.396	(0.566)	0.356	0.040
143.	11.92	0.60	0.396	(0.563)	0.356	0.040
144.	12.00	0.60	0.396	(0.561)	0.356	0.040
145.	12.08	0.83	0.550	(0.558)	0.495	0.055
146.	12.17	0.83	0.550	(0.555)	0.495	0.055
147.	12.25	0.83	0.550	(0.552)	0.495	0.055
148.	12.33	0.87	0.572	(0.549)	0.515	0.057
149.	12.42	0.87	0.572	(0.547)	0.515	0.057
150.	12.50	0.87	0.572	(0.544)	0.515	0.057

151.	12.58	0.93	0.616	0.541	(0.554)	0.075
152.	12.67	0.93	0.616	0.538	(0.554)	0.078
153.	12.75	0.93	0.616	0.536	(0.554)	0.080
154.	12.83	0.97	0.638	0.533	(0.574)	0.105
155.	12.92	0.97	0.638	0.530	(0.574)	0.108
156.	13.00	0.97	0.638	0.528	(0.574)	0.110
157.	13.08	1.13	0.748	0.525	(0.673)	0.223
158.	13.17	1.13	0.748	0.522	(0.673)	0.226
159.	13.25	1.13	0.748	0.520	(0.673)	0.228
160.	13.33	1.13	0.748	0.517	(0.673)	0.231
161.	13.42	1.13	0.748	0.514	(0.673)	0.234
162.	13.50	1.13	0.748	0.512	(0.673)	0.236
163.	13.58	0.77	0.506	(0.509)	0.455	0.051
164.	13.67	0.77	0.506	(0.507)	0.455	0.051
165.	13.75	0.77	0.506	(0.504)	0.455	0.051
166.	13.83	0.77	0.506	(0.501)	0.455	0.051
167.	13.92	0.77	0.506	(0.499)	0.455	0.051
168.	14.00	0.77	0.506	(0.496)	0.455	0.051
169.	14.08	0.90	0.594	0.494	(0.535)	0.100
170.	14.17	0.90	0.594	0.491	(0.535)	0.103
171.	14.25	0.90	0.594	0.489	(0.535)	0.105
172.	14.33	0.87	0.572	0.486	(0.515)	0.086
173.	14.42	0.87	0.572	0.484	(0.515)	0.088
174.	14.50	0.87	0.572	0.481	(0.515)	0.091
175.	14.58	0.87	0.572	0.479	(0.515)	0.093
176.	14.67	0.87	0.572	0.476	(0.515)	0.096
177.	14.75	0.87	0.572	0.474	(0.515)	0.098
178.	14.83	0.83	0.550	0.471	(0.495)	0.079
179.	14.92	0.83	0.550	0.469	(0.495)	0.081
180.	15.00	0.83	0.550	0.467	(0.495)	0.083
181.	15.08	0.80	0.528	0.464	(0.475)	0.064
182.	15.17	0.80	0.528	0.462	(0.475)	0.066
183.	15.25	0.80	0.528	0.460	(0.475)	0.068
184.	15.33	0.77	0.506	(0.457)	0.455	0.051
185.	15.42	0.77	0.506	0.455	(0.455)	0.051
186.	15.50	0.77	0.506	0.452	(0.455)	0.054
187.	15.58	0.63	0.418	(0.450)	0.376	0.042
188.	15.67	0.63	0.418	(0.448)	0.376	0.042
189.	15.75	0.63	0.418	(0.446)	0.376	0.042
190.	15.83	0.63	0.418	(0.443)	0.376	0.042
191.	15.92	0.63	0.418	(0.441)	0.376	0.042
192.	16.00	0.63	0.418	(0.439)	0.376	0.042
193.	16.08	0.13	0.088	(0.437)	0.079	0.009
194.	16.17	0.13	0.088	(0.434)	0.079	0.009
195.	16.25	0.13	0.088	(0.432)	0.079	0.009
196.	16.33	0.13	0.088	(0.430)	0.079	0.009
197.	16.42	0.13	0.088	(0.428)	0.079	0.009
198.	16.50	0.13	0.088	(0.425)	0.079	0.009
199.	16.58	0.10	0.066	(0.423)	0.059	0.007
200.	16.67	0.10	0.066	(0.421)	0.059	0.007
201.	16.75	0.10	0.066	(0.419)	0.059	0.007
202.	16.83	0.10	0.066	(0.417)	0.059	0.007
203.	16.92	0.10	0.066	(0.415)	0.059	0.007
204.	17.00	0.10	0.066	(0.413)	0.059	0.007

205. 17.08	0.17	0.110	(0.411)	0.099	0.011
206. 17.17	0.17	0.110	(0.409)	0.099	0.011
207. 17.25	0.17	0.110	(0.407)	0.099	0.011
208. 17.33	0.17	0.110	(0.404)	0.099	0.011
209. 17.42	0.17	0.110	(0.402)	0.099	0.011
210. 17.50	0.17	0.110	(0.400)	0.099	0.011
211. 17.58	0.17	0.110	(0.398)	0.099	0.011
212. 17.67	0.17	0.110	(0.396)	0.099	0.011
213. 17.75	0.17	0.110	(0.394)	0.099	0.011
214. 17.83	0.13	0.088	(0.392)	0.079	0.009
215. 17.92	0.13	0.088	(0.391)	0.079	0.009
216. 18.00	0.13	0.088	(0.389)	0.079	0.009
217. 18.08	0.13	0.088	(0.387)	0.079	0.009
218. 18.17	0.13	0.088	(0.385)	0.079	0.009
219. 18.25	0.13	0.088	(0.383)	0.079	0.009
220. 18.33	0.13	0.088	(0.381)	0.079	0.009
221. 18.42	0.13	0.088	(0.379)	0.079	0.009
222. 18.50	0.13	0.088	(0.377)	0.079	0.009
223. 18.58	0.10	0.066	(0.376)	0.059	0.007
224. 18.67	0.10	0.066	(0.374)	0.059	0.007
225. 18.75	0.10	0.066	(0.372)	0.059	0.007
226. 18.83	0.07	0.044	(0.370)	0.040	0.004
227. 18.92	0.07	0.044	(0.368)	0.040	0.004
228. 19.00	0.07	0.044	(0.367)	0.040	0.004
229. 19.08	0.10	0.066	(0.365)	0.059	0.007
230. 19.17	0.10	0.066	(0.363)	0.059	0.007
231. 19.25	0.10	0.066	(0.361)	0.059	0.007
232. 19.33	0.13	0.088	(0.360)	0.079	0.009
233. 19.42	0.13	0.088	(0.358)	0.079	0.009
234. 19.50	0.13	0.088	(0.356)	0.079	0.009
235. 19.58	0.10	0.066	(0.355)	0.059	0.007
236. 19.67	0.10	0.066	(0.353)	0.059	0.007
237. 19.75	0.10	0.066	(0.352)	0.059	0.007
238. 19.83	0.07	0.044	(0.350)	0.040	0.004
239. 19.92	0.07	0.044	(0.348)	0.040	0.004
240. 20.00	0.07	0.044	(0.347)	0.040	0.004
241. 20.08	0.10	0.066	(0.345)	0.059	0.007
242. 20.17	0.10	0.066	(0.344)	0.059	0.007
243. 20.25	0.10	0.066	(0.342)	0.059	0.007
244. 20.33	0.10	0.066	(0.341)	0.059	0.007
245. 20.42	0.10	0.066	(0.339)	0.059	0.007
246. 20.50	0.10	0.066	(0.338)	0.059	0.007
247. 20.58	0.10	0.066	(0.337)	0.059	0.007
248. 20.67	0.10	0.066	(0.335)	0.059	0.007
249. 20.75	0.10	0.066	(0.334)	0.059	0.007
250. 20.83	0.07	0.044	(0.332)	0.040	0.004
251. 20.92	0.07	0.044	(0.331)	0.040	0.004
252. 21.00	0.07	0.044	(0.330)	0.040	0.004
253. 21.08	0.10	0.066	(0.328)	0.059	0.007
254. 21.17	0.10	0.066	(0.327)	0.059	0.007
255. 21.25	0.10	0.066	(0.326)	0.059	0.007
256. 21.33	0.07	0.044	(0.325)	0.040	0.004
257. 21.42	0.07	0.044	(0.323)	0.040	0.004
258. 21.50	0.07	0.044	(0.322)	0.040	0.004

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 259. 21.58     0.10      0.066       (  0.321)       0.059        0.007
 260. 21.67     0.10      0.066       (  0.320)       0.059        0.007
 261. 21.75     0.10      0.066       (  0.319)       0.059        0.007
 262. 21.83     0.07      0.044       (  0.318)       0.040        0.004
 263. 21.92     0.07      0.044       (  0.317)       0.040        0.004
 264. 22.00     0.07      0.044       (  0.315)       0.040        0.004
 265. 22.08     0.10      0.066       (  0.314)       0.059        0.007
 266. 22.17     0.10      0.066       (  0.313)       0.059        0.007
 267. 22.25     0.10      0.066       (  0.312)       0.059        0.007
 268. 22.33     0.07      0.044       (  0.311)       0.040        0.004
 269. 22.42     0.07      0.044       (  0.310)       0.040        0.004
 270. 22.50     0.07      0.044       (  0.310)       0.040        0.004
 271. 22.58     0.07      0.044       (  0.309)       0.040        0.004
 272. 22.67     0.07      0.044       (  0.308)       0.040        0.004
 273. 22.75     0.07      0.044       (  0.307)       0.040        0.004
 274. 22.83     0.07      0.044       (  0.306)       0.040        0.004
 275. 22.92     0.07      0.044       (  0.305)       0.040        0.004
 276. 23.00     0.07      0.044       (  0.305)       0.040        0.004
 277. 23.08     0.07      0.044       (  0.304)       0.040        0.004
 278. 23.17     0.07      0.044       (  0.303)       0.040        0.004
 279. 23.25     0.07      0.044       (  0.303)       0.040        0.004
 280. 23.33     0.07      0.044       (  0.302)       0.040        0.004
 281. 23.42     0.07      0.044       (  0.301)       0.040        0.004
 282. 23.50     0.07      0.044       (  0.301)       0.040        0.004
 283. 23.58     0.07      0.044       (  0.300)       0.040        0.004
 284. 23.67     0.07      0.044       (  0.300)       0.040        0.004
 285. 23.75     0.07      0.044       (  0.300)       0.040        0.004
 286. 23.83     0.07      0.044       (  0.299)       0.040        0.004
 287. 23.92     0.07      0.044       (  0.299)       0.040        0.004
 288. 24.00     0.07      0.044       (  0.299)       0.040        0.004
                  (Loss Rate Not Used)
     Sum =     100.0                                   Sum =     8.2
      Flood volume = Effective rainfall      0.68(In)
       times area       8.7(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
      Total soil loss =      4.82(In)
      Total soil loss =     3.494(Ac.Ft)
      Total rainfall =      5.50(In)
      Flood volume =       21497.0 Cubic Feet
      Total soil loss =      152195.6 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      2.059(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                                24 - H O U R   S T O R M
                                      R u n o f f     H y d r o g r a p h
      ---------------------------------------------------------------------
                             Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5
10.0
  ---------------------------------------------------------------------
    0+ 5       0.0001      0.02  Q         |         |         |         |
    0+10       0.0004      0.04  Q         |         |         |         |
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0+15	0.0006	0.04	Q				
0+20	0.0010	0.05	Q				
0+25	0.0014	0.06	Q				
0+30	0.0018	0.06	Q				
0+35	0.0022	0.06	Q				
0+40	0.0026	0.06	Q				
0+45	0.0030	0.06	Q				
0+50	0.0034	0.07	Q				
0+55	0.0040	0.08	Q				
1+ 0	0.0045	0.08	Q				
1+ 5	0.0049	0.07	Q				
1+10	0.0054	0.06	Q				
1+15	0.0058	0.06	Q				
1+20	0.0062	0.06	Q				
1+25	0.0066	0.06	Q				
1+30	0.0069	0.06	Q				
1+35	0.0073	0.06	Q				
1+40	0.0077	0.06	Q				
1+45	0.0081	0.06	Q				
1+50	0.0086	0.07	Q				
1+55	0.0091	0.08	Q				
2+ 0	0.0097	0.08	Q				
2+ 5	0.0102	0.08	Q				
2+10	0.0107	0.08	Q				
2+15	0.0113	0.08	Q				
2+20	0.0118	0.08	Q				
2+25	0.0123	0.08	Q				
2+30	0.0129	0.08	QV				
2+35	0.0135	0.09	QV				
2+40	0.0141	0.09	QV				
2+45	0.0148	0.10	QV				
2+50	0.0154	0.10	QV				
2+55	0.0161	0.10	QV				
3+ 0	0.0168	0.10	QV				
3+ 5	0.0174	0.10	QV				
3+10	0.0181	0.10	QV				
3+15	0.0188	0.10	QV				
3+20	0.0194	0.10	QV				
3+25	0.0201	0.10	QV				
3+30	0.0208	0.10	QV				
3+35	0.0214	0.10	QV				
3+40	0.0221	0.10	QV				
3+45	0.0227	0.10	QV				
3+50	0.0235	0.11	QV				
3+55	0.0243	0.11	QV				
4+ 0	0.0251	0.12	Q V				
4+ 5	0.0259	0.12	Q V				
4+10	0.0267	0.12	Q V				
4+15	0.0275	0.12	Q V				
4+20	0.0283	0.13	Q V				
4+25	0.0292	0.13	Q V				
4+30	0.0302	0.13	Q V				
4+35	0.0311	0.14	Q V				
4+40	0.0320	0.14	Q V				

4+45	0.0330	0.14	Q V	|	|	|	|
4+50	0.0340	0.15	Q V	|	|	|	|
4+55	0.0350	0.15	Q V	|	|	|	|
5+ 0	0.0361	0.15	Q V	|	|	|	|
5+ 5	0.0370	0.13	Q V	|	|	|	|
5+10	0.0378	0.12	Q V	|	|	|	|
5+15	0.0386	0.12	Q V	|	|	|	|
5+20	0.0395	0.13	Q V	|	|	|	|
5+25	0.0404	0.13	Q V	|	|	|	|
5+30	0.0413	0.13	Q V	|	|	|	|
5+35	0.0423	0.15	Q V	|	|	|	|
5+40	0.0434	0.15	Q V	|	|	|	|
5+45	0.0444	0.15	Q V	|	|	|	|
5+50	0.0455	0.15	Q V	|	|	|	|
5+55	0.0466	0.15	Q V	|	|	|	|
6+ 0	0.0476	0.15	Q V	|	|	|	|
6+ 5	0.0488	0.16	Q V	|	|	|	|
6+10	0.0500	0.17	Q V	|	|	|	|
6+15	0.0512	0.17	Q V	|	|	|	|
6+20	0.0523	0.17	Q V	|	|	|	|
6+25	0.0535	0.17	Q V	|	|	|	|
6+30	0.0547	0.17	Q V	|	|	|	|
6+35	0.0560	0.18	Q V	|	|	|	|
6+40	0.0573	0.19	Q V	|	|	|	|
6+45	0.0587	0.19	Q V	|	|	|	|
6+50	0.0600	0.19	Q V	|	|	|	|
6+55	0.0613	0.19	Q V	|	|	|	|
7+ 0	0.0626	0.19	Q V	|	|	|	|
7+ 5	0.0640	0.19	Q V	|	|	|	|
7+10	0.0653	0.19	Q V	|	|	|	|
7+15	0.0666	0.19	Q V	|	|	|	|
7+20	0.0680	0.20	Q V	|	|	|	|
7+25	0.0695	0.21	Q V	|	|	|	|
7+30	0.0709	0.21	Q V	|	|	|	|
7+35	0.0725	0.22	Q V	|	|	|	|
7+40	0.0741	0.23	Q V	|	|	|	|
7+45	0.0756	0.23	Q V	|	|	|	|
7+50	0.0773	0.24	Q V	|	|	|	|
7+55	0.0790	0.25	Q V	|	|	|	|
8+ 0	0.0808	0.25	|Q V	|	|	|	|
8+ 5	0.0826	0.27	|Q V	|	|	|	|
8+10	0.0846	0.29	|Q V	|	|	|	|
8+15	0.0866	0.29	|Q V	|	|	|	|
8+20	0.0886	0.29	|Q V	|	|	|	|
8+25	0.0906	0.29	|Q V	|	|	|	|
8+30	0.0926	0.29	|Q V	|	|	|	|
8+35	0.0946	0.30	|Q V	|	|	|	|
8+40	0.0967	0.31	|Q V	|	|	|	|
8+45	0.0989	0.31	|Q V	|	|	|	|
8+50	0.1011	0.32	|Q V	|	|	|	|
8+55	0.1033	0.33	|Q V	|	|	|	|
9+ 0	0.1056	0.33	|Q V	|	|	|	|
9+ 5	0.1080	0.35	|Q V	|	|	|	|
9+10	0.1105	0.36	|Q V	|	|	|	|

9+15	0.1130	0.37	Q V				
9+20	0.1156	0.38	Q V				
9+25	0.1182	0.38	Q V				
9+30	0.1209	0.39	Q V				
9+35	0.1236	0.40	Q V				
9+40	0.1264	0.40	Q V				
9+45	0.1292	0.40	Q V				
9+50	0.1320	0.42	Q V				
9+55	0.1350	0.42	Q V				
10+ 0	0.1379	0.42	Q V				
10+ 5	0.1403	0.35	Q V				
10+10	0.1424	0.30	Q V				
10+15	0.1444	0.29	Q V				
10+20	0.1464	0.29	Q V				
10+25	0.1484	0.29	Q V				
10+30	0.1504	0.29	Q V				
10+35	0.1527	0.34	Q V				
10+40	0.1553	0.38	Q V				
10+45	0.1580	0.38	Q V				
10+50	0.1606	0.39	Q V				
10+55	0.1633	0.39	Q V				
11+ 0	0.1659	0.39	Q V				
11+ 5	0.1685	0.38	Q V				
11+10	0.1711	0.37	Q V				
11+15	0.1736	0.37	Q V				
11+20	0.1761	0.37	Q V				
11+25	0.1787	0.37	Q V				
11+30	0.1812	0.37	Q V				
11+35	0.1836	0.35	Q V				
11+40	0.1858	0.33	Q V				
11+45	0.1881	0.33	Q V				
11+50	0.1904	0.34	Q V				
11+55	0.1928	0.35	Q V				
12+ 0	0.1952	0.35	Q V				
12+ 5	0.1981	0.42	Q V				
12+10	0.2013	0.47	Q V				
12+15	0.2046	0.48	Q V				
12+20	0.2080	0.49	Q V				
12+25	0.2115	0.50	Q V				
12+30	0.2149	0.50	Q V				
12+35	0.2190	0.58	Q V				
12+40	0.2235	0.66	Q V				
12+45	0.2282	0.69	Q V				
12+50	0.2338	0.82	Q V				
12+55	0.2401	0.92	Q V				
13+ 0	0.2467	0.95	Q V				
13+ 5	0.2569	1.49	Q V				
13+10	0.2699	1.89	Q V				
13+15	0.2835	1.97	Q V				
13+20	0.2974	2.01	Q V				
13+25	0.3114	2.04	Q V				
13+30	0.3256	2.06	Q V				
13+35	0.3340	1.21	Q V				
13+40	0.3379	0.58	Q V				

13+45	0.3412	0.47	Q			V	
13+50	0.3442	0.44	Q			V	
13+55	0.3473	0.44	Q			V	
14+ 0	0.3503	0.44	Q			V	
14+ 5	0.3550	0.67	Q			V	
14+10	0.3609	0.86	Q			V	
14+15	0.3671	0.90	Q			V	
14+20	0.3728	0.83	Q			V	
14+25	0.3782	0.78	Q			V	
14+30	0.3836	0.79	Q			V	
14+35	0.3891	0.81	Q			V	
14+40	0.3948	0.83	Q			V	
14+45	0.4007	0.85	Q			V	
14+50	0.4060	0.77	Q			V	
14+55	0.4109	0.71	Q			V	
15+ 0	0.4158	0.72	Q			V	
15+ 5	0.4202	0.64	Q			V	
15+10	0.4243	0.58	Q			V	
15+15	0.4283	0.59	Q			V	
15+20	0.4319	0.52	Q			V	
15+25	0.4351	0.46	Q			V	
15+30	0.4382	0.46	Q			V	
15+35	0.4411	0.41	Q			V	
15+40	0.4437	0.37	Q			V	
15+45	0.4462	0.37	Q			V	
15+50	0.4487	0.37	Q			V	
15+55	0.4513	0.37	Q			V	
16+ 0	0.4538	0.37	Q			V	
16+ 5	0.4553	0.21	Q			V	
16+10	0.4559	0.10	Q			V	
16+15	0.4565	0.08	Q			V	
16+20	0.4570	0.08	Q			V	
16+25	0.4576	0.08	Q			V	
16+30	0.4581	0.08	Q			V	
16+35	0.4586	0.07	Q			V	
16+40	0.4590	0.06	Q			V	
16+45	0.4594	0.06	Q			V	
16+50	0.4598	0.06	Q			V	
16+55	0.4602	0.06	Q			V	
17+ 0	0.4606	0.06	Q			V	
17+ 5	0.4611	0.08	Q			V	
17+10	0.4618	0.09	Q			V	
17+15	0.4624	0.10	Q			V	
17+20	0.4631	0.10	Q			V	
17+25	0.4637	0.10	Q			V	
17+30	0.4644	0.10	Q			V	
17+35	0.4651	0.10	Q			V	
17+40	0.4657	0.10	Q			V	
17+45	0.4664	0.10	Q			V	
17+50	0.4670	0.09	Q			V	
17+55	0.4675	0.08	Q			V	
18+ 0	0.4681	0.08	Q			V	
18+ 5	0.4686	0.08	Q			V	
18+10	0.4691	0.08	Q			V	

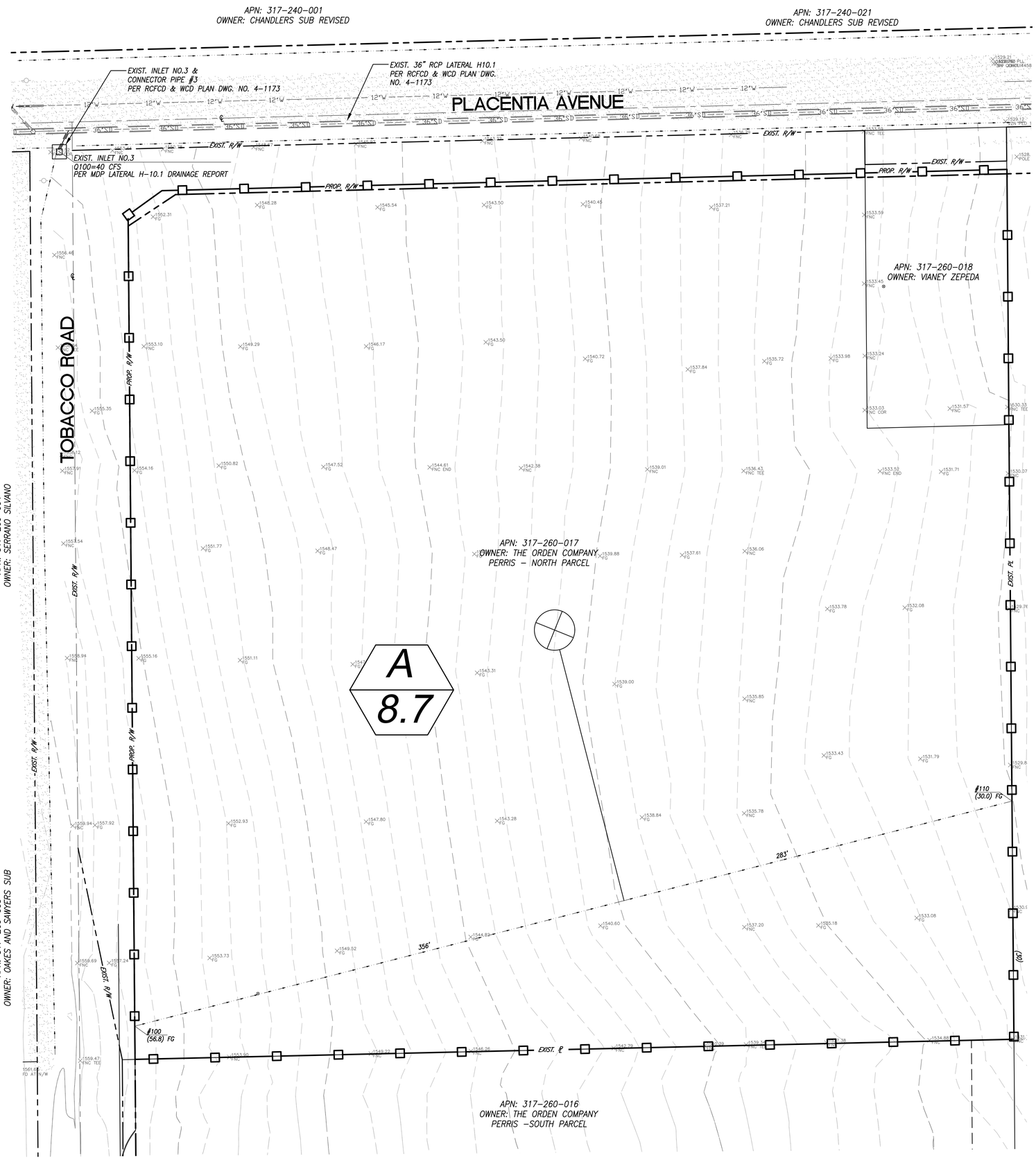
18+15	0.4697	0.08	Q	|	|	|	V |
18+20	0.4702	0.08	Q	|	|	|	V |
18+25	0.4707	0.08	Q	|	|	|	V |
18+30	0.4713	0.08	Q	|	|	|	V |
18+35	0.4717	0.07	Q	|	|	|	V |
18+40	0.4721	0.06	Q	|	|	|	V |
18+45	0.4725	0.06	Q	|	|	|	V |
18+50	0.4729	0.05	Q	|	|	|	V |
18+55	0.4731	0.04	Q	|	|	|	V |
19+ 0	0.4734	0.04	Q	|	|	|	V |
19+ 5	0.4737	0.05	Q	|	|	|	V |
19+10	0.4741	0.06	Q	|	|	|	V |
19+15	0.4745	0.06	Q	|	|	|	V |
19+20	0.4750	0.07	Q	|	|	|	V |
19+25	0.4755	0.08	Q	|	|	|	V |
19+30	0.4761	0.08	Q	|	|	|	V |
19+35	0.4765	0.07	Q	|	|	|	V |
19+40	0.4769	0.06	Q	|	|	|	V |
19+45	0.4773	0.06	Q	|	|	|	V |
19+50	0.4777	0.05	Q	|	|	|	V |
19+55	0.4779	0.04	Q	|	|	|	V |
20+ 0	0.4782	0.04	Q	|	|	|	V |
20+ 5	0.4785	0.05	Q	|	|	|	V |
20+10	0.4789	0.06	Q	|	|	|	V |
20+15	0.4793	0.06	Q	|	|	|	V |
20+20	0.4797	0.06	Q	|	|	|	V |
20+25	0.4801	0.06	Q	|	|	|	V |
20+30	0.4805	0.06	Q	|	|	|	V |
20+35	0.4809	0.06	Q	|	|	|	V |
20+40	0.4813	0.06	Q	|	|	|	V|
20+45	0.4817	0.06	Q	|	|	|	V|
20+50	0.4820	0.05	Q	|	|	|	V|
20+55	0.4823	0.04	Q	|	|	|	V|
21+ 0	0.4826	0.04	Q	|	|	|	V|
21+ 5	0.4829	0.05	Q	|	|	|	V|
21+10	0.4833	0.06	Q	|	|	|	V|
21+15	0.4837	0.06	Q	|	|	|	V|
21+20	0.4840	0.05	Q	|	|	|	V|
21+25	0.4843	0.04	Q	|	|	|	V|
21+30	0.4846	0.04	Q	|	|	|	V|
21+35	0.4849	0.05	Q	|	|	|	V|
21+40	0.4853	0.06	Q	|	|	|	V|
21+45	0.4857	0.06	Q	|	|	|	V|
21+50	0.4860	0.05	Q	|	|	|	V|
21+55	0.4863	0.04	Q	|	|	|	V|
22+ 0	0.4866	0.04	Q	|	|	|	V|
22+ 5	0.4869	0.05	Q	|	|	|	V|
22+10	0.4873	0.06	Q	|	|	|	V|
22+15	0.4877	0.06	Q	|	|	|	V|
22+20	0.4880	0.05	Q	|	|	|	V|
22+25	0.4883	0.04	Q	|	|	|	V|
22+30	0.4886	0.04	Q	|	|	|	V|
22+35	0.4888	0.04	Q	|	|	|	V|
22+40	0.4891	0.04	Q	|	|	|	V|

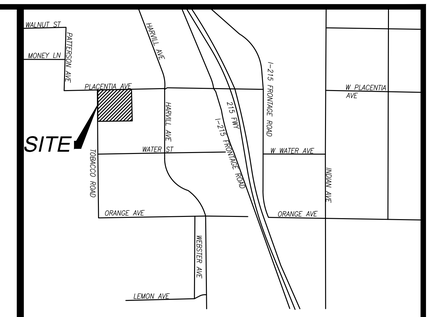
22+45	0.4894	0.04	Q	|	|	|	V|
22+50	0.4896	0.04	Q	|	|	|	V|
22+55	0.4899	0.04	Q	|	|	|	V|
23+ 0	0.4902	0.04	Q	|	|	|	V|
23+ 5	0.4904	0.04	Q	|	|	|	V|
23+10	0.4907	0.04	Q	|	|	|	V|
23+15	0.4910	0.04	Q	|	|	|	V|
23+20	0.4912	0.04	Q	|	|	|	V|
23+25	0.4915	0.04	Q	|	|	|	V|
23+30	0.4918	0.04	Q	|	|	|	V|
23+35	0.4920	0.04	Q	|	|	|	V|
23+40	0.4923	0.04	Q	|	|	|	V|
23+45	0.4926	0.04	Q	|	|	|	V|
23+50	0.4928	0.04	Q	|	|	|	V|
23+55	0.4931	0.04	Q	|	|	|	V|
24+ 0	0.4934	0.04	Q	|	|	|	V|
24+ 5	0.4935	0.02	Q	|	|	|	V|
24+10	0.4935	0.00	Q	|	|	|	V|
24+15	0.4935	0.00	Q	|	|	|	V|

Appendix “B” - Existing Conditions Map:

Unit Hydrograph Exhibit

EXISTING HYDROLOGIC CONDITIONS - PERRIS NORTH DEVELOPMENT





VICINITY MAP

TOWNSHIP 4S,
RANGE 4W, SECTION 13

LEGEND

- U/G ELECTRICAL CONDUITS
- U/G WATER
- EXISTING GROUND CONTOUR
- CENTERLINE
- R/W LINE
- TRIBUTARY AREA BOUNDARY
- SUBAREA
- ACREAGE
- FLOWLINE
- NODE
- ELEVATION
- CENTROID

	EXIST. UNDEVELOPED UNIT HYDROGRAPH PEAK FLOW (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	5.8	9.8	12.9	23.2
3 HR DURATION	1.3	3.5	5.2	10.9
6 HR DURATION	0.9	2.8	4.4	9.6
24 HR DURATION	0.2	0.3	0.4	2.1

30 0 30 60 90

SCALE 1" = 30'

EXISTING PRE-DEVELOPMENT UNIT HYDROGRAPH EXHIBIT

FOR

THE ORDEN COMPANY

COUNTY OF RIVERSIDE

PREPARED BY:

Armstrong & Brooks Consulting Engineers, Inc.
Civil Engineering · Water Resources · Surveying

1350 E. Chase Drive. Corona, CA 92881
Mail: P.O. Box 78088, Corona, CA 92887
Ph. (951) 372-8400, Fax (951) 372-8430

Appendix “C”- Proposed Conditions Calculations

Appendix “C-1” – Proposed Developed Unrouted Hydrographs

WATERSHED A:
TRIBUTARY TO
INFILTRATION TRENCH

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77              0.50                    0.39

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77              1.30                    1.00

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    0.500(In)
      Area Averaged 100-Year Rainfall =    1.300(In)

      Point rain (area averaged) =    0.500(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    0.500(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.346        0.599        1.000      0.599
                                                          Sum (F) =
0.599
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-
      Slope of intensity-duration curve for a 1 hour storm =0.5000
      ------------------------------------------------------------------
--

                           U n i t  H y d r o g r a p h
                                VALLEY S-Curve
      ------------------------------------------------------------------
                           Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                       Graph %           (CFS)
      ------------------------------------------------------------------
-
                  1   0.083        326.011         59.201              0.459
                  2   0.167        652.021         35.743              0.277
                  3   0.250        978.032          5.056              0.039
                                                                  Sum =
100.000   Sum=       0.776
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1. 0.08	4.20	0.252	(0.599)	0.157	0.095
2. 0.17	4.30	0.258	(0.599)	0.161	0.097
3. 0.25	5.00	0.300	(0.599)	0.187	0.113
4. 0.33	5.00	0.300	(0.599)	0.187	0.113
5. 0.42	5.80	0.348	(0.599)	0.217	0.131
6. 0.50	6.50	0.390	(0.599)	0.243	0.147
7. 0.58	7.40	0.444	(0.599)	0.277	0.167
8. 0.67	8.60	0.516	(0.599)	0.321	0.195
9. 0.75	12.30	0.738	(0.599)	0.460	0.278
10. 0.83	29.10	1.746	0.599	(1.088)	1.147
11. 0.92	6.80	0.408	(0.599)	0.254	0.154
12. 1.00	5.00	0.300	(0.599)	0.187	0.113
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	2.8

Flood volume = Effective rainfall 0.23(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.27(In)
Total soil loss = 0.017(Ac.Ft)
Total rainfall = 0.50(In)
Flood volume = 640.6 Cubic Feet
Total soil loss = 756.9 Cubic Feet

Peak flow rate of this hydrograph = 0.612(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.04	Q	|	|	|	|
0+10	0.0008	0.07	Q V	|	|	|	|
0+15	0.0014	0.08	Q V	|	|	|	|
0+20	0.0020	0.09	Q V	|	|	|	|
0+25	0.0026	0.10	Q V	|	|	|	|
0+30	0.0034	0.11	Q V	|	|	|	|
0+35	0.0042	0.12	Q | V	|	|	|	|
0+40	0.0052	0.14	Q | V	|	|	|	|
0+45	0.0065	0.19	Q | V	|	|	|	|
0+50	0.0107	0.61	| Q	|	|	| V |	|

```
    0+55       0.0135      0.40  |Q        |         |         |     V   |
    1+ 0       0.0144      0.14  Q         |         |         |        V|
    1+ 5       0.0147      0.04  Q         |         |         |        V|
    1+10       0.0147      0.00  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             0.85                    0.65

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.00                    1.54

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    0.850(In)
      Area Averaged 100-Year Rainfall =    2.000(In)

      Point rain (area averaged) =    0.850(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    0.850(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.346        0.599        1.000      0.599
                                                          Sum (F) =
0.599
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                  1   0.083        326.011         59.201              0.459
                  2   0.167        652.021         35.743              0.277
                  3   0.250        978.032          5.056              0.039
                                                                 Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	1.30	0.133	(0.599)	0.083	0.050
2. 0.17	1.30	0.133	(0.599)	0.083	0.050
3. 0.25	1.10	0.112	(0.599)	0.070	0.042
4. 0.33	1.50	0.153	(0.599)	0.095	0.058
5. 0.42	1.50	0.153	(0.599)	0.095	0.058
6. 0.50	1.80	0.184	(0.599)	0.114	0.069
7. 0.58	1.50	0.153	(0.599)	0.095	0.058
8. 0.67	1.80	0.184	(0.599)	0.114	0.069
9. 0.75	1.80	0.184	(0.599)	0.114	0.069
10. 0.83	1.50	0.153	(0.599)	0.095	0.058
11. 0.92	1.60	0.163	(0.599)	0.102	0.062
12. 1.00	1.80	0.184	(0.599)	0.114	0.069
13. 1.08	2.20	0.224	(0.599)	0.140	0.085
14. 1.17	2.20	0.224	(0.599)	0.140	0.085
15. 1.25	2.20	0.224	(0.599)	0.140	0.085
16. 1.33	2.00	0.204	(0.599)	0.127	0.077
17. 1.42	2.60	0.265	(0.599)	0.165	0.100
18. 1.50	2.70	0.275	(0.599)	0.172	0.104
19. 1.58	2.40	0.245	(0.599)	0.153	0.092
20. 1.67	2.70	0.275	(0.599)	0.172	0.104
21. 1.75	3.30	0.337	(0.599)	0.210	0.127
22. 1.83	3.10	0.316	(0.599)	0.197	0.119
23. 1.92	2.90	0.296	(0.599)	0.184	0.112
24. 2.00	3.00	0.306	(0.599)	0.191	0.115
25. 2.08	3.10	0.316	(0.599)	0.197	0.119
26. 2.17	4.20	0.428	(0.599)	0.267	0.162
27. 2.25	5.00	0.510	(0.599)	0.318	0.192
28. 2.33	3.50	0.357	(0.599)	0.222	0.135
29. 2.42	6.80	0.694	(0.599)	0.432	0.261
30. 2.50	7.30	0.745	(0.599)	0.464	0.281
31. 2.58	8.20	0.836	(0.599)	0.521	0.315
32. 2.67	5.90	0.602	(0.599)	0.375	0.227
33. 2.75	2.00	0.204	(0.599)	0.127	0.077
34. 2.83	1.80	0.184	(0.599)	0.114	0.069
35. 2.92	1.80	0.184	(0.599)	0.114	0.069
36. 3.00	0.60	0.061	(0.599)	0.038	0.023
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	3.8

Flood volume = Effective rainfall 0.32(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.53(In)
Total soil loss = 0.034(Ac.Ft)
Total rainfall = 0.85(In)
Flood volume = 895.7 Cubic Feet
Total soil loss = 1480.1 Cubic Feet

Peak flow rate of this hydrograph = 0.233(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.02	Q				
0+10	0.0004	0.04	Q				
0+15	0.0007	0.04	QV				
0+20	0.0009	0.04	QV				
0+25	0.0012	0.04	Q V				
0+30	0.0016	0.05	Q V				
0+35	0.0019	0.05	Q V				
0+40	0.0023	0.05	Q V				
0+45	0.0026	0.05	Q V				
0+50	0.0030	0.05	Q V				
0+55	0.0033	0.05	Q V				
1+ 0	0.0036	0.05	Q V				
1+ 5	0.0041	0.06	Q V				
1+10	0.0045	0.07	Q V				
1+15	0.0050	0.07	Q V				
1+20	0.0054	0.06	Q V				
1+25	0.0059	0.07	Q V				
1+30	0.0064	0.08	Q V				
1+35	0.0069	0.08	Q V				
1+40	0.0075	0.08	Q V				
1+45	0.0081	0.09	Q V				
1+50	0.0087	0.09	Q V				
1+55	0.0093	0.09	Q V				
2+ 0	0.0100	0.09	Q V				
2+ 5	0.0106	0.09	Q V				
2+10	0.0114	0.11	Q V				
2+15	0.0123	0.14	Q V				
2+20	0.0131	0.12	Q V				
2+25	0.0143	0.17	Q V				
2+30	0.0157	0.21	Q V				
2+35	0.0173	0.23	Q V				
2+40	0.0187	0.20	Q V				
2+45	0.0195	0.11	Q V				
2+50	0.0199	0.06	Q V				
2+55	0.0203	0.05	Q V				
3+ 0	0.0205	0.03	Q V				
3+ 5	0.0206	0.01	Q V				
3+10	0.0206	0.00	Q V				

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPTRENCH62.out

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             1.20                    0.92

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.90                    2.23

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    1.200(In)
      Area Averaged 100-Year Rainfall =    2.900(In)

      Point rain (area averaged) =    1.200(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.200(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.346        0.599        1.000      0.599
                                                          Sum (F) =
0.599
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                  1   0.083        326.011         59.201              0.459
                  2   0.167        652.021         35.743              0.277
                  3   0.250        978.032          5.056              0.039
                                                                 Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.50	0.072	(0.599)		0.045	0.027
2.	0.17	0.60	0.086	(0.599)		0.054	0.033
3.	0.25	0.60	0.086	(0.599)		0.054	0.033
4.	0.33	0.60	0.086	(0.599)		0.054	0.033
5.	0.42	0.60	0.086	(0.599)		0.054	0.033
6.	0.50	0.70	0.101	(0.599)		0.063	0.038
7.	0.58	0.70	0.101	(0.599)		0.063	0.038
8.	0.67	0.70	0.101	(0.599)		0.063	0.038
9.	0.75	0.70	0.101	(0.599)		0.063	0.038
10.	0.83	0.70	0.101	(0.599)		0.063	0.038
11.	0.92	0.70	0.101	(0.599)		0.063	0.038
12.	1.00	0.80	0.115	(0.599)		0.072	0.043
13.	1.08	0.80	0.115	(0.599)		0.072	0.043
14.	1.17	0.80	0.115	(0.599)		0.072	0.043
15.	1.25	0.80	0.115	(0.599)		0.072	0.043
16.	1.33	0.80	0.115	(0.599)		0.072	0.043
17.	1.42	0.80	0.115	(0.599)		0.072	0.043
18.	1.50	0.80	0.115	(0.599)		0.072	0.043
19.	1.58	0.80	0.115	(0.599)		0.072	0.043
20.	1.67	0.80	0.115	(0.599)		0.072	0.043
21.	1.75	0.80	0.115	(0.599)		0.072	0.043
22.	1.83	0.80	0.115	(0.599)		0.072	0.043
23.	1.92	0.80	0.115	(0.599)		0.072	0.043
24.	2.00	0.90	0.130	(0.599)		0.081	0.049
25.	2.08	0.80	0.115	(0.599)		0.072	0.043
26.	2.17	0.90	0.130	(0.599)		0.081	0.049
27.	2.25	0.90	0.130	(0.599)		0.081	0.049
28.	2.33	0.90	0.130	(0.599)		0.081	0.049
29.	2.42	0.90	0.130	(0.599)		0.081	0.049
30.	2.50	0.90	0.130	(0.599)		0.081	0.049
31.	2.58	0.90	0.130	(0.599)		0.081	0.049
32.	2.67	0.90	0.130	(0.599)		0.081	0.049
33.	2.75	1.00	0.144	(0.599)		0.090	0.054
34.	2.83	1.00	0.144	(0.599)		0.090	0.054
35.	2.92	1.00	0.144	(0.599)		0.090	0.054
36.	3.00	1.00	0.144	(0.599)		0.090	0.054
37.	3.08	1.00	0.144	(0.599)		0.090	0.054
38.	3.17	1.10	0.158	(0.599)		0.099	0.060
39.	3.25	1.10	0.158	(0.599)		0.099	0.060
40.	3.33	1.10	0.158	(0.599)		0.099	0.060
41.	3.42	1.20	0.173	(0.599)		0.108	0.065
42.	3.50	1.30	0.187	(0.599)		0.117	0.071
43.	3.58	1.40	0.202	(0.599)		0.126	0.076
44.	3.67	1.40	0.202	(0.599)		0.126	0.076
45.	3.75	1.50	0.216	(0.599)		0.135	0.081
46.	3.83	1.50	0.216	(0.599)		0.135	0.081
47.	3.92	1.60	0.230	(0.599)		0.144	0.087

48.	4.00	1.60	0.230	(0.599)	0.144	0.087
49.	4.08	1.70	0.245	(0.599)	0.153	0.092
50.	4.17	1.80	0.259	(0.599)	0.161	0.098
51.	4.25	1.90	0.274	(0.599)	0.170	0.103
52.	4.33	2.00	0.288	(0.599)	0.179	0.109
53.	4.42	2.10	0.302	(0.599)	0.188	0.114
54.	4.50	2.10	0.302	(0.599)	0.188	0.114
55.	4.58	2.20	0.317	(0.599)	0.197	0.119
56.	4.67	2.30	0.331	(0.599)	0.206	0.125
57.	4.75	2.40	0.346	(0.599)	0.215	0.130
58.	4.83	2.40	0.346	(0.599)	0.215	0.130
59.	4.92	2.50	0.360	(0.599)	0.224	0.136
60.	5.00	2.60	0.374	(0.599)	0.233	0.141
61.	5.08	3.10	0.446	(0.599)	0.278	0.168
62.	5.17	3.60	0.518	(0.599)	0.323	0.195
63.	5.25	3.90	0.562	(0.599)	0.350	0.212
64.	5.33	4.20	0.605	(0.599)	0.377	0.228
65.	5.42	4.70	0.677	(0.599)	0.422	0.255
66.	5.50	5.60	0.806	(0.599)	0.502	0.304
67.	5.58	1.90	0.274	(0.599)	0.170	0.103
68.	5.67	0.90	0.130	(0.599)	0.081	0.049
69.	5.75	0.60	0.086	(0.599)	0.054	0.033
70.	5.83	0.50	0.072	(0.599)	0.045	0.027
71.	5.92	0.30	0.043	(0.599)	0.027	0.016
72.	6.00	0.20	0.029	(0.599)	0.018	0.011

(Loss Rate Not Used)

Sum = 100.0 Sum = 5.4

Flood volume = Effective rainfall 0.45(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.75(In)
Total soil loss = 0.048(Ac.Ft)
Total rainfall = 1.20(In)
Flood volume = 1264.5 Cubic Feet
Total soil loss = 2089.6 Cubic Feet

Peak flow rate of this hydrograph = 0.219(CFS)

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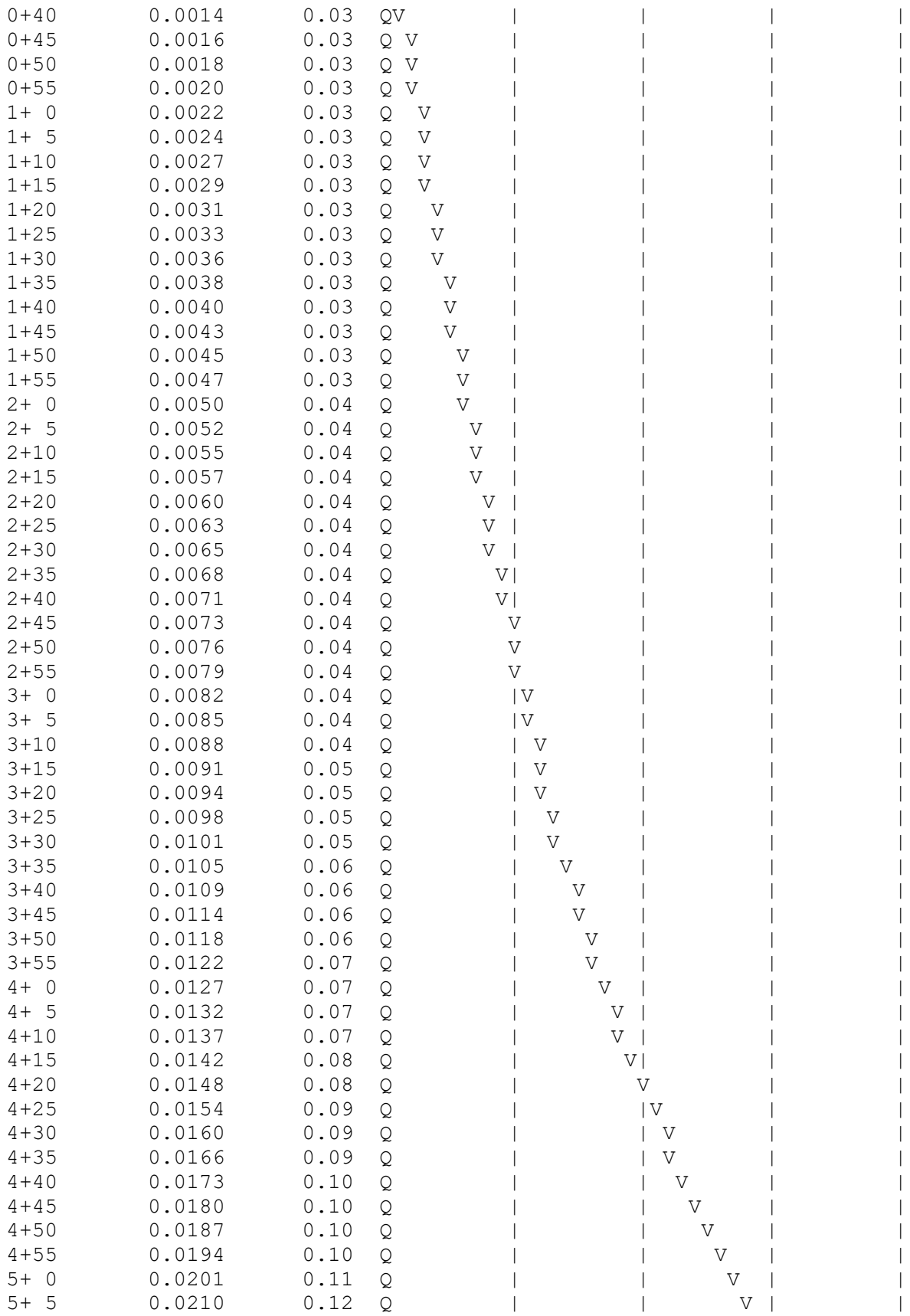
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0002	0.02	Q	|	|	|	|
0+15	0.0004	0.03	Q	|	|	|	|
0+20	0.0006	0.03	Q	|	|	|	|
0+25	0.0008	0.03	QV	|	|	|	|
0+30	0.0010	0.03	QV	|	|	|	|
0+35	0.0012	0.03	QV	|	|	|	|



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    5+10       0.0219      0.14  Q          |          |          V          |
    5+15       0.0230      0.16  Q          |          |          |V         |
    5+20       0.0242      0.17  Q          |          |          |  V       |
    5+25       0.0255      0.19  Q          |          |          |    V     |
    5+30       0.0270      0.22  Q          |          |          |      V   |
    5+35       0.0280      0.14  Q          |          |          |       V  |
    5+40       0.0284      0.06  Q          |          |          |        V |
    5+45       0.0287      0.03  Q          |          |          |        V |
    5+50       0.0288      0.02  Q          |          |          |        V |
    5+55       0.0289      0.02  Q          |          |          |        V |
    6+ 0       0.0290      0.01  Q          |          |          |        V |
    6+ 5       0.0290      0.00  Q          |          |          |        V |
    6+10       0.0290      0.00  Q          |          |          |        V |
-------------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPTRENCH242.out

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.00                    1.54

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             5.90                    4.54

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    2.000(In)
      Area Averaged 100-Year Rainfall =    5.900(In)

      Point rain (area averaged) =    2.000(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    2.000(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.346        0.599        1.000      0.599
                                                          Sum (F) =
0.599
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-
                           U n i t  H y d r o g r a p h
                                VALLEY S-Curve
      ------------------------------------------------------------------
                           Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                  1   0.083        326.011         59.201              0.459
                  2   0.167        652.021         35.743              0.277
                  3   0.250        978.032          5.056              0.039
                                                                 Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.07	0.016	(1.062)		0.010	0.006
2.	0.17	0.07	0.016	(1.058)		0.010	0.006
3.	0.25	0.07	0.016	(1.054)		0.010	0.006
4.	0.33	0.10	0.024	(1.050)		0.015	0.009
5.	0.42	0.10	0.024	(1.046)		0.015	0.009
6.	0.50	0.10	0.024	(1.042)		0.015	0.009
7.	0.58	0.10	0.024	(1.038)		0.015	0.009
8.	0.67	0.10	0.024	(1.034)		0.015	0.009
9.	0.75	0.10	0.024	(1.030)		0.015	0.009
10.	0.83	0.13	0.032	(1.026)		0.020	0.012
11.	0.92	0.13	0.032	(1.022)		0.020	0.012
12.	1.00	0.13	0.032	(1.018)		0.020	0.012
13.	1.08	0.10	0.024	(1.014)		0.015	0.009
14.	1.17	0.10	0.024	(1.010)		0.015	0.009
15.	1.25	0.10	0.024	(1.006)		0.015	0.009
16.	1.33	0.10	0.024	(1.002)		0.015	0.009
17.	1.42	0.10	0.024	(0.998)		0.015	0.009
18.	1.50	0.10	0.024	(0.994)		0.015	0.009
19.	1.58	0.10	0.024	(0.990)		0.015	0.009
20.	1.67	0.10	0.024	(0.986)		0.015	0.009
21.	1.75	0.10	0.024	(0.982)		0.015	0.009
22.	1.83	0.13	0.032	(0.978)		0.020	0.012
23.	1.92	0.13	0.032	(0.974)		0.020	0.012
24.	2.00	0.13	0.032	(0.970)		0.020	0.012
25.	2.08	0.13	0.032	(0.966)		0.020	0.012
26.	2.17	0.13	0.032	(0.962)		0.020	0.012
27.	2.25	0.13	0.032	(0.958)		0.020	0.012
28.	2.33	0.13	0.032	(0.954)		0.020	0.012
29.	2.42	0.13	0.032	(0.950)		0.020	0.012
30.	2.50	0.13	0.032	(0.947)		0.020	0.012
31.	2.58	0.17	0.040	(0.943)		0.025	0.015
32.	2.67	0.17	0.040	(0.939)		0.025	0.015
33.	2.75	0.17	0.040	(0.935)		0.025	0.015
34.	2.83	0.17	0.040	(0.931)		0.025	0.015
35.	2.92	0.17	0.040	(0.927)		0.025	0.015
36.	3.00	0.17	0.040	(0.923)		0.025	0.015
37.	3.08	0.17	0.040	(0.920)		0.025	0.015
38.	3.17	0.17	0.040	(0.916)		0.025	0.015
39.	3.25	0.17	0.040	(0.912)		0.025	0.015
40.	3.33	0.17	0.040	(0.908)		0.025	0.015
41.	3.42	0.17	0.040	(0.904)		0.025	0.015
42.	3.50	0.17	0.040	(0.901)		0.025	0.015
43.	3.58	0.17	0.040	(0.897)		0.025	0.015
44.	3.67	0.17	0.040	(0.893)		0.025	0.015
45.	3.75	0.17	0.040	(0.889)		0.025	0.015
46.	3.83	0.20	0.048	(0.886)		0.030	0.018
47.	3.92	0.20	0.048	(0.882)		0.030	0.018

48.	4.00	0.20	0.048	(0.878)	0.030	0.018
49.	4.08	0.20	0.048	(0.874)	0.030	0.018
50.	4.17	0.20	0.048	(0.871)	0.030	0.018
51.	4.25	0.20	0.048	(0.867)	0.030	0.018
52.	4.33	0.23	0.056	(0.863)	0.035	0.021
53.	4.42	0.23	0.056	(0.860)	0.035	0.021
54.	4.50	0.23	0.056	(0.856)	0.035	0.021
55.	4.58	0.23	0.056	(0.852)	0.035	0.021
56.	4.67	0.23	0.056	(0.849)	0.035	0.021
57.	4.75	0.23	0.056	(0.845)	0.035	0.021
58.	4.83	0.27	0.064	(0.841)	0.040	0.024
59.	4.92	0.27	0.064	(0.838)	0.040	0.024
60.	5.00	0.27	0.064	(0.834)	0.040	0.024
61.	5.08	0.20	0.048	(0.830)	0.030	0.018
62.	5.17	0.20	0.048	(0.827)	0.030	0.018
63.	5.25	0.20	0.048	(0.823)	0.030	0.018
64.	5.33	0.23	0.056	(0.820)	0.035	0.021
65.	5.42	0.23	0.056	(0.816)	0.035	0.021
66.	5.50	0.23	0.056	(0.812)	0.035	0.021
67.	5.58	0.27	0.064	(0.809)	0.040	0.024
68.	5.67	0.27	0.064	(0.805)	0.040	0.024
69.	5.75	0.27	0.064	(0.802)	0.040	0.024
70.	5.83	0.27	0.064	(0.798)	0.040	0.024
71.	5.92	0.27	0.064	(0.795)	0.040	0.024
72.	6.00	0.27	0.064	(0.791)	0.040	0.024
73.	6.08	0.30	0.072	(0.788)	0.045	0.027
74.	6.17	0.30	0.072	(0.784)	0.045	0.027
75.	6.25	0.30	0.072	(0.781)	0.045	0.027
76.	6.33	0.30	0.072	(0.777)	0.045	0.027
77.	6.42	0.30	0.072	(0.774)	0.045	0.027
78.	6.50	0.30	0.072	(0.770)	0.045	0.027
79.	6.58	0.33	0.080	(0.767)	0.050	0.030
80.	6.67	0.33	0.080	(0.763)	0.050	0.030
81.	6.75	0.33	0.080	(0.760)	0.050	0.030
82.	6.83	0.33	0.080	(0.756)	0.050	0.030
83.	6.92	0.33	0.080	(0.753)	0.050	0.030
84.	7.00	0.33	0.080	(0.750)	0.050	0.030
85.	7.08	0.33	0.080	(0.746)	0.050	0.030
86.	7.17	0.33	0.080	(0.743)	0.050	0.030
87.	7.25	0.33	0.080	(0.739)	0.050	0.030
88.	7.33	0.37	0.088	(0.736)	0.055	0.033
89.	7.42	0.37	0.088	(0.733)	0.055	0.033
90.	7.50	0.37	0.088	(0.729)	0.055	0.033
91.	7.58	0.40	0.096	(0.726)	0.060	0.036
92.	7.67	0.40	0.096	(0.723)	0.060	0.036
93.	7.75	0.40	0.096	(0.719)	0.060	0.036
94.	7.83	0.43	0.104	(0.716)	0.065	0.039
95.	7.92	0.43	0.104	(0.713)	0.065	0.039
96.	8.00	0.43	0.104	(0.709)	0.065	0.039
97.	8.08	0.50	0.120	(0.706)	0.075	0.045
98.	8.17	0.50	0.120	(0.703)	0.075	0.045
99.	8.25	0.50	0.120	(0.699)	0.075	0.045
100.	8.33	0.50	0.120	(0.696)	0.075	0.045
101.	8.42	0.50	0.120	(0.693)	0.075	0.045

102.	8.50	0.50	0.120	(0.690)	0.075	0.045
103.	8.58	0.53	0.128	(0.686)	0.080	0.048
104.	8.67	0.53	0.128	(0.683)	0.080	0.048
105.	8.75	0.53	0.128	(0.680)	0.080	0.048
106.	8.83	0.57	0.136	(0.677)	0.085	0.051
107.	8.92	0.57	0.136	(0.674)	0.085	0.051
108.	9.00	0.57	0.136	(0.670)	0.085	0.051
109.	9.08	0.63	0.152	(0.667)	0.095	0.057
110.	9.17	0.63	0.152	(0.664)	0.095	0.057
111.	9.25	0.63	0.152	(0.661)	0.095	0.057
112.	9.33	0.67	0.160	(0.658)	0.100	0.060
113.	9.42	0.67	0.160	(0.655)	0.100	0.060
114.	9.50	0.67	0.160	(0.651)	0.100	0.060
115.	9.58	0.70	0.168	(0.648)	0.105	0.063
116.	9.67	0.70	0.168	(0.645)	0.105	0.063
117.	9.75	0.70	0.168	(0.642)	0.105	0.063
118.	9.83	0.73	0.176	(0.639)	0.110	0.066
119.	9.92	0.73	0.176	(0.636)	0.110	0.066
120.	10.00	0.73	0.176	(0.633)	0.110	0.066
121.	10.08	0.50	0.120	(0.630)	0.075	0.045
122.	10.17	0.50	0.120	(0.627)	0.075	0.045
123.	10.25	0.50	0.120	(0.624)	0.075	0.045
124.	10.33	0.50	0.120	(0.621)	0.075	0.045
125.	10.42	0.50	0.120	(0.618)	0.075	0.045
126.	10.50	0.50	0.120	(0.615)	0.075	0.045
127.	10.58	0.67	0.160	(0.612)	0.100	0.060
128.	10.67	0.67	0.160	(0.609)	0.100	0.060
129.	10.75	0.67	0.160	(0.606)	0.100	0.060
130.	10.83	0.67	0.160	(0.603)	0.100	0.060
131.	10.92	0.67	0.160	(0.600)	0.100	0.060
132.	11.00	0.67	0.160	(0.597)	0.100	0.060
133.	11.08	0.63	0.152	(0.594)	0.095	0.057
134.	11.17	0.63	0.152	(0.591)	0.095	0.057
135.	11.25	0.63	0.152	(0.588)	0.095	0.057
136.	11.33	0.63	0.152	(0.585)	0.095	0.057
137.	11.42	0.63	0.152	(0.582)	0.095	0.057
138.	11.50	0.63	0.152	(0.579)	0.095	0.057
139.	11.58	0.57	0.136	(0.577)	0.085	0.051
140.	11.67	0.57	0.136	(0.574)	0.085	0.051
141.	11.75	0.57	0.136	(0.571)	0.085	0.051
142.	11.83	0.60	0.144	(0.568)	0.090	0.054
143.	11.92	0.60	0.144	(0.565)	0.090	0.054
144.	12.00	0.60	0.144	(0.562)	0.090	0.054
145.	12.08	0.83	0.200	(0.559)	0.125	0.075
146.	12.17	0.83	0.200	(0.557)	0.125	0.075
147.	12.25	0.83	0.200	(0.554)	0.125	0.075
148.	12.33	0.87	0.208	(0.551)	0.130	0.078
149.	12.42	0.87	0.208	(0.548)	0.130	0.078
150.	12.50	0.87	0.208	(0.546)	0.130	0.078
151.	12.58	0.93	0.224	(0.543)	0.140	0.084
152.	12.67	0.93	0.224	(0.540)	0.140	0.084
153.	12.75	0.93	0.224	(0.537)	0.140	0.084
154.	12.83	0.97	0.232	(0.535)	0.145	0.087
155.	12.92	0.97	0.232	(0.532)	0.145	0.087

156. 13.00	0.97	0.232	(0.529)	0.145	0.087
157. 13.08	1.13	0.272	(0.527)	0.169	0.103
158. 13.17	1.13	0.272	(0.524)	0.169	0.103
159. 13.25	1.13	0.272	(0.521)	0.169	0.103
160. 13.33	1.13	0.272	(0.519)	0.169	0.103
161. 13.42	1.13	0.272	(0.516)	0.169	0.103
162. 13.50	1.13	0.272	(0.513)	0.169	0.103
163. 13.58	0.77	0.184	(0.511)	0.115	0.069
164. 13.67	0.77	0.184	(0.508)	0.115	0.069
165. 13.75	0.77	0.184	(0.506)	0.115	0.069
166. 13.83	0.77	0.184	(0.503)	0.115	0.069
167. 13.92	0.77	0.184	(0.500)	0.115	0.069
168. 14.00	0.77	0.184	(0.498)	0.115	0.069
169. 14.08	0.90	0.216	(0.495)	0.135	0.081
170. 14.17	0.90	0.216	(0.493)	0.135	0.081
171. 14.25	0.90	0.216	(0.490)	0.135	0.081
172. 14.33	0.87	0.208	(0.488)	0.130	0.078
173. 14.42	0.87	0.208	(0.485)	0.130	0.078
174. 14.50	0.87	0.208	(0.483)	0.130	0.078
175. 14.58	0.87	0.208	(0.480)	0.130	0.078
176. 14.67	0.87	0.208	(0.478)	0.130	0.078
177. 14.75	0.87	0.208	(0.475)	0.130	0.078
178. 14.83	0.83	0.200	(0.473)	0.125	0.075
179. 14.92	0.83	0.200	(0.471)	0.125	0.075
180. 15.00	0.83	0.200	(0.468)	0.125	0.075
181. 15.08	0.80	0.192	(0.466)	0.120	0.072
182. 15.17	0.80	0.192	(0.463)	0.120	0.072
183. 15.25	0.80	0.192	(0.461)	0.120	0.072
184. 15.33	0.77	0.184	(0.459)	0.115	0.069
185. 15.42	0.77	0.184	(0.456)	0.115	0.069
186. 15.50	0.77	0.184	(0.454)	0.115	0.069
187. 15.58	0.63	0.152	(0.452)	0.095	0.057
188. 15.67	0.63	0.152	(0.449)	0.095	0.057
189. 15.75	0.63	0.152	(0.447)	0.095	0.057
190. 15.83	0.63	0.152	(0.445)	0.095	0.057
191. 15.92	0.63	0.152	(0.442)	0.095	0.057
192. 16.00	0.63	0.152	(0.440)	0.095	0.057
193. 16.08	0.13	0.032	(0.438)	0.020	0.012
194. 16.17	0.13	0.032	(0.436)	0.020	0.012
195. 16.25	0.13	0.032	(0.433)	0.020	0.012
196. 16.33	0.13	0.032	(0.431)	0.020	0.012
197. 16.42	0.13	0.032	(0.429)	0.020	0.012
198. 16.50	0.13	0.032	(0.427)	0.020	0.012
199. 16.58	0.10	0.024	(0.425)	0.015	0.009
200. 16.67	0.10	0.024	(0.423)	0.015	0.009
201. 16.75	0.10	0.024	(0.420)	0.015	0.009
202. 16.83	0.10	0.024	(0.418)	0.015	0.009
203. 16.92	0.10	0.024	(0.416)	0.015	0.009
204. 17.00	0.10	0.024	(0.414)	0.015	0.009
205. 17.08	0.17	0.040	(0.412)	0.025	0.015
206. 17.17	0.17	0.040	(0.410)	0.025	0.015
207. 17.25	0.17	0.040	(0.408)	0.025	0.015
208. 17.33	0.17	0.040	(0.406)	0.025	0.015
209. 17.42	0.17	0.040	(0.404)	0.025	0.015

210. 17.50	0.17	0.040	(0.402)	0.025	0.015
211. 17.58	0.17	0.040	(0.400)	0.025	0.015
212. 17.67	0.17	0.040	(0.398)	0.025	0.015
213. 17.75	0.17	0.040	(0.396)	0.025	0.015
214. 17.83	0.13	0.032	(0.394)	0.020	0.012
215. 17.92	0.13	0.032	(0.392)	0.020	0.012
216. 18.00	0.13	0.032	(0.390)	0.020	0.012
217. 18.08	0.13	0.032	(0.388)	0.020	0.012
218. 18.17	0.13	0.032	(0.386)	0.020	0.012
219. 18.25	0.13	0.032	(0.384)	0.020	0.012
220. 18.33	0.13	0.032	(0.382)	0.020	0.012
221. 18.42	0.13	0.032	(0.380)	0.020	0.012
222. 18.50	0.13	0.032	(0.379)	0.020	0.012
223. 18.58	0.10	0.024	(0.377)	0.015	0.009
224. 18.67	0.10	0.024	(0.375)	0.015	0.009
225. 18.75	0.10	0.024	(0.373)	0.015	0.009
226. 18.83	0.07	0.016	(0.371)	0.010	0.006
227. 18.92	0.07	0.016	(0.370)	0.010	0.006
228. 19.00	0.07	0.016	(0.368)	0.010	0.006
229. 19.08	0.10	0.024	(0.366)	0.015	0.009
230. 19.17	0.10	0.024	(0.364)	0.015	0.009
231. 19.25	0.10	0.024	(0.363)	0.015	0.009
232. 19.33	0.13	0.032	(0.361)	0.020	0.012
233. 19.42	0.13	0.032	(0.359)	0.020	0.012
234. 19.50	0.13	0.032	(0.358)	0.020	0.012
235. 19.58	0.10	0.024	(0.356)	0.015	0.009
236. 19.67	0.10	0.024	(0.354)	0.015	0.009
237. 19.75	0.10	0.024	(0.353)	0.015	0.009
238. 19.83	0.07	0.016	(0.351)	0.010	0.006
239. 19.92	0.07	0.016	(0.350)	0.010	0.006
240. 20.00	0.07	0.016	(0.348)	0.010	0.006
241. 20.08	0.10	0.024	(0.346)	0.015	0.009
242. 20.17	0.10	0.024	(0.345)	0.015	0.009
243. 20.25	0.10	0.024	(0.343)	0.015	0.009
244. 20.33	0.10	0.024	(0.342)	0.015	0.009
245. 20.42	0.10	0.024	(0.341)	0.015	0.009
246. 20.50	0.10	0.024	(0.339)	0.015	0.009
247. 20.58	0.10	0.024	(0.338)	0.015	0.009
248. 20.67	0.10	0.024	(0.336)	0.015	0.009
249. 20.75	0.10	0.024	(0.335)	0.015	0.009
250. 20.83	0.07	0.016	(0.333)	0.010	0.006
251. 20.92	0.07	0.016	(0.332)	0.010	0.006
252. 21.00	0.07	0.016	(0.331)	0.010	0.006
253. 21.08	0.10	0.024	(0.329)	0.015	0.009
254. 21.17	0.10	0.024	(0.328)	0.015	0.009
255. 21.25	0.10	0.024	(0.327)	0.015	0.009
256. 21.33	0.07	0.016	(0.326)	0.010	0.006
257. 21.42	0.07	0.016	(0.324)	0.010	0.006
258. 21.50	0.07	0.016	(0.323)	0.010	0.006
259. 21.58	0.10	0.024	(0.322)	0.015	0.009
260. 21.67	0.10	0.024	(0.321)	0.015	0.009
261. 21.75	0.10	0.024	(0.320)	0.015	0.009
262. 21.83	0.07	0.016	(0.319)	0.010	0.006
263. 21.92	0.07	0.016	(0.318)	0.010	0.006

264.	22.00	0.07	0.016	(0.316)	0.010	0.006
265.	22.08	0.10	0.024	(0.315)	0.015	0.009
266.	22.17	0.10	0.024	(0.314)	0.015	0.009
267.	22.25	0.10	0.024	(0.313)	0.015	0.009
268.	22.33	0.07	0.016	(0.312)	0.010	0.006
269.	22.42	0.07	0.016	(0.311)	0.010	0.006
270.	22.50	0.07	0.016	(0.311)	0.010	0.006
271.	22.58	0.07	0.016	(0.310)	0.010	0.006
272.	22.67	0.07	0.016	(0.309)	0.010	0.006
273.	22.75	0.07	0.016	(0.308)	0.010	0.006
274.	22.83	0.07	0.016	(0.307)	0.010	0.006
275.	22.92	0.07	0.016	(0.306)	0.010	0.006
276.	23.00	0.07	0.016	(0.306)	0.010	0.006
277.	23.08	0.07	0.016	(0.305)	0.010	0.006
278.	23.17	0.07	0.016	(0.304)	0.010	0.006
279.	23.25	0.07	0.016	(0.304)	0.010	0.006
280.	23.33	0.07	0.016	(0.303)	0.010	0.006
281.	23.42	0.07	0.016	(0.302)	0.010	0.006
282.	23.50	0.07	0.016	(0.302)	0.010	0.006
283.	23.58	0.07	0.016	(0.301)	0.010	0.006
284.	23.67	0.07	0.016	(0.301)	0.010	0.006
285.	23.75	0.07	0.016	(0.301)	0.010	0.006
286.	23.83	0.07	0.016	(0.300)	0.010	0.006
287.	23.92	0.07	0.016	(0.300)	0.010	0.006
288.	24.00	0.07	0.016	(0.300)	0.010	0.006

(Loss Rate Not Used)

Sum = 100.0 Sum = 9.0

Flood volume = Effective rainfall 0.75(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 1.25(In)
Total soil loss = 0.080(Ac.Ft)
Total rainfall = 2.00(In)
Flood volume = 2107.5 Cubic Feet
Total soil loss = 3482.7 Cubic Feet

Peak flow rate of this hydrograph = 0.080(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0000	0.00	Q	|	|	|	|
0+15	0.0001	0.00	Q	|	|	|	|
0+20	0.0001	0.01	Q	|	|	|	|
0+25	0.0002	0.01	Q	|	|	|	|
0+30	0.0002	0.01	Q	|	|	|	|
0+35	0.0003	0.01	Q	|	|	|	|

0+40	0.0003	0.01	Q	|	|	|	|
0+45	0.0004	0.01	Q	|	|	|	|
0+50	0.0004	0.01	Q	|	|	|	|
0+55	0.0005	0.01	Q	|	|	|	|
1+ 0	0.0006	0.01	Q	|	|	|	|
1+ 5	0.0006	0.01	Q	|	|	|	|
1+10	0.0007	0.01	Q	|	|	|	|
1+15	0.0007	0.01	Q	|	|	|	|
1+20	0.0008	0.01	Q	|	|	|	|
1+25	0.0008	0.01	Q	|	|	|	|
1+30	0.0008	0.01	Q	|	|	|	|
1+35	0.0009	0.01	Q	|	|	|	|
1+40	0.0009	0.01	Q	|	|	|	|
1+45	0.0010	0.01	Q	|	|	|	|
1+50	0.0011	0.01	Q	|	|	|	|
1+55	0.0011	0.01	Q	|	|	|	|
2+ 0	0.0012	0.01	Q	|	|	|	|
2+ 5	0.0012	0.01	QV	|	|	|	|
2+10	0.0013	0.01	QV	|	|	|	|
2+15	0.0014	0.01	QV	|	|	|	|
2+20	0.0014	0.01	QV	|	|	|	|
2+25	0.0015	0.01	QV	|	|	|	|
2+30	0.0016	0.01	QV	|	|	|	|
2+35	0.0016	0.01	QV	|	|	|	|
2+40	0.0017	0.01	QV	|	|	|	|
2+45	0.0018	0.01	QV	|	|	|	|
2+50	0.0019	0.01	QV	|	|	|	|
2+55	0.0020	0.01	QV	|	|	|	|
3+ 0	0.0020	0.01	QV	|	|	|	|
3+ 5	0.0021	0.01	QV	|	|	|	|
3+10	0.0022	0.01	QV	|	|	|	|
3+15	0.0023	0.01	QV	|	|	|	|
3+20	0.0024	0.01	QV	|	|	|	|
3+25	0.0024	0.01	Q V	|	|	|	|
3+30	0.0025	0.01	Q V	|	|	|	|
3+35	0.0026	0.01	Q V	|	|	|	|
3+40	0.0027	0.01	Q V	|	|	|	|
3+45	0.0028	0.01	Q V	|	|	|	|
3+50	0.0029	0.01	Q V	|	|	|	|
3+55	0.0030	0.01	Q V	|	|	|	|
4+ 0	0.0031	0.01	Q V	|	|	|	|
4+ 5	0.0031	0.01	Q V	|	|	|	|
4+10	0.0032	0.01	Q V	|	|	|	|
4+15	0.0033	0.01	Q V	|	|	|	|
4+20	0.0034	0.02	Q V	|	|	|	|
4+25	0.0036	0.02	Q V	|	|	|	|
4+30	0.0037	0.02	Q V	|	|	|	|
4+35	0.0038	0.02	Q V	|	|	|	|
4+40	0.0039	0.02	Q V	|	|	|	|
4+45	0.0040	0.02	Q V	|	|	|	|
4+50	0.0041	0.02	Q V	|	|	|	|
4+55	0.0043	0.02	Q V	|	|	|	|
5+ 0	0.0044	0.02	Q V	|	|	|	|
5+ 5	0.0045	0.02	Q V	|	|	|	|

5+10	0.0046	0.01	Q	V	|	|	|	|
5+15	0.0047	0.01	Q	V	|	|	|	|
5+20	0.0048	0.02	Q	V	|	|	|	|
5+25	0.0049	0.02	Q	V	|	|	|	|
5+30	0.0050	0.02	Q	V	|	|	|	|
5+35	0.0052	0.02	Q	V	|	|	|	|
5+40	0.0053	0.02	Q	V	|	|	|	|
5+45	0.0054	0.02	Q	V	|	|	|	|
5+50	0.0055	0.02	Q	V	|	|	|	|
5+55	0.0057	0.02	Q	V	|	|	|	|
6+ 0	0.0058	0.02	Q	V	|	|	|	|
6+ 5	0.0059	0.02	Q	V	|	|	|	|
6+10	0.0061	0.02	Q	V	|	|	|	|
6+15	0.0062	0.02	Q	V	|	|	|	|
6+20	0.0064	0.02	Q	V	|	|	|	|
6+25	0.0065	0.02	Q	V	|	|	|	|
6+30	0.0067	0.02	Q	V	|	|	|	|
6+35	0.0068	0.02	Q	V	|	|	|	|
6+40	0.0070	0.02	Q	V	|	|	|	|
6+45	0.0071	0.02	Q	V	|	|	|	|
6+50	0.0073	0.02	Q	V	|	|	|	|
6+55	0.0075	0.02	Q	V	|	|	|	|
7+ 0	0.0076	0.02	Q	V	|	|	|	|
7+ 5	0.0078	0.02	Q	V	|	|	|	|
7+10	0.0079	0.02	Q	V	|	|	|	|
7+15	0.0081	0.02	Q	V	|	|	|	|
7+20	0.0083	0.02	Q	V	|	|	|	|
7+25	0.0084	0.03	Q	V	|	|	|	|
7+30	0.0086	0.03	Q	V	|	|	|	|
7+35	0.0088	0.03	Q	V	|	|	|	|
7+40	0.0090	0.03	Q	V	|	|	|	|
7+45	0.0092	0.03	Q	V	|	|	|	|
7+50	0.0094	0.03	Q	V	|	|	|	|
7+55	0.0096	0.03	Q	V	|	|	|	|
8+ 0	0.0098	0.03	Q	V	|	|	|	|
8+ 5	0.0101	0.03	Q	V	|	|	|	|
8+10	0.0103	0.03	Q	V	|	|	|	|
8+15	0.0105	0.04	Q	V	|	|	|	|
8+20	0.0108	0.04	Q	V	|	|	|	|
8+25	0.0110	0.04	Q	V	|	|	|	|
8+30	0.0113	0.04	Q	V	|	|	|	|
8+35	0.0115	0.04	Q	V	|	|	|	|
8+40	0.0118	0.04	Q	V	|	|	|	|
8+45	0.0120	0.04	Q	V	|	|	|	|
8+50	0.0123	0.04	Q	V	|	|	|	|
8+55	0.0126	0.04	Q	V	|	|	|	|
9+ 0	0.0128	0.04	Q	V	|	|	|	|
9+ 5	0.0131	0.04	Q	V	|	|	|	|
9+10	0.0134	0.04	Q	|	V	|	|	|
9+15	0.0137	0.04	Q	|	V	|	|	|
9+20	0.0141	0.05	Q	|	V	|	|	|
9+25	0.0144	0.05	Q	|	V	|	|	|
9+30	0.0147	0.05	Q	|	V	|	|	|
9+35	0.0150	0.05	Q	|	V	|	|	|

9+40	0.0154	0.05	Q	V			
9+45	0.0157	0.05	Q	V			
9+50	0.0161	0.05	Q	V			
9+55	0.0164	0.05	Q	V			
10+ 0	0.0168	0.05	Q	V			
10+ 5	0.0171	0.04	Q	V			
10+10	0.0173	0.04	Q	V			
10+15	0.0175	0.04	Q	V			
10+20	0.0178	0.04	Q	V			
10+25	0.0180	0.04	Q	V			
10+30	0.0183	0.04	Q	V			
10+35	0.0186	0.04	Q	V			
10+40	0.0189	0.05	Q	V			
10+45	0.0192	0.05	Q	V			
10+50	0.0195	0.05	Q	V			
10+55	0.0198	0.05	Q	V			
11+ 0	0.0202	0.05	Q	V			
11+ 5	0.0205	0.05	Q	V			
11+10	0.0208	0.04	Q	V			
11+15	0.0211	0.04	Q	V			
11+20	0.0214	0.04	Q	V			
11+25	0.0217	0.04	Q	V			
11+30	0.0220	0.04	Q	V			
11+35	0.0223	0.04	Q	V			
11+40	0.0226	0.04	Q	V			
11+45	0.0229	0.04	Q	V			
11+50	0.0231	0.04	Q	V			
11+55	0.0234	0.04	Q	V			
12+ 0	0.0237	0.04	Q	V			
12+ 5	0.0241	0.05	Q	V			
12+10	0.0245	0.06	Q	V			
12+15	0.0249	0.06	Q	V			
12+20	0.0253	0.06	Q	V			
12+25	0.0257	0.06	Q	V			
12+30	0.0261	0.06	Q	V			
12+35	0.0266	0.06	Q	V			
12+40	0.0270	0.07	Q	V			
12+45	0.0275	0.07	Q	V			
12+50	0.0279	0.07	Q	V			
12+55	0.0284	0.07	Q	V			
13+ 0	0.0289	0.07	Q	V			
13+ 5	0.0294	0.07	Q	V			
13+10	0.0299	0.08	Q	V			
13+15	0.0305	0.08	Q	V			
13+20	0.0310	0.08	Q	V			
13+25	0.0316	0.08	Q	V			
13+30	0.0321	0.08	Q	V			
13+35	0.0326	0.06	Q	V			
13+40	0.0329	0.06	Q	V			
13+45	0.0333	0.05	Q	V			
13+50	0.0337	0.05	Q	V			
13+55	0.0341	0.05	Q	V			
14+ 0	0.0344	0.05	Q	V			
14+ 5	0.0348	0.06	Q	V			

14+10	0.0353	0.06	Q	|	|	V|	|
14+15	0.0357	0.06	Q	|	|	V|	|
14+20	0.0361	0.06	Q	|	|	V|	|
14+25	0.0365	0.06	Q	|	|	V	|
14+30	0.0370	0.06	Q	|	|	V	|
14+35	0.0374	0.06	Q	|	|	V	|
14+40	0.0378	0.06	Q	|	|	|V	|
14+45	0.0382	0.06	Q	|	|	|V	|
14+50	0.0386	0.06	Q	|	|	|V	|
14+55	0.0390	0.06	Q	|	|	| V	|
15+ 0	0.0394	0.06	Q	|	|	| V	|
15+ 5	0.0398	0.06	Q	|	|	| V	|
15+10	0.0402	0.06	Q	|	|	| V	|
15+15	0.0406	0.06	Q	|	|	| V	|
15+20	0.0410	0.05	Q	|	|	| V	|
15+25	0.0414	0.05	Q	|	|	| V	|
15+30	0.0417	0.05	Q	|	|	| V	|
15+35	0.0421	0.05	Q	|	|	| V	|
15+40	0.0424	0.04	Q	|	|	| V	|
15+45	0.0427	0.04	Q	|	|	| V	|
15+50	0.0430	0.04	Q	|	|	| V	|
15+55	0.0433	0.04	Q	|	|	| V	|
16+ 0	0.0436	0.04	Q	|	|	| V	|
16+ 5	0.0438	0.02	Q	|	|	| V	|
16+10	0.0438	0.01	Q	|	|	| V	|
16+15	0.0439	0.01	Q	|	|	| V	|
16+20	0.0440	0.01	Q	|	|	| V	|
16+25	0.0440	0.01	Q	|	|	| V	|
16+30	0.0441	0.01	Q	|	|	| V	|
16+35	0.0441	0.01	Q	|	|	| V	|
16+40	0.0442	0.01	Q	|	|	| V	|
16+45	0.0442	0.01	Q	|	|	| V	|
16+50	0.0443	0.01	Q	|	|	| V	|
16+55	0.0443	0.01	Q	|	|	| V	|
17+ 0	0.0444	0.01	Q	|	|	| V	|
17+ 5	0.0445	0.01	Q	|	|	| V	|
17+10	0.0445	0.01	Q	|	|	| V	|
17+15	0.0446	0.01	Q	|	|	| V	|
17+20	0.0447	0.01	Q	|	|	| V	|
17+25	0.0448	0.01	Q	|	|	| V	|
17+30	0.0449	0.01	Q	|	|	| V	|
17+35	0.0449	0.01	Q	|	|	| V	|
17+40	0.0450	0.01	Q	|	|	| V	|
17+45	0.0451	0.01	Q	|	|	| V	|
17+50	0.0452	0.01	Q	|	|	| V	|
17+55	0.0452	0.01	Q	|	|	| V	|
18+ 0	0.0453	0.01	Q	|	|	| V	|
18+ 5	0.0454	0.01	Q	|	|	| V	|
18+10	0.0454	0.01	Q	|	|	| V	|
18+15	0.0455	0.01	Q	|	|	| V	|
18+20	0.0456	0.01	Q	|	|	| V	|
18+25	0.0456	0.01	Q	|	|	| V	|
18+30	0.0457	0.01	Q	|	|	| V	|
18+35	0.0457	0.01	Q	|	|	| V	|

18+40	0.0458	0.01	Q	|	|	|	V |
18+45	0.0458	0.01	Q	|	|	|	V |
18+50	0.0459	0.01	Q	|	|	|	V |
18+55	0.0459	0.00	Q	|	|	|	V |
19+ 0	0.0459	0.00	Q	|	|	|	V |
19+ 5	0.0460	0.01	Q	|	|	|	V |
19+10	0.0460	0.01	Q	|	|	|	V |
19+15	0.0461	0.01	Q	|	|	|	V |
19+20	0.0461	0.01	Q	|	|	|	V |
19+25	0.0462	0.01	Q	|	|	|	V |
19+30	0.0463	0.01	Q	|	|	|	V |
19+35	0.0463	0.01	Q	|	|	|	V |
19+40	0.0464	0.01	Q	|	|	|	V |
19+45	0.0464	0.01	Q	|	|	|	V |
19+50	0.0465	0.01	Q	|	|	|	V |
19+55	0.0465	0.00	Q	|	|	|	V |
20+ 0	0.0465	0.00	Q	|	|	|	V |
20+ 5	0.0466	0.01	Q	|	|	|	V |
20+10	0.0466	0.01	Q	|	|	|	V |
20+15	0.0467	0.01	Q	|	|	|	V |
20+20	0.0467	0.01	Q	|	|	|	V |
20+25	0.0468	0.01	Q	|	|	|	V |
20+30	0.0468	0.01	Q	|	|	|	V |
20+35	0.0469	0.01	Q	|	|	|	V |
20+40	0.0469	0.01	Q	|	|	|	V |
20+45	0.0470	0.01	Q	|	|	|	V |
20+50	0.0470	0.01	Q	|	|	|	V |
20+55	0.0470	0.00	Q	|	|	|	V |
21+ 0	0.0471	0.00	Q	|	|	|	V |
21+ 5	0.0471	0.01	Q	|	|	|	V |
21+10	0.0471	0.01	Q	|	|	|	V |
21+15	0.0472	0.01	Q	|	|	|	V|
21+20	0.0472	0.01	Q	|	|	|	V|
21+25	0.0473	0.00	Q	|	|	|	V|
21+30	0.0473	0.00	Q	|	|	|	V|
21+35	0.0473	0.01	Q	|	|	|	V|
21+40	0.0474	0.01	Q	|	|	|	V|
21+45	0.0474	0.01	Q	|	|	|	V|
21+50	0.0475	0.01	Q	|	|	|	V|
21+55	0.0475	0.00	Q	|	|	|	V|
22+ 0	0.0475	0.00	Q	|	|	|	V|
22+ 5	0.0476	0.01	Q	|	|	|	V|
22+10	0.0476	0.01	Q	|	|	|	V|
22+15	0.0477	0.01	Q	|	|	|	V|
22+20	0.0477	0.01	Q	|	|	|	V|
22+25	0.0478	0.00	Q	|	|	|	V|
22+30	0.0478	0.00	Q	|	|	|	V|
22+35	0.0478	0.00	Q	|	|	|	V|
22+40	0.0479	0.00	Q	|	|	|	V|
22+45	0.0479	0.00	Q	|	|	|	V|
22+50	0.0479	0.00	Q	|	|	|	V|
22+55	0.0479	0.00	Q	|	|	|	V|
23+ 0	0.0480	0.00	Q	|	|	|	V|
23+ 5	0.0480	0.00	Q	|	|	|	V|

23+10	0.0480	0.00	Q	|	|	|	V|
23+15	0.0481	0.00	Q	|	|	|	V|
23+20	0.0481	0.00	Q	|	|	|	V|
23+25	0.0481	0.00	Q	|	|	|	V|
23+30	0.0482	0.00	Q	|	|	|	V|
23+35	0.0482	0.00	Q	|	|	|	V|
23+40	0.0482	0.00	Q	|	|	|	V|
23+45	0.0483	0.00	Q	|	|	|	V|
23+50	0.0483	0.00	Q	|	|	|	V|
23+55	0.0483	0.00	Q	|	|	|	V|
24+ 0	0.0484	0.00	Q	|	|	|	V|
24+ 5	0.0484	0.00	Q	|	|	|	V|
24+10	0.0484	0.00	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPTRENCH15.out

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77              0.50                    0.39

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77              1.30                    1.00

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    0.500(In)
      Area Averaged 100-Year Rainfall =    1.300(In)

      Point rain (area averaged) =    0.687(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    0.687(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.346        0.599        1.000      0.599
                                                          Sum (F) =
0.599
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-
      Slope of intensity-duration curve for a 1 hour storm =0.5000
      ------------------------------------------------------------------
--

                           U n i t  H y d r o g r a p h
                                VALLEY S-Curve
      ------------------------------------------------------------------
                           Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                       Graph %           (CFS)
      ------------------------------------------------------------------
-
                  1   0.083        326.011         59.201              0.459
                  2   0.167        652.021         35.743              0.277
                  3   0.250        978.032          5.056              0.039
                                                                  Sum =
100.000   Sum=       0.776
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)			Effective
(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1. 0.08	4.20	0.346	(0.599)		0.216	0.131
2. 0.17	4.30	0.355	(0.599)		0.221	0.134
3. 0.25	5.00	0.412	(0.599)		0.257	0.155
4. 0.33	5.00	0.412	(0.599)		0.257	0.155
5. 0.42	5.80	0.478	(0.599)		0.298	0.180
6. 0.50	6.50	0.536	(0.599)		0.334	0.202
7. 0.58	7.40	0.610	(0.599)		0.380	0.230
8. 0.67	8.60	0.709	(0.599)		0.442	0.267
9. 0.75	12.30	1.015	0.599	(	0.632)	0.415
10. 0.83	29.10	2.400	0.599	(	1.495)	1.801
11. 0.92	6.80	0.561	(0.599)		0.349	0.211
12. 1.00	5.00	0.412	(0.599)		0.257	0.155
	(Loss Rate Not Used)					
Sum =	100.0				Sum =	4.0

Flood volume = Effective rainfall 0.34(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.35(In)
Total soil loss = 0.023(Ac.Ft)
Total rainfall = 0.69(In)
Flood volume = 940.7 Cubic Feet
Total soil loss = 980.6 Cubic Feet

Peak flow rate of this hydrograph = 0.954(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0004	0.06	Q				
0+10	0.0011	0.10	Q V				
0+15	0.0019	0.11	Q V				
0+20	0.0027	0.12	Q V				
0+25	0.0036	0.13	Q V				
0+30	0.0046	0.15	Q V				
0+35	0.0058	0.17	Q V				
0+40	0.0071	0.19	Q	V			
0+45	0.0090	0.27	Q	V			
0+50	0.0156	0.95	Q		V		

```
    0+55       0.0198      0.61  | Q       |         |         |     V   |
    1+ 0       0.0212      0.20  Q         |         |         |        V|
    1+ 5       0.0216      0.05  Q         |         |         |        V|
    1+10       0.0216      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             0.85                    0.65

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.00                    1.54

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    0.850(In)
      Area Averaged 100-Year Rainfall =    2.000(In)

      Point rain (area averaged) =    1.119(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.119(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.346        0.599        1.000      0.599
                                                          Sum (F) =
0.599
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                  1   0.083        326.011         59.201              0.459
                  2   0.167        652.021         35.743              0.277
                  3   0.250        978.032          5.056              0.039
                                                                 Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)			Effective
(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1. 0.08	1.30	0.175	(0.599)		0.109	0.066
2. 0.17	1.30	0.175	(0.599)		0.109	0.066
3. 0.25	1.10	0.148	(0.599)		0.092	0.056
4. 0.33	1.50	0.201	(0.599)		0.126	0.076
5. 0.42	1.50	0.201	(0.599)		0.126	0.076
6. 0.50	1.80	0.242	(0.599)		0.151	0.091
7. 0.58	1.50	0.201	(0.599)		0.126	0.076
8. 0.67	1.80	0.242	(0.599)		0.151	0.091
9. 0.75	1.80	0.242	(0.599)		0.151	0.091
10. 0.83	1.50	0.201	(0.599)		0.126	0.076
11. 0.92	1.60	0.215	(0.599)		0.134	0.081
12. 1.00	1.80	0.242	(0.599)		0.151	0.091
13. 1.08	2.20	0.296	(0.599)		0.184	0.111
14. 1.17	2.20	0.296	(0.599)		0.184	0.111
15. 1.25	2.20	0.296	(0.599)		0.184	0.111
16. 1.33	2.00	0.269	(0.599)		0.167	0.101
17. 1.42	2.60	0.349	(0.599)		0.218	0.132
18. 1.50	2.70	0.363	(0.599)		0.226	0.137
19. 1.58	2.40	0.322	(0.599)		0.201	0.122
20. 1.67	2.70	0.363	(0.599)		0.226	0.137
21. 1.75	3.30	0.443	(0.599)		0.276	0.167
22. 1.83	3.10	0.416	(0.599)		0.259	0.157
23. 1.92	2.90	0.390	(0.599)		0.243	0.147
24. 2.00	3.00	0.403	(0.599)		0.251	0.152
25. 2.08	3.10	0.416	(0.599)		0.259	0.157
26. 2.17	4.20	0.564	(0.599)		0.351	0.213
27. 2.25	5.00	0.672	(0.599)		0.418	0.253
28. 2.33	3.50	0.470	(0.599)		0.293	0.177
29. 2.42	6.80	0.913	(0.599)		0.569	0.344
30. 2.50	7.30	0.981	0.599	(	0.611)	0.381
31. 2.58	8.20	1.101	0.599	(	0.686)	0.502
32. 2.67	5.90	0.793	(0.599)		0.494	0.299
33. 2.75	2.00	0.269	(0.599)		0.167	0.101
34. 2.83	1.80	0.242	(0.599)		0.151	0.091
35. 2.92	1.80	0.242	(0.599)		0.151	0.091
36. 3.00	0.60	0.081	(0.599)		0.050	0.030
	(Loss Rate Not Used)					
Sum =	100.0					Sum = 5.2

Flood volume = Effective rainfall 0.43(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.69(In)
Total soil loss = 0.044(Ac.Ft)
Total rainfall = 1.12(In)
Flood volume = 1202.4 Cubic Feet
Total soil loss = 1926.3 Cubic Feet

Peak flow rate of this hydrograph = 0.350(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0002	0.03	Q
0+10	0.0005	0.05	Q
0+15	0.0009	0.05	QV
0+20	0.0012	0.05	QV
0+25	0.0016	0.06	Q V
0+30	0.0021	0.07	Q V
0+35	0.0025	0.06	Q V
0+40	0.0030	0.07	Q V
0+45	0.0035	0.07	Q V
0+50	0.0039	0.06	Q V
0+55	0.0043	0.06	Q V
1+ 0	0.0048	0.07	Q V
1+ 5	0.0053	0.08	Q V
1+10	0.0059	0.09	Q V
1+15	0.0065	0.09	Q V
1+20	0.0071	0.08	Q V
1+25	0.0077	0.09	Q V
1+30	0.0084	0.10	Q V
1+35	0.0091	0.10	Q V
1+40	0.0098	0.10	Q V
1+45	0.0106	0.12	Q V
1+50	0.0115	0.12	Q V
1+55	0.0123	0.12	Q V
2+ 0	0.0131	0.12	Q V
2+ 5	0.0139	0.12	Q V
2+10	0.0150	0.15	Q V
2+15	0.0162	0.18	Q V
2+20	0.0173	0.16	Q V
2+25	0.0188	0.22	Q V
2+30	0.0207	0.28	Q V
2+35	0.0231	0.35	Q V
2+40	0.0251	0.29	Q V
2+45	0.0262	0.15	Q V
2+50	0.0267	0.08	Q V
2+55	0.0272	0.07	Q V
3+ 0	0.0275	0.04	Q V
3+ 5	0.0276	0.01	Q V
3+10	0.0276	0.00	Q V

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             1.20                    0.92

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.90                    2.23

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    1.200(In)
      Area Averaged 100-Year Rainfall =    2.900(In)

      Point rain (area averaged) =    1.598(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.598(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.346        0.599        1.000      0.599
                                                          Sum (F) =
0.599
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                  1   0.083        326.011         59.201              0.459
                  2   0.167        652.021         35.743              0.277
                  3   0.250        978.032          5.056              0.039
                                                                 Sum =
100.000   Sum=       0.776
------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.50	0.096	(0.599)		0.060	0.036
2.	0.17	0.60	0.115	(0.599)		0.072	0.043
3.	0.25	0.60	0.115	(0.599)		0.072	0.043
4.	0.33	0.60	0.115	(0.599)		0.072	0.043
5.	0.42	0.60	0.115	(0.599)		0.072	0.043
6.	0.50	0.70	0.134	(0.599)		0.084	0.051
7.	0.58	0.70	0.134	(0.599)		0.084	0.051
8.	0.67	0.70	0.134	(0.599)		0.084	0.051
9.	0.75	0.70	0.134	(0.599)		0.084	0.051
10.	0.83	0.70	0.134	(0.599)		0.084	0.051
11.	0.92	0.70	0.134	(0.599)		0.084	0.051
12.	1.00	0.80	0.153	(0.599)		0.096	0.058
13.	1.08	0.80	0.153	(0.599)		0.096	0.058
14.	1.17	0.80	0.153	(0.599)		0.096	0.058
15.	1.25	0.80	0.153	(0.599)		0.096	0.058
16.	1.33	0.80	0.153	(0.599)		0.096	0.058
17.	1.42	0.80	0.153	(0.599)		0.096	0.058
18.	1.50	0.80	0.153	(0.599)		0.096	0.058
19.	1.58	0.80	0.153	(0.599)		0.096	0.058
20.	1.67	0.80	0.153	(0.599)		0.096	0.058
21.	1.75	0.80	0.153	(0.599)		0.096	0.058
22.	1.83	0.80	0.153	(0.599)		0.096	0.058
23.	1.92	0.80	0.153	(0.599)		0.096	0.058
24.	2.00	0.90	0.173	(0.599)		0.108	0.065
25.	2.08	0.80	0.153	(0.599)		0.096	0.058
26.	2.17	0.90	0.173	(0.599)		0.108	0.065
27.	2.25	0.90	0.173	(0.599)		0.108	0.065
28.	2.33	0.90	0.173	(0.599)		0.108	0.065
29.	2.42	0.90	0.173	(0.599)		0.108	0.065
30.	2.50	0.90	0.173	(0.599)		0.108	0.065
31.	2.58	0.90	0.173	(0.599)		0.108	0.065
32.	2.67	0.90	0.173	(0.599)		0.108	0.065
33.	2.75	1.00	0.192	(0.599)		0.119	0.072
34.	2.83	1.00	0.192	(0.599)		0.119	0.072
35.	2.92	1.00	0.192	(0.599)		0.119	0.072
36.	3.00	1.00	0.192	(0.599)		0.119	0.072
37.	3.08	1.00	0.192	(0.599)		0.119	0.072
38.	3.17	1.10	0.211	(0.599)		0.131	0.080
39.	3.25	1.10	0.211	(0.599)		0.131	0.080
40.	3.33	1.10	0.211	(0.599)		0.131	0.080
41.	3.42	1.20	0.230	(0.599)		0.143	0.087
42.	3.50	1.30	0.249	(0.599)		0.155	0.094
43.	3.58	1.40	0.268	(0.599)		0.167	0.101
44.	3.67	1.40	0.268	(0.599)		0.167	0.101
45.	3.75	1.50	0.288	(0.599)		0.179	0.108
46.	3.83	1.50	0.288	(0.599)		0.179	0.108
47.	3.92	1.60	0.307	(0.599)		0.191	0.116

48.	4.00	1.60	0.307	(0.599)	0.191	0.116
49.	4.08	1.70	0.326	(0.599)	0.203	0.123
50.	4.17	1.80	0.345	(0.599)	0.215	0.130
51.	4.25	1.90	0.364	(0.599)	0.227	0.137
52.	4.33	2.00	0.384	(0.599)	0.239	0.145
53.	4.42	2.10	0.403	(0.599)	0.251	0.152
54.	4.50	2.10	0.403	(0.599)	0.251	0.152
55.	4.58	2.20	0.422	(0.599)	0.263	0.159
56.	4.67	2.30	0.441	(0.599)	0.275	0.166
57.	4.75	2.40	0.460	(0.599)	0.287	0.174
58.	4.83	2.40	0.460	(0.599)	0.287	0.174
59.	4.92	2.50	0.479	(0.599)	0.299	0.181
60.	5.00	2.60	0.499	(0.599)	0.311	0.188
61.	5.08	3.10	0.595	(0.599)	0.370	0.224
62.	5.17	3.60	0.690	(0.599)	0.430	0.260
63.	5.25	3.90	0.748	(0.599)	0.466	0.282
64.	5.33	4.20	0.805	(0.599)	0.502	0.304
65.	5.42	4.70	0.901	(0.599)	0.562	0.340
66.	5.50	5.60	1.074	0.599	(0.669)	0.475
67.	5.58	1.90	0.364	(0.599)	0.227	0.137
68.	5.67	0.90	0.173	(0.599)	0.108	0.065
69.	5.75	0.60	0.115	(0.599)	0.072	0.043
70.	5.83	0.50	0.096	(0.599)	0.060	0.036
71.	5.92	0.30	0.058	(0.599)	0.036	0.022
72.	6.00	0.20	0.038	(0.599)	0.024	0.014

(Loss Rate Not Used)

Sum = 100.0 Sum = 7.3

Flood volume = Effective rainfall 0.61(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.99(In)
Total soil loss = 0.064(Ac.Ft)
Total rainfall = 1.60(In)
Flood volume = 1700.3 Cubic Feet
Total soil loss = 2766.7 Cubic Feet

Peak flow rate of this hydrograph = 0.324(CFS)

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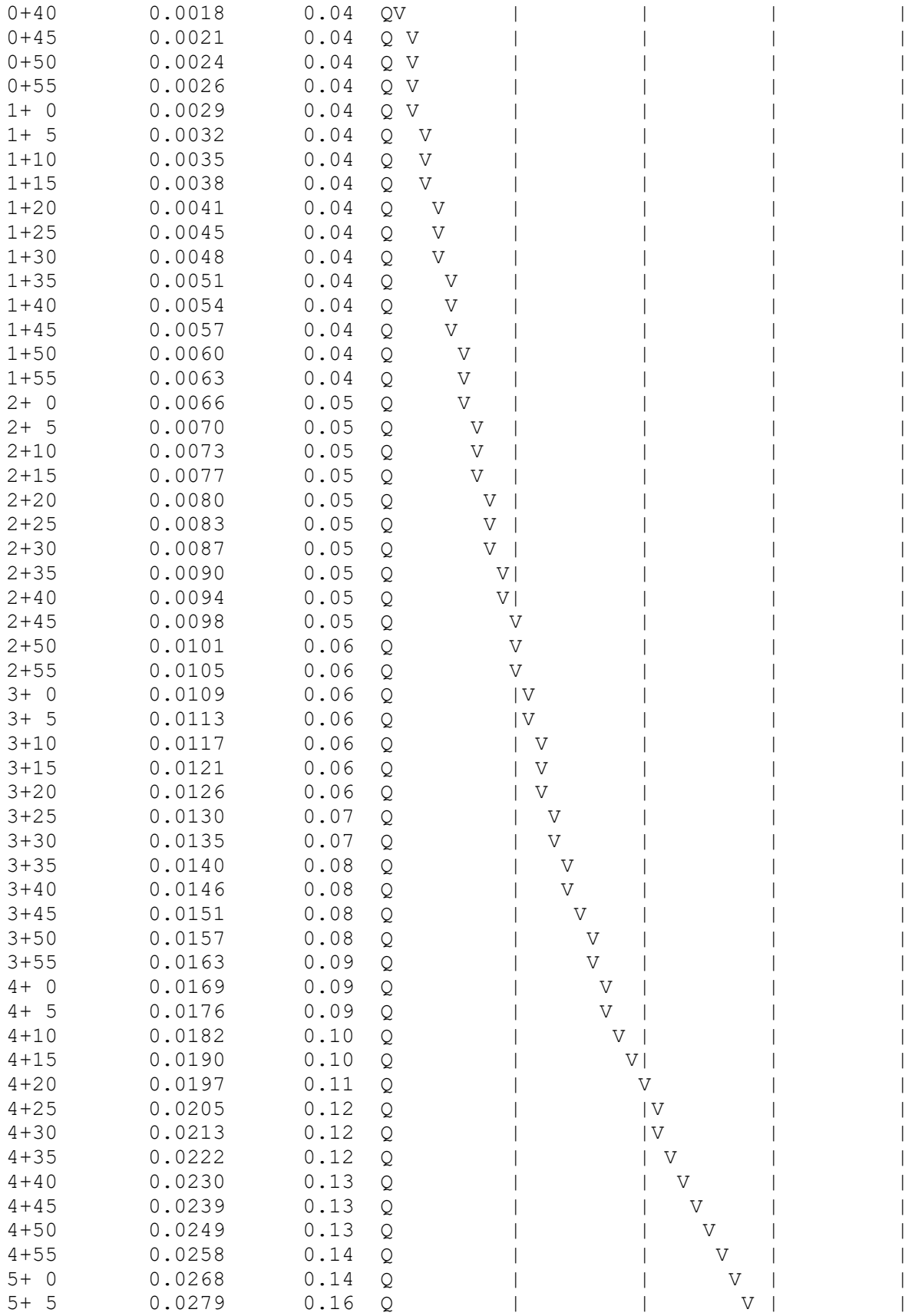
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0003	0.03	Q	|	|	|	|
0+15	0.0006	0.03	Q	|	|	|	|
0+20	0.0008	0.03	Q	|	|	|	|
0+25	0.0010	0.03	QV	|	|	|	|
0+30	0.0013	0.04	QV	|	|	|	|
0+35	0.0015	0.04	QV	|	|	|	|



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    5+10       0.0292      0.19  Q          |          |         V|          |
    5+15       0.0307      0.21  Q          |          |          |V         |
    5+20       0.0322      0.23  Q          |          |          |  V       |
    5+25       0.0340      0.25  |Q         |          |          |   V      |
    5+30       0.0362      0.32  |Q         |          |          |       V  |
    5+35       0.0376      0.21  Q          |          |          |        V |
    5+40       0.0382      0.09  Q          |          |          |         V|
    5+45       0.0385      0.04  Q          |          |          |         V|
    5+50       0.0388      0.03  Q          |          |          |         V|
    5+55       0.0389      0.02  Q          |          |          |         V|
    6+ 0       0.0390      0.01  Q          |          |          |         V|
    6+ 5       0.0390      0.00  Q          |          |          |         V|
    6+10       0.0390      0.00  Q          |          |          |          V
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPTRENCH245.out

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.00                    1.54

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             5.90                    4.54

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    2.000(In)
      Area Averaged 100-Year Rainfall =    5.900(In)

      Point rain (area averaged) =    2.913(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    2.913(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.346        0.599        1.000      0.599
                                                          Sum (F) =
0.599
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                  1   0.083        326.011         59.201              0.459
                  2   0.167        652.021         35.743              0.277
                  3   0.250        978.032          5.056              0.039
                                                                 Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.07	0.023	(1.062)		0.015	0.009
2.	0.17	0.07	0.023	(1.058)		0.015	0.009
3.	0.25	0.07	0.023	(1.054)		0.015	0.009
4.	0.33	0.10	0.035	(1.050)		0.022	0.013
5.	0.42	0.10	0.035	(1.046)		0.022	0.013
6.	0.50	0.10	0.035	(1.042)		0.022	0.013
7.	0.58	0.10	0.035	(1.038)		0.022	0.013
8.	0.67	0.10	0.035	(1.034)		0.022	0.013
9.	0.75	0.10	0.035	(1.030)		0.022	0.013
10.	0.83	0.13	0.047	(1.026)		0.029	0.018
11.	0.92	0.13	0.047	(1.022)		0.029	0.018
12.	1.00	0.13	0.047	(1.018)		0.029	0.018
13.	1.08	0.10	0.035	(1.014)		0.022	0.013
14.	1.17	0.10	0.035	(1.010)		0.022	0.013
15.	1.25	0.10	0.035	(1.006)		0.022	0.013
16.	1.33	0.10	0.035	(1.002)		0.022	0.013
17.	1.42	0.10	0.035	(0.998)		0.022	0.013
18.	1.50	0.10	0.035	(0.994)		0.022	0.013
19.	1.58	0.10	0.035	(0.990)		0.022	0.013
20.	1.67	0.10	0.035	(0.986)		0.022	0.013
21.	1.75	0.10	0.035	(0.982)		0.022	0.013
22.	1.83	0.13	0.047	(0.978)		0.029	0.018
23.	1.92	0.13	0.047	(0.974)		0.029	0.018
24.	2.00	0.13	0.047	(0.970)		0.029	0.018
25.	2.08	0.13	0.047	(0.966)		0.029	0.018
26.	2.17	0.13	0.047	(0.962)		0.029	0.018
27.	2.25	0.13	0.047	(0.958)		0.029	0.018
28.	2.33	0.13	0.047	(0.954)		0.029	0.018
29.	2.42	0.13	0.047	(0.950)		0.029	0.018
30.	2.50	0.13	0.047	(0.947)		0.029	0.018
31.	2.58	0.17	0.058	(0.943)		0.036	0.022
32.	2.67	0.17	0.058	(0.939)		0.036	0.022
33.	2.75	0.17	0.058	(0.935)		0.036	0.022
34.	2.83	0.17	0.058	(0.931)		0.036	0.022
35.	2.92	0.17	0.058	(0.927)		0.036	0.022
36.	3.00	0.17	0.058	(0.923)		0.036	0.022
37.	3.08	0.17	0.058	(0.920)		0.036	0.022
38.	3.17	0.17	0.058	(0.916)		0.036	0.022
39.	3.25	0.17	0.058	(0.912)		0.036	0.022
40.	3.33	0.17	0.058	(0.908)		0.036	0.022
41.	3.42	0.17	0.058	(0.904)		0.036	0.022
42.	3.50	0.17	0.058	(0.901)		0.036	0.022
43.	3.58	0.17	0.058	(0.897)		0.036	0.022
44.	3.67	0.17	0.058	(0.893)		0.036	0.022
45.	3.75	0.17	0.058	(0.889)		0.036	0.022
46.	3.83	0.20	0.070	(0.886)		0.044	0.026
47.	3.92	0.20	0.070	(0.882)		0.044	0.026

48.	4.00	0.20	0.070	(0.878)	0.044	0.026
49.	4.08	0.20	0.070	(0.874)	0.044	0.026
50.	4.17	0.20	0.070	(0.871)	0.044	0.026
51.	4.25	0.20	0.070	(0.867)	0.044	0.026
52.	4.33	0.23	0.082	(0.863)	0.051	0.031
53.	4.42	0.23	0.082	(0.860)	0.051	0.031
54.	4.50	0.23	0.082	(0.856)	0.051	0.031
55.	4.58	0.23	0.082	(0.852)	0.051	0.031
56.	4.67	0.23	0.082	(0.849)	0.051	0.031
57.	4.75	0.23	0.082	(0.845)	0.051	0.031
58.	4.83	0.27	0.093	(0.841)	0.058	0.035
59.	4.92	0.27	0.093	(0.838)	0.058	0.035
60.	5.00	0.27	0.093	(0.834)	0.058	0.035
61.	5.08	0.20	0.070	(0.830)	0.044	0.026
62.	5.17	0.20	0.070	(0.827)	0.044	0.026
63.	5.25	0.20	0.070	(0.823)	0.044	0.026
64.	5.33	0.23	0.082	(0.820)	0.051	0.031
65.	5.42	0.23	0.082	(0.816)	0.051	0.031
66.	5.50	0.23	0.082	(0.812)	0.051	0.031
67.	5.58	0.27	0.093	(0.809)	0.058	0.035
68.	5.67	0.27	0.093	(0.805)	0.058	0.035
69.	5.75	0.27	0.093	(0.802)	0.058	0.035
70.	5.83	0.27	0.093	(0.798)	0.058	0.035
71.	5.92	0.27	0.093	(0.795)	0.058	0.035
72.	6.00	0.27	0.093	(0.791)	0.058	0.035
73.	6.08	0.30	0.105	(0.788)	0.065	0.040
74.	6.17	0.30	0.105	(0.784)	0.065	0.040
75.	6.25	0.30	0.105	(0.781)	0.065	0.040
76.	6.33	0.30	0.105	(0.777)	0.065	0.040
77.	6.42	0.30	0.105	(0.774)	0.065	0.040
78.	6.50	0.30	0.105	(0.770)	0.065	0.040
79.	6.58	0.33	0.117	(0.767)	0.073	0.044
80.	6.67	0.33	0.117	(0.763)	0.073	0.044
81.	6.75	0.33	0.117	(0.760)	0.073	0.044
82.	6.83	0.33	0.117	(0.756)	0.073	0.044
83.	6.92	0.33	0.117	(0.753)	0.073	0.044
84.	7.00	0.33	0.117	(0.750)	0.073	0.044
85.	7.08	0.33	0.117	(0.746)	0.073	0.044
86.	7.17	0.33	0.117	(0.743)	0.073	0.044
87.	7.25	0.33	0.117	(0.739)	0.073	0.044
88.	7.33	0.37	0.128	(0.736)	0.080	0.048
89.	7.42	0.37	0.128	(0.733)	0.080	0.048
90.	7.50	0.37	0.128	(0.729)	0.080	0.048
91.	7.58	0.40	0.140	(0.726)	0.087	0.053
92.	7.67	0.40	0.140	(0.723)	0.087	0.053
93.	7.75	0.40	0.140	(0.719)	0.087	0.053
94.	7.83	0.43	0.152	(0.716)	0.094	0.057
95.	7.92	0.43	0.152	(0.713)	0.094	0.057
96.	8.00	0.43	0.152	(0.709)	0.094	0.057
97.	8.08	0.50	0.175	(0.706)	0.109	0.066
98.	8.17	0.50	0.175	(0.703)	0.109	0.066
99.	8.25	0.50	0.175	(0.699)	0.109	0.066
100.	8.33	0.50	0.175	(0.696)	0.109	0.066
101.	8.42	0.50	0.175	(0.693)	0.109	0.066

102.	8.50	0.50	0.175	(0.690)	0.109	0.066
103.	8.58	0.53	0.186	(0.686)	0.116	0.070
104.	8.67	0.53	0.186	(0.683)	0.116	0.070
105.	8.75	0.53	0.186	(0.680)	0.116	0.070
106.	8.83	0.57	0.198	(0.677)	0.123	0.075
107.	8.92	0.57	0.198	(0.674)	0.123	0.075
108.	9.00	0.57	0.198	(0.670)	0.123	0.075
109.	9.08	0.63	0.221	(0.667)	0.138	0.083
110.	9.17	0.63	0.221	(0.664)	0.138	0.083
111.	9.25	0.63	0.221	(0.661)	0.138	0.083
112.	9.33	0.67	0.233	(0.658)	0.145	0.088
113.	9.42	0.67	0.233	(0.655)	0.145	0.088
114.	9.50	0.67	0.233	(0.651)	0.145	0.088
115.	9.58	0.70	0.245	(0.648)	0.152	0.092
116.	9.67	0.70	0.245	(0.645)	0.152	0.092
117.	9.75	0.70	0.245	(0.642)	0.152	0.092
118.	9.83	0.73	0.256	(0.639)	0.160	0.097
119.	9.92	0.73	0.256	(0.636)	0.160	0.097
120.	10.00	0.73	0.256	(0.633)	0.160	0.097
121.	10.08	0.50	0.175	(0.630)	0.109	0.066
122.	10.17	0.50	0.175	(0.627)	0.109	0.066
123.	10.25	0.50	0.175	(0.624)	0.109	0.066
124.	10.33	0.50	0.175	(0.621)	0.109	0.066
125.	10.42	0.50	0.175	(0.618)	0.109	0.066
126.	10.50	0.50	0.175	(0.615)	0.109	0.066
127.	10.58	0.67	0.233	(0.612)	0.145	0.088
128.	10.67	0.67	0.233	(0.609)	0.145	0.088
129.	10.75	0.67	0.233	(0.606)	0.145	0.088
130.	10.83	0.67	0.233	(0.603)	0.145	0.088
131.	10.92	0.67	0.233	(0.600)	0.145	0.088
132.	11.00	0.67	0.233	(0.597)	0.145	0.088
133.	11.08	0.63	0.221	(0.594)	0.138	0.083
134.	11.17	0.63	0.221	(0.591)	0.138	0.083
135.	11.25	0.63	0.221	(0.588)	0.138	0.083
136.	11.33	0.63	0.221	(0.585)	0.138	0.083
137.	11.42	0.63	0.221	(0.582)	0.138	0.083
138.	11.50	0.63	0.221	(0.579)	0.138	0.083
139.	11.58	0.57	0.198	(0.577)	0.123	0.075
140.	11.67	0.57	0.198	(0.574)	0.123	0.075
141.	11.75	0.57	0.198	(0.571)	0.123	0.075
142.	11.83	0.60	0.210	(0.568)	0.131	0.079
143.	11.92	0.60	0.210	(0.565)	0.131	0.079
144.	12.00	0.60	0.210	(0.562)	0.131	0.079
145.	12.08	0.83	0.291	(0.559)	0.182	0.110
146.	12.17	0.83	0.291	(0.557)	0.182	0.110
147.	12.25	0.83	0.291	(0.554)	0.182	0.110
148.	12.33	0.87	0.303	(0.551)	0.189	0.114
149.	12.42	0.87	0.303	(0.548)	0.189	0.114
150.	12.50	0.87	0.303	(0.546)	0.189	0.114
151.	12.58	0.93	0.326	(0.543)	0.203	0.123
152.	12.67	0.93	0.326	(0.540)	0.203	0.123
153.	12.75	0.93	0.326	(0.537)	0.203	0.123
154.	12.83	0.97	0.338	(0.535)	0.211	0.127
155.	12.92	0.97	0.338	(0.532)	0.211	0.127

156.	13.00	0.97	0.338	(0.529)	0.211	0.127
157.	13.08	1.13	0.396	(0.527)	0.247	0.149
158.	13.17	1.13	0.396	(0.524)	0.247	0.149
159.	13.25	1.13	0.396	(0.521)	0.247	0.149
160.	13.33	1.13	0.396	(0.519)	0.247	0.149
161.	13.42	1.13	0.396	(0.516)	0.247	0.149
162.	13.50	1.13	0.396	(0.513)	0.247	0.149
163.	13.58	0.77	0.268	(0.511)	0.167	0.101
164.	13.67	0.77	0.268	(0.508)	0.167	0.101
165.	13.75	0.77	0.268	(0.506)	0.167	0.101
166.	13.83	0.77	0.268	(0.503)	0.167	0.101
167.	13.92	0.77	0.268	(0.500)	0.167	0.101
168.	14.00	0.77	0.268	(0.498)	0.167	0.101
169.	14.08	0.90	0.315	(0.495)	0.196	0.119
170.	14.17	0.90	0.315	(0.493)	0.196	0.119
171.	14.25	0.90	0.315	(0.490)	0.196	0.119
172.	14.33	0.87	0.303	(0.488)	0.189	0.114
173.	14.42	0.87	0.303	(0.485)	0.189	0.114
174.	14.50	0.87	0.303	(0.483)	0.189	0.114
175.	14.58	0.87	0.303	(0.480)	0.189	0.114
176.	14.67	0.87	0.303	(0.478)	0.189	0.114
177.	14.75	0.87	0.303	(0.475)	0.189	0.114
178.	14.83	0.83	0.291	(0.473)	0.182	0.110
179.	14.92	0.83	0.291	(0.471)	0.182	0.110
180.	15.00	0.83	0.291	(0.468)	0.182	0.110
181.	15.08	0.80	0.280	(0.466)	0.174	0.105
182.	15.17	0.80	0.280	(0.463)	0.174	0.105
183.	15.25	0.80	0.280	(0.461)	0.174	0.105
184.	15.33	0.77	0.268	(0.459)	0.167	0.101
185.	15.42	0.77	0.268	(0.456)	0.167	0.101
186.	15.50	0.77	0.268	(0.454)	0.167	0.101
187.	15.58	0.63	0.221	(0.452)	0.138	0.083
188.	15.67	0.63	0.221	(0.449)	0.138	0.083
189.	15.75	0.63	0.221	(0.447)	0.138	0.083
190.	15.83	0.63	0.221	(0.445)	0.138	0.083
191.	15.92	0.63	0.221	(0.442)	0.138	0.083
192.	16.00	0.63	0.221	(0.440)	0.138	0.083
193.	16.08	0.13	0.047	(0.438)	0.029	0.018
194.	16.17	0.13	0.047	(0.436)	0.029	0.018
195.	16.25	0.13	0.047	(0.433)	0.029	0.018
196.	16.33	0.13	0.047	(0.431)	0.029	0.018
197.	16.42	0.13	0.047	(0.429)	0.029	0.018
198.	16.50	0.13	0.047	(0.427)	0.029	0.018
199.	16.58	0.10	0.035	(0.425)	0.022	0.013
200.	16.67	0.10	0.035	(0.423)	0.022	0.013
201.	16.75	0.10	0.035	(0.420)	0.022	0.013
202.	16.83	0.10	0.035	(0.418)	0.022	0.013
203.	16.92	0.10	0.035	(0.416)	0.022	0.013
204.	17.00	0.10	0.035	(0.414)	0.022	0.013
205.	17.08	0.17	0.058	(0.412)	0.036	0.022
206.	17.17	0.17	0.058	(0.410)	0.036	0.022
207.	17.25	0.17	0.058	(0.408)	0.036	0.022
208.	17.33	0.17	0.058	(0.406)	0.036	0.022
209.	17.42	0.17	0.058	(0.404)	0.036	0.022

210. 17.50	0.17	0.058	(0.402)	0.036	0.022
211. 17.58	0.17	0.058	(0.400)	0.036	0.022
212. 17.67	0.17	0.058	(0.398)	0.036	0.022
213. 17.75	0.17	0.058	(0.396)	0.036	0.022
214. 17.83	0.13	0.047	(0.394)	0.029	0.018
215. 17.92	0.13	0.047	(0.392)	0.029	0.018
216. 18.00	0.13	0.047	(0.390)	0.029	0.018
217. 18.08	0.13	0.047	(0.388)	0.029	0.018
218. 18.17	0.13	0.047	(0.386)	0.029	0.018
219. 18.25	0.13	0.047	(0.384)	0.029	0.018
220. 18.33	0.13	0.047	(0.382)	0.029	0.018
221. 18.42	0.13	0.047	(0.380)	0.029	0.018
222. 18.50	0.13	0.047	(0.379)	0.029	0.018
223. 18.58	0.10	0.035	(0.377)	0.022	0.013
224. 18.67	0.10	0.035	(0.375)	0.022	0.013
225. 18.75	0.10	0.035	(0.373)	0.022	0.013
226. 18.83	0.07	0.023	(0.371)	0.015	0.009
227. 18.92	0.07	0.023	(0.370)	0.015	0.009
228. 19.00	0.07	0.023	(0.368)	0.015	0.009
229. 19.08	0.10	0.035	(0.366)	0.022	0.013
230. 19.17	0.10	0.035	(0.364)	0.022	0.013
231. 19.25	0.10	0.035	(0.363)	0.022	0.013
232. 19.33	0.13	0.047	(0.361)	0.029	0.018
233. 19.42	0.13	0.047	(0.359)	0.029	0.018
234. 19.50	0.13	0.047	(0.358)	0.029	0.018
235. 19.58	0.10	0.035	(0.356)	0.022	0.013
236. 19.67	0.10	0.035	(0.354)	0.022	0.013
237. 19.75	0.10	0.035	(0.353)	0.022	0.013
238. 19.83	0.07	0.023	(0.351)	0.015	0.009
239. 19.92	0.07	0.023	(0.350)	0.015	0.009
240. 20.00	0.07	0.023	(0.348)	0.015	0.009
241. 20.08	0.10	0.035	(0.346)	0.022	0.013
242. 20.17	0.10	0.035	(0.345)	0.022	0.013
243. 20.25	0.10	0.035	(0.343)	0.022	0.013
244. 20.33	0.10	0.035	(0.342)	0.022	0.013
245. 20.42	0.10	0.035	(0.341)	0.022	0.013
246. 20.50	0.10	0.035	(0.339)	0.022	0.013
247. 20.58	0.10	0.035	(0.338)	0.022	0.013
248. 20.67	0.10	0.035	(0.336)	0.022	0.013
249. 20.75	0.10	0.035	(0.335)	0.022	0.013
250. 20.83	0.07	0.023	(0.333)	0.015	0.009
251. 20.92	0.07	0.023	(0.332)	0.015	0.009
252. 21.00	0.07	0.023	(0.331)	0.015	0.009
253. 21.08	0.10	0.035	(0.329)	0.022	0.013
254. 21.17	0.10	0.035	(0.328)	0.022	0.013
255. 21.25	0.10	0.035	(0.327)	0.022	0.013
256. 21.33	0.07	0.023	(0.326)	0.015	0.009
257. 21.42	0.07	0.023	(0.324)	0.015	0.009
258. 21.50	0.07	0.023	(0.323)	0.015	0.009
259. 21.58	0.10	0.035	(0.322)	0.022	0.013
260. 21.67	0.10	0.035	(0.321)	0.022	0.013
261. 21.75	0.10	0.035	(0.320)	0.022	0.013
262. 21.83	0.07	0.023	(0.319)	0.015	0.009
263. 21.92	0.07	0.023	(0.318)	0.015	0.009

264.	22.00	0.07	0.023	(0.316)	0.015	0.009
265.	22.08	0.10	0.035	(0.315)	0.022	0.013
266.	22.17	0.10	0.035	(0.314)	0.022	0.013
267.	22.25	0.10	0.035	(0.313)	0.022	0.013
268.	22.33	0.07	0.023	(0.312)	0.015	0.009
269.	22.42	0.07	0.023	(0.311)	0.015	0.009
270.	22.50	0.07	0.023	(0.311)	0.015	0.009
271.	22.58	0.07	0.023	(0.310)	0.015	0.009
272.	22.67	0.07	0.023	(0.309)	0.015	0.009
273.	22.75	0.07	0.023	(0.308)	0.015	0.009
274.	22.83	0.07	0.023	(0.307)	0.015	0.009
275.	22.92	0.07	0.023	(0.306)	0.015	0.009
276.	23.00	0.07	0.023	(0.306)	0.015	0.009
277.	23.08	0.07	0.023	(0.305)	0.015	0.009
278.	23.17	0.07	0.023	(0.304)	0.015	0.009
279.	23.25	0.07	0.023	(0.304)	0.015	0.009
280.	23.33	0.07	0.023	(0.303)	0.015	0.009
281.	23.42	0.07	0.023	(0.302)	0.015	0.009
282.	23.50	0.07	0.023	(0.302)	0.015	0.009
283.	23.58	0.07	0.023	(0.301)	0.015	0.009
284.	23.67	0.07	0.023	(0.301)	0.015	0.009
285.	23.75	0.07	0.023	(0.301)	0.015	0.009
286.	23.83	0.07	0.023	(0.300)	0.015	0.009
287.	23.92	0.07	0.023	(0.300)	0.015	0.009
288.	24.00	0.07	0.023	(0.300)	0.015	0.009

(Loss Rate Not Used)

Sum = 100.0 Sum = 13.2

Flood volume = Effective rainfall 1.10(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 1.82(In)
Total soil loss = 0.116(Ac.Ft)
Total rainfall = 2.91(In)
Flood volume = 3070.1 Cubic Feet
Total soil loss = 5073.4 Cubic Feet

Peak flow rate of this hydrograph = 0.116(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0001	0.01	Q	|	|	|	|
0+15	0.0001	0.01	Q	|	|	|	|
0+20	0.0002	0.01	Q	|	|	|	|
0+25	0.0002	0.01	Q	|	|	|	|
0+30	0.0003	0.01	Q	|	|	|	|
0+35	0.0004	0.01	Q	|	|	|	|

0+40	0.0005	0.01	Q				
0+45	0.0005	0.01	Q				
0+50	0.0006	0.01	Q				
0+55	0.0007	0.01	Q				
1+ 0	0.0008	0.01	Q				
1+ 5	0.0009	0.01	Q				
1+10	0.0010	0.01	Q				
1+15	0.0010	0.01	Q				
1+20	0.0011	0.01	Q				
1+25	0.0012	0.01	Q				
1+30	0.0012	0.01	Q				
1+35	0.0013	0.01	Q				
1+40	0.0014	0.01	Q				
1+45	0.0014	0.01	Q				
1+50	0.0015	0.01	Q				
1+55	0.0016	0.01	Q				
2+ 0	0.0017	0.01	Q				
2+ 5	0.0018	0.01	QV				
2+10	0.0019	0.01	QV				
2+15	0.0020	0.01	QV				
2+20	0.0021	0.01	QV				
2+25	0.0022	0.01	QV				
2+30	0.0023	0.01	QV				
2+35	0.0024	0.02	QV				
2+40	0.0025	0.02	QV				
2+45	0.0026	0.02	QV				
2+50	0.0027	0.02	QV				
2+55	0.0029	0.02	QV				
3+ 0	0.0030	0.02	QV				
3+ 5	0.0031	0.02	QV				
3+10	0.0032	0.02	QV				
3+15	0.0033	0.02	QV				
3+20	0.0034	0.02	QV				
3+25	0.0036	0.02	Q V				
3+30	0.0037	0.02	Q V				
3+35	0.0038	0.02	Q V				
3+40	0.0039	0.02	Q V				
3+45	0.0040	0.02	Q V				
3+50	0.0042	0.02	Q V				
3+55	0.0043	0.02	Q V				
4+ 0	0.0044	0.02	Q V				
4+ 5	0.0046	0.02	Q V				
4+10	0.0047	0.02	Q V				
4+15	0.0049	0.02	Q V				
4+20	0.0050	0.02	Q V				
4+25	0.0052	0.02	Q V				
4+30	0.0054	0.02	Q V				
4+35	0.0055	0.02	Q V				
4+40	0.0057	0.02	Q V				
4+45	0.0058	0.02	Q V				
4+50	0.0060	0.03	Q V				
4+55	0.0062	0.03	Q V				
5+ 0	0.0064	0.03	Q V				
5+ 5	0.0066	0.02	Q V				

5+10	0.0067	0.02	Q	V	|	|	|	|
5+15	0.0068	0.02	Q	V	|	|	|	|
5+20	0.0070	0.02	Q	V	|	|	|	|
5+25	0.0072	0.02	Q	V	|	|	|	|
5+30	0.0073	0.02	Q	V	|	|	|	|
5+35	0.0075	0.03	Q	V	|	|	|	|
5+40	0.0077	0.03	Q	V	|	|	|	|
5+45	0.0079	0.03	Q	V	|	|	|	|
5+50	0.0081	0.03	Q	V	|	|	|	|
5+55	0.0083	0.03	Q	V	|	|	|	|
6+ 0	0.0084	0.03	Q	V	|	|	|	|
6+ 5	0.0086	0.03	Q	V	|	|	|	|
6+10	0.0089	0.03	Q	V	|	|	|	|
6+15	0.0091	0.03	Q	V	|	|	|	|
6+20	0.0093	0.03	Q	V	|	|	|	|
6+25	0.0095	0.03	Q	V	|	|	|	|
6+30	0.0097	0.03	Q	V	|	|	|	|
6+35	0.0099	0.03	Q	V	|	|	|	|
6+40	0.0102	0.03	Q	V	|	|	|	|
6+45	0.0104	0.03	Q	V	|	|	|	|
6+50	0.0106	0.03	Q	V	|	|	|	|
6+55	0.0109	0.03	Q	V	|	|	|	|
7+ 0	0.0111	0.03	Q	V	|	|	|	|
7+ 5	0.0113	0.03	Q	V	|	|	|	|
7+10	0.0116	0.03	Q	V	|	|	|	|
7+15	0.0118	0.03	Q	V	|	|	|	|
7+20	0.0121	0.04	Q	V	|	|	|	|
7+25	0.0123	0.04	Q	V	|	|	|	|
7+30	0.0126	0.04	Q	V	|	|	|	|
7+35	0.0128	0.04	Q	V	|	|	|	|
7+40	0.0131	0.04	Q	V	|	|	|	|
7+45	0.0134	0.04	Q	V	|	|	|	|
7+50	0.0137	0.04	Q	V	|	|	|	|
7+55	0.0140	0.04	Q	V	|	|	|	|
8+ 0	0.0143	0.04	Q	V	|	|	|	|
8+ 5	0.0146	0.05	Q	V	|	|	|	|
8+10	0.0150	0.05	Q	V	|	|	|	|
8+15	0.0153	0.05	Q	V	|	|	|	|
8+20	0.0157	0.05	Q	V	|	|	|	|
8+25	0.0160	0.05	Q	V	|	|	|	|
8+30	0.0164	0.05	Q	V	|	|	|	|
8+35	0.0168	0.05	Q	V	|	|	|	|
8+40	0.0171	0.05	Q	V	|	|	|	|
8+45	0.0175	0.05	Q	V	|	|	|	|
8+50	0.0179	0.06	Q	V	|	|	|	|
8+55	0.0183	0.06	Q	V	|	|	|	|
9+ 0	0.0187	0.06	Q	V	|	|	|	|
9+ 5	0.0191	0.06	Q	V	|	|	|	|
9+10	0.0196	0.06	Q	V	|	|	|	|
9+15	0.0200	0.06	Q	V	|	|	|	|
9+20	0.0205	0.07	Q	V	|	|	|	|
9+25	0.0210	0.07	Q	V	|	|	|	|
9+30	0.0214	0.07	Q	V	|	|	|	|
9+35	0.0219	0.07	Q	V	|	|	|	|

9+40	0.0224	0.07	Q	V			
9+45	0.0229	0.07	Q	V			
9+50	0.0234	0.07	Q	V			
9+55	0.0239	0.07	Q	V			
10+ 0	0.0244	0.08	Q	V			
10+ 5	0.0249	0.06	Q	V			
10+10	0.0252	0.05	Q	V			
10+15	0.0256	0.05	Q	V			
10+20	0.0259	0.05	Q	V			
10+25	0.0263	0.05	Q	V			
10+30	0.0266	0.05	Q	V			
10+35	0.0270	0.06	Q	V			
10+40	0.0275	0.07	Q	V			
10+45	0.0280	0.07	Q	V			
10+50	0.0284	0.07	Q	V			
10+55	0.0289	0.07	Q	V			
11+ 0	0.0294	0.07	Q	V			
11+ 5	0.0298	0.07	Q	V			
11+10	0.0303	0.06	Q	V			
11+15	0.0307	0.06	Q	V			
11+20	0.0312	0.06	Q	V			
11+25	0.0316	0.06	Q	V			
11+30	0.0321	0.06	Q	V			
11+35	0.0325	0.06	Q	V			
11+40	0.0329	0.06	Q	V			
11+45	0.0333	0.06	Q	V			
11+50	0.0337	0.06	Q	V			
11+55	0.0341	0.06	Q	V			
12+ 0	0.0346	0.06	Q	V			
12+ 5	0.0351	0.08	Q	V			
12+10	0.0357	0.08	Q	V			
12+15	0.0362	0.09	Q	V			
12+20	0.0368	0.09	Q	V			
12+25	0.0374	0.09	Q	V			
12+30	0.0381	0.09	Q	V			
12+35	0.0387	0.09	Q	V			
12+40	0.0394	0.10	Q	V			
12+45	0.0400	0.10	Q	V			
12+50	0.0407	0.10	Q	V			
12+55	0.0414	0.10	Q	V			
13+ 0	0.0420	0.10	Q	V			
13+ 5	0.0428	0.11	Q	V			
13+10	0.0436	0.12	Q	V			
13+15	0.0444	0.12	Q	V			
13+20	0.0452	0.12	Q	V			
13+25	0.0460	0.12	Q	V			
13+30	0.0468	0.12	Q	V			
13+35	0.0474	0.09	Q	V			
13+40	0.0480	0.08	Q	V			
13+45	0.0485	0.08	Q	V			
13+50	0.0491	0.08	Q	V			
13+55	0.0496	0.08	Q	V			
14+ 0	0.0501	0.08	Q	V			
14+ 5	0.0507	0.09	Q	V			

14+10	0.0514	0.09	Q	|	|	V|		|
14+15	0.0520	0.09	Q	|	|	V|		|
14+20	0.0526	0.09	Q	|	|	V|		|
14+25	0.0532	0.09	Q	|	|	V		|
14+30	0.0538	0.09	Q	|	|	V		|
14+35	0.0545	0.09	Q	|	|	V		|
14+40	0.0551	0.09	Q	|	|	|V		|
14+45	0.0557	0.09	Q	|	|	|V		|
14+50	0.0563	0.09	Q	|	|	|V		|
14+55	0.0569	0.09	Q	|	|	| V		|
15+ 0	0.0575	0.09	Q	|	|	| V		|
15+ 5	0.0580	0.08	Q	|	|	| V		|
15+10	0.0586	0.08	Q	|	|	| V		|
15+15	0.0592	0.08	Q	|	|	| V		|
15+20	0.0597	0.08	Q	|	|	| V		|
15+25	0.0602	0.08	Q	|	|	| V		|
15+30	0.0608	0.08	Q	|	|	| V		|
15+35	0.0613	0.07	Q	|	|	| V		|
15+40	0.0617	0.07	Q	|	|	| V		|
15+45	0.0622	0.06	Q	|	|	| V		|
15+50	0.0626	0.06	Q	|	|	| V		|
15+55	0.0631	0.06	Q	|	|	| V		|
16+ 0	0.0635	0.06	Q	|	|	| V		|
16+ 5	0.0637	0.03	Q	|	|	| V		|
16+10	0.0639	0.02	Q	|	|	| V		|
16+15	0.0640	0.01	Q	|	|	| V		|
16+20	0.0640	0.01	Q	|	|	| V		|
16+25	0.0641	0.01	Q	|	|	| V		|
16+30	0.0642	0.01	Q	|	|	| V		|
16+35	0.0643	0.01	Q	|	|	| V		|
16+40	0.0644	0.01	Q	|	|	| V		|
16+45	0.0645	0.01	Q	|	|	| V		|
16+50	0.0645	0.01	Q	|	|	| V		|
16+55	0.0646	0.01	Q	|	|	| V		|
17+ 0	0.0647	0.01	Q	|	|	| V		|
17+ 5	0.0648	0.01	Q	|	|	| V		|
17+10	0.0649	0.02	Q	|	|	| V		|
17+15	0.0650	0.02	Q	|	|	| V		|
17+20	0.0651	0.02	Q	|	|	| V		|
17+25	0.0652	0.02	Q	|	|	| V		|
17+30	0.0654	0.02	Q	|	|	| V		|
17+35	0.0655	0.02	Q	|	|	| V		|
17+40	0.0656	0.02	Q	|	|	| V		|
17+45	0.0657	0.02	Q	|	|	| V		|
17+50	0.0658	0.02	Q	|	|	| V		|
17+55	0.0659	0.01	Q	|	|	| V		|
18+ 0	0.0660	0.01	Q	|	|	| V		|
18+ 5	0.0661	0.01	Q	|	|	| V		|
18+10	0.0662	0.01	Q	|	|	| V		|
18+15	0.0663	0.01	Q	|	|	| V		|
18+20	0.0664	0.01	Q	|	|	| V		|
18+25	0.0665	0.01	Q	|	|	| V		|
18+30	0.0666	0.01	Q	|	|	| V		|
18+35	0.0666	0.01	Q	|	|	| V		|

18+40	0.0667	0.01	Q	|	|	|	V |
18+45	0.0668	0.01	Q	|	|	|	V |
18+50	0.0668	0.01	Q	|	|	|	V |
18+55	0.0669	0.01	Q	|	|	|	V |
19+ 0	0.0669	0.01	Q	|	|	|	V |
19+ 5	0.0670	0.01	Q	|	|	|	V |
19+10	0.0671	0.01	Q	|	|	|	V |
19+15	0.0671	0.01	Q	|	|	|	V |
19+20	0.0672	0.01	Q	|	|	|	V |
19+25	0.0673	0.01	Q	|	|	|	V |
19+30	0.0674	0.01	Q	|	|	|	V |
19+35	0.0675	0.01	Q	|	|	|	V |
19+40	0.0676	0.01	Q	|	|	|	V |
19+45	0.0676	0.01	Q	|	|	|	V |
19+50	0.0677	0.01	Q	|	|	|	V |
19+55	0.0677	0.01	Q	|	|	|	V |
20+ 0	0.0678	0.01	Q	|	|	|	V |
20+ 5	0.0678	0.01	Q	|	|	|	V |
20+10	0.0679	0.01	Q	|	|	|	V |
20+15	0.0680	0.01	Q	|	|	|	V |
20+20	0.0681	0.01	Q	|	|	|	V |
20+25	0.0681	0.01	Q	|	|	|	V |
20+30	0.0682	0.01	Q	|	|	|	V |
20+35	0.0683	0.01	Q	|	|	|	V |
20+40	0.0683	0.01	Q	|	|	|	V |
20+45	0.0684	0.01	Q	|	|	|	V |
20+50	0.0685	0.01	Q	|	|	|	V |
20+55	0.0685	0.01	Q	|	|	|	V |
21+ 0	0.0686	0.01	Q	|	|	|	V |
21+ 5	0.0686	0.01	Q	|	|	|	V |
21+10	0.0687	0.01	Q	|	|	|	V |
21+15	0.0688	0.01	Q	|	|	|	V|
21+20	0.0688	0.01	Q	|	|	|	V|
21+25	0.0689	0.01	Q	|	|	|	V|
21+30	0.0689	0.01	Q	|	|	|	V|
21+35	0.0690	0.01	Q	|	|	|	V|
21+40	0.0690	0.01	Q	|	|	|	V|
21+45	0.0691	0.01	Q	|	|	|	V|
21+50	0.0692	0.01	Q	|	|	|	V|
21+55	0.0692	0.01	Q	|	|	|	V|
22+ 0	0.0693	0.01	Q	|	|	|	V|
22+ 5	0.0693	0.01	Q	|	|	|	V|
22+10	0.0694	0.01	Q	|	|	|	V|
22+15	0.0695	0.01	Q	|	|	|	V|
22+20	0.0695	0.01	Q	|	|	|	V|
22+25	0.0696	0.01	Q	|	|	|	V|
22+30	0.0696	0.01	Q	|	|	|	V|
22+35	0.0697	0.01	Q	|	|	|	V|
22+40	0.0697	0.01	Q	|	|	|	V|
22+45	0.0698	0.01	Q	|	|	|	V|
22+50	0.0698	0.01	Q	|	|	|	V|
22+55	0.0698	0.01	Q	|	|	|	V|
23+ 0	0.0699	0.01	Q	|	|	|	V|
23+ 5	0.0699	0.01	Q	|	|	|	V|

23+10	0.0700	0.01	Q	|	|	|	V|
23+15	0.0700	0.01	Q	|	|	|	V|
23+20	0.0701	0.01	Q	|	|	|	V|
23+25	0.0701	0.01	Q	|	|	|	V|
23+30	0.0702	0.01	Q	|	|	|	V|
23+35	0.0702	0.01	Q	|	|	|	V|
23+40	0.0703	0.01	Q	|	|	|	V|
23+45	0.0703	0.01	Q	|	|	|	V|
23+50	0.0704	0.01	Q	|	|	|	V|
23+55	0.0704	0.01	Q	|	|	|	V|
24+ 0	0.0705	0.01	Q	|	|	|	V|
24+ 5	0.0705	0.00	Q	|	|	|	V|
24+10	0.0705	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPTRENCH110.out

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             0.50                   0.39

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             1.30                   1.00

      STORM EVENT (YEAR) =   10.00
      Area Averaged 2-Year Rainfall =    0.500(In)
      Area Averaged 100-Year Rainfall =    1.300(In)

      Point rain (area averaged) =    0.829(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    0.829(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.346        0.511        1.000      0.511
                                                          Sum (F) =
0.511
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-
      Slope of intensity-duration curve for a 1 hour storm =0.5000
      ------------------------------------------------------------------
--

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                      Graph %            (CFS)
      ------------------------------------------------------------------
-
                1   0.083        326.011         59.201              0.459
                2   0.167        652.021         35.743              0.277
                3   0.250        978.032          5.056              0.039
```

Sum =
100.000 Sum= 0.776

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	4.20	0.418	(0.599)	0.260	0.158
2. 0.17	4.30	0.428	(0.599)	0.267	0.161
3. 0.25	5.00	0.497	(0.599)	0.310	0.188
4. 0.33	5.00	0.497	(0.599)	0.310	0.188
5. 0.42	5.80	0.577	(0.599)	0.360	0.218
6. 0.50	6.50	0.647	(0.599)	0.403	0.244
7. 0.58	7.40	0.736	(0.599)	0.459	0.278
8. 0.67	8.60	0.856	(0.599)	0.533	0.323
9. 0.75	12.30	1.224	0.599	(0.762)	0.624
10. 0.83	29.10	2.895	0.599	(1.804)	2.296
11. 0.92	6.80	0.677	(0.599)	0.421	0.255
12. 1.00	5.00	0.497	(0.599)	0.310	0.188

(Loss Rate Not Used)

Sum = 100.0 Sum = 5.1

Flood volume = Effective rainfall 0.43(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.40(In)
Total soil loss = 0.026(Ac.Ft)
Total rainfall = 0.83(In)
Flood volume = 1192.2 Cubic Feet
Total soil loss = 1125.3 Cubic Feet

Peak flow rate of this hydrograph = 1.241(CFS)

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1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0005	0.07	Q | | | |
0+10	0.0013	0.12	QV | | | |
0+15	0.0023	0.14	Q V | | | |
0+20	0.0033	0.14	Q V | | | |
0+25	0.0043	0.16	Q V | | | |
0+30	0.0056	0.18	Q V | | | |
0+35	0.0070	0.20	Q V | | |
0+40	0.0086	0.23	Q | V | | |

```
    0+45       0.0113      0.39  |Q        |     V   |         |         |
    0+50       0.0198      1.24  |   Q     |         |       V |         |
    0+55       0.0252      0.78  |  Q      |         |         |     V   |
    1+ 0       0.0269      0.25  Q         |         |         |        V|
    1+ 5       0.0273      0.06  Q         |         |         |        V|
    1+10       0.0274      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             0.85                   0.65

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.00                   1.54

      STORM EVENT (YEAR) =   10.00
      Area Averaged 2-Year Rainfall =    0.850(In)
      Area Averaged 100-Year Rainfall =    2.000(In)

      Point rain (area averaged) =    1.323(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.323(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.346        0.511        1.000      0.511
                                                          Sum (F) =
0.511
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083        326.011         59.201             0.459
                 2   0.167        652.021         35.743             0.277
                 3   0.250        978.032          5.056             0.039
                                                                  Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)			Effective
(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1. 0.08	1.30	0.206	(0.599)		0.129	0.078
2. 0.17	1.30	0.206	(0.599)		0.129	0.078
3. 0.25	1.10	0.175	(0.599)		0.109	0.066
4. 0.33	1.50	0.238	(0.599)		0.148	0.090
5. 0.42	1.50	0.238	(0.599)		0.148	0.090
6. 0.50	1.80	0.286	(0.599)		0.178	0.108
7. 0.58	1.50	0.238	(0.599)		0.148	0.090
8. 0.67	1.80	0.286	(0.599)		0.178	0.108
9. 0.75	1.80	0.286	(0.599)		0.178	0.108
10. 0.83	1.50	0.238	(0.599)		0.148	0.090
11. 0.92	1.60	0.254	(0.599)		0.158	0.096
12. 1.00	1.80	0.286	(0.599)		0.178	0.108
13. 1.08	2.20	0.349	(0.599)		0.218	0.132
14. 1.17	2.20	0.349	(0.599)		0.218	0.132
15. 1.25	2.20	0.349	(0.599)		0.218	0.132
16. 1.33	2.00	0.318	(0.599)		0.198	0.120
17. 1.42	2.60	0.413	(0.599)		0.257	0.156
18. 1.50	2.70	0.429	(0.599)		0.267	0.162
19. 1.58	2.40	0.381	(0.599)		0.237	0.144
20. 1.67	2.70	0.429	(0.599)		0.267	0.162
21. 1.75	3.30	0.524	(0.599)		0.326	0.198
22. 1.83	3.10	0.492	(0.599)		0.307	0.186
23. 1.92	2.90	0.460	(0.599)		0.287	0.174
24. 2.00	3.00	0.476	(0.599)		0.297	0.180
25. 2.08	3.10	0.492	(0.599)		0.307	0.186
26. 2.17	4.20	0.667	(0.599)		0.415	0.251
27. 2.25	5.00	0.794	(0.599)		0.495	0.299
28. 2.33	3.50	0.556	(0.599)		0.346	0.210
29. 2.42	6.80	1.080	0.599	(	0.673)	0.480
30. 2.50	7.30	1.159	0.599	(	0.722)	0.560
31. 2.58	8.20	1.302	0.599	(	0.811)	0.703
32. 2.67	5.90	0.937	(0.599)		0.584	0.353
33. 2.75	2.00	0.318	(0.599)		0.198	0.120
34. 2.83	1.80	0.286	(0.599)		0.178	0.108
35. 2.92	1.80	0.286	(0.599)		0.178	0.108
36. 3.00	0.60	0.095	(0.599)		0.059	0.036

(Loss Rate Not Used)

Sum = 100.0 Sum = 6.4

Flood volume = Effective rainfall 0.53(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.79(In)
Total soil loss = 0.051(Ac.Ft)
Total rainfall = 1.32(In)
Flood volume = 1489.2 Cubic Feet
Total soil loss = 2209.0 Cubic Feet

Peak flow rate of this hydrograph = 0.497(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0002	0.04	Q
0+10	0.0006	0.06	Q
0+15	0.0010	0.05	QV
0+20	0.0015	0.06	QV
0+25	0.0019	0.07	Q V
0+30	0.0025	0.08	Q V
0+35	0.0030	0.07	Q V
0+40	0.0035	0.08	Q V
0+45	0.0041	0.08	Q V
0+50	0.0046	0.08	Q V
0+55	0.0051	0.07	Q V
1+ 0	0.0057	0.08	Q V
1+ 5	0.0063	0.09	Q V
1+10	0.0070	0.10	Q V
1+15	0.0077	0.10	Q V
1+20	0.0084	0.10	Q V
1+25	0.0091	0.11	Q V
1+30	0.0100	0.12	Q V
1+35	0.0108	0.12	Q V
1+40	0.0116	0.12	Q V
1+45	0.0126	0.14	Q V
1+50	0.0136	0.15	Q V
1+55	0.0146	0.14	Q V
2+ 0	0.0155	0.14	Q V
2+ 5	0.0165	0.14	Q V
2+10	0.0177	0.17	Q V
2+15	0.0192	0.21	Q V
2+20	0.0205	0.19	Q V
2+25	0.0225	0.29	Q V
2+30	0.0252	0.40	Q V
2+35	0.0286	0.50	Q V
2+40	0.0312	0.38	Q V
2+45	0.0325	0.18	Q V
2+50	0.0332	0.10	Q V
2+55	0.0337	0.08	Q V
3+ 0	0.0341	0.05	Q V
3+ 5	0.0342	0.01	Q V
3+10	0.0342	0.00	Q V

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPTRENCH610.out

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      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             1.20                   0.92

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.90                   2.23

      STORM EVENT (YEAR) =   10.00
      Area Averaged 2-Year Rainfall =    1.200(In)
      Area Averaged 100-Year Rainfall =    2.900(In)

      Point rain (area averaged) =    1.899(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.899(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.346        0.511        1.000      0.511
                                                          Sum (F) =
0.511
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083        326.011        59.201             0.459
                 2   0.167        652.021        35.743             0.277
                 3   0.250        978.032         5.056             0.039
                                                                 Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.50	0.114	(0.599)		0.071	0.043
2.	0.17	0.60	0.137	(0.599)		0.085	0.052
3.	0.25	0.60	0.137	(0.599)		0.085	0.052
4.	0.33	0.60	0.137	(0.599)		0.085	0.052
5.	0.42	0.60	0.137	(0.599)		0.085	0.052
6.	0.50	0.70	0.160	(0.599)		0.099	0.060
7.	0.58	0.70	0.160	(0.599)		0.099	0.060
8.	0.67	0.70	0.160	(0.599)		0.099	0.060
9.	0.75	0.70	0.160	(0.599)		0.099	0.060
10.	0.83	0.70	0.160	(0.599)		0.099	0.060
11.	0.92	0.70	0.160	(0.599)		0.099	0.060
12.	1.00	0.80	0.182	(0.599)		0.114	0.069
13.	1.08	0.80	0.182	(0.599)		0.114	0.069
14.	1.17	0.80	0.182	(0.599)		0.114	0.069
15.	1.25	0.80	0.182	(0.599)		0.114	0.069
16.	1.33	0.80	0.182	(0.599)		0.114	0.069
17.	1.42	0.80	0.182	(0.599)		0.114	0.069
18.	1.50	0.80	0.182	(0.599)		0.114	0.069
19.	1.58	0.80	0.182	(0.599)		0.114	0.069
20.	1.67	0.80	0.182	(0.599)		0.114	0.069
21.	1.75	0.80	0.182	(0.599)		0.114	0.069
22.	1.83	0.80	0.182	(0.599)		0.114	0.069
23.	1.92	0.80	0.182	(0.599)		0.114	0.069
24.	2.00	0.90	0.205	(0.599)		0.128	0.077
25.	2.08	0.80	0.182	(0.599)		0.114	0.069
26.	2.17	0.90	0.205	(0.599)		0.128	0.077
27.	2.25	0.90	0.205	(0.599)		0.128	0.077
28.	2.33	0.90	0.205	(0.599)		0.128	0.077
29.	2.42	0.90	0.205	(0.599)		0.128	0.077
30.	2.50	0.90	0.205	(0.599)		0.128	0.077
31.	2.58	0.90	0.205	(0.599)		0.128	0.077
32.	2.67	0.90	0.205	(0.599)		0.128	0.077
33.	2.75	1.00	0.228	(0.599)		0.142	0.086
34.	2.83	1.00	0.228	(0.599)		0.142	0.086
35.	2.92	1.00	0.228	(0.599)		0.142	0.086
36.	3.00	1.00	0.228	(0.599)		0.142	0.086
37.	3.08	1.00	0.228	(0.599)		0.142	0.086
38.	3.17	1.10	0.251	(0.599)		0.156	0.095
39.	3.25	1.10	0.251	(0.599)		0.156	0.095
40.	3.33	1.10	0.251	(0.599)		0.156	0.095
41.	3.42	1.20	0.274	(0.599)		0.170	0.103
42.	3.50	1.30	0.296	(0.599)		0.185	0.112
43.	3.58	1.40	0.319	(0.599)		0.199	0.120
44.	3.67	1.40	0.319	(0.599)		0.199	0.120
45.	3.75	1.50	0.342	(0.599)		0.213	0.129
46.	3.83	1.50	0.342	(0.599)		0.213	0.129

47.	3.92	1.60	0.365	(0.599)	0.227	0.137
48.	4.00	1.60	0.365	(0.599)	0.227	0.137
49.	4.08	1.70	0.387	(0.599)	0.241	0.146
50.	4.17	1.80	0.410	(0.599)	0.256	0.155
51.	4.25	1.90	0.433	(0.599)	0.270	0.163
52.	4.33	2.00	0.456	(0.599)	0.284	0.172
53.	4.42	2.10	0.479	(0.599)	0.298	0.180
54.	4.50	2.10	0.479	(0.599)	0.298	0.180
55.	4.58	2.20	0.501	(0.599)	0.312	0.189
56.	4.67	2.30	0.524	(0.599)	0.327	0.198
57.	4.75	2.40	0.547	(0.599)	0.341	0.206
58.	4.83	2.40	0.547	(0.599)	0.341	0.206
59.	4.92	2.50	0.570	(0.599)	0.355	0.215
60.	5.00	2.60	0.593	(0.599)	0.369	0.223
61.	5.08	3.10	0.707	(0.599)	0.440	0.266
62.	5.17	3.60	0.821	(0.599)	0.511	0.309
63.	5.25	3.90	0.889	(0.599)	0.554	0.335
64.	5.33	4.20	0.957	(0.599)	0.596	0.361
65.	5.42	4.70	1.071	0.599	(0.667)	0.472
66.	5.50	5.60	1.276	0.599	(0.795)	0.677
67.	5.58	1.90	0.433	(0.599)	0.270	0.163
68.	5.67	0.90	0.205	(0.599)	0.128	0.077
69.	5.75	0.60	0.137	(0.599)	0.085	0.052
70.	5.83	0.50	0.114	(0.599)	0.071	0.043
71.	5.92	0.30	0.068	(0.599)	0.043	0.026
72.	6.00	0.20	0.046	(0.599)	0.028	0.017

(Loss Rate Not Used)

Sum = 100.0 Sum = 8.9

Flood volume = Effective rainfall 0.74(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 1.16(In)
Total soil loss = 0.075(Ac.Ft)
Total rainfall = 1.90(In)
Flood volume = 2062.9 Cubic Feet
Total soil loss = 3246.0 Cubic Feet

Peak flow rate of this hydrograph = 0.456(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.02	Q				
0+10	0.0004	0.04	Q				
0+15	0.0007	0.04	Q				
0+20	0.0009	0.04	Q				
0+25	0.0012	0.04	QV				
0+30	0.0015	0.04	QV				

```
0+35       0.0018      0.05  QV        |         |         |         |
0+40       0.0021      0.05  QV        |         |         |         |
0+45       0.0025      0.05  Q V       |         |         |         |
0+50       0.0028      0.05  Q V       |         |         |         |
0+55       0.0031      0.05  Q V       |         |         |         |
1+ 0       0.0035      0.05  Q V       |         |         |         |
1+ 5       0.0038      0.05  Q  V      |         |         |         |
1+10       0.0042      0.05  Q  V      |         |         |         |
1+15       0.0046      0.05  Q  V      |         |         |         |
1+20       0.0049      0.05  Q   V     |         |         |         |
1+25       0.0053      0.05  Q   V     |         |         |         |
1+30       0.0057      0.05  Q   V     |         |         |         |
1+35       0.0060      0.05  Q    V    |         |         |         |
1+40       0.0064      0.05  Q    V    |         |         |         |
1+45       0.0068      0.05  Q    V    |         |         |         |
1+50       0.0071      0.05  Q     V   |         |         |         |
1+55       0.0075      0.05  Q     V   |         |         |         |
2+ 0       0.0079      0.06  Q     V   |         |         |         |
2+ 5       0.0083      0.06  Q     V   |         |         |         |
2+10       0.0087      0.06  Q      V  |         |         |         |
2+15       0.0091      0.06  Q      V  |         |         |         |
2+20       0.0095      0.06  Q       V |         |         |         |
2+25       0.0099      0.06  Q       V |         |         |         |
2+30       0.0103      0.06  Q       V |         |         |         |
2+35       0.0107      0.06  Q        V|         |         |         |
2+40       0.0112      0.06  Q        V|         |         |         |
2+45       0.0116      0.06  Q        V|         |         |         |
2+50       0.0121      0.07  Q         V         |         |         |
2+55       0.0125      0.07  Q         V         |         |         |
3+ 0       0.0130      0.07  Q         V         |         |         |
3+ 5       0.0134      0.07  Q         |V        |         |         |
3+10       0.0139      0.07  Q         |V        |         |         |
3+15       0.0144      0.07  Q         | V       |         |         |
3+20       0.0149      0.07  Q         | V       |         |         |
3+25       0.0155      0.08  Q         |  V      |         |         |
3+30       0.0160      0.08  Q         |  V      |         |         |
3+35       0.0167      0.09  Q         |   V     |         |         |
3+40       0.0173      0.09  Q         |   V     |         |         |
3+45       0.0180      0.10  Q         |    V    |         |         |
3+50       0.0187      0.10  Q         |    V    |         |         |
3+55       0.0194      0.10  Q         |     V   |         |         |
4+ 0       0.0201      0.11  Q         |     V   |         |         |
4+ 5       0.0209      0.11  Q         |      V  |         |         |
4+10       0.0217      0.12  Q         |       V |         |         |
4+15       0.0225      0.12  Q         |        V|         |         |
4+20       0.0234      0.13  Q         |        V|         |         |
4+25       0.0244      0.14  Q         |         V         |         |
4+30       0.0253      0.14  Q         |         |V        |         |
4+35       0.0263      0.14  Q         |         | V       |         |
4+40       0.0274      0.15  Q         |         |  V      |         |
4+45       0.0284      0.16  Q         |         |   V     |         |
4+50       0.0295      0.16  Q         |         |   V     |         |
4+55       0.0307      0.16  Q         |         |    V    |         |
5+ 0       0.0318      0.17  Q         |         |     V   |         |
```

```
    5+ 5       0.0332      0.19  Q          |          |       V |          |
    5+10       0.0347      0.22  Q          |          |        V|          |
    5+15       0.0364      0.25  |Q         |          |         V          |
    5+20       0.0383      0.27  |Q         |          |          | V       |
    5+25       0.0406      0.33  |Q         |          |          |   V     |
    5+30       0.0437      0.46  |Q         |          |          |     V   |
    5+35       0.0457      0.28  |Q         |          |          |       V |
    5+40       0.0464      0.11  Q          |          |          |         V|
    5+45       0.0468      0.05  Q          |          |          |         V|
    5+50       0.0470      0.04  Q          |          |          |         V|
    5+55       0.0472      0.03  Q          |          |          |         V|
    6+ 0       0.0473      0.02  Q          |          |          |         V|
    6+ 5       0.0474      0.01  Q          |          |          |         V|
    6+10       0.0474      0.00  Q          |          |          |         V|
---------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPTRENCH2410.out

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.00                    1.54

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             5.90                    4.54

      STORM EVENT (YEAR) =   10.00
      Area Averaged 2-Year Rainfall =    2.000(In)
      Area Averaged 100-Year Rainfall =    5.900(In)

      Point rain (area averaged) =    3.604(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    3.604(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.346        0.511        1.000      0.511
                                                          Sum (F) =
0.511
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083        326.011         59.201             0.459
                 2   0.167        652.021         35.743             0.277
                 3   0.250        978.032          5.056             0.039
                                                                  Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.07	0.029	(1.062)	0.018	0.011
2. 0.17	0.07	0.029	(1.058)	0.018	0.011
3. 0.25	0.07	0.029	(1.054)	0.018	0.011
4. 0.33	0.10	0.043	(1.050)	0.027	0.016
5. 0.42	0.10	0.043	(1.046)	0.027	0.016
6. 0.50	0.10	0.043	(1.042)	0.027	0.016
7. 0.58	0.10	0.043	(1.038)	0.027	0.016
8. 0.67	0.10	0.043	(1.034)	0.027	0.016
9. 0.75	0.10	0.043	(1.030)	0.027	0.016
10. 0.83	0.13	0.058	(1.026)	0.036	0.022
11. 0.92	0.13	0.058	(1.022)	0.036	0.022
12. 1.00	0.13	0.058	(1.018)	0.036	0.022
13. 1.08	0.10	0.043	(1.014)	0.027	0.016
14. 1.17	0.10	0.043	(1.010)	0.027	0.016
15. 1.25	0.10	0.043	(1.006)	0.027	0.016
16. 1.33	0.10	0.043	(1.002)	0.027	0.016
17. 1.42	0.10	0.043	(0.998)	0.027	0.016
18. 1.50	0.10	0.043	(0.994)	0.027	0.016
19. 1.58	0.10	0.043	(0.990)	0.027	0.016
20. 1.67	0.10	0.043	(0.986)	0.027	0.016
21. 1.75	0.10	0.043	(0.982)	0.027	0.016
22. 1.83	0.13	0.058	(0.978)	0.036	0.022
23. 1.92	0.13	0.058	(0.974)	0.036	0.022
24. 2.00	0.13	0.058	(0.970)	0.036	0.022
25. 2.08	0.13	0.058	(0.966)	0.036	0.022
26. 2.17	0.13	0.058	(0.962)	0.036	0.022
27. 2.25	0.13	0.058	(0.958)	0.036	0.022
28. 2.33	0.13	0.058	(0.954)	0.036	0.022
29. 2.42	0.13	0.058	(0.950)	0.036	0.022
30. 2.50	0.13	0.058	(0.947)	0.036	0.022
31. 2.58	0.17	0.072	(0.943)	0.045	0.027
32. 2.67	0.17	0.072	(0.939)	0.045	0.027
33. 2.75	0.17	0.072	(0.935)	0.045	0.027
34. 2.83	0.17	0.072	(0.931)	0.045	0.027
35. 2.92	0.17	0.072	(0.927)	0.045	0.027
36. 3.00	0.17	0.072	(0.923)	0.045	0.027
37. 3.08	0.17	0.072	(0.920)	0.045	0.027
38. 3.17	0.17	0.072	(0.916)	0.045	0.027
39. 3.25	0.17	0.072	(0.912)	0.045	0.027
40. 3.33	0.17	0.072	(0.908)	0.045	0.027
41. 3.42	0.17	0.072	(0.904)	0.045	0.027
42. 3.50	0.17	0.072	(0.901)	0.045	0.027
43. 3.58	0.17	0.072	(0.897)	0.045	0.027
44. 3.67	0.17	0.072	(0.893)	0.045	0.027
45. 3.75	0.17	0.072	(0.889)	0.045	0.027
46. 3.83	0.20	0.087	(0.886)	0.054	0.033

47.	3.92	0.20	0.087	(0.882)	0.054	0.033
48.	4.00	0.20	0.087	(0.878)	0.054	0.033
49.	4.08	0.20	0.087	(0.874)	0.054	0.033
50.	4.17	0.20	0.087	(0.871)	0.054	0.033
51.	4.25	0.20	0.087	(0.867)	0.054	0.033
52.	4.33	0.23	0.101	(0.863)	0.063	0.038
53.	4.42	0.23	0.101	(0.860)	0.063	0.038
54.	4.50	0.23	0.101	(0.856)	0.063	0.038
55.	4.58	0.23	0.101	(0.852)	0.063	0.038
56.	4.67	0.23	0.101	(0.849)	0.063	0.038
57.	4.75	0.23	0.101	(0.845)	0.063	0.038
58.	4.83	0.27	0.115	(0.841)	0.072	0.043
59.	4.92	0.27	0.115	(0.838)	0.072	0.043
60.	5.00	0.27	0.115	(0.834)	0.072	0.043
61.	5.08	0.20	0.087	(0.830)	0.054	0.033
62.	5.17	0.20	0.087	(0.827)	0.054	0.033
63.	5.25	0.20	0.087	(0.823)	0.054	0.033
64.	5.33	0.23	0.101	(0.820)	0.063	0.038
65.	5.42	0.23	0.101	(0.816)	0.063	0.038
66.	5.50	0.23	0.101	(0.812)	0.063	0.038
67.	5.58	0.27	0.115	(0.809)	0.072	0.043
68.	5.67	0.27	0.115	(0.805)	0.072	0.043
69.	5.75	0.27	0.115	(0.802)	0.072	0.043
70.	5.83	0.27	0.115	(0.798)	0.072	0.043
71.	5.92	0.27	0.115	(0.795)	0.072	0.043
72.	6.00	0.27	0.115	(0.791)	0.072	0.043
73.	6.08	0.30	0.130	(0.788)	0.081	0.049
74.	6.17	0.30	0.130	(0.784)	0.081	0.049
75.	6.25	0.30	0.130	(0.781)	0.081	0.049
76.	6.33	0.30	0.130	(0.777)	0.081	0.049
77.	6.42	0.30	0.130	(0.774)	0.081	0.049
78.	6.50	0.30	0.130	(0.770)	0.081	0.049
79.	6.58	0.33	0.144	(0.767)	0.090	0.054
80.	6.67	0.33	0.144	(0.763)	0.090	0.054
81.	6.75	0.33	0.144	(0.760)	0.090	0.054
82.	6.83	0.33	0.144	(0.756)	0.090	0.054
83.	6.92	0.33	0.144	(0.753)	0.090	0.054
84.	7.00	0.33	0.144	(0.750)	0.090	0.054
85.	7.08	0.33	0.144	(0.746)	0.090	0.054
86.	7.17	0.33	0.144	(0.743)	0.090	0.054
87.	7.25	0.33	0.144	(0.739)	0.090	0.054
88.	7.33	0.37	0.159	(0.736)	0.099	0.060
89.	7.42	0.37	0.159	(0.733)	0.099	0.060
90.	7.50	0.37	0.159	(0.729)	0.099	0.060
91.	7.58	0.40	0.173	(0.726)	0.108	0.065
92.	7.67	0.40	0.173	(0.723)	0.108	0.065
93.	7.75	0.40	0.173	(0.719)	0.108	0.065
94.	7.83	0.43	0.187	(0.716)	0.117	0.071
95.	7.92	0.43	0.187	(0.713)	0.117	0.071
96.	8.00	0.43	0.187	(0.709)	0.117	0.071
97.	8.08	0.50	0.216	(0.706)	0.135	0.082
98.	8.17	0.50	0.216	(0.703)	0.135	0.082
99.	8.25	0.50	0.216	(0.699)	0.135	0.082
100.	8.33	0.50	0.216	(0.696)	0.135	0.082

101.	8.42	0.50	0.216	(0.693)	0.135	0.082
102.	8.50	0.50	0.216	(0.690)	0.135	0.082
103.	8.58	0.53	0.231	(0.686)	0.144	0.087
104.	8.67	0.53	0.231	(0.683)	0.144	0.087
105.	8.75	0.53	0.231	(0.680)	0.144	0.087
106.	8.83	0.57	0.245	(0.677)	0.153	0.092
107.	8.92	0.57	0.245	(0.674)	0.153	0.092
108.	9.00	0.57	0.245	(0.670)	0.153	0.092
109.	9.08	0.63	0.274	(0.667)	0.171	0.103
110.	9.17	0.63	0.274	(0.664)	0.171	0.103
111.	9.25	0.63	0.274	(0.661)	0.171	0.103
112.	9.33	0.67	0.288	(0.658)	0.180	0.109
113.	9.42	0.67	0.288	(0.655)	0.180	0.109
114.	9.50	0.67	0.288	(0.651)	0.180	0.109
115.	9.58	0.70	0.303	(0.648)	0.189	0.114
116.	9.67	0.70	0.303	(0.645)	0.189	0.114
117.	9.75	0.70	0.303	(0.642)	0.189	0.114
118.	9.83	0.73	0.317	(0.639)	0.198	0.120
119.	9.92	0.73	0.317	(0.636)	0.198	0.120
120.	10.00	0.73	0.317	(0.633)	0.198	0.120
121.	10.08	0.50	0.216	(0.630)	0.135	0.082
122.	10.17	0.50	0.216	(0.627)	0.135	0.082
123.	10.25	0.50	0.216	(0.624)	0.135	0.082
124.	10.33	0.50	0.216	(0.621)	0.135	0.082
125.	10.42	0.50	0.216	(0.618)	0.135	0.082
126.	10.50	0.50	0.216	(0.615)	0.135	0.082
127.	10.58	0.67	0.288	(0.612)	0.180	0.109
128.	10.67	0.67	0.288	(0.609)	0.180	0.109
129.	10.75	0.67	0.288	(0.606)	0.180	0.109
130.	10.83	0.67	0.288	(0.603)	0.180	0.109
131.	10.92	0.67	0.288	(0.600)	0.180	0.109
132.	11.00	0.67	0.288	(0.597)	0.180	0.109
133.	11.08	0.63	0.274	(0.594)	0.171	0.103
134.	11.17	0.63	0.274	(0.591)	0.171	0.103
135.	11.25	0.63	0.274	(0.588)	0.171	0.103
136.	11.33	0.63	0.274	(0.585)	0.171	0.103
137.	11.42	0.63	0.274	(0.582)	0.171	0.103
138.	11.50	0.63	0.274	(0.579)	0.171	0.103
139.	11.58	0.57	0.245	(0.577)	0.153	0.092
140.	11.67	0.57	0.245	(0.574)	0.153	0.092
141.	11.75	0.57	0.245	(0.571)	0.153	0.092
142.	11.83	0.60	0.260	(0.568)	0.162	0.098
143.	11.92	0.60	0.260	(0.565)	0.162	0.098
144.	12.00	0.60	0.260	(0.562)	0.162	0.098
145.	12.08	0.83	0.360	(0.559)	0.225	0.136
146.	12.17	0.83	0.360	(0.557)	0.225	0.136
147.	12.25	0.83	0.360	(0.554)	0.225	0.136
148.	12.33	0.87	0.375	(0.551)	0.234	0.141
149.	12.42	0.87	0.375	(0.548)	0.234	0.141
150.	12.50	0.87	0.375	(0.546)	0.234	0.141
151.	12.58	0.93	0.404	(0.543)	0.252	0.152
152.	12.67	0.93	0.404	(0.540)	0.252	0.152
153.	12.75	0.93	0.404	(0.537)	0.252	0.152
154.	12.83	0.97	0.418	(0.535)	0.260	0.158

155. 12.92	0.97	0.418	(0.532)	0.260	0.158
156. 13.00	0.97	0.418	(0.529)	0.260	0.158
157. 13.08	1.13	0.490	(0.527)	0.305	0.185
158. 13.17	1.13	0.490	(0.524)	0.305	0.185
159. 13.25	1.13	0.490	(0.521)	0.305	0.185
160. 13.33	1.13	0.490	(0.519)	0.305	0.185
161. 13.42	1.13	0.490	(0.516)	0.305	0.185
162. 13.50	1.13	0.490	(0.513)	0.305	0.185
163. 13.58	0.77	0.332	(0.511)	0.207	0.125
164. 13.67	0.77	0.332	(0.508)	0.207	0.125
165. 13.75	0.77	0.332	(0.506)	0.207	0.125
166. 13.83	0.77	0.332	(0.503)	0.207	0.125
167. 13.92	0.77	0.332	(0.500)	0.207	0.125
168. 14.00	0.77	0.332	(0.498)	0.207	0.125
169. 14.08	0.90	0.389	(0.495)	0.243	0.147
170. 14.17	0.90	0.389	(0.493)	0.243	0.147
171. 14.25	0.90	0.389	(0.490)	0.243	0.147
172. 14.33	0.87	0.375	(0.488)	0.234	0.141
173. 14.42	0.87	0.375	(0.485)	0.234	0.141
174. 14.50	0.87	0.375	(0.483)	0.234	0.141
175. 14.58	0.87	0.375	(0.480)	0.234	0.141
176. 14.67	0.87	0.375	(0.478)	0.234	0.141
177. 14.75	0.87	0.375	(0.475)	0.234	0.141
178. 14.83	0.83	0.360	(0.473)	0.225	0.136
179. 14.92	0.83	0.360	(0.471)	0.225	0.136
180. 15.00	0.83	0.360	(0.468)	0.225	0.136
181. 15.08	0.80	0.346	(0.466)	0.216	0.130
182. 15.17	0.80	0.346	(0.463)	0.216	0.130
183. 15.25	0.80	0.346	(0.461)	0.216	0.130
184. 15.33	0.77	0.332	(0.459)	0.207	0.125
185. 15.42	0.77	0.332	(0.456)	0.207	0.125
186. 15.50	0.77	0.332	(0.454)	0.207	0.125
187. 15.58	0.63	0.274	(0.452)	0.171	0.103
188. 15.67	0.63	0.274	(0.449)	0.171	0.103
189. 15.75	0.63	0.274	(0.447)	0.171	0.103
190. 15.83	0.63	0.274	(0.445)	0.171	0.103
191. 15.92	0.63	0.274	(0.442)	0.171	0.103
192. 16.00	0.63	0.274	(0.440)	0.171	0.103
193. 16.08	0.13	0.058	(0.438)	0.036	0.022
194. 16.17	0.13	0.058	(0.436)	0.036	0.022
195. 16.25	0.13	0.058	(0.433)	0.036	0.022
196. 16.33	0.13	0.058	(0.431)	0.036	0.022
197. 16.42	0.13	0.058	(0.429)	0.036	0.022
198. 16.50	0.13	0.058	(0.427)	0.036	0.022
199. 16.58	0.10	0.043	(0.425)	0.027	0.016
200. 16.67	0.10	0.043	(0.423)	0.027	0.016
201. 16.75	0.10	0.043	(0.420)	0.027	0.016
202. 16.83	0.10	0.043	(0.418)	0.027	0.016
203. 16.92	0.10	0.043	(0.416)	0.027	0.016
204. 17.00	0.10	0.043	(0.414)	0.027	0.016
205. 17.08	0.17	0.072	(0.412)	0.045	0.027
206. 17.17	0.17	0.072	(0.410)	0.045	0.027
207. 17.25	0.17	0.072	(0.408)	0.045	0.027
208. 17.33	0.17	0.072	(0.406)	0.045	0.027

209. 17.42	0.17	0.072	(0.404)	0.045	0.027
210. 17.50	0.17	0.072	(0.402)	0.045	0.027
211. 17.58	0.17	0.072	(0.400)	0.045	0.027
212. 17.67	0.17	0.072	(0.398)	0.045	0.027
213. 17.75	0.17	0.072	(0.396)	0.045	0.027
214. 17.83	0.13	0.058	(0.394)	0.036	0.022
215. 17.92	0.13	0.058	(0.392)	0.036	0.022
216. 18.00	0.13	0.058	(0.390)	0.036	0.022
217. 18.08	0.13	0.058	(0.388)	0.036	0.022
218. 18.17	0.13	0.058	(0.386)	0.036	0.022
219. 18.25	0.13	0.058	(0.384)	0.036	0.022
220. 18.33	0.13	0.058	(0.382)	0.036	0.022
221. 18.42	0.13	0.058	(0.380)	0.036	0.022
222. 18.50	0.13	0.058	(0.379)	0.036	0.022
223. 18.58	0.10	0.043	(0.377)	0.027	0.016
224. 18.67	0.10	0.043	(0.375)	0.027	0.016
225. 18.75	0.10	0.043	(0.373)	0.027	0.016
226. 18.83	0.07	0.029	(0.371)	0.018	0.011
227. 18.92	0.07	0.029	(0.370)	0.018	0.011
228. 19.00	0.07	0.029	(0.368)	0.018	0.011
229. 19.08	0.10	0.043	(0.366)	0.027	0.016
230. 19.17	0.10	0.043	(0.364)	0.027	0.016
231. 19.25	0.10	0.043	(0.363)	0.027	0.016
232. 19.33	0.13	0.058	(0.361)	0.036	0.022
233. 19.42	0.13	0.058	(0.359)	0.036	0.022
234. 19.50	0.13	0.058	(0.358)	0.036	0.022
235. 19.58	0.10	0.043	(0.356)	0.027	0.016
236. 19.67	0.10	0.043	(0.354)	0.027	0.016
237. 19.75	0.10	0.043	(0.353)	0.027	0.016
238. 19.83	0.07	0.029	(0.351)	0.018	0.011
239. 19.92	0.07	0.029	(0.350)	0.018	0.011
240. 20.00	0.07	0.029	(0.348)	0.018	0.011
241. 20.08	0.10	0.043	(0.346)	0.027	0.016
242. 20.17	0.10	0.043	(0.345)	0.027	0.016
243. 20.25	0.10	0.043	(0.343)	0.027	0.016
244. 20.33	0.10	0.043	(0.342)	0.027	0.016
245. 20.42	0.10	0.043	(0.341)	0.027	0.016
246. 20.50	0.10	0.043	(0.339)	0.027	0.016
247. 20.58	0.10	0.043	(0.338)	0.027	0.016
248. 20.67	0.10	0.043	(0.336)	0.027	0.016
249. 20.75	0.10	0.043	(0.335)	0.027	0.016
250. 20.83	0.07	0.029	(0.333)	0.018	0.011
251. 20.92	0.07	0.029	(0.332)	0.018	0.011
252. 21.00	0.07	0.029	(0.331)	0.018	0.011
253. 21.08	0.10	0.043	(0.329)	0.027	0.016
254. 21.17	0.10	0.043	(0.328)	0.027	0.016
255. 21.25	0.10	0.043	(0.327)	0.027	0.016
256. 21.33	0.07	0.029	(0.326)	0.018	0.011
257. 21.42	0.07	0.029	(0.324)	0.018	0.011
258. 21.50	0.07	0.029	(0.323)	0.018	0.011
259. 21.58	0.10	0.043	(0.322)	0.027	0.016
260. 21.67	0.10	0.043	(0.321)	0.027	0.016
261. 21.75	0.10	0.043	(0.320)	0.027	0.016
262. 21.83	0.07	0.029	(0.319)	0.018	0.011

```
 263. 21.92     0.07      0.029       (  0.318)       0.018         0.011
 264. 22.00     0.07      0.029       (  0.316)       0.018         0.011
 265. 22.08     0.10      0.043       (  0.315)       0.027         0.016
 266. 22.17     0.10      0.043       (  0.314)       0.027         0.016
 267. 22.25     0.10      0.043       (  0.313)       0.027         0.016
 268. 22.33     0.07      0.029       (  0.312)       0.018         0.011
 269. 22.42     0.07      0.029       (  0.311)       0.018         0.011
 270. 22.50     0.07      0.029       (  0.311)       0.018         0.011
 271. 22.58     0.07      0.029       (  0.310)       0.018         0.011
 272. 22.67     0.07      0.029       (  0.309)       0.018         0.011
 273. 22.75     0.07      0.029       (  0.308)       0.018         0.011
 274. 22.83     0.07      0.029       (  0.307)       0.018         0.011
 275. 22.92     0.07      0.029       (  0.306)       0.018         0.011
 276. 23.00     0.07      0.029       (  0.306)       0.018         0.011
 277. 23.08     0.07      0.029       (  0.305)       0.018         0.011
 278. 23.17     0.07      0.029       (  0.304)       0.018         0.011
 279. 23.25     0.07      0.029       (  0.304)       0.018         0.011
 280. 23.33     0.07      0.029       (  0.303)       0.018         0.011
 281. 23.42     0.07      0.029       (  0.302)       0.018         0.011
 282. 23.50     0.07      0.029       (  0.302)       0.018         0.011
 283. 23.58     0.07      0.029       (  0.301)       0.018         0.011
 284. 23.67     0.07      0.029       (  0.301)       0.018         0.011
 285. 23.75     0.07      0.029       (  0.301)       0.018         0.011
 286. 23.83     0.07      0.029       (  0.300)       0.018         0.011
 287. 23.92     0.07      0.029       (  0.300)       0.018         0.011
 288. 24.00     0.07      0.029       (  0.300)       0.018         0.011
                   (Loss Rate Not Used)
    Sum =     100.0                                    Sum =    16.3
     Flood volume = Effective rainfall      1.36(In)
      times area       0.8(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
     Total soil loss =      2.25(In)
     Total soil loss =     0.144(Ac.Ft)
     Total rainfall =      3.60(In)
     Flood volume =        3798.2 Cubic Feet
     Total soil loss =        6276.7 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =      0.143(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                              24 - H O U R    S T O R M
                                    R u n o f f     H y d r o g r a p h
     ---------------------------------------------------------------------
                            Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5
10.0
  ---------------------------------------------------------------------
    0+ 5       0.0000      0.00  Q         |         |         |         |
    0+10       0.0001      0.01  Q         |         |         |         |
    0+15       0.0001      0.01  Q         |         |         |         |
    0+20       0.0002      0.01  Q         |         |         |         |
    0+25       0.0003      0.01  Q         |         |         |         |
    0+30       0.0004      0.01  Q         |         |         |         |
```

0+35	0.0005	0.01	Q				
0+40	0.0006	0.01	Q				
0+45	0.0007	0.01	Q				
0+50	0.0008	0.02	Q				
0+55	0.0009	0.02	Q				
1+ 0	0.0010	0.02	Q				
1+ 5	0.0011	0.01	Q				
1+10	0.0012	0.01	Q				
1+15	0.0013	0.01	Q				
1+20	0.0014	0.01	Q				
1+25	0.0014	0.01	Q				
1+30	0.0015	0.01	Q				
1+35	0.0016	0.01	Q				
1+40	0.0017	0.01	Q				
1+45	0.0018	0.01	Q				
1+50	0.0019	0.02	Q				
1+55	0.0020	0.02	Q				
2+ 0	0.0021	0.02	Q				
2+ 5	0.0022	0.02	QV				
2+10	0.0024	0.02	QV				
2+15	0.0025	0.02	QV				
2+20	0.0026	0.02	QV				
2+25	0.0027	0.02	QV				
2+30	0.0028	0.02	QV				
2+35	0.0030	0.02	QV				
2+40	0.0031	0.02	QV				
2+45	0.0032	0.02	QV				
2+50	0.0034	0.02	QV				
2+55	0.0035	0.02	QV				
3+ 0	0.0037	0.02	QV				
3+ 5	0.0038	0.02	QV				
3+10	0.0040	0.02	QV				
3+15	0.0041	0.02	QV				
3+20	0.0043	0.02	QV				
3+25	0.0044	0.02	Q V				
3+30	0.0046	0.02	Q V				
3+35	0.0047	0.02	Q V				
3+40	0.0048	0.02	Q V				
3+45	0.0050	0.02	Q V				
3+50	0.0052	0.02	Q V				
3+55	0.0053	0.03	Q V				
4+ 0	0.0055	0.03	Q V				
4+ 5	0.0057	0.03	Q V				
4+10	0.0058	0.03	Q V				
4+15	0.0060	0.03	Q V				
4+20	0.0062	0.03	Q V				
4+25	0.0064	0.03	Q V				
4+30	0.0066	0.03	Q V				
4+35	0.0068	0.03	Q V				
4+40	0.0070	0.03	Q V				
4+45	0.0072	0.03	Q V				
4+50	0.0075	0.03	Q V				
4+55	0.0077	0.03	Q V				
5+ 0	0.0079	0.03	Q V				

5+ 5	0.0081	0.03	Q	V	|	|	|	|
5+10	0.0083	0.03	Q	V	|	|	|	|
5+15	0.0085	0.03	Q	V	|	|	|	|
5+20	0.0087	0.03	Q	V	|	|	|	|
5+25	0.0089	0.03	Q	V	|	|	|	|
5+30	0.0091	0.03	Q	V	|	|	|	|
5+35	0.0093	0.03	Q	V	|	|	|	|
5+40	0.0095	0.03	Q	V	|	|	|	|
5+45	0.0097	0.03	Q	V	|	|	|	|
5+50	0.0100	0.03	Q	V	|	|	|	|
5+55	0.0102	0.03	Q	V	|	|	|	|
6+ 0	0.0104	0.03	Q	V	|	|	|	|
6+ 5	0.0107	0.04	Q	V	|	|	|	|
6+10	0.0110	0.04	Q	V	|	|	|	|
6+15	0.0112	0.04	Q	V	|	|	|	|
6+20	0.0115	0.04	Q	V	|	|	|	|
6+25	0.0117	0.04	Q	V	|	|	|	|
6+30	0.0120	0.04	Q	V	|	|	|	|
6+35	0.0123	0.04	Q	V	|	|	|	|
6+40	0.0126	0.04	Q	V	|	|	|	|
6+45	0.0129	0.04	Q	V	|	|	|	|
6+50	0.0131	0.04	Q	V	|	|	|	|
6+55	0.0134	0.04	Q	V	|	|	|	|
7+ 0	0.0137	0.04	Q	V	|	|	|	|
7+ 5	0.0140	0.04	Q	V	|	|	|	|
7+10	0.0143	0.04	Q	V	|	|	|	|
7+15	0.0146	0.04	Q	V	|	|	|	|
7+20	0.0149	0.04	Q	V	|	|	|	|
7+25	0.0152	0.05	Q	V	|	|	|	|
7+30	0.0155	0.05	Q	V	|	|	|	|
7+35	0.0159	0.05	Q	V	|	|	|	|
7+40	0.0162	0.05	Q	V	|	|	|	|
7+45	0.0166	0.05	Q	V	|	|	|	|
7+50	0.0169	0.05	Q	V	|	|	|	|
7+55	0.0173	0.05	Q	V	|	|	|	|
8+ 0	0.0177	0.05	Q	V	|	|	|	|
8+ 5	0.0181	0.06	Q	V	|	|	|	|
8+10	0.0185	0.06	Q	V	|	|	|	|
8+15	0.0190	0.06	Q	V	|	|	|	|
8+20	0.0194	0.06	Q	V	|	|	|	|
8+25	0.0199	0.06	Q	V	|	|	|	|
8+30	0.0203	0.06	Q	V	|	|	|	|
8+35	0.0207	0.07	Q	V	|	|	|	|
8+40	0.0212	0.07	Q	V	|	|	|	|
8+45	0.0217	0.07	Q	V	|	|	|	|
8+50	0.0222	0.07	Q	V	|	|	|	|
8+55	0.0226	0.07	Q	V	|	|	|	|
9+ 0	0.0231	0.07	Q	V	|	|	|	|
9+ 5	0.0237	0.08	Q	V	|	|	|	|
9+10	0.0242	0.08	Q	|	V	|	|	|
9+15	0.0248	0.08	Q	|	V	|	|	|
9+20	0.0253	0.08	Q	|	V	|	|	|
9+25	0.0259	0.08	Q	|	V	|	|	|
9+30	0.0265	0.08	Q	|	|	V	|	|

9+35	0.0271	0.09	Q	V			
9+40	0.0277	0.09	Q	V			
9+45	0.0283	0.09	Q	V			
9+50	0.0289	0.09	Q	V			
9+55	0.0296	0.09	Q	V			
10+ 0	0.0302	0.09	Q	V			
10+ 5	0.0307	0.08	Q	V			
10+10	0.0312	0.06	Q	V			
10+15	0.0316	0.06	Q	V			
10+20	0.0321	0.06	Q	V			
10+25	0.0325	0.06	Q	V			
10+30	0.0329	0.06	Q	V			
10+35	0.0335	0.08	Q	V			
10+40	0.0340	0.08	Q	V			
10+45	0.0346	0.08	Q	V			
10+50	0.0352	0.08	Q	V			
10+55	0.0358	0.08	Q	V			
11+ 0	0.0364	0.08	Q	V			
11+ 5	0.0369	0.08	Q	V			
11+10	0.0375	0.08	Q	V			
11+15	0.0380	0.08	Q	V			
11+20	0.0386	0.08	Q	V			
11+25	0.0391	0.08	Q	V			
11+30	0.0397	0.08	Q	V			
11+35	0.0402	0.08	Q	V			
11+40	0.0407	0.07	Q	V			
11+45	0.0412	0.07	Q	V			
11+50	0.0417	0.07	Q	V			
11+55	0.0422	0.08	Q	V			
12+ 0	0.0427	0.08	Q	V			
12+ 5	0.0434	0.09	Q	V			
12+10	0.0441	0.10	Q	V			
12+15	0.0448	0.11	Q	V			
12+20	0.0456	0.11	Q	V			
12+25	0.0463	0.11	Q	V			
12+30	0.0471	0.11	Q	V			
12+35	0.0479	0.11	Q	V			
12+40	0.0487	0.12	Q	V			
12+45	0.0495	0.12	Q	V			
12+50	0.0503	0.12	Q	V			
12+55	0.0512	0.12	Q	V			
13+ 0	0.0520	0.12	Q	V			
13+ 5	0.0529	0.13	Q	V			
13+10	0.0539	0.14	Q	V			
13+15	0.0549	0.14	Q	V			
13+20	0.0559	0.14	Q	V			
13+25	0.0569	0.14	Q	V			
13+30	0.0579	0.14	Q	V			
13+35	0.0587	0.12	Q	V			
13+40	0.0594	0.10	Q	V			
13+45	0.0600	0.10	Q	V			
13+50	0.0607	0.10	Q	V			
13+55	0.0614	0.10	Q	V			
14+ 0	0.0620	0.10	Q	V			

14+ 5	0.0628	0.11	Q	|	|	V |	|
14+10	0.0636	0.11	Q	|	|	V|	|
14+15	0.0643	0.11	Q	|	|	V|	|
14+20	0.0651	0.11	Q	|	|	V|	|
14+25	0.0659	0.11	Q	|	|	V	|
14+30	0.0666	0.11	Q	|	|	V	|
14+35	0.0674	0.11	Q	|	|	V	|
14+40	0.0681	0.11	Q	|	|	|V	|
14+45	0.0689	0.11	Q	|	|	|V	|
14+50	0.0696	0.11	Q	|	|	|V	|
14+55	0.0704	0.11	Q	|	|	| V	|
15+ 0	0.0711	0.11	Q	|	|	| V	|
15+ 5	0.0718	0.10	Q	|	|	| V	|
15+10	0.0725	0.10	Q	|	|	| V	|
15+15	0.0732	0.10	Q	|	|	| V	|
15+20	0.0739	0.10	Q	|	|	| V	|
15+25	0.0745	0.10	Q	|	|	| V	|
15+30	0.0752	0.10	Q	|	|	| V	|
15+35	0.0758	0.09	Q	|	|	| V	|
15+40	0.0764	0.08	Q	|	|	| V	|
15+45	0.0769	0.08	Q	|	|	| V	|
15+50	0.0775	0.08	Q	|	|	| V	|
15+55	0.0780	0.08	Q	|	|	| V	|
16+ 0	0.0786	0.08	Q	|	|	| V	|
16+ 5	0.0789	0.04	Q	|	|	| V	|
16+10	0.0790	0.02	Q	|	|	| V	|
16+15	0.0791	0.02	Q	|	|	| V	|
16+20	0.0792	0.02	Q	|	|	| V	|
16+25	0.0794	0.02	Q	|	|	| V	|
16+30	0.0795	0.02	Q	|	|	| V	|
16+35	0.0796	0.01	Q	|	|	| V	|
16+40	0.0797	0.01	Q	|	|	| V	|
16+45	0.0797	0.01	Q	|	|	| V	|
16+50	0.0798	0.01	Q	|	|	| V	|
16+55	0.0799	0.01	Q	|	|	| V	|
17+ 0	0.0800	0.01	Q	|	|	| V	|
17+ 5	0.0801	0.02	Q	|	|	| V	|
17+10	0.0803	0.02	Q	|	|	| V	|
17+15	0.0804	0.02	Q	|	|	| V	|
17+20	0.0806	0.02	Q	|	|	| V	|
17+25	0.0807	0.02	Q	|	|	| V	|
17+30	0.0809	0.02	Q	|	|	| V	|
17+35	0.0810	0.02	Q	|	|	| V	|
17+40	0.0811	0.02	Q	|	|	| V	|
17+45	0.0813	0.02	Q	|	|	| V	|
17+50	0.0814	0.02	Q	|	|	| V	|
17+55	0.0815	0.02	Q	|	|	| V	|
18+ 0	0.0816	0.02	Q	|	|	| V	|
18+ 5	0.0818	0.02	Q	|	|	| V	|
18+10	0.0819	0.02	Q	|	|	| V	|
18+15	0.0820	0.02	Q	|	|	| V	|
18+20	0.0821	0.02	Q	|	|	| V	|
18+25	0.0822	0.02	Q	|	|	| V	|
18+30	0.0823	0.02	Q	|	|	| V	|

18+35	0.0824	0.01	Q	|	|	|	V |
18+40	0.0825	0.01	Q	|	|	|	V |
18+45	0.0826	0.01	Q	|	|	|	V |
18+50	0.0827	0.01	Q	|	|	|	V |
18+55	0.0828	0.01	Q	|	|	|	V |
19+ 0	0.0828	0.01	Q	|	|	|	V |
19+ 5	0.0829	0.01	Q	|	|	|	V |
19+10	0.0830	0.01	Q	|	|	|	V |
19+15	0.0831	0.01	Q	|	|	|	V |
19+20	0.0832	0.02	Q	|	|	|	V |
19+25	0.0833	0.02	Q	|	|	|	V |
19+30	0.0834	0.02	Q	|	|	|	V |
19+35	0.0835	0.01	Q	|	|	|	V |
19+40	0.0836	0.01	Q	|	|	|	V |
19+45	0.0837	0.01	Q	|	|	|	V |
19+50	0.0837	0.01	Q	|	|	|	V |
19+55	0.0838	0.01	Q	|	|	|	V |
20+ 0	0.0839	0.01	Q	|	|	|	V |
20+ 5	0.0839	0.01	Q	|	|	|	V |
20+10	0.0840	0.01	Q	|	|	|	V |
20+15	0.0841	0.01	Q	|	|	|	V |
20+20	0.0842	0.01	Q	|	|	|	V |
20+25	0.0843	0.01	Q	|	|	|	V |
20+30	0.0844	0.01	Q	|	|	|	V |
20+35	0.0845	0.01	Q	|	|	|	V |
20+40	0.0845	0.01	Q	|	|	|	V |
20+45	0.0846	0.01	Q	|	|	|	V |
20+50	0.0847	0.01	Q	|	|	|	V |
20+55	0.0848	0.01	Q	|	|	|	V |
21+ 0	0.0848	0.01	Q	|	|	|	V |
21+ 5	0.0849	0.01	Q	|	|	|	V |
21+10	0.0850	0.01	Q	|	|	|	V |
21+15	0.0851	0.01	Q	|	|	|	V|
21+20	0.0851	0.01	Q	|	|	|	V|
21+25	0.0852	0.01	Q	|	|	|	V|
21+30	0.0853	0.01	Q	|	|	|	V|
21+35	0.0853	0.01	Q	|	|	|	V|
21+40	0.0854	0.01	Q	|	|	|	V|
21+45	0.0855	0.01	Q	|	|	|	V|
21+50	0.0856	0.01	Q	|	|	|	V|
21+55	0.0856	0.01	Q	|	|	|	V|
22+ 0	0.0857	0.01	Q	|	|	|	V|
22+ 5	0.0858	0.01	Q	|	|	|	V|
22+10	0.0858	0.01	Q	|	|	|	V|
22+15	0.0859	0.01	Q	|	|	|	V|
22+20	0.0860	0.01	Q	|	|	|	V|
22+25	0.0861	0.01	Q	|	|	|	V|
22+30	0.0861	0.01	Q	|	|	|	V|
22+35	0.0862	0.01	Q	|	|	|	V|
22+40	0.0862	0.01	Q	|	|	|	V|
22+45	0.0863	0.01	Q	|	|	|	V|
22+50	0.0864	0.01	Q	|	|	|	V|
22+55	0.0864	0.01	Q	|	|	|	V|
23+ 0	0.0865	0.01	Q	|	|	|	V|

23+ 5	0.0865	0.01	Q	|	|	|	V|
23+10	0.0866	0.01	Q	|	|	|	V|
23+15	0.0866	0.01	Q	|	|	|	V|
23+20	0.0867	0.01	Q	|	|	|	V|
23+25	0.0868	0.01	Q	|	|	|	V|
23+30	0.0868	0.01	Q	|	|	|	V|
23+35	0.0869	0.01	Q	|	|	|	V|
23+40	0.0869	0.01	Q	|	|	|	V|
23+45	0.0870	0.01	Q	|	|	|	V|
23+50	0.0871	0.01	Q	|	|	|	V|
23+55	0.0871	0.01	Q	|	|	|	V|
24+ 0	0.0872	0.01	Q	|	|	|	V|
24+ 5	0.0872	0.00	Q	|	|	|	V|
24+10	0.0872	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPTRENCH1100.out

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      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77              0.50                    0.39

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77              1.30                    1.00

      STORM EVENT (YEAR) =  100.00
      Area Averaged 2-Year Rainfall =    0.500(In)
      Area Averaged 100-Year Rainfall =    1.300(In)

      Point rain (area averaged) =    1.300(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.300(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.346        0.511        1.000      0.511
                                                          Sum (F) =
0.511
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-
      Slope of intensity-duration curve for a 1 hour storm =0.5000
      ------------------------------------------------------------------
--

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                      Graph %            (CFS)
      ------------------------------------------------------------------
-
                1   0.083        326.011         59.201              0.459
                2   0.167        652.021         35.743              0.277
                3   0.250        978.032          5.056              0.039
```

Sum =
100.000 Sum= 0.776

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	4.20	0.655	(0.599)	0.408	0.247
2. 0.17	4.30	0.671	(0.599)	0.418	0.253
3. 0.25	5.00	0.780	(0.599)	0.486	0.294
4. 0.33	5.00	0.780	(0.599)	0.486	0.294
5. 0.42	5.80	0.905	(0.599)	0.564	0.341
6. 0.50	6.50	1.014	0.599	(0.632)	0.415
7. 0.58	7.40	1.154	0.599	(0.719)	0.555
8. 0.67	8.60	1.342	0.599	(0.836)	0.742
9. 0.75	12.30	1.919	0.599	(1.195)	1.319
10. 0.83	29.10	4.540	0.599	(2.828)	3.940
11. 0.92	6.80	1.061	0.599	(0.661)	0.461
12. 1.00	5.00	0.780	(0.599)	0.486	0.294

(Loss Rate Not Used)

Sum = 100.0 Sum = 9.2

Flood volume = Effective rainfall 0.76(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.54(In)
Total soil loss = 0.034(Ac.Ft)
Total rainfall = 1.30(In)
Flood volume = 2132.7 Cubic Feet
Total soil loss = 1500.9 Cubic Feet

Peak flow rate of this hydrograph = 2.206(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0008	0.11	Q				
0+10	0.0021	0.18	QV				
0+15	0.0035	0.22	Q V				
0+20	0.0051	0.23	Q V				
0+25	0.0068	0.25	Q V				
0+30	0.0089	0.30	|Q V				
0+35	0.0115	0.38	|Q V|				
0+40	0.0150	0.51	| Q | V				

```
    0+45       0.0208      0.83  |  Q      |     V   |          |          |
    0+50       0.0360      2.21  |       Q |         |          |          |
    0+55       0.0453      1.36  |    Q    |         |          |      V   |
    1+ 0       0.0482      0.42  |Q        |         |          |        V |
    1+ 5       0.0489      0.10  Q         |         |          |        V |
    1+10       0.0490      0.01  Q         |         |          |          V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             0.85                   0.65

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.00                   1.54

      STORM EVENT (YEAR) =  100.00
      Area Averaged 2-Year Rainfall =    0.850(In)
      Area Averaged 100-Year Rainfall =    2.000(In)

      Point rain (area averaged) =    2.000(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    2.000(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.346        0.511        1.000      0.511
                                                          Sum (F) =
0.511
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083        326.011         59.201             0.459
                 2   0.167        652.021         35.743             0.277
                 3   0.250        978.032          5.056             0.039
                                                                  Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	1.30	0.312	(0.599)	0.194	0.118
2. 0.17	1.30	0.312	(0.599)	0.194	0.118
3. 0.25	1.10	0.264	(0.599)	0.164	0.100
4. 0.33	1.50	0.360	(0.599)	0.224	0.136
5. 0.42	1.50	0.360	(0.599)	0.224	0.136
6. 0.50	1.80	0.432	(0.599)	0.269	0.163
7. 0.58	1.50	0.360	(0.599)	0.224	0.136
8. 0.67	1.80	0.432	(0.599)	0.269	0.163
9. 0.75	1.80	0.432	(0.599)	0.269	0.163
10. 0.83	1.50	0.360	(0.599)	0.224	0.136
11. 0.92	1.60	0.384	(0.599)	0.239	0.145
12. 1.00	1.80	0.432	(0.599)	0.269	0.163
13. 1.08	2.20	0.528	(0.599)	0.329	0.199
14. 1.17	2.20	0.528	(0.599)	0.329	0.199
15. 1.25	2.20	0.528	(0.599)	0.329	0.199
16. 1.33	2.00	0.480	(0.599)	0.299	0.181
17. 1.42	2.60	0.624	(0.599)	0.389	0.235
18. 1.50	2.70	0.648	(0.599)	0.404	0.244
19. 1.58	2.40	0.576	(0.599)	0.359	0.217
20. 1.67	2.70	0.648	(0.599)	0.404	0.244
21. 1.75	3.30	0.792	(0.599)	0.493	0.299
22. 1.83	3.10	0.744	(0.599)	0.464	0.280
23. 1.92	2.90	0.696	(0.599)	0.434	0.262
24. 2.00	3.00	0.720	(0.599)	0.449	0.271
25. 2.08	3.10	0.744	(0.599)	0.464	0.280
26. 2.17	4.20	1.008	0.599	(0.628)	0.409
27. 2.25	5.00	1.200	0.599	(0.748)	0.601
28. 2.33	3.50	0.840	(0.599)	0.523	0.317
29. 2.42	6.80	1.632	0.599	(1.017)	1.033
30. 2.50	7.30	1.752	0.599	(1.091)	1.153
31. 2.58	8.20	1.968	0.599	(1.226)	1.369
32. 2.67	5.90	1.416	0.599	(0.882)	0.817
33. 2.75	2.00	0.480	(0.599)	0.299	0.181
34. 2.83	1.80	0.432	(0.599)	0.269	0.163
35. 2.92	1.80	0.432	(0.599)	0.269	0.163
36. 3.00	0.60	0.144	(0.599)	0.090	0.054
	(Loss Rate Not Used)				
Sum =	100.0				Sum = 11.0

Flood volume = Effective rainfall 0.92(In)
times area 0.8(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 1.08(In)
Total soil loss = 0.069(Ac.Ft)
Total rainfall = 2.00(In)
Flood volume = 2572.4 Cubic Feet
Total soil loss = 3017.8 Cubic Feet

Peak flow rate of this hydrograph = 0.989(CFS)

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3 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0004	0.05	Q
0+10	0.0010	0.09	Q
0+15	0.0015	0.08	QV
0+20	0.0022	0.09	QV
0+25	0.0029	0.10	QV
0+30	0.0037	0.12	Q V
0+35	0.0045	0.11	Q V
0+40	0.0053	0.12	Q V
0+45	0.0062	0.13	Q V
0+50	0.0070	0.11	Q V
0+55	0.0077	0.11	Q V
1+ 0	0.0086	0.12	Q V
1+ 5	0.0095	0.14	Q V
1+10	0.0106	0.15	Q V
1+15	0.0117	0.15	Q V
1+20	0.0127	0.15	Q V
1+25	0.0138	0.17	Q V
1+30	0.0151	0.18	Q V
1+35	0.0163	0.18	Q V
1+40	0.0176	0.18	Q V
1+45	0.0190	0.21	Q V
1+50	0.0205	0.22	Q V
1+55	0.0220	0.21	Q V
2+ 0	0.0234	0.21	Q V
2+ 5	0.0249	0.21	Q V
2+10	0.0268	0.28	Q V
2+15	0.0296	0.40	Q V
2+20	0.0318	0.33	Q V
2+25	0.0359	0.59	Q V
2+30	0.0416	0.83	Q V
2+35	0.0484	0.99	Q V
2+40	0.0539	0.80	Q V
2+45	0.0564	0.36	Q V
2+50	0.0575	0.16	Q V
2+55	0.0584	0.13	Q V
3+ 0	0.0589	0.08	Q V
3+ 5	0.0590	0.02	Q V
3+10	0.0591	0.00	Q V

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             1.20                   0.92

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.90                   2.23

      STORM EVENT (YEAR) =  100.00
      Area Averaged 2-Year Rainfall =    1.200(In)
      Area Averaged 100-Year Rainfall =    2.900(In)

      Point rain (area averaged) =    2.900(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    2.900(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.346        0.511        1.000      0.511
                                                          Sum (F) =
0.511
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083        326.011        59.201             0.459
                 2   0.167        652.021        35.743             0.277
                 3   0.250        978.032         5.056             0.039
                                                                 Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.50	0.174	(0.599)	0.108	0.066
2. 0.17	0.60	0.209	(0.599)	0.130	0.079
3. 0.25	0.60	0.209	(0.599)	0.130	0.079
4. 0.33	0.60	0.209	(0.599)	0.130	0.079
5. 0.42	0.60	0.209	(0.599)	0.130	0.079
6. 0.50	0.70	0.244	(0.599)	0.152	0.092
7. 0.58	0.70	0.244	(0.599)	0.152	0.092
8. 0.67	0.70	0.244	(0.599)	0.152	0.092
9. 0.75	0.70	0.244	(0.599)	0.152	0.092
10. 0.83	0.70	0.244	(0.599)	0.152	0.092
11. 0.92	0.70	0.244	(0.599)	0.152	0.092
12. 1.00	0.80	0.278	(0.599)	0.173	0.105
13. 1.08	0.80	0.278	(0.599)	0.173	0.105
14. 1.17	0.80	0.278	(0.599)	0.173	0.105
15. 1.25	0.80	0.278	(0.599)	0.173	0.105
16. 1.33	0.80	0.278	(0.599)	0.173	0.105
17. 1.42	0.80	0.278	(0.599)	0.173	0.105
18. 1.50	0.80	0.278	(0.599)	0.173	0.105
19. 1.58	0.80	0.278	(0.599)	0.173	0.105
20. 1.67	0.80	0.278	(0.599)	0.173	0.105
21. 1.75	0.80	0.278	(0.599)	0.173	0.105
22. 1.83	0.80	0.278	(0.599)	0.173	0.105
23. 1.92	0.80	0.278	(0.599)	0.173	0.105
24. 2.00	0.90	0.313	(0.599)	0.195	0.118
25. 2.08	0.80	0.278	(0.599)	0.173	0.105
26. 2.17	0.90	0.313	(0.599)	0.195	0.118
27. 2.25	0.90	0.313	(0.599)	0.195	0.118
28. 2.33	0.90	0.313	(0.599)	0.195	0.118
29. 2.42	0.90	0.313	(0.599)	0.195	0.118
30. 2.50	0.90	0.313	(0.599)	0.195	0.118
31. 2.58	0.90	0.313	(0.599)	0.195	0.118
32. 2.67	0.90	0.313	(0.599)	0.195	0.118
33. 2.75	1.00	0.348	(0.599)	0.217	0.131
34. 2.83	1.00	0.348	(0.599)	0.217	0.131
35. 2.92	1.00	0.348	(0.599)	0.217	0.131
36. 3.00	1.00	0.348	(0.599)	0.217	0.131
37. 3.08	1.00	0.348	(0.599)	0.217	0.131
38. 3.17	1.10	0.383	(0.599)	0.238	0.144
39. 3.25	1.10	0.383	(0.599)	0.238	0.144
40. 3.33	1.10	0.383	(0.599)	0.238	0.144
41. 3.42	1.20	0.418	(0.599)	0.260	0.157
42. 3.50	1.30	0.452	(0.599)	0.282	0.171
43. 3.58	1.40	0.487	(0.599)	0.304	0.184
44. 3.67	1.40	0.487	(0.599)	0.304	0.184
45. 3.75	1.50	0.522	(0.599)	0.325	0.197
46. 3.83	1.50	0.522	(0.599)	0.325	0.197

```
  47. 3.92     1.60      0.557       (  0.599)       0.347        0.210
  48. 4.00     1.60      0.557       (  0.599)       0.347        0.210
  49. 4.08     1.70      0.592       (  0.599)       0.369        0.223
  50. 4.17     1.80      0.626       (  0.599)       0.390        0.236
  51. 4.25     1.90      0.661       (  0.599)       0.412        0.249
  52. 4.33     2.00      0.696       (  0.599)       0.434        0.262
  53. 4.42     2.10      0.731       (  0.599)       0.455        0.276
  54. 4.50     2.10      0.731       (  0.599)       0.455        0.276
  55. 4.58     2.20      0.766       (  0.599)       0.477        0.289
  56. 4.67     2.30      0.800       (  0.599)       0.499        0.302
  57. 4.75     2.40      0.835       (  0.599)       0.520        0.315
  58. 4.83     2.40      0.835       (  0.599)       0.520        0.315
  59. 4.92     2.50      0.870       (  0.599)       0.542        0.328
  60. 5.00     2.60      0.905       (  0.599)       0.564        0.341
  61. 5.08     3.10      1.079          0.599    (  0.672)        0.479
  62. 5.17     3.60      1.253          0.599    (  0.780)        0.653
  63. 5.25     3.90      1.357          0.599    (  0.846)        0.758
  64. 5.33     4.20      1.462          0.599    (  0.911)        0.862
  65. 5.42     4.70      1.636          0.599    (  1.019)        1.036
  66. 5.50     5.60      1.949          0.599    (  1.214)        1.349
  67. 5.58     1.90      0.661       (  0.599)       0.412        0.249
  68. 5.67     0.90      0.313       (  0.599)       0.195        0.118
  69. 5.75     0.60      0.209       (  0.599)       0.130        0.079
  70. 5.83     0.50      0.174       (  0.599)       0.108        0.066
  71. 5.92     0.30      0.104       (  0.599)       0.065        0.039
  72. 6.00     0.20      0.070       (  0.599)       0.043        0.026
                  (Loss Rate Not Used)
     Sum =     100.0                                   Sum =    15.0
      Flood volume = Effective rainfall      1.25(In)
       times area       0.8(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
      Total soil loss =      1.65(In)
      Total soil loss =     0.106(Ac.Ft)
      Total rainfall =      2.90(In)
      Flood volume =        3485.8 Cubic Feet
      Total soil loss =        4620.0 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.942(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                                 6 - H O U R   S T O R M
                                        R u n o f f     H y d r o g r a p h
      ---------------------------------------------------------------------
                              Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5
10.0
  ---------------------------------------------------------------------
    0+ 5       0.0002      0.03  Q         |         |         |         |
    0+10       0.0006      0.05  Q         |         |         |         |
    0+15       0.0010      0.06  Q         |         |         |         |
    0+20       0.0014      0.06  Q         |         |         |         |
    0+25       0.0018      0.06  Q         |         |         |         |
    0+30       0.0023      0.07  QV        |         |         |         |
```

0+35	0.0028	0.07	QV	|	|	|	|
0+40	0.0033	0.07	QV	|	|	|	|
0+45	0.0038	0.07	QV	|	|	|	|
0+50	0.0043	0.07	Q V	|	|	|	|
0+55	0.0048	0.07	Q V	|	|	|	|
1+ 0	0.0053	0.08	Q V	|	|	|	|
1+ 5	0.0058	0.08	Q V	|	|	|	|
1+10	0.0064	0.08	Q V	|	|	|	|
1+15	0.0070	0.08	Q V	|	|	|	|
1+20	0.0075	0.08	Q V	|	|	|	|
1+25	0.0081	0.08	Q V	|	|	|	|
1+30	0.0087	0.08	Q V	|	|	|	|
1+35	0.0092	0.08	Q V	|	|	|	|
1+40	0.0098	0.08	Q V	|	|	|	|
1+45	0.0103	0.08	Q V	|	|	|	|
1+50	0.0109	0.08	Q V	|	|	|	|
1+55	0.0115	0.08	Q V	|	|	|	|
2+ 0	0.0121	0.09	Q V	|	|	|	|
2+ 5	0.0126	0.09	Q V	|	|	|	|
2+10	0.0133	0.09	Q V	|	|	|	|
2+15	0.0139	0.09	Q V	|	|	|	|
2+20	0.0145	0.09	Q V	|	|	|	|
2+25	0.0151	0.09	Q V	|	|	|	|
2+30	0.0158	0.09	Q V	|	|	|	|
2+35	0.0164	0.09	Q V	|	|	|	|
2+40	0.0170	0.09	Q V	|	|	|	|
2+45	0.0177	0.10	Q V	|	|	|	|
2+50	0.0184	0.10	Q V	|	|	|	|
2+55	0.0191	0.10	Q V	|	|	|	|
3+ 0	0.0198	0.10	Q V	|	|	|	|
3+ 5	0.0205	0.10	Q V	|	|	|	|
3+10	0.0213	0.11	Q V	|	|	|	|
3+15	0.0220	0.11	Q | V	|	|	|	|
3+20	0.0228	0.11	Q | V	|	|	|	|
3+25	0.0236	0.12	Q | V	|	|	|	|
3+30	0.0245	0.13	Q | V	|	|	|	|
3+35	0.0254	0.14	Q | V	|	|	|	|
3+40	0.0264	0.14	Q | V	|	|	|	|
3+45	0.0274	0.15	Q | V	|	|	|	|
3+50	0.0285	0.15	Q | V	|	|	|	|
3+55	0.0296	0.16	Q | V	|	|	|	|
4+ 0	0.0307	0.16	Q | V	|	|	|	|
4+ 5	0.0319	0.17	Q | V	|	|	|	|
4+10	0.0331	0.18	Q | V	|	|	|	|
4+15	0.0344	0.19	Q | V	|	|	|	|
4+20	0.0358	0.20	Q | V	|	|	|	|
4+25	0.0372	0.21	Q | V	|	|	|	|
4+30	0.0387	0.21	Q | V	|	|	|	|
4+35	0.0402	0.22	Q | V	|	|	|	|
4+40	0.0418	0.23	Q | V	|	|	|	|
4+45	0.0434	0.24	Q | V	|	|	|	|
4+50	0.0451	0.24	Q | V	|	|	|	|
4+55	0.0468	0.25	|Q | V	|	|	|	|
5+ 0	0.0486	0.26	|Q | V	|	|	|	|

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    5+ 5       0.0509      0.33  |Q        |          |    V    |          |
    5+10       0.0540      0.45  |Q        |          |     V   |          |
    5+15       0.0577      0.55  | Q       |          |       V |          |
    5+20       0.0621      0.63  | Q       |          |         |V         |
    5+25       0.0672      0.75  | Q       |          |         |  V       |
    5+30       0.0737      0.94  |  Q      |          |         |     V    |
    5+35       0.0774      0.53  | Q       |          |         |       V  |
    5+40       0.0786      0.18  Q         |          |         |         V|
    5+45       0.0791      0.08  Q         |          |         |         V|
    5+50       0.0795      0.06  Q         |          |         |         V|
    5+55       0.0798      0.04  Q         |          |         |         V|
    6+ 0       0.0800      0.03  Q         |          |         |         V|
    6+ 5       0.0800      0.01  Q         |          |         |         V|
    6+10       0.0800      0.00  Q         |          |         |         V|
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U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPTRENCH24100.out

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             2.00                    1.54

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.77             5.90                    4.54

      STORM EVENT (YEAR) =  100.00
      Area Averaged 2-Year Rainfall =    2.000(In)
      Area Averaged 100-Year Rainfall =    5.900(In)

      Point rain (area averaged) =    5.900(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    5.900(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.770           32.00         0.346
       Total Area Entered =      0.77(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.346        0.511        1.000      0.511
                                                          Sum (F) =
0.511
      Area averaged mean soil loss (F) (In/Hr) =  0.599
      Minimum soil loss rate ((In/Hr)) =  0.300
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.623
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083        326.011         59.201             0.459
                 2   0.167        652.021         35.743             0.277
                 3   0.250        978.032          5.056             0.039
                                                                  Sum =
100.000   Sum=       0.776
      ------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.07	0.047	(1.062)	0.029	0.018
2. 0.17	0.07	0.047	(1.058)	0.029	0.018
3. 0.25	0.07	0.047	(1.054)	0.029	0.018
4. 0.33	0.10	0.071	(1.050)	0.044	0.027
5. 0.42	0.10	0.071	(1.046)	0.044	0.027
6. 0.50	0.10	0.071	(1.042)	0.044	0.027
7. 0.58	0.10	0.071	(1.038)	0.044	0.027
8. 0.67	0.10	0.071	(1.034)	0.044	0.027
9. 0.75	0.10	0.071	(1.030)	0.044	0.027
10. 0.83	0.13	0.094	(1.026)	0.059	0.036
11. 0.92	0.13	0.094	(1.022)	0.059	0.036
12. 1.00	0.13	0.094	(1.018)	0.059	0.036
13. 1.08	0.10	0.071	(1.014)	0.044	0.027
14. 1.17	0.10	0.071	(1.010)	0.044	0.027
15. 1.25	0.10	0.071	(1.006)	0.044	0.027
16. 1.33	0.10	0.071	(1.002)	0.044	0.027
17. 1.42	0.10	0.071	(0.998)	0.044	0.027
18. 1.50	0.10	0.071	(0.994)	0.044	0.027
19. 1.58	0.10	0.071	(0.990)	0.044	0.027
20. 1.67	0.10	0.071	(0.986)	0.044	0.027
21. 1.75	0.10	0.071	(0.982)	0.044	0.027
22. 1.83	0.13	0.094	(0.978)	0.059	0.036
23. 1.92	0.13	0.094	(0.974)	0.059	0.036
24. 2.00	0.13	0.094	(0.970)	0.059	0.036
25. 2.08	0.13	0.094	(0.966)	0.059	0.036
26. 2.17	0.13	0.094	(0.962)	0.059	0.036
27. 2.25	0.13	0.094	(0.958)	0.059	0.036
28. 2.33	0.13	0.094	(0.954)	0.059	0.036
29. 2.42	0.13	0.094	(0.950)	0.059	0.036
30. 2.50	0.13	0.094	(0.947)	0.059	0.036
31. 2.58	0.17	0.118	(0.943)	0.074	0.044
32. 2.67	0.17	0.118	(0.939)	0.074	0.044
33. 2.75	0.17	0.118	(0.935)	0.074	0.044
34. 2.83	0.17	0.118	(0.931)	0.074	0.044
35. 2.92	0.17	0.118	(0.927)	0.074	0.044
36. 3.00	0.17	0.118	(0.923)	0.074	0.044
37. 3.08	0.17	0.118	(0.920)	0.074	0.044
38. 3.17	0.17	0.118	(0.916)	0.074	0.044
39. 3.25	0.17	0.118	(0.912)	0.074	0.044
40. 3.33	0.17	0.118	(0.908)	0.074	0.044
41. 3.42	0.17	0.118	(0.904)	0.074	0.044
42. 3.50	0.17	0.118	(0.901)	0.074	0.044
43. 3.58	0.17	0.118	(0.897)	0.074	0.044
44. 3.67	0.17	0.118	(0.893)	0.074	0.044
45. 3.75	0.17	0.118	(0.889)	0.074	0.044
46. 3.83	0.20	0.142	(0.886)	0.088	0.053

47.	3.92	0.20	0.142	(0.882)	0.088	0.053
48.	4.00	0.20	0.142	(0.878)	0.088	0.053
49.	4.08	0.20	0.142	(0.874)	0.088	0.053
50.	4.17	0.20	0.142	(0.871)	0.088	0.053
51.	4.25	0.20	0.142	(0.867)	0.088	0.053
52.	4.33	0.23	0.165	(0.863)	0.103	0.062
53.	4.42	0.23	0.165	(0.860)	0.103	0.062
54.	4.50	0.23	0.165	(0.856)	0.103	0.062
55.	4.58	0.23	0.165	(0.852)	0.103	0.062
56.	4.67	0.23	0.165	(0.849)	0.103	0.062
57.	4.75	0.23	0.165	(0.845)	0.103	0.062
58.	4.83	0.27	0.189	(0.841)	0.118	0.071
59.	4.92	0.27	0.189	(0.838)	0.118	0.071
60.	5.00	0.27	0.189	(0.834)	0.118	0.071
61.	5.08	0.20	0.142	(0.830)	0.088	0.053
62.	5.17	0.20	0.142	(0.827)	0.088	0.053
63.	5.25	0.20	0.142	(0.823)	0.088	0.053
64.	5.33	0.23	0.165	(0.820)	0.103	0.062
65.	5.42	0.23	0.165	(0.816)	0.103	0.062
66.	5.50	0.23	0.165	(0.812)	0.103	0.062
67.	5.58	0.27	0.189	(0.809)	0.118	0.071
68.	5.67	0.27	0.189	(0.805)	0.118	0.071
69.	5.75	0.27	0.189	(0.802)	0.118	0.071
70.	5.83	0.27	0.189	(0.798)	0.118	0.071
71.	5.92	0.27	0.189	(0.795)	0.118	0.071
72.	6.00	0.27	0.189	(0.791)	0.118	0.071
73.	6.08	0.30	0.212	(0.788)	0.132	0.080
74.	6.17	0.30	0.212	(0.784)	0.132	0.080
75.	6.25	0.30	0.212	(0.781)	0.132	0.080
76.	6.33	0.30	0.212	(0.777)	0.132	0.080
77.	6.42	0.30	0.212	(0.774)	0.132	0.080
78.	6.50	0.30	0.212	(0.770)	0.132	0.080
79.	6.58	0.33	0.236	(0.767)	0.147	0.089
80.	6.67	0.33	0.236	(0.763)	0.147	0.089
81.	6.75	0.33	0.236	(0.760)	0.147	0.089
82.	6.83	0.33	0.236	(0.756)	0.147	0.089
83.	6.92	0.33	0.236	(0.753)	0.147	0.089
84.	7.00	0.33	0.236	(0.750)	0.147	0.089
85.	7.08	0.33	0.236	(0.746)	0.147	0.089
86.	7.17	0.33	0.236	(0.743)	0.147	0.089
87.	7.25	0.33	0.236	(0.739)	0.147	0.089
88.	7.33	0.37	0.260	(0.736)	0.162	0.098
89.	7.42	0.37	0.260	(0.733)	0.162	0.098
90.	7.50	0.37	0.260	(0.729)	0.162	0.098
91.	7.58	0.40	0.283	(0.726)	0.176	0.107
92.	7.67	0.40	0.283	(0.723)	0.176	0.107
93.	7.75	0.40	0.283	(0.719)	0.176	0.107
94.	7.83	0.43	0.307	(0.716)	0.191	0.116
95.	7.92	0.43	0.307	(0.713)	0.191	0.116
96.	8.00	0.43	0.307	(0.709)	0.191	0.116
97.	8.08	0.50	0.354	(0.706)	0.221	0.133
98.	8.17	0.50	0.354	(0.703)	0.221	0.133
99.	8.25	0.50	0.354	(0.699)	0.221	0.133
100.	8.33	0.50	0.354	(0.696)	0.221	0.133

101.	8.42	0.50	0.354	(0.693)	0.221	0.133
102.	8.50	0.50	0.354	(0.690)	0.221	0.133
103.	8.58	0.53	0.378	(0.686)	0.235	0.142
104.	8.67	0.53	0.378	(0.683)	0.235	0.142
105.	8.75	0.53	0.378	(0.680)	0.235	0.142
106.	8.83	0.57	0.401	(0.677)	0.250	0.151
107.	8.92	0.57	0.401	(0.674)	0.250	0.151
108.	9.00	0.57	0.401	(0.670)	0.250	0.151
109.	9.08	0.63	0.448	(0.667)	0.279	0.169
110.	9.17	0.63	0.448	(0.664)	0.279	0.169
111.	9.25	0.63	0.448	(0.661)	0.279	0.169
112.	9.33	0.67	0.472	(0.658)	0.294	0.178
113.	9.42	0.67	0.472	(0.655)	0.294	0.178
114.	9.50	0.67	0.472	(0.651)	0.294	0.178
115.	9.58	0.70	0.496	(0.648)	0.309	0.187
116.	9.67	0.70	0.496	(0.645)	0.309	0.187
117.	9.75	0.70	0.496	(0.642)	0.309	0.187
118.	9.83	0.73	0.519	(0.639)	0.323	0.196
119.	9.92	0.73	0.519	(0.636)	0.323	0.196
120.	10.00	0.73	0.519	(0.633)	0.323	0.196
121.	10.08	0.50	0.354	(0.630)	0.221	0.133
122.	10.17	0.50	0.354	(0.627)	0.221	0.133
123.	10.25	0.50	0.354	(0.624)	0.221	0.133
124.	10.33	0.50	0.354	(0.621)	0.221	0.133
125.	10.42	0.50	0.354	(0.618)	0.221	0.133
126.	10.50	0.50	0.354	(0.615)	0.221	0.133
127.	10.58	0.67	0.472	(0.612)	0.294	0.178
128.	10.67	0.67	0.472	(0.609)	0.294	0.178
129.	10.75	0.67	0.472	(0.606)	0.294	0.178
130.	10.83	0.67	0.472	(0.603)	0.294	0.178
131.	10.92	0.67	0.472	(0.600)	0.294	0.178
132.	11.00	0.67	0.472	(0.597)	0.294	0.178
133.	11.08	0.63	0.448	(0.594)	0.279	0.169
134.	11.17	0.63	0.448	(0.591)	0.279	0.169
135.	11.25	0.63	0.448	(0.588)	0.279	0.169
136.	11.33	0.63	0.448	(0.585)	0.279	0.169
137.	11.42	0.63	0.448	(0.582)	0.279	0.169
138.	11.50	0.63	0.448	(0.579)	0.279	0.169
139.	11.58	0.57	0.401	(0.577)	0.250	0.151
140.	11.67	0.57	0.401	(0.574)	0.250	0.151
141.	11.75	0.57	0.401	(0.571)	0.250	0.151
142.	11.83	0.60	0.425	(0.568)	0.265	0.160
143.	11.92	0.60	0.425	(0.565)	0.265	0.160
144.	12.00	0.60	0.425	(0.562)	0.265	0.160
145.	12.08	0.83	0.590	(0.559)	0.368	0.222
146.	12.17	0.83	0.590	(0.557)	0.368	0.222
147.	12.25	0.83	0.590	(0.554)	0.368	0.222
148.	12.33	0.87	0.614	(0.551)	0.382	0.231
149.	12.42	0.87	0.614	(0.548)	0.382	0.231
150.	12.50	0.87	0.614	(0.546)	0.382	0.231
151.	12.58	0.93	0.661	(0.543)	0.412	0.249
152.	12.67	0.93	0.661	(0.540)	0.412	0.249
153.	12.75	0.93	0.661	(0.537)	0.412	0.249
154.	12.83	0.97	0.684	(0.535)	0.426	0.258

155. 12.92	0.97	0.684	(0.532)	0.426	0.258
156. 13.00	0.97	0.684	(0.529)	0.426	0.258
157. 13.08	1.13	0.802	(0.527)	0.500	0.303
158. 13.17	1.13	0.802	(0.524)	0.500	0.303
159. 13.25	1.13	0.802	(0.521)	0.500	0.303
160. 13.33	1.13	0.802	(0.519)	0.500	0.303
161. 13.42	1.13	0.802	(0.516)	0.500	0.303
162. 13.50	1.13	0.802	(0.513)	0.500	0.303
163. 13.58	0.77	0.543	(0.511)	0.338	0.205
164. 13.67	0.77	0.543	(0.508)	0.338	0.205
165. 13.75	0.77	0.543	(0.506)	0.338	0.205
166. 13.83	0.77	0.543	(0.503)	0.338	0.205
167. 13.92	0.77	0.543	(0.500)	0.338	0.205
168. 14.00	0.77	0.543	(0.498)	0.338	0.205
169. 14.08	0.90	0.637	(0.495)	0.397	0.240
170. 14.17	0.90	0.637	(0.493)	0.397	0.240
171. 14.25	0.90	0.637	(0.490)	0.397	0.240
172. 14.33	0.87	0.614	(0.488)	0.382	0.231
173. 14.42	0.87	0.614	(0.485)	0.382	0.231
174. 14.50	0.87	0.614	(0.483)	0.382	0.231
175. 14.58	0.87	0.614	(0.480)	0.382	0.231
176. 14.67	0.87	0.614	(0.478)	0.382	0.231
177. 14.75	0.87	0.614	(0.475)	0.382	0.231
178. 14.83	0.83	0.590	(0.473)	0.368	0.222
179. 14.92	0.83	0.590	(0.471)	0.368	0.222
180. 15.00	0.83	0.590	(0.468)	0.368	0.222
181. 15.08	0.80	0.566	(0.466)	0.353	0.214
182. 15.17	0.80	0.566	(0.463)	0.353	0.214
183. 15.25	0.80	0.566	(0.461)	0.353	0.214
184. 15.33	0.77	0.543	(0.459)	0.338	0.205
185. 15.42	0.77	0.543	(0.456)	0.338	0.205
186. 15.50	0.77	0.543	(0.454)	0.338	0.205
187. 15.58	0.63	0.448	(0.452)	0.279	0.169
188. 15.67	0.63	0.448	(0.449)	0.279	0.169
189. 15.75	0.63	0.448	(0.447)	0.279	0.169
190. 15.83	0.63	0.448	(0.445)	0.279	0.169
191. 15.92	0.63	0.448	(0.442)	0.279	0.169
192. 16.00	0.63	0.448	(0.440)	0.279	0.169
193. 16.08	0.13	0.094	(0.438)	0.059	0.036
194. 16.17	0.13	0.094	(0.436)	0.059	0.036
195. 16.25	0.13	0.094	(0.433)	0.059	0.036
196. 16.33	0.13	0.094	(0.431)	0.059	0.036
197. 16.42	0.13	0.094	(0.429)	0.059	0.036
198. 16.50	0.13	0.094	(0.427)	0.059	0.036
199. 16.58	0.10	0.071	(0.425)	0.044	0.027
200. 16.67	0.10	0.071	(0.423)	0.044	0.027
201. 16.75	0.10	0.071	(0.420)	0.044	0.027
202. 16.83	0.10	0.071	(0.418)	0.044	0.027
203. 16.92	0.10	0.071	(0.416)	0.044	0.027
204. 17.00	0.10	0.071	(0.414)	0.044	0.027
205. 17.08	0.17	0.118	(0.412)	0.074	0.044
206. 17.17	0.17	0.118	(0.410)	0.074	0.044
207. 17.25	0.17	0.118	(0.408)	0.074	0.044
208. 17.33	0.17	0.118	(0.406)	0.074	0.044

209. 17.42	0.17	0.118	(0.404)	0.074	0.044
210. 17.50	0.17	0.118	(0.402)	0.074	0.044
211. 17.58	0.17	0.118	(0.400)	0.074	0.044
212. 17.67	0.17	0.118	(0.398)	0.074	0.044
213. 17.75	0.17	0.118	(0.396)	0.074	0.044
214. 17.83	0.13	0.094	(0.394)	0.059	0.036
215. 17.92	0.13	0.094	(0.392)	0.059	0.036
216. 18.00	0.13	0.094	(0.390)	0.059	0.036
217. 18.08	0.13	0.094	(0.388)	0.059	0.036
218. 18.17	0.13	0.094	(0.386)	0.059	0.036
219. 18.25	0.13	0.094	(0.384)	0.059	0.036
220. 18.33	0.13	0.094	(0.382)	0.059	0.036
221. 18.42	0.13	0.094	(0.380)	0.059	0.036
222. 18.50	0.13	0.094	(0.379)	0.059	0.036
223. 18.58	0.10	0.071	(0.377)	0.044	0.027
224. 18.67	0.10	0.071	(0.375)	0.044	0.027
225. 18.75	0.10	0.071	(0.373)	0.044	0.027
226. 18.83	0.07	0.047	(0.371)	0.029	0.018
227. 18.92	0.07	0.047	(0.370)	0.029	0.018
228. 19.00	0.07	0.047	(0.368)	0.029	0.018
229. 19.08	0.10	0.071	(0.366)	0.044	0.027
230. 19.17	0.10	0.071	(0.364)	0.044	0.027
231. 19.25	0.10	0.071	(0.363)	0.044	0.027
232. 19.33	0.13	0.094	(0.361)	0.059	0.036
233. 19.42	0.13	0.094	(0.359)	0.059	0.036
234. 19.50	0.13	0.094	(0.358)	0.059	0.036
235. 19.58	0.10	0.071	(0.356)	0.044	0.027
236. 19.67	0.10	0.071	(0.354)	0.044	0.027
237. 19.75	0.10	0.071	(0.353)	0.044	0.027
238. 19.83	0.07	0.047	(0.351)	0.029	0.018
239. 19.92	0.07	0.047	(0.350)	0.029	0.018
240. 20.00	0.07	0.047	(0.348)	0.029	0.018
241. 20.08	0.10	0.071	(0.346)	0.044	0.027
242. 20.17	0.10	0.071	(0.345)	0.044	0.027
243. 20.25	0.10	0.071	(0.343)	0.044	0.027
244. 20.33	0.10	0.071	(0.342)	0.044	0.027
245. 20.42	0.10	0.071	(0.341)	0.044	0.027
246. 20.50	0.10	0.071	(0.339)	0.044	0.027
247. 20.58	0.10	0.071	(0.338)	0.044	0.027
248. 20.67	0.10	0.071	(0.336)	0.044	0.027
249. 20.75	0.10	0.071	(0.335)	0.044	0.027
250. 20.83	0.07	0.047	(0.333)	0.029	0.018
251. 20.92	0.07	0.047	(0.332)	0.029	0.018
252. 21.00	0.07	0.047	(0.331)	0.029	0.018
253. 21.08	0.10	0.071	(0.329)	0.044	0.027
254. 21.17	0.10	0.071	(0.328)	0.044	0.027
255. 21.25	0.10	0.071	(0.327)	0.044	0.027
256. 21.33	0.07	0.047	(0.326)	0.029	0.018
257. 21.42	0.07	0.047	(0.324)	0.029	0.018
258. 21.50	0.07	0.047	(0.323)	0.029	0.018
259. 21.58	0.10	0.071	(0.322)	0.044	0.027
260. 21.67	0.10	0.071	(0.321)	0.044	0.027
261. 21.75	0.10	0.071	(0.320)	0.044	0.027
262. 21.83	0.07	0.047	(0.319)	0.029	0.018

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263. 21.92     0.07      0.047       (  0.318)       0.029        0.018
264. 22.00     0.07      0.047       (  0.316)       0.029        0.018
265. 22.08     0.10      0.071       (  0.315)       0.044        0.027
266. 22.17     0.10      0.071       (  0.314)       0.044        0.027
267. 22.25     0.10      0.071       (  0.313)       0.044        0.027
268. 22.33     0.07      0.047       (  0.312)       0.029        0.018
269. 22.42     0.07      0.047       (  0.311)       0.029        0.018
270. 22.50     0.07      0.047       (  0.311)       0.029        0.018
271. 22.58     0.07      0.047       (  0.310)       0.029        0.018
272. 22.67     0.07      0.047       (  0.309)       0.029        0.018
273. 22.75     0.07      0.047       (  0.308)       0.029        0.018
274. 22.83     0.07      0.047       (  0.307)       0.029        0.018
275. 22.92     0.07      0.047       (  0.306)       0.029        0.018
276. 23.00     0.07      0.047       (  0.306)       0.029        0.018
277. 23.08     0.07      0.047       (  0.305)       0.029        0.018
278. 23.17     0.07      0.047       (  0.304)       0.029        0.018
279. 23.25     0.07      0.047       (  0.304)       0.029        0.018
280. 23.33     0.07      0.047       (  0.303)       0.029        0.018
281. 23.42     0.07      0.047       (  0.302)       0.029        0.018
282. 23.50     0.07      0.047       (  0.302)       0.029        0.018
283. 23.58     0.07      0.047       (  0.301)       0.029        0.018
284. 23.67     0.07      0.047       (  0.301)       0.029        0.018
285. 23.75     0.07      0.047       (  0.301)       0.029        0.018
286. 23.83     0.07      0.047       (  0.300)       0.029        0.018
287. 23.92     0.07      0.047       (  0.300)       0.029        0.018
288. 24.00     0.07      0.047       (  0.300)       0.029        0.018
                  (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    26.7
     Flood volume = Effective rainfall      2.22(In)
      times area       0.8(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
     Total soil loss =      3.68(In)
     Total soil loss =     0.236(Ac.Ft)
     Total rainfall =      5.90(In)
     Flood volume =        6217.1 Cubic Feet
     Total soil loss =       10273.9 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =      0.235(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                              24 - H O U R    S T O R M
                                    R u n o f f     H y d r o g r a p h
     ---------------------------------------------------------------------
                            Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5
10.0
  ----------------------------------------------------------------------
    0+ 5       0.0001      0.01  Q         |         |         |         |
    0+10       0.0001      0.01  Q         |         |         |         |
    0+15       0.0002      0.01  Q         |         |         |         |
    0+20       0.0004      0.02  Q         |         |         |         |
    0+25       0.0005      0.02  Q         |         |         |         |
    0+30       0.0006      0.02  Q         |         |         |         |
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0+35	0.0008	0.02	Q	|	|	|	|
0+40	0.0009	0.02	Q	|	|	|	|
0+45	0.0011	0.02	Q	|	|	|	|
0+50	0.0012	0.02	Q	|	|	|	|
0+55	0.0014	0.03	Q	|	|	|	|
1+ 0	0.0016	0.03	Q	|	|	|	|
1+ 5	0.0018	0.02	Q	|	|	|	|
1+10	0.0019	0.02	Q	|	|	|	|
1+15	0.0021	0.02	Q	|	|	|	|
1+20	0.0022	0.02	Q	|	|	|	|
1+25	0.0024	0.02	Q	|	|	|	|
1+30	0.0025	0.02	Q	|	|	|	|
1+35	0.0026	0.02	Q	|	|	|	|
1+40	0.0028	0.02	Q	|	|	|	|
1+45	0.0029	0.02	Q	|	|	|	|
1+50	0.0031	0.02	Q	|	|	|	|
1+55	0.0033	0.03	Q	|	|	|	|
2+ 0	0.0035	0.03	Q	|	|	|	|
2+ 5	0.0037	0.03	QV	|	|	|	|
2+10	0.0039	0.03	QV	|	|	|	|
2+15	0.0041	0.03	QV	|	|	|	|
2+20	0.0042	0.03	QV	|	|	|	|
2+25	0.0044	0.03	QV	|	|	|	|
2+30	0.0046	0.03	QV	|	|	|	|
2+35	0.0048	0.03	QV	|	|	|	|
2+40	0.0051	0.03	QV	|	|	|	|
2+45	0.0053	0.03	QV	|	|	|	|
2+50	0.0056	0.03	QV	|	|	|	|
2+55	0.0058	0.03	QV	|	|	|	|
3+ 0	0.0060	0.03	QV	|	|	|	|
3+ 5	0.0063	0.03	QV	|	|	|	|
3+10	0.0065	0.03	QV	|	|	|	|
3+15	0.0067	0.03	QV	|	|	|	|
3+20	0.0070	0.03	QV	|	|	|	|
3+25	0.0072	0.03	Q V	|	|	|	|
3+30	0.0075	0.03	Q V	|	|	|	|
3+35	0.0077	0.03	Q V	|	|	|	|
3+40	0.0079	0.03	Q V	|	|	|	|
3+45	0.0082	0.03	Q V	|	|	|	|
3+50	0.0084	0.04	Q V	|	|	|	|
3+55	0.0087	0.04	Q V	|	|	|	|
4+ 0	0.0090	0.04	Q V	|	|	|	|
4+ 5	0.0093	0.04	Q V	|	|	|	|
4+10	0.0096	0.04	Q V	|	|	|	|
4+15	0.0099	0.04	Q V	|	|	|	|
4+20	0.0102	0.05	Q V	|	|	|	|
4+25	0.0105	0.05	Q V	|	|	|	|
4+30	0.0108	0.05	Q V	|	|	|	|
4+35	0.0112	0.05	Q V	|	|	|	|
4+40	0.0115	0.05	Q V	|	|	|	|
4+45	0.0118	0.05	Q V	|	|	|	|
4+50	0.0122	0.05	Q V	|	|	|	|
4+55	0.0126	0.05	Q V	|	|	|	|
5+ 0	0.0130	0.06	Q V	|	|	|	|

5+ 5	0.0133	0.05	Q	V	|	|	|	|
5+10	0.0136	0.04	Q	V	|	|	|	|
5+15	0.0139	0.04	Q	V	|	|	|	|
5+20	0.0142	0.05	Q	V	|	|	|	|
5+25	0.0145	0.05	Q	V	|	|	|	|
5+30	0.0148	0.05	Q	V	|	|	|	|
5+35	0.0152	0.05	Q	V	|	|	|	|
5+40	0.0156	0.05	Q	V	|	|	|	|
5+45	0.0160	0.06	Q	V	|	|	|	|
5+50	0.0163	0.06	Q	V	|	|	|	|
5+55	0.0167	0.06	Q	V	|	|	|	|
6+ 0	0.0171	0.06	Q	V	|	|	|	|
6+ 5	0.0175	0.06	Q	V	|	|	|	|
6+10	0.0179	0.06	Q	V	|	|	|	|
6+15	0.0184	0.06	Q	V	|	|	|	|
6+20	0.0188	0.06	Q	V	|	|	|	|
6+25	0.0192	0.06	Q	V	|	|	|	|
6+30	0.0196	0.06	Q	V	|	|	|	|
6+35	0.0201	0.07	Q	V	|	|	|	|
6+40	0.0206	0.07	Q	V	|	|	|	|
6+45	0.0210	0.07	Q	V	|	|	|	|
6+50	0.0215	0.07	Q	V	|	|	|	|
6+55	0.0220	0.07	Q	V	|	|	|	|
7+ 0	0.0225	0.07	Q	V	|	|	|	|
7+ 5	0.0230	0.07	Q	V	|	|	|	|
7+10	0.0234	0.07	Q	V	|	|	|	|
7+15	0.0239	0.07	Q	V	|	|	|	|
7+20	0.0244	0.07	Q	V	|	|	|	|
7+25	0.0249	0.08	Q	V	|	|	|	|
7+30	0.0255	0.08	Q	V	|	|	|	|
7+35	0.0260	0.08	Q	V	|	|	|	|
7+40	0.0266	0.08	Q	V	|	|	|	|
7+45	0.0271	0.08	Q	V	|	|	|	|
7+50	0.0277	0.09	Q	V	|	|	|	|
7+55	0.0284	0.09	Q	V	|	|	|	|
8+ 0	0.0290	0.09	Q	V	|	|	|	|
8+ 5	0.0296	0.10	Q	V	|	|	|	|
8+10	0.0304	0.10	Q	V	|	|	|	|
8+15	0.0311	0.10	Q	V	|	|	|	|
8+20	0.0318	0.10	Q	V	|	|	|	|
8+25	0.0325	0.10	Q	V	|	|	|	|
8+30	0.0332	0.10	Q	V	|	|	|	|
8+35	0.0340	0.11	Q	V	|	|	|	|
8+40	0.0347	0.11	Q	V	|	|	|	|
8+45	0.0355	0.11	Q	V	|	|	|	|
8+50	0.0363	0.11	Q	V	|	|	|	|
8+55	0.0371	0.12	Q	V	|	|	|	|
9+ 0	0.0379	0.12	Q	V	|	|	|	|
9+ 5	0.0387	0.13	Q	V	|	|	|	|
9+10	0.0396	0.13	Q	V	|	|	|	|
9+15	0.0405	0.13	Q	V	|	|	|	|
9+20	0.0415	0.14	Q	V	|	|	|	|
9+25	0.0424	0.14	Q	V	|	|	|	|
9+30	0.0434	0.14	Q	V	|	|	|	|

9+35	0.0444	0.14	Q	V			
9+40	0.0454	0.14	Q	V			
9+45	0.0464	0.15	Q	V			
9+50	0.0474	0.15	Q	V			
9+55	0.0484	0.15	Q	V			
10+ 0	0.0495	0.15	Q	V			
10+ 5	0.0503	0.12	Q	V			
10+10	0.0511	0.11	Q	V			
10+15	0.0518	0.10	Q	V			
10+20	0.0525	0.10	Q	V			
10+25	0.0532	0.10	Q	V			
10+30	0.0539	0.10	Q	V			
10+35	0.0548	0.12	Q	V			
10+40	0.0557	0.14	Q	V			
10+45	0.0567	0.14	Q	V			
10+50	0.0576	0.14	Q	V			
10+55	0.0586	0.14	Q	V			
11+ 0	0.0595	0.14	Q	V			
11+ 5	0.0604	0.13	Q	V			
11+10	0.0613	0.13	Q	V			
11+15	0.0622	0.13	Q	V			
11+20	0.0631	0.13	Q	V			
11+25	0.0640	0.13	Q	V			
11+30	0.0650	0.13	Q	V			
11+35	0.0658	0.12	Q	V			
11+40	0.0666	0.12	Q	V			
11+45	0.0674	0.12	Q	V			
11+50	0.0683	0.12	Q	V			
11+55	0.0691	0.12	Q	V			
12+ 0	0.0700	0.12	Q	V			
12+ 5	0.0710	0.15	Q	V			
12+10	0.0722	0.17	Q	V			
12+15	0.0734	0.17	Q	V			
12+20	0.0746	0.18	Q	V			
12+25	0.0758	0.18	Q	V			
12+30	0.0771	0.18	Q	V			
12+35	0.0784	0.19	Q	V			
12+40	0.0797	0.19	Q	V			
12+45	0.0810	0.19	Q	V			
12+50	0.0824	0.20	Q	V			
12+55	0.0838	0.20	Q	V			
13+ 0	0.0851	0.20	Q	V			
13+ 5	0.0867	0.22	Q	V			
13+10	0.0883	0.23	Q	V			
13+15	0.0899	0.23	Q	V			
13+20	0.0915	0.23	Q	V			
13+25	0.0931	0.23	Q	V			
13+30	0.0947	0.23	Q	V			
13+35	0.0960	0.19	Q	V			
13+40	0.0972	0.16	Q	V			
13+45	0.0983	0.16	Q	V			
13+50	0.0994	0.16	Q	V			
13+55	0.1005	0.16	Q	V			
14+ 0	0.1015	0.16	Q	V			

14+ 5	0.1028	0.18	Q	|	|	V |	|
14+10	0.1040	0.19	Q	|	|	V|	|
14+15	0.1053	0.19	Q	|	|	V|	|
14+20	0.1066	0.18	Q	|	|	V|	|
14+25	0.1078	0.18	Q	|	|	V	|
14+30	0.1090	0.18	Q	|	|	V	|
14+35	0.1103	0.18	Q	|	|	V	|
14+40	0.1115	0.18	Q	|	|	|V	|
14+45	0.1128	0.18	Q	|	|	|V	|
14+50	0.1140	0.18	Q	|	|	|V	|
14+55	0.1152	0.17	Q	|	|	| V	|
15+ 0	0.1163	0.17	Q	|	|	| V	|
15+ 5	0.1175	0.17	Q	|	|	| V	|
15+10	0.1187	0.17	Q	|	|	| V	|
15+15	0.1198	0.17	Q	|	|	| V	|
15+20	0.1209	0.16	Q	|	|	| V	|
15+25	0.1220	0.16	Q	|	|	| V	|
15+30	0.1231	0.16	Q	|	|	| V	|
15+35	0.1241	0.14	Q	|	|	| V	|
15+40	0.1250	0.13	Q	|	|	| V	|
15+45	0.1259	0.13	Q	|	|	| V	|
15+50	0.1268	0.13	Q	|	|	| V	|
15+55	0.1277	0.13	Q	|	|	| V	|
16+ 0	0.1286	0.13	Q	|	|	| V	|
16+ 5	0.1291	0.07	Q	|	|	| V	|
16+10	0.1293	0.03	Q	|	|	| V	|
16+15	0.1295	0.03	Q	|	|	| V	|
16+20	0.1297	0.03	Q	|	|	| V	|
16+25	0.1299	0.03	Q	|	|	| V	|
16+30	0.1301	0.03	Q	|	|	| V	|
16+35	0.1302	0.02	Q	|	|	| V	|
16+40	0.1304	0.02	Q	|	|	| V	|
16+45	0.1305	0.02	Q	|	|	| V	|
16+50	0.1307	0.02	Q	|	|	| V	|
16+55	0.1308	0.02	Q	|	|	| V	|
17+ 0	0.1310	0.02	Q	|	|	| V	|
17+ 5	0.1312	0.03	Q	|	|	| V	|
17+10	0.1314	0.03	Q	|	|	| V	|
17+15	0.1316	0.03	Q	|	|	| V	|
17+20	0.1319	0.03	Q	|	|	| V	|
17+25	0.1321	0.03	Q	|	|	| V	|
17+30	0.1323	0.03	Q	|	|	| V	|
17+35	0.1326	0.03	Q	|	|	| V	|
17+40	0.1328	0.03	Q	|	|	| V	|
17+45	0.1331	0.03	Q	|	|	| V	|
17+50	0.1333	0.03	Q	|	|	| V	|
17+55	0.1335	0.03	Q	|	|	| V	|
18+ 0	0.1336	0.03	Q	|	|	| V	|
18+ 5	0.1338	0.03	Q	|	|	| V	|
18+10	0.1340	0.03	Q	|	|	| V	|
18+15	0.1342	0.03	Q	|	|	| V	|
18+20	0.1344	0.03	Q	|	|	| V	|
18+25	0.1346	0.03	Q	|	|	| V	|
18+30	0.1348	0.03	Q	|	|	| V	|

18+35	0.1350	0.02	Q	|	|	|	V |
18+40	0.1351	0.02	Q	|	|	|	V |
18+45	0.1352	0.02	Q	|	|	|	V |
18+50	0.1354	0.02	Q	|	|	|	V |
18+55	0.1355	0.01	Q	|	|	|	V |
19+ 0	0.1355	0.01	Q	|	|	|	V |
19+ 5	0.1357	0.02	Q	|	|	|	V |
19+10	0.1358	0.02	Q	|	|	|	V |
19+15	0.1360	0.02	Q	|	|	|	V |
19+20	0.1361	0.02	Q	|	|	|	V |
19+25	0.1363	0.03	Q	|	|	|	V |
19+30	0.1365	0.03	Q	|	|	|	V |
19+35	0.1367	0.02	Q	|	|	|	V |
19+40	0.1368	0.02	Q	|	|	|	V |
19+45	0.1370	0.02	Q	|	|	|	V |
19+50	0.1371	0.02	Q	|	|	|	V |
19+55	0.1372	0.01	Q	|	|	|	V |
20+ 0	0.1373	0.01	Q	|	|	|	V |
20+ 5	0.1374	0.02	Q	|	|	|	V |
20+10	0.1375	0.02	Q	|	|	|	V |
20+15	0.1377	0.02	Q	|	|	|	V |
20+20	0.1378	0.02	Q	|	|	|	V |
20+25	0.1380	0.02	Q	|	|	|	V |
20+30	0.1381	0.02	Q	|	|	|	V |
20+35	0.1382	0.02	Q	|	|	|	V |
20+40	0.1384	0.02	Q	|	|	|	V |
20+45	0.1385	0.02	Q	|	|	|	V |
20+50	0.1386	0.02	Q	|	|	|	V |
20+55	0.1387	0.01	Q	|	|	|	V |
21+ 0	0.1388	0.01	Q	|	|	|	V |
21+ 5	0.1390	0.02	Q	|	|	|	V |
21+10	0.1391	0.02	Q	|	|	|	V |
21+15	0.1392	0.02	Q	|	|	|	V|
21+20	0.1393	0.02	Q	|	|	|	V|
21+25	0.1394	0.01	Q	|	|	|	V|
21+30	0.1395	0.01	Q	|	|	|	V|
21+35	0.1397	0.02	Q	|	|	|	V|
21+40	0.1398	0.02	Q	|	|	|	V|
21+45	0.1399	0.02	Q	|	|	|	V|
21+50	0.1401	0.02	Q	|	|	|	V|
21+55	0.1402	0.01	Q	|	|	|	V|
22+ 0	0.1403	0.01	Q	|	|	|	V|
22+ 5	0.1404	0.02	Q	|	|	|	V|
22+10	0.1405	0.02	Q	|	|	|	V|
22+15	0.1407	0.02	Q	|	|	|	V|
22+20	0.1408	0.02	Q	|	|	|	V|
22+25	0.1409	0.01	Q	|	|	|	V|
22+30	0.1410	0.01	Q	|	|	|	V|
22+35	0.1411	0.01	Q	|	|	|	V|
22+40	0.1412	0.01	Q	|	|	|	V|
22+45	0.1413	0.01	Q	|	|	|	V|
22+50	0.1413	0.01	Q	|	|	|	V|
22+55	0.1414	0.01	Q	|	|	|	V|
23+ 0	0.1415	0.01	Q	|	|	|	V|

23+ 5	0.1416	0.01	Q	|	|	|	V|
23+10	0.1417	0.01	Q	|	|	|	V|
23+15	0.1418	0.01	Q	|	|	|	V|
23+20	0.1419	0.01	Q	|	|	|	V|
23+25	0.1420	0.01	Q	|	|	|	V|
23+30	0.1421	0.01	Q	|	|	|	V|
23+35	0.1422	0.01	Q	|	|	|	V|
23+40	0.1423	0.01	Q	|	|	|	V|
23+45	0.1424	0.01	Q	|	|	|	V|
23+50	0.1425	0.01	Q	|	|	|	V|
23+55	0.1426	0.01	Q	|	|	|	V|
24+ 0	0.1427	0.01	Q	|	|	|	V|
24+ 5	0.1427	0.01	Q	|	|	|	V|
24+10	0.1427	0.00	Q	|	|	|	V|

WATERSHED B: TRIBUTARY TO UNDERGROUND DETENTION/INFILTRATION FACILITY

U n i t H y d r o g r a p h A n a l y s i s

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Study date 11/30/23 File: 2177UHP12.out

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	0.50	3.60

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	1.30	9.36

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 0.500(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.500(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.920	0.150	1.000	0.150
					Sum (F) =	0.150

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.164

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700

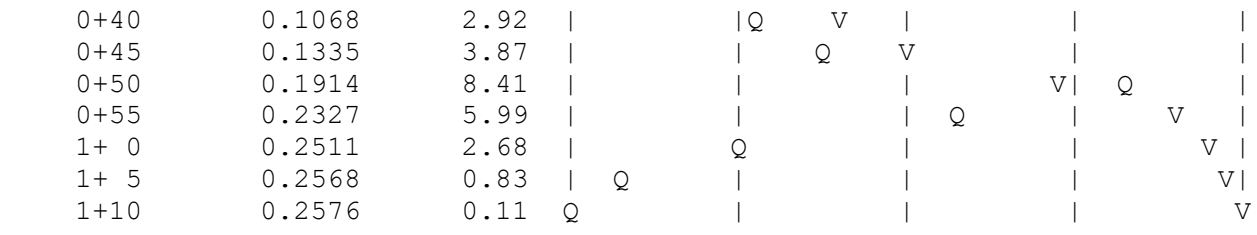
```
               3   0.250        895.844          6.258               0.454
                                                                   Sum =
100.000   Sum=       7.256
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)			Effective
(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1. 0.08	4.20	0.252	(0.150)		0.041	0.211
2. 0.17	4.30	0.258	(0.150)		0.042	0.216
3. 0.25	5.00	0.300	(0.150)		0.049	0.251
4. 0.33	5.00	0.300	(0.150)		0.049	0.251
5. 0.42	5.80	0.348	(0.150)		0.057	0.291
6. 0.50	6.50	0.390	(0.150)		0.064	0.326
7. 0.58	7.40	0.444	(0.150)		0.073	0.371
8. 0.67	8.60	0.516	(0.150)		0.085	0.431
9. 0.75	12.30	0.738	(0.150)		0.121	0.617
10. 0.83	29.10	1.746	0.150	(	0.286)	1.596
11. 0.92	6.80	0.408	(0.150)		0.067	0.341
12. 1.00	5.00	0.300	(0.150)		0.049	0.251
	(Loss Rate Not Used)					
Sum =	100.0				Sum =	5.2

```
     Flood volume = Effective rainfall      0.43(In)
      times area       7.2(Ac.)/[(In)/(Ft.)] =       0.3(Ac.Ft)
     Total soil loss =      0.07(In)
     Total soil loss =     0.042(Ac.Ft)
     Total rainfall =      0.50(In)
     Flood volume =       11221.7 Cubic Feet
     Total soil loss =        1845.5 Cubic Feet
     ---------------------------------------------------------------------
      Peak flow rate of this hydrograph =      8.414(CFS)
     ---------------------------------------------------------------------
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                                1 - H O U R   S T O R M
                                     R u n o f f     H y d r o g r a p h
     ---------------------------------------------------------------------
                             Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5
10.0
  ---------------------------------------------------------------------
    0+ 5       0.0060      0.86  V  Q      |         |         |         |
    0+10       0.0160      1.45  | V  Q    |         |         |         |
    0+15       0.0277      1.71  |   V Q   |         |         |         |
    0+20       0.0402      1.80  |     VQ  |         |         |         |
    0+25       0.0538      1.99  |      QV |         |         |         |
    0+30       0.0692      2.24  |       Q V         |         |         |
    0+35       0.0867      2.54  |         Q  V      |         |         |
```


0+40 0.1068 2.92
0+45 0.1335 3.87
0+50 0.1914 8.41
0+55 0.2327 5.99
1+ 0 0.2511 2.68
1+ 5 0.2568 0.83
1+10 0.2576 0.11

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	0.85	6.12

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.00	14.40

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.850(In)
Area Averaged 100-Year Rainfall = 2.000(In)

Point rain (area averaged) = 0.850(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 0.850(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.920	0.150	1.000	0.150
					Sum (F) =	0.150

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
(hrs)			
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454
			Sum =	100.000

Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1. 0.08	1.30	0.133	(0.150)	0.022	0.111
2. 0.17	1.30	0.133	(0.150)	0.022	0.111
3. 0.25	1.10	0.112	(0.150)	0.018	0.094
4. 0.33	1.50	0.153	(0.150)	0.025	0.128
5. 0.42	1.50	0.153	(0.150)	0.025	0.128
6. 0.50	1.80	0.184	(0.150)	0.030	0.153
7. 0.58	1.50	0.153	(0.150)	0.025	0.128
8. 0.67	1.80	0.184	(0.150)	0.030	0.153
9. 0.75	1.80	0.184	(0.150)	0.030	0.153
10. 0.83	1.50	0.153	(0.150)	0.025	0.128
11. 0.92	1.60	0.163	(0.150)	0.027	0.136
12. 1.00	1.80	0.184	(0.150)	0.030	0.153
13. 1.08	2.20	0.224	(0.150)	0.037	0.188
14. 1.17	2.20	0.224	(0.150)	0.037	0.188
15. 1.25	2.20	0.224	(0.150)	0.037	0.188
16. 1.33	2.00	0.204	(0.150)	0.033	0.171
17. 1.42	2.60	0.265	(0.150)	0.043	0.222
18. 1.50	2.70	0.275	(0.150)	0.045	0.230
19. 1.58	2.40	0.245	(0.150)	0.040	0.205
20. 1.67	2.70	0.275	(0.150)	0.045	0.230
21. 1.75	3.30	0.337	(0.150)	0.055	0.281
22. 1.83	3.10	0.316	(0.150)	0.052	0.264
23. 1.92	2.90	0.296	(0.150)	0.049	0.247
24. 2.00	3.00	0.306	(0.150)	0.050	0.256
25. 2.08	3.10	0.316	(0.150)	0.052	0.264
26. 2.17	4.20	0.428	(0.150)	0.070	0.358
27. 2.25	5.00	0.510	(0.150)	0.084	0.426
28. 2.33	3.50	0.357	(0.150)	0.059	0.298
29. 2.42	6.80	0.694	(0.150)	0.114	0.580
30. 2.50	7.30	0.745	(0.150)	0.122	0.622
31. 2.58	8.20	0.836	(0.150)	0.137	0.699
32. 2.67	5.90	0.602	(0.150)	0.099	0.503
33. 2.75	2.00	0.204	(0.150)	0.033	0.171
34. 2.83	1.80	0.184	(0.150)	0.030	0.153
35. 2.92	1.80	0.184	(0.150)	0.030	0.153
36. 3.00	0.60	0.061	(0.150)	0.010	0.051
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	8.5

Flood volume = Effective rainfall 0.71(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 0.14(In)
Total soil loss = 0.084(Ac.Ft)
Total rainfall = 0.85(In)
Flood volume = 18571.7 Cubic Feet

Total soil loss = 3643.2 Cubic Feet

Peak flow rate of this hydrograph = 4.815(CFS)

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3 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0031	0.45	VQ | | | |
0+10	0.0083	0.75	V Q | | | |
0+15	0.0134	0.73	|VQ | | | |
0+20	0.0191	0.83	|V Q | | | |
0+25	0.0254	0.91	| VQ | | | |
0+30	0.0325	1.03	| VQ | | | |
0+35	0.0394	1.00	| Q | | | |
0+40	0.0466	1.05	| Q | | | |
0+45	0.0542	1.10	| QV | | | |
0+50	0.0611	1.01	| QV | | | |
0+55	0.0678	0.98	| Q V | | | |
1+ 0	0.0751	1.06	| Q V | | | |
1+ 5	0.0837	1.25	| Q V | | | |
1+10	0.0930	1.35	| Q V | | | |
1+15	0.1023	1.36	| Q V| | | |
1+20	0.1112	1.29	| Q V | | |
1+25	0.1213	1.46	| Q |V | | |
1+30	0.1324	1.62	| Q | V | | |
1+35	0.1432	1.56	| Q | V | | |
1+40	0.1542	1.60	| Q | V | | |
1+45	0.1671	1.87	| Q | V | | |
1+50	0.1805	1.95	| Q | V | | |
1+55	0.1933	1.86	| Q | V | | |
2+ 0	0.2060	1.84	| Q | V| | |
2+ 5	0.2190	1.89	| Q | V | |
2+10	0.2348	2.30	| Q| | V | |
2+15	0.2544	2.84	| |Q | V | |
2+20	0.2719	2.54	| Q | V | |
2+25	0.2951	3.38	| | Q | V | |
2+30	0.3245	4.26	| | Q | V | |
2+35	0.3576	4.81	| | Q| | V |
2+40	0.3868	4.24	| | Q | | V |
2+45	0.4032	2.38	| Q| | | V |
2+50	0.4122	1.32	| Q | | | V |
2+55	0.4200	1.12	| Q | | | V|
3+ 0	0.4248	0.69	| Q | | | V|
3+ 5	0.4262	0.21	Q | | | V|
3+10	0.4263	0.02	Q | | | V|

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	1.20	8.64

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.90	20.88

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.200(In)
Area Averaged 100-Year Rainfall = 2.900(In)

Point rain (area averaged) = 1.200(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.200(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.920	0.150	1.000	0.150
					Sum (F) =	0.150

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454
			Sum = 100.000	Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.50	0.072	(0.150)	0.012	0.060
2. 0.17	0.60	0.086	(0.150)	0.014	0.072
3. 0.25	0.60	0.086	(0.150)	0.014	0.072
4. 0.33	0.60	0.086	(0.150)	0.014	0.072
5. 0.42	0.60	0.086	(0.150)	0.014	0.072
6. 0.50	0.70	0.101	(0.150)	0.017	0.084
7. 0.58	0.70	0.101	(0.150)	0.017	0.084
8. 0.67	0.70	0.101	(0.150)	0.017	0.084
9. 0.75	0.70	0.101	(0.150)	0.017	0.084
10. 0.83	0.70	0.101	(0.150)	0.017	0.084
11. 0.92	0.70	0.101	(0.150)	0.017	0.084
12. 1.00	0.80	0.115	(0.150)	0.019	0.096
13. 1.08	0.80	0.115	(0.150)	0.019	0.096
14. 1.17	0.80	0.115	(0.150)	0.019	0.096
15. 1.25	0.80	0.115	(0.150)	0.019	0.096
16. 1.33	0.80	0.115	(0.150)	0.019	0.096
17. 1.42	0.80	0.115	(0.150)	0.019	0.096
18. 1.50	0.80	0.115	(0.150)	0.019	0.096
19. 1.58	0.80	0.115	(0.150)	0.019	0.096
20. 1.67	0.80	0.115	(0.150)	0.019	0.096
21. 1.75	0.80	0.115	(0.150)	0.019	0.096
22. 1.83	0.80	0.115	(0.150)	0.019	0.096
23. 1.92	0.80	0.115	(0.150)	0.019	0.096
24. 2.00	0.90	0.130	(0.150)	0.021	0.108
25. 2.08	0.80	0.115	(0.150)	0.019	0.096
26. 2.17	0.90	0.130	(0.150)	0.021	0.108
27. 2.25	0.90	0.130	(0.150)	0.021	0.108
28. 2.33	0.90	0.130	(0.150)	0.021	0.108
29. 2.42	0.90	0.130	(0.150)	0.021	0.108
30. 2.50	0.90	0.130	(0.150)	0.021	0.108
31. 2.58	0.90	0.130	(0.150)	0.021	0.108
32. 2.67	0.90	0.130	(0.150)	0.021	0.108
33. 2.75	1.00	0.144	(0.150)	0.024	0.120
34. 2.83	1.00	0.144	(0.150)	0.024	0.120
35. 2.92	1.00	0.144	(0.150)	0.024	0.120
36. 3.00	1.00	0.144	(0.150)	0.024	0.120
37. 3.08	1.00	0.144	(0.150)	0.024	0.120
38. 3.17	1.10	0.158	(0.150)	0.026	0.132
39. 3.25	1.10	0.158	(0.150)	0.026	0.132
40. 3.33	1.10	0.158	(0.150)	0.026	0.132
41. 3.42	1.20	0.173	(0.150)	0.028	0.144
42. 3.50	1.30	0.187	(0.150)	0.031	0.156
43. 3.58	1.40	0.202	(0.150)	0.033	0.169
44. 3.67	1.40	0.202	(0.150)	0.033	0.169

45. 3.75	1.50	0.216	(0.150)	0.035	0.181
46. 3.83	1.50	0.216	(0.150)	0.035	0.181
47. 3.92	1.60	0.230	(0.150)	0.038	0.193
48. 4.00	1.60	0.230	(0.150)	0.038	0.193
49. 4.08	1.70	0.245	(0.150)	0.040	0.205
50. 4.17	1.80	0.259	(0.150)	0.043	0.217
51. 4.25	1.90	0.274	(0.150)	0.045	0.229
52. 4.33	2.00	0.288	(0.150)	0.047	0.241
53. 4.42	2.10	0.302	(0.150)	0.050	0.253
54. 4.50	2.10	0.302	(0.150)	0.050	0.253
55. 4.58	2.20	0.317	(0.150)	0.052	0.265
56. 4.67	2.30	0.331	(0.150)	0.054	0.277
57. 4.75	2.40	0.346	(0.150)	0.057	0.289
58. 4.83	2.40	0.346	(0.150)	0.057	0.289
59. 4.92	2.50	0.360	(0.150)	0.059	0.301
60. 5.00	2.60	0.374	(0.150)	0.061	0.313
61. 5.08	3.10	0.446	(0.150)	0.073	0.373
62. 5.17	3.60	0.518	(0.150)	0.085	0.433
63. 5.25	3.90	0.562	(0.150)	0.092	0.469
64. 5.33	4.20	0.605	(0.150)	0.099	0.506
65. 5.42	4.70	0.677	(0.150)	0.111	0.566
66. 5.50	5.60	0.806	(0.150)	0.132	0.674
67. 5.58	1.90	0.274	(0.150)	0.045	0.229
68. 5.67	0.90	0.130	(0.150)	0.021	0.108
69. 5.75	0.60	0.086	(0.150)	0.014	0.072
70. 5.83	0.50	0.072	(0.150)	0.012	0.060
71. 5.92	0.30	0.043	(0.150)	0.007	0.036
72. 6.00	0.20	0.029	(0.150)	0.005	0.024

(Loss Rate Not Used)

Sum = 100.0 Sum = 12.0

Flood volume = Effective rainfall 1.00(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 0.6(Ac.Ft)
Total soil loss = 0.20(In)
Total soil loss = 0.118(Ac.Ft)
Total rainfall = 1.20(In)
Flood volume = 26219.0 Cubic Feet
Total soil loss = 5143.4 Cubic Feet

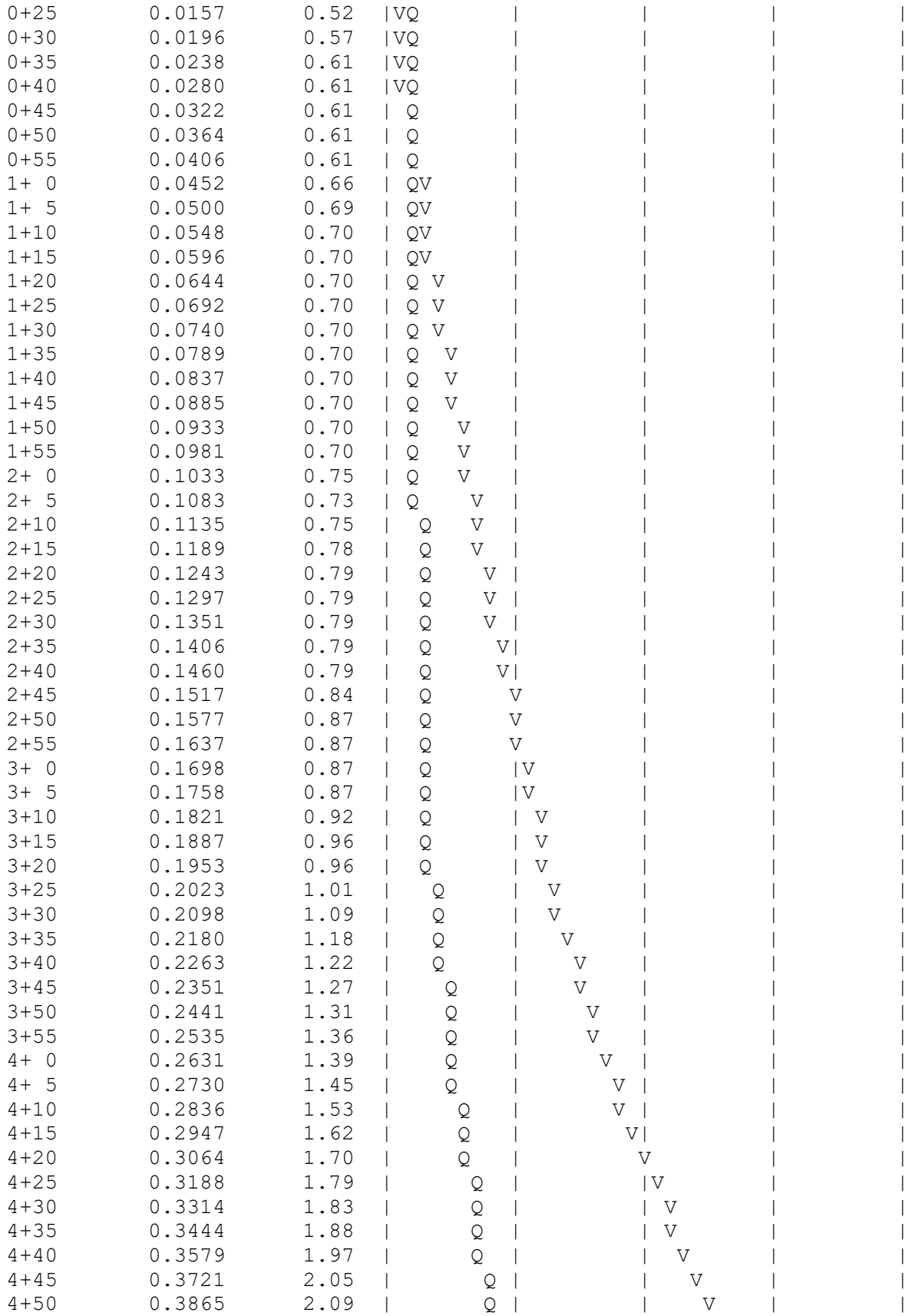
Peak flow rate of this hydrograph = 4.525(CFS)

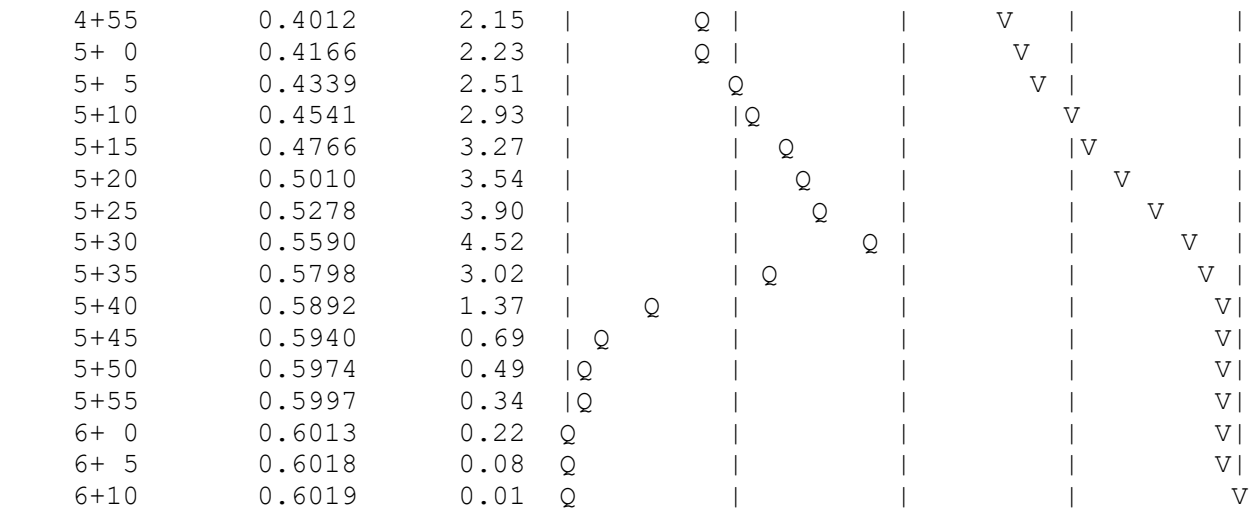
++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0017	0.25	Q | | | |
0+10	0.0049	0.46	VQ | | | |
0+15	0.0084	0.52	V Q | | | |
0+20	0.0120	0.52	V Q | | | |




4+55 0.4012 2.15
5+ 0 0.4166 2.23
5+ 5 0.4339 2.51
5+10 0.4541 2.93
5+15 0.4766 3.27
5+20 0.5010 3.54
5+25 0.5278 3.90
5+30 0.5590 4.52
5+35 0.5798 3.02
5+40 0.5892 1.37
5+45 0.5940 0.69
5+50 0.5974 0.49
5+55 0.5997 0.34
6+ 0 0.6013 0.22
6+ 5 0.6018 0.08
6+10 0.6019 0.01

U n i t H y d r o g r a p h A n a l y s i s

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Study date 11/30/23 File: 2177UHP242.out

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.00	14.40

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	5.90	42.48

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.000(In)
Area Averaged 100-Year Rainfall = 5.900(In)

Point rain (area averaged) = 2.000(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.000(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.920	0.150	1.000	0.150
					Sum (F) =	0.150

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454
			Sum =	100.000

Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

	Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1.	0.08	0.07	0.016	(0.265)	0.003	0.013
2.	0.17	0.07	0.016	(0.264)	0.003	0.013
3.	0.25	0.07	0.016	(0.263)	0.003	0.013
4.	0.33	0.10	0.024	(0.262)	0.004	0.020
5.	0.42	0.10	0.024	(0.261)	0.004	0.020
6.	0.50	0.10	0.024	(0.260)	0.004	0.020
7.	0.58	0.10	0.024	(0.259)	0.004	0.020
8.	0.67	0.10	0.024	(0.258)	0.004	0.020
9.	0.75	0.10	0.024	(0.257)	0.004	0.020
10.	0.83	0.13	0.032	(0.256)	0.005	0.027
11.	0.92	0.13	0.032	(0.255)	0.005	0.027
12.	1.00	0.13	0.032	(0.254)	0.005	0.027
13.	1.08	0.10	0.024	(0.253)	0.004	0.020
14.	1.17	0.10	0.024	(0.252)	0.004	0.020
15.	1.25	0.10	0.024	(0.251)	0.004	0.020
16.	1.33	0.10	0.024	(0.250)	0.004	0.020
17.	1.42	0.10	0.024	(0.249)	0.004	0.020
18.	1.50	0.10	0.024	(0.248)	0.004	0.020
19.	1.58	0.10	0.024	(0.247)	0.004	0.020
20.	1.67	0.10	0.024	(0.246)	0.004	0.020
21.	1.75	0.10	0.024	(0.245)	0.004	0.020
22.	1.83	0.13	0.032	(0.244)	0.005	0.027
23.	1.92	0.13	0.032	(0.243)	0.005	0.027
24.	2.00	0.13	0.032	(0.242)	0.005	0.027
25.	2.08	0.13	0.032	(0.241)	0.005	0.027
26.	2.17	0.13	0.032	(0.240)	0.005	0.027
27.	2.25	0.13	0.032	(0.239)	0.005	0.027
28.	2.33	0.13	0.032	(0.238)	0.005	0.027
29.	2.42	0.13	0.032	(0.237)	0.005	0.027
30.	2.50	0.13	0.032	(0.236)	0.005	0.027
31.	2.58	0.17	0.040	(0.235)	0.007	0.033
32.	2.67	0.17	0.040	(0.235)	0.007	0.033
33.	2.75	0.17	0.040	(0.234)	0.007	0.033
34.	2.83	0.17	0.040	(0.233)	0.007	0.033
35.	2.92	0.17	0.040	(0.232)	0.007	0.033
36.	3.00	0.17	0.040	(0.231)	0.007	0.033
37.	3.08	0.17	0.040	(0.230)	0.007	0.033
38.	3.17	0.17	0.040	(0.229)	0.007	0.033
39.	3.25	0.17	0.040	(0.228)	0.007	0.033
40.	3.33	0.17	0.040	(0.227)	0.007	0.033
41.	3.42	0.17	0.040	(0.226)	0.007	0.033
42.	3.50	0.17	0.040	(0.225)	0.007	0.033
43.	3.58	0.17	0.040	(0.224)	0.007	0.033
44.	3.67	0.17	0.040	(0.223)	0.007	0.033

45.	3.75	0.17	0.040	(0.222)	0.007	0.033
46.	3.83	0.20	0.048	(0.221)	0.008	0.040
47.	3.92	0.20	0.048	(0.220)	0.008	0.040
48.	4.00	0.20	0.048	(0.219)	0.008	0.040
49.	4.08	0.20	0.048	(0.218)	0.008	0.040
50.	4.17	0.20	0.048	(0.217)	0.008	0.040
51.	4.25	0.20	0.048	(0.217)	0.008	0.040
52.	4.33	0.23	0.056	(0.216)	0.009	0.047
53.	4.42	0.23	0.056	(0.215)	0.009	0.047
54.	4.50	0.23	0.056	(0.214)	0.009	0.047
55.	4.58	0.23	0.056	(0.213)	0.009	0.047
56.	4.67	0.23	0.056	(0.212)	0.009	0.047
57.	4.75	0.23	0.056	(0.211)	0.009	0.047
58.	4.83	0.27	0.064	(0.210)	0.010	0.054
59.	4.92	0.27	0.064	(0.209)	0.010	0.054
60.	5.00	0.27	0.064	(0.208)	0.010	0.054
61.	5.08	0.20	0.048	(0.207)	0.008	0.040
62.	5.17	0.20	0.048	(0.207)	0.008	0.040
63.	5.25	0.20	0.048	(0.206)	0.008	0.040
64.	5.33	0.23	0.056	(0.205)	0.009	0.047
65.	5.42	0.23	0.056	(0.204)	0.009	0.047
66.	5.50	0.23	0.056	(0.203)	0.009	0.047
67.	5.58	0.27	0.064	(0.202)	0.010	0.054
68.	5.67	0.27	0.064	(0.201)	0.010	0.054
69.	5.75	0.27	0.064	(0.200)	0.010	0.054
70.	5.83	0.27	0.064	(0.199)	0.010	0.054
71.	5.92	0.27	0.064	(0.198)	0.010	0.054
72.	6.00	0.27	0.064	(0.198)	0.010	0.054
73.	6.08	0.30	0.072	(0.197)	0.012	0.060
74.	6.17	0.30	0.072	(0.196)	0.012	0.060
75.	6.25	0.30	0.072	(0.195)	0.012	0.060
76.	6.33	0.30	0.072	(0.194)	0.012	0.060
77.	6.42	0.30	0.072	(0.193)	0.012	0.060
78.	6.50	0.30	0.072	(0.192)	0.012	0.060
79.	6.58	0.33	0.080	(0.192)	0.013	0.067
80.	6.67	0.33	0.080	(0.191)	0.013	0.067
81.	6.75	0.33	0.080	(0.190)	0.013	0.067
82.	6.83	0.33	0.080	(0.189)	0.013	0.067
83.	6.92	0.33	0.080	(0.188)	0.013	0.067
84.	7.00	0.33	0.080	(0.187)	0.013	0.067
85.	7.08	0.33	0.080	(0.186)	0.013	0.067
86.	7.17	0.33	0.080	(0.186)	0.013	0.067
87.	7.25	0.33	0.080	(0.185)	0.013	0.067
88.	7.33	0.37	0.088	(0.184)	0.014	0.074
89.	7.42	0.37	0.088	(0.183)	0.014	0.074
90.	7.50	0.37	0.088	(0.182)	0.014	0.074
91.	7.58	0.40	0.096	(0.181)	0.016	0.080
92.	7.67	0.40	0.096	(0.180)	0.016	0.080
93.	7.75	0.40	0.096	(0.180)	0.016	0.080
94.	7.83	0.43	0.104	(0.179)	0.017	0.087
95.	7.92	0.43	0.104	(0.178)	0.017	0.087
96.	8.00	0.43	0.104	(0.177)	0.017	0.087
97.	8.08	0.50	0.120	(0.176)	0.020	0.100
98.	8.17	0.50	0.120	(0.176)	0.020	0.100

99.	8.25	0.50	0.120	(0.175)	0.020	0.100
100.	8.33	0.50	0.120	(0.174)	0.020	0.100
101.	8.42	0.50	0.120	(0.173)	0.020	0.100
102.	8.50	0.50	0.120	(0.172)	0.020	0.100
103.	8.58	0.53	0.128	(0.171)	0.021	0.107
104.	8.67	0.53	0.128	(0.171)	0.021	0.107
105.	8.75	0.53	0.128	(0.170)	0.021	0.107
106.	8.83	0.57	0.136	(0.169)	0.022	0.114
107.	8.92	0.57	0.136	(0.168)	0.022	0.114
108.	9.00	0.57	0.136	(0.167)	0.022	0.114
109.	9.08	0.63	0.152	(0.167)	0.025	0.127
110.	9.17	0.63	0.152	(0.166)	0.025	0.127
111.	9.25	0.63	0.152	(0.165)	0.025	0.127
112.	9.33	0.67	0.160	(0.164)	0.026	0.134
113.	9.42	0.67	0.160	(0.164)	0.026	0.134
114.	9.50	0.67	0.160	(0.163)	0.026	0.134
115.	9.58	0.70	0.168	(0.162)	0.028	0.140
116.	9.67	0.70	0.168	(0.161)	0.028	0.140
117.	9.75	0.70	0.168	(0.160)	0.028	0.140
118.	9.83	0.73	0.176	(0.160)	0.029	0.147
119.	9.92	0.73	0.176	(0.159)	0.029	0.147
120.	10.00	0.73	0.176	(0.158)	0.029	0.147
121.	10.08	0.50	0.120	(0.157)	0.020	0.100
122.	10.17	0.50	0.120	(0.157)	0.020	0.100
123.	10.25	0.50	0.120	(0.156)	0.020	0.100
124.	10.33	0.50	0.120	(0.155)	0.020	0.100
125.	10.42	0.50	0.120	(0.154)	0.020	0.100
126.	10.50	0.50	0.120	(0.154)	0.020	0.100
127.	10.58	0.67	0.160	(0.153)	0.026	0.134
128.	10.67	0.67	0.160	(0.152)	0.026	0.134
129.	10.75	0.67	0.160	(0.151)	0.026	0.134
130.	10.83	0.67	0.160	(0.151)	0.026	0.134
131.	10.92	0.67	0.160	(0.150)	0.026	0.134
132.	11.00	0.67	0.160	(0.149)	0.026	0.134
133.	11.08	0.63	0.152	(0.148)	0.025	0.127
134.	11.17	0.63	0.152	(0.148)	0.025	0.127
135.	11.25	0.63	0.152	(0.147)	0.025	0.127
136.	11.33	0.63	0.152	(0.146)	0.025	0.127
137.	11.42	0.63	0.152	(0.145)	0.025	0.127
138.	11.50	0.63	0.152	(0.145)	0.025	0.127
139.	11.58	0.57	0.136	(0.144)	0.022	0.114
140.	11.67	0.57	0.136	(0.143)	0.022	0.114
141.	11.75	0.57	0.136	(0.143)	0.022	0.114
142.	11.83	0.60	0.144	(0.142)	0.024	0.120
143.	11.92	0.60	0.144	(0.141)	0.024	0.120
144.	12.00	0.60	0.144	(0.140)	0.024	0.120
145.	12.08	0.83	0.200	(0.140)	0.033	0.167
146.	12.17	0.83	0.200	(0.139)	0.033	0.167
147.	12.25	0.83	0.200	(0.138)	0.033	0.167
148.	12.33	0.87	0.208	(0.138)	0.034	0.174
149.	12.42	0.87	0.208	(0.137)	0.034	0.174
150.	12.50	0.87	0.208	(0.136)	0.034	0.174
151.	12.58	0.93	0.224	(0.136)	0.037	0.187
152.	12.67	0.93	0.224	(0.135)	0.037	0.187

153. 12.75	0.93	0.224	(0.134)	0.037	0.187
154. 12.83	0.97	0.232	(0.134)	0.038	0.194
155. 12.92	0.97	0.232	(0.133)	0.038	0.194
156. 13.00	0.97	0.232	(0.132)	0.038	0.194
157. 13.08	1.13	0.272	(0.132)	0.045	0.227
158. 13.17	1.13	0.272	(0.131)	0.045	0.227
159. 13.25	1.13	0.272	(0.130)	0.045	0.227
160. 13.33	1.13	0.272	(0.130)	0.045	0.227
161. 13.42	1.13	0.272	(0.129)	0.045	0.227
162. 13.50	1.13	0.272	(0.128)	0.045	0.227
163. 13.58	0.77	0.184	(0.128)	0.030	0.154
164. 13.67	0.77	0.184	(0.127)	0.030	0.154
165. 13.75	0.77	0.184	(0.126)	0.030	0.154
166. 13.83	0.77	0.184	(0.126)	0.030	0.154
167. 13.92	0.77	0.184	(0.125)	0.030	0.154
168. 14.00	0.77	0.184	(0.124)	0.030	0.154
169. 14.08	0.90	0.216	(0.124)	0.035	0.181
170. 14.17	0.90	0.216	(0.123)	0.035	0.181
171. 14.25	0.90	0.216	(0.122)	0.035	0.181
172. 14.33	0.87	0.208	(0.122)	0.034	0.174
173. 14.42	0.87	0.208	(0.121)	0.034	0.174
174. 14.50	0.87	0.208	(0.121)	0.034	0.174
175. 14.58	0.87	0.208	(0.120)	0.034	0.174
176. 14.67	0.87	0.208	(0.119)	0.034	0.174
177. 14.75	0.87	0.208	(0.119)	0.034	0.174
178. 14.83	0.83	0.200	(0.118)	0.033	0.167
179. 14.92	0.83	0.200	(0.118)	0.033	0.167
180. 15.00	0.83	0.200	(0.117)	0.033	0.167
181. 15.08	0.80	0.192	(0.116)	0.031	0.161
182. 15.17	0.80	0.192	(0.116)	0.031	0.161
183. 15.25	0.80	0.192	(0.115)	0.031	0.161
184. 15.33	0.77	0.184	(0.115)	0.030	0.154
185. 15.42	0.77	0.184	(0.114)	0.030	0.154
186. 15.50	0.77	0.184	(0.113)	0.030	0.154
187. 15.58	0.63	0.152	(0.113)	0.025	0.127
188. 15.67	0.63	0.152	(0.112)	0.025	0.127
189. 15.75	0.63	0.152	(0.112)	0.025	0.127
190. 15.83	0.63	0.152	(0.111)	0.025	0.127
191. 15.92	0.63	0.152	(0.111)	0.025	0.127
192. 16.00	0.63	0.152	(0.110)	0.025	0.127
193. 16.08	0.13	0.032	(0.109)	0.005	0.027
194. 16.17	0.13	0.032	(0.109)	0.005	0.027
195. 16.25	0.13	0.032	(0.108)	0.005	0.027
196. 16.33	0.13	0.032	(0.108)	0.005	0.027
197. 16.42	0.13	0.032	(0.107)	0.005	0.027
198. 16.50	0.13	0.032	(0.107)	0.005	0.027
199. 16.58	0.10	0.024	(0.106)	0.004	0.020
200. 16.67	0.10	0.024	(0.106)	0.004	0.020
201. 16.75	0.10	0.024	(0.105)	0.004	0.020
202. 16.83	0.10	0.024	(0.104)	0.004	0.020
203. 16.92	0.10	0.024	(0.104)	0.004	0.020
204. 17.00	0.10	0.024	(0.103)	0.004	0.020
205. 17.08	0.17	0.040	(0.103)	0.007	0.033
206. 17.17	0.17	0.040	(0.102)	0.007	0.033

207. 17.25	0.17	0.040	(0.102)	0.007	0.033
208. 17.33	0.17	0.040	(0.101)	0.007	0.033
209. 17.42	0.17	0.040	(0.101)	0.007	0.033
210. 17.50	0.17	0.040	(0.100)	0.007	0.033
211. 17.58	0.17	0.040	(0.100)	0.007	0.033
212. 17.67	0.17	0.040	(0.099)	0.007	0.033
213. 17.75	0.17	0.040	(0.099)	0.007	0.033
214. 17.83	0.13	0.032	(0.098)	0.005	0.027
215. 17.92	0.13	0.032	(0.098)	0.005	0.027
216. 18.00	0.13	0.032	(0.097)	0.005	0.027
217. 18.08	0.13	0.032	(0.097)	0.005	0.027
218. 18.17	0.13	0.032	(0.096)	0.005	0.027
219. 18.25	0.13	0.032	(0.096)	0.005	0.027
220. 18.33	0.13	0.032	(0.095)	0.005	0.027
221. 18.42	0.13	0.032	(0.095)	0.005	0.027
222. 18.50	0.13	0.032	(0.095)	0.005	0.027
223. 18.58	0.10	0.024	(0.094)	0.004	0.020
224. 18.67	0.10	0.024	(0.094)	0.004	0.020
225. 18.75	0.10	0.024	(0.093)	0.004	0.020
226. 18.83	0.07	0.016	(0.093)	0.003	0.013
227. 18.92	0.07	0.016	(0.092)	0.003	0.013
228. 19.00	0.07	0.016	(0.092)	0.003	0.013
229. 19.08	0.10	0.024	(0.091)	0.004	0.020
230. 19.17	0.10	0.024	(0.091)	0.004	0.020
231. 19.25	0.10	0.024	(0.091)	0.004	0.020
232. 19.33	0.13	0.032	(0.090)	0.005	0.027
233. 19.42	0.13	0.032	(0.090)	0.005	0.027
234. 19.50	0.13	0.032	(0.089)	0.005	0.027
235. 19.58	0.10	0.024	(0.089)	0.004	0.020
236. 19.67	0.10	0.024	(0.089)	0.004	0.020
237. 19.75	0.10	0.024	(0.088)	0.004	0.020
238. 19.83	0.07	0.016	(0.088)	0.003	0.013
239. 19.92	0.07	0.016	(0.087)	0.003	0.013
240. 20.00	0.07	0.016	(0.087)	0.003	0.013
241. 20.08	0.10	0.024	(0.087)	0.004	0.020
242. 20.17	0.10	0.024	(0.086)	0.004	0.020
243. 20.25	0.10	0.024	(0.086)	0.004	0.020
244. 20.33	0.10	0.024	(0.085)	0.004	0.020
245. 20.42	0.10	0.024	(0.085)	0.004	0.020
246. 20.50	0.10	0.024	(0.085)	0.004	0.020
247. 20.58	0.10	0.024	(0.084)	0.004	0.020
248. 20.67	0.10	0.024	(0.084)	0.004	0.020
249. 20.75	0.10	0.024	(0.084)	0.004	0.020
250. 20.83	0.07	0.016	(0.083)	0.003	0.013
251. 20.92	0.07	0.016	(0.083)	0.003	0.013
252. 21.00	0.07	0.016	(0.083)	0.003	0.013
253. 21.08	0.10	0.024	(0.082)	0.004	0.020
254. 21.17	0.10	0.024	(0.082)	0.004	0.020
255. 21.25	0.10	0.024	(0.082)	0.004	0.020
256. 21.33	0.07	0.016	(0.081)	0.003	0.013
257. 21.42	0.07	0.016	(0.081)	0.003	0.013
258. 21.50	0.07	0.016	(0.081)	0.003	0.013
259. 21.58	0.10	0.024	(0.080)	0.004	0.020
260. 21.67	0.10	0.024	(0.080)	0.004	0.020

261. 21.75	0.10	0.024	(0.080)	0.004	0.020
262. 21.83	0.07	0.016	(0.080)	0.003	0.013
263. 21.92	0.07	0.016	(0.079)	0.003	0.013
264. 22.00	0.07	0.016	(0.079)	0.003	0.013
265. 22.08	0.10	0.024	(0.079)	0.004	0.020
266. 22.17	0.10	0.024	(0.079)	0.004	0.020
267. 22.25	0.10	0.024	(0.078)	0.004	0.020
268. 22.33	0.07	0.016	(0.078)	0.003	0.013
269. 22.42	0.07	0.016	(0.078)	0.003	0.013
270. 22.50	0.07	0.016	(0.078)	0.003	0.013
271. 22.58	0.07	0.016	(0.077)	0.003	0.013
272. 22.67	0.07	0.016	(0.077)	0.003	0.013
273. 22.75	0.07	0.016	(0.077)	0.003	0.013
274. 22.83	0.07	0.016	(0.077)	0.003	0.013
275. 22.92	0.07	0.016	(0.077)	0.003	0.013
276. 23.00	0.07	0.016	(0.076)	0.003	0.013
277. 23.08	0.07	0.016	(0.076)	0.003	0.013
278. 23.17	0.07	0.016	(0.076)	0.003	0.013
279. 23.25	0.07	0.016	(0.076)	0.003	0.013
280. 23.33	0.07	0.016	(0.076)	0.003	0.013
281. 23.42	0.07	0.016	(0.076)	0.003	0.013
282. 23.50	0.07	0.016	(0.075)	0.003	0.013
283. 23.58	0.07	0.016	(0.075)	0.003	0.013
284. 23.67	0.07	0.016	(0.075)	0.003	0.013
285. 23.75	0.07	0.016	(0.075)	0.003	0.013
286. 23.83	0.07	0.016	(0.075)	0.003	0.013
287. 23.92	0.07	0.016	(0.075)	0.003	0.013
288. 24.00	0.07	0.016	(0.075)	0.003	0.013

(Loss Rate Not Used)

Sum = 100.0 Sum = 20.1

Flood volume = Effective rainfall 1.67(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 1.0(Ac.Ft)
Total soil loss = 0.33(In)
Total soil loss = 0.197(Ac.Ft)
Total rainfall = 2.00(In)
Flood volume = 43698.8 Cubic Feet
Total soil loss = 8572.5 Cubic Feet

Peak flow rate of this hydrograph = 1.651(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0004	0.05	Q	|	|	|	|
0+10	0.0010	0.09	Q	|	|	|	|
0+15	0.0017	0.10	Q	|	|	|	|
0+20	0.0025	0.12	Q	|	|	|	|

0+25	0.0035	0.14	Q	|	|	|	|
0+30	0.0045	0.15	Q	|	|	|	|
0+35	0.0055	0.15	Q	|	|	|	|
0+40	0.0065	0.15	Q	|	|	|	|
0+45	0.0075	0.15	Q	|	|	|	|
0+50	0.0087	0.17	Q	|	|	|	|
0+55	0.0100	0.19	Q	|	|	|	|
1+ 0	0.0114	0.19	Q	|	|	|	|
1+ 5	0.0125	0.17	Q	|	|	|	|
1+10	0.0135	0.15	Q	|	|	|	|
1+15	0.0145	0.15	Q	|	|	|	|
1+20	0.0156	0.15	Q	|	|	|	|
1+25	0.0166	0.15	Q	|	|	|	|
1+30	0.0176	0.15	Q	|	|	|	|
1+35	0.0186	0.15	Q	|	|	|	|
1+40	0.0196	0.15	Q	|	|	|	|
1+45	0.0206	0.15	Q	|	|	|	|
1+50	0.0218	0.17	Q	|	|	|	|
1+55	0.0231	0.19	Q	|	|	|	|
2+ 0	0.0244	0.19	Q	|	|	|	|
2+ 5	0.0258	0.19	QV	|	|	|	|
2+10	0.0271	0.19	QV	|	|	|	|
2+15	0.0284	0.19	QV	|	|	|	|
2+20	0.0298	0.19	QV	|	|	|	|
2+25	0.0311	0.19	QV	|	|	|	|
2+30	0.0324	0.19	QV	|	|	|	|
2+35	0.0340	0.22	QV	|	|	|	|
2+40	0.0356	0.24	QV	|	|	|	|
2+45	0.0373	0.24	QV	|	|	|	|
2+50	0.0390	0.24	QV	|	|	|	|
2+55	0.0406	0.24	QV	|	|	|	|
3+ 0	0.0423	0.24	QV	|	|	|	|
3+ 5	0.0440	0.24	QV	|	|	|	|
3+10	0.0456	0.24	QV	|	|	|	|
3+15	0.0473	0.24	QV	|	|	|	|
3+20	0.0490	0.24	QV	|	|	|	|
3+25	0.0507	0.24	Q V	|	|	|	|
3+30	0.0523	0.24	Q V	|	|	|	|
3+35	0.0540	0.24	Q V	|	|	|	|
3+40	0.0557	0.24	Q V	|	|	|	|
3+45	0.0574	0.24	Q V	|	|	|	|
3+50	0.0592	0.27	|QV	|	|	|	|
3+55	0.0612	0.29	|QV	|	|	|	|
4+ 0	0.0632	0.29	|QV	|	|	|	|
4+ 5	0.0652	0.29	|QV	|	|	|	|
4+10	0.0672	0.29	|QV	|	|	|	|
4+15	0.0692	0.29	|QV	|	|	|	|
4+20	0.0714	0.32	|QV	|	|	|	|
4+25	0.0737	0.34	|QV	|	|	|	|
4+30	0.0761	0.34	|Q V	|	|	|	|
4+35	0.0784	0.34	|Q V	|	|	|	|
4+40	0.0808	0.34	|Q V	|	|	|	|
4+45	0.0831	0.34	|Q V	|	|	|	|
4+50	0.0856	0.37	|Q V	|	|	|	|

4+55	0.0883	0.39	|Q V |	|	|	|
5+ 0	0.0910	0.39	|Q V |	|	|	|
5+ 5	0.0933	0.33	|Q V |	|	|	|
5+10	0.0953	0.30	|Q V |	|	|	|
5+15	0.0973	0.29	|Q V |	|	|	|
5+20	0.0995	0.32	|Q V |	|	|	|
5+25	0.1018	0.34	|Q V |	|	|	|
5+30	0.1042	0.34	|Q V |	|	|	|
5+35	0.1067	0.37	|Q V |	|	|	|
5+40	0.1094	0.39	|Q V |	|	|	|
5+45	0.1120	0.39	|Q V |	|	|	|
5+50	0.1147	0.39	|Q V |	|	|	|
5+55	0.1174	0.39	|Q V |	|	|	|
6+ 0	0.1201	0.39	|Q V |	|	|	|
6+ 5	0.1229	0.42	|Q V |	|	|	|
6+10	0.1259	0.43	|Q V |	|	|	|
6+15	0.1289	0.44	|Q V |	|	|	|
6+20	0.1319	0.44	|Q V |	|	|	|
6+25	0.1349	0.44	|Q V |	|	|	|
6+30	0.1379	0.44	|Q V |	|	|	|
6+35	0.1411	0.46	|Q V |	|	|	|
6+40	0.1445	0.48	|Q V |	|	|	|
6+45	0.1478	0.49	|Q V |	|	|	|
6+50	0.1512	0.49	|Q V |	|	|	|
6+55	0.1545	0.49	|Q V |	|	|	|
7+ 0	0.1578	0.49	|Q V |	|	|	|
7+ 5	0.1612	0.49	|Q V |	|	|	|
7+10	0.1645	0.49	|Q V |	|	|	|
7+15	0.1679	0.49	|Q V |	|	|	|
7+20	0.1714	0.51	| Q V |	|	|	|
7+25	0.1751	0.53	| Q V |	|	|	|
7+30	0.1787	0.53	| Q V |	|	|	|
7+35	0.1826	0.56	| Q V |	|	|	|
7+40	0.1866	0.58	| Q V |	|	|	|
7+45	0.1906	0.58	| Q V |	|	|	|
7+50	0.1948	0.61	| Q V |	|	|	|
7+55	0.1991	0.63	| Q V |	|	|	|
8+ 0	0.2035	0.63	| Q V |	|	|	|
8+ 5	0.2082	0.69	| Q V |	|	|	|
8+10	0.2132	0.72	| Q V |	|	|	|
8+15	0.2182	0.73	| Q V |	|	|	|
8+20	0.2232	0.73	| Q V |	|	|	|
8+25	0.2282	0.73	| Q V|	|	|	|
8+30	0.2333	0.73	| Q V|	|	|	|
8+35	0.2385	0.76	| Q V|	|	|	|
8+40	0.2438	0.77	| Q V|	|	|	|
8+45	0.2491	0.78	| Q V|	|	|	|
8+50	0.2547	0.80	| Q V	|	|	|
8+55	0.2603	0.82	| Q V	|	|	|
9+ 0	0.2660	0.83	| Q V	|	|	|
9+ 5	0.2721	0.88	| Q V	|	|	|
9+10	0.2784	0.92	| Q |V	|	|	|
9+15	0.2848	0.92	| Q |V	|	|	|
9+20	0.2913	0.95	| Q |V	|	|	|

9+25	0.2980	0.97	Q	V			
9+30	0.3047	0.97	Q	V			
9+35	0.3115	1.00	Q	V			
9+40	0.3185	1.02	Q	V			
9+45	0.3256	1.02	Q	V			
9+50	0.3328	1.05	Q	V			
9+55	0.3401	1.07	Q	V			
10+ 0	0.3475	1.07	Q	V			
10+ 5	0.3535	0.88	Q	V			
10+10	0.3587	0.75	Q	V			
10+15	0.3637	0.73	Q	V			
10+20	0.3687	0.73	Q	V			
10+25	0.3737	0.73	Q	V			
10+30	0.3787	0.73	Q	V			
10+35	0.3847	0.87	Q	V			
10+40	0.3913	0.96	Q	V			
10+45	0.3979	0.97	Q	V			
10+50	0.4046	0.97	Q	V			
10+55	0.4113	0.97	Q	V			
11+ 0	0.4180	0.97	Q	V			
11+ 5	0.4245	0.94	Q	V			
11+10	0.4309	0.93	Q	V			
11+15	0.4372	0.92	Q	V			
11+20	0.4436	0.92	Q	V			
11+25	0.4499	0.92	Q	V			
11+30	0.4563	0.92	Q	V			
11+35	0.4623	0.87	Q	V			
11+40	0.4680	0.83	Q	V			
11+45	0.4737	0.83	Q	V			
11+50	0.4796	0.85	Q	V			
11+55	0.4856	0.87	Q	V			
12+ 0	0.4916	0.87	Q	V			
12+ 5	0.4989	1.07	Q	V			
12+10	0.5071	1.19	Q	V			
12+15	0.5155	1.21	Q	V			
12+20	0.5240	1.24	Q	V			
12+25	0.5327	1.26	Q	V			
12+30	0.5414	1.26	Q	V			
12+35	0.5505	1.32	Q	V			
12+40	0.5598	1.35	Q	V			
12+45	0.5692	1.36	Q	V			
12+50	0.5787	1.39	Q	V			
12+55	0.5884	1.41	Q	V			
13+ 0	0.5981	1.41	Q	V			
13+ 5	0.6087	1.55	Q	V			
13+10	0.6200	1.64	Q	V			
13+15	0.6314	1.65	Q	V			
13+20	0.6427	1.65	Q	V			
13+25	0.6541	1.65	Q	V			
13+30	0.6655	1.65	Q	V			
13+35	0.6748	1.35	Q	V			
13+40	0.6827	1.15	Q	V			
13+45	0.6904	1.12	Q	V			
13+50	0.6981	1.12	Q	V			

13+55	0.7058	1.12	Q			V	
14+ 0	0.7135	1.12	Q			V	
14+ 5	0.7219	1.23	Q			V	
14+10	0.7308	1.30	Q			V	
14+15	0.7399	1.31	Q			V	
14+20	0.7487	1.28	Q			V	
14+25	0.7574	1.27	Q			V	
14+30	0.7661	1.26	Q			V	
14+35	0.7748	1.26	Q			V	
14+40	0.7835	1.26	Q			V	
14+45	0.7922	1.26	Q			V	
14+50	0.8007	1.23	Q			V	
14+55	0.8091	1.22	Q			V	
15+ 0	0.8175	1.21	Q			V	
15+ 5	0.8256	1.19	Q			V	
15+10	0.8337	1.17	Q			V	
15+15	0.8417	1.17	Q			V	
15+20	0.8495	1.14	Q			V	
15+25	0.8572	1.12	Q			V	
15+30	0.8649	1.12	Q			V	
15+35	0.8719	1.01	Q			V	
15+40	0.8783	0.93	Q			V	
15+45	0.8847	0.92	Q			V	
15+50	0.8910	0.92	Q			V	
15+55	0.8974	0.92	Q			V	
16+ 0	0.9037	0.92	Q			V	
16+ 5	0.9072	0.51	Q			V	
16+10	0.9089	0.24	Q			V	
16+15	0.9102	0.19	Q			V	
16+20	0.9116	0.19	Q			V	
16+25	0.9129	0.19	Q			V	
16+30	0.9142	0.19	Q			V	
16+35	0.9154	0.17	Q			V	
16+40	0.9164	0.15	Q			V	
16+45	0.9174	0.15	Q			V	
16+50	0.9184	0.15	Q			V	
16+55	0.9194	0.15	Q			V	
17+ 0	0.9204	0.15	Q			V	
17+ 5	0.9218	0.20	Q			V	
17+10	0.9234	0.24	Q			V	
17+15	0.9251	0.24	Q			V	
17+20	0.9268	0.24	Q			V	
17+25	0.9285	0.24	Q			V	
17+30	0.9301	0.24	Q			V	
17+35	0.9318	0.24	Q			V	
17+40	0.9335	0.24	Q			V	
17+45	0.9351	0.24	Q			V	
17+50	0.9366	0.22	Q			V	
17+55	0.9380	0.20	Q			V	
18+ 0	0.9393	0.19	Q			V	
18+ 5	0.9407	0.19	Q			V	
18+10	0.9420	0.19	Q			V	
18+15	0.9433	0.19	Q			V	
18+20	0.9447	0.19	Q			V	

18+25	0.9460	0.19	Q	|	|	|	V |
18+30	0.9473	0.19	Q	|	|	|	V |
18+35	0.9485	0.17	Q	|	|	|	V |
18+40	0.9495	0.15	Q	|	|	|	V |
18+45	0.9505	0.15	Q	|	|	|	V |
18+50	0.9513	0.12	Q	|	|	|	V |
18+55	0.9520	0.10	Q	|	|	|	V |
19+ 0	0.9527	0.10	Q	|	|	|	V |
19+ 5	0.9536	0.12	Q	|	|	|	V |
19+10	0.9545	0.14	Q	|	|	|	V |
19+15	0.9555	0.15	Q	|	|	|	V |
19+20	0.9567	0.17	Q	|	|	|	V |
19+25	0.9580	0.19	Q	|	|	|	V |
19+30	0.9594	0.19	Q	|	|	|	V |
19+35	0.9605	0.17	Q	|	|	|	V |
19+40	0.9616	0.15	Q	|	|	|	V |
19+45	0.9626	0.15	Q	|	|	|	V |
19+50	0.9634	0.12	Q	|	|	|	V |
19+55	0.9641	0.10	Q	|	|	|	V |
20+ 0	0.9647	0.10	Q	|	|	|	V |
20+ 5	0.9656	0.12	Q	|	|	|	V |
20+10	0.9666	0.14	Q	|	|	|	V |
20+15	0.9676	0.15	Q	|	|	|	V |
20+20	0.9686	0.15	Q	|	|	|	V |
20+25	0.9696	0.15	Q	|	|	|	V |
20+30	0.9706	0.15	Q	|	|	|	V |
20+35	0.9716	0.15	Q	|	|	|	V |
20+40	0.9726	0.15	Q	|	|	|	V |
20+45	0.9736	0.15	Q	|	|	|	V |
20+50	0.9744	0.12	Q	|	|	|	V |
20+55	0.9751	0.10	Q	|	|	|	V |
21+ 0	0.9758	0.10	Q	|	|	|	V |
21+ 5	0.9766	0.12	Q	|	|	|	V |
21+10	0.9776	0.14	Q	|	|	|	V |
21+15	0.9786	0.15	Q	|	|	|	V|
21+20	0.9794	0.12	Q	|	|	|	V|
21+25	0.9801	0.10	Q	|	|	|	V|
21+30	0.9808	0.10	Q	|	|	|	V|
21+35	0.9816	0.12	Q	|	|	|	V|
21+40	0.9826	0.14	Q	|	|	|	V|
21+45	0.9836	0.15	Q	|	|	|	V|
21+50	0.9844	0.12	Q	|	|	|	V|
21+55	0.9851	0.10	Q	|	|	|	V|
22+ 0	0.9858	0.10	Q	|	|	|	V|
22+ 5	0.9867	0.12	Q	|	|	|	V|
22+10	0.9876	0.14	Q	|	|	|	V|
22+15	0.9886	0.15	Q	|	|	|	V|
22+20	0.9895	0.12	Q	|	|	|	V|
22+25	0.9901	0.10	Q	|	|	|	V|
22+30	0.9908	0.10	Q	|	|	|	V|
22+35	0.9915	0.10	Q	|	|	|	V|
22+40	0.9922	0.10	Q	|	|	|	V|
22+45	0.9928	0.10	Q	|	|	|	V|
22+50	0.9935	0.10	Q	|	|	|	V|

22+55	0.9942	0.10	Q	|	|	|	V|
23+ 0	0.9948	0.10	Q	|	|	|	V|
23+ 5	0.9955	0.10	Q	|	|	|	V|
23+10	0.9962	0.10	Q	|	|	|	V|
23+15	0.9968	0.10	Q	|	|	|	V|
23+20	0.9975	0.10	Q	|	|	|	V|
23+25	0.9982	0.10	Q	|	|	|	V|
23+30	0.9988	0.10	Q	|	|	|	V|
23+35	0.9995	0.10	Q	|	|	|	V|
23+40	1.0002	0.10	Q	|	|	|	V|
23+45	1.0008	0.10	Q	|	|	|	V|
23+50	1.0015	0.10	Q	|	|	|	V|
23+55	1.0022	0.10	Q	|	|	|	V|
24+ 0	1.0029	0.10	Q	|	|	|	V|
24+ 5	1.0031	0.04	Q	|	|	|	V|
24+10	1.0032	0.01	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	0.50	3.60

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	1.30	9.36

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 0.687(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.687(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.920	0.150	1.000	0.150
					Sum (F) =	0.150

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.164

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700

```
               3   0.250        895.844          6.258               0.454
                                                                  Sum =
100.000   Sum=       7.256
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)			Effective
(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1. 0.08	4.20	0.346	(0.150)		0.057	0.290
2. 0.17	4.30	0.355	(0.150)		0.058	0.296
3. 0.25	5.00	0.412	(0.150)		0.068	0.345
4. 0.33	5.00	0.412	(0.150)		0.068	0.345
5. 0.42	5.80	0.478	(0.150)		0.078	0.400
6. 0.50	6.50	0.536	(0.150)		0.088	0.448
7. 0.58	7.40	0.610	(0.150)		0.100	0.510
8. 0.67	8.60	0.709	(0.150)		0.116	0.593
9. 0.75	12.30	1.015	0.150	(	0.166)	0.865
10. 0.83	29.10	2.400	0.150	(	0.394)	2.250
11. 0.92	6.80	0.561	(0.150)		0.092	0.469
12. 1.00	5.00	0.412	(0.150)		0.068	0.345
	(Loss Rate Not Used)					
Sum =	100.0					Sum = 7.2

```
    Flood volume = Effective rainfall      0.60(In)
     times area       7.2(Ac.)/[(In)/(Ft.)] =       0.4(Ac.Ft)
    Total soil loss =      0.09(In)
    Total soil loss =     0.055(Ac.Ft)
    Total rainfall =      0.69(In)
    Flood volume =       15585.6 Cubic Feet
    Total soil loss =        2378.6 Cubic Feet
    ---------------------------------------------------------------------
     Peak flow rate of this hydrograph =     11.843(CFS)
    ---------------------------------------------------------------------
    +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                              1 - H O U R   S T O R M
                                   R u n o f f     H y d r o g r a p h
    ---------------------------------------------------------------------
                           Hydrograph in   5   Minute intervals ((CFS))

    ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0
20.0
  ---------------------------------------------------------------------
    0+ 5       0.0082      1.19  V Q       |         |         |         |
    0+10       0.0220      2.00  | VQ      |         |         |         |
    0+15       0.0381      2.35  |   Q     |         |         |         |
    0+20       0.0552      2.48  |   Q V   |         |         |         |
    0+25       0.0740      2.73  |    Q  V |         |         |         |
    0+30       0.0952      3.08  |     Q   V         |         |         |
    0+35       0.1192      3.49  |     Q   |  V      |         |         |
```

```
    0+40       0.1469      4.02  |        Q |     V   |         |         |
    0+45       0.1839      5.38  |          Q         V         |         |
    0+50       0.2655     11.84  |          |         |  Q     V|         |
    0+55       0.3233      8.40  |          |     Q   |         |     V   |
    1+ 0       0.3488      3.70  |      Q   |         |         |       V |
    1+ 5       0.3567      1.14  | Q        |         |         |         V|
    1+10       0.3578      0.16  Q          |         |         |         V|
---------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	0.85	6.12

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.00	14.40

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 0.850(In)
Area Averaged 100-Year Rainfall = 2.000(In)

Point rain (area averaged) = 1.119(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.119(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.920	0.150	1.000	0.150
					Sum (F) =	0.150

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454
			Sum = 100.000	Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1. 0.08	1.30	0.175	(0.150)	0.029	0.146
2. 0.17	1.30	0.175	(0.150)	0.029	0.146
3. 0.25	1.10	0.148	(0.150)	0.024	0.124
4. 0.33	1.50	0.201	(0.150)	0.033	0.168
5. 0.42	1.50	0.201	(0.150)	0.033	0.168
6. 0.50	1.80	0.242	(0.150)	0.040	0.202
7. 0.58	1.50	0.201	(0.150)	0.033	0.168
8. 0.67	1.80	0.242	(0.150)	0.040	0.202
9. 0.75	1.80	0.242	(0.150)	0.040	0.202
10. 0.83	1.50	0.201	(0.150)	0.033	0.168
11. 0.92	1.60	0.215	(0.150)	0.035	0.180
12. 1.00	1.80	0.242	(0.150)	0.040	0.202
13. 1.08	2.20	0.296	(0.150)	0.048	0.247
14. 1.17	2.20	0.296	(0.150)	0.048	0.247
15. 1.25	2.20	0.296	(0.150)	0.048	0.247
16. 1.33	2.00	0.269	(0.150)	0.044	0.225
17. 1.42	2.60	0.349	(0.150)	0.057	0.292
18. 1.50	2.70	0.363	(0.150)	0.059	0.303
19. 1.58	2.40	0.322	(0.150)	0.053	0.269
20. 1.67	2.70	0.363	(0.150)	0.059	0.303
21. 1.75	3.30	0.443	(0.150)	0.073	0.371
22. 1.83	3.10	0.416	(0.150)	0.068	0.348
23. 1.92	2.90	0.390	(0.150)	0.064	0.326
24. 2.00	3.00	0.403	(0.150)	0.066	0.337
25. 2.08	3.10	0.416	(0.150)	0.068	0.348
26. 2.17	4.20	0.564	(0.150)	0.093	0.472
27. 2.25	5.00	0.672	(0.150)	0.110	0.561
28. 2.33	3.50	0.470	(0.150)	0.077	0.393
29. 2.42	6.80	0.913	0.150	(0.150)	0.764
30. 2.50	7.30	0.981	0.150	(0.161)	0.831
31. 2.58	8.20	1.101	0.150	(0.181)	0.952
32. 2.67	5.90	0.792	(0.150)	0.130	0.663
33. 2.75	2.00	0.269	(0.150)	0.044	0.225
34. 2.83	1.80	0.242	(0.150)	0.040	0.202
35. 2.92	1.80	0.242	(0.150)	0.040	0.202
36. 3.00	0.60	0.081	(0.150)	0.013	0.067
	(Loss Rate Not Used)				
Sum =	100.0				Sum = 11.3

Flood volume = Effective rainfall 0.94(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 0.6(Ac.Ft)
Total soil loss = 0.18(In)
Total soil loss = 0.108(Ac.Ft)
Total rainfall = 1.12(In)
Flood volume = 24548.6 Cubic Feet

Total soil loss = 4706.1 Cubic Feet

Peak flow rate of this hydrograph = 6.497(CFS)

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3 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0041	0.60	V Q | | | |
0+10	0.0110	0.99	V Q | | | |
0+15	0.0176	0.97	|V Q | | | |
0+20	0.0251	1.09	|V Q | | | |
0+25	0.0334	1.20	| V Q | | | |
0+30	0.0428	1.36	| V Q | | | |
0+35	0.0519	1.31	| V Q | | | |
0+40	0.0613	1.38	| VQ | | | |
0+45	0.0713	1.45	| Q | | | |
0+50	0.0805	1.33	| Q | | | |
0+55	0.0893	1.28	| QV | | | |
1+ 0	0.0989	1.39	| Q V | | | |
1+ 5	0.1102	1.64	| QV | | | |
1+10	0.1224	1.77	| QV | | | |
1+15	0.1348	1.79	| Q V| | | |
1+20	0.1465	1.70	| Q V | | |
1+25	0.1597	1.92	| Q |V | | |
1+30	0.1744	2.14	| Q | V | | |
1+35	0.1886	2.06	| Q | V | | |
1+40	0.2031	2.11	| Q | V | | |
1+45	0.2201	2.46	| Q| V | | |
1+50	0.2378	2.57	| Q V | | |
1+55	0.2546	2.45	| Q| V | | |
2+ 0	0.2713	2.42	| Q| V| | |
2+ 5	0.2884	2.49	| Q| V | |
2+10	0.3093	3.03	| | Q |V | |
2+15	0.3350	3.74	| | Q | V | |
2+20	0.3580	3.34	| | Q | V | |
2+25	0.3887	4.45	| | Q | V | |
2+30	0.4276	5.65	| | | Q | V |
2+35	0.4723	6.50	| | | Q | V |
2+40	0.5114	5.67	| | | Q | V |
2+45	0.5330	3.14	| | Q | | V |
2+50	0.5450	1.74	| Q | | | V |
2+55	0.5552	1.48	| Q | | | V|
3+ 0	0.5615	0.91	| Q | | | V|
3+ 5	0.5633	0.27	|Q | | | V|
3+10	0.5636	0.03	Q | | | V

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	1.20	8.64

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.90	20.88

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 1.200(In)
Area Averaged 100-Year Rainfall = 2.900(In)

Point rain (area averaged) = 1.598(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.598(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.920	0.150	1.000	0.150
					Sum (F) =	0.150

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454
			Sum = 100.000	Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

	Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1.	0.08	0.50	0.096	(0.150)	0.016	0.080
2.	0.17	0.60	0.115	(0.150)	0.019	0.096
3.	0.25	0.60	0.115	(0.150)	0.019	0.096
4.	0.33	0.60	0.115	(0.150)	0.019	0.096
5.	0.42	0.60	0.115	(0.150)	0.019	0.096
6.	0.50	0.70	0.134	(0.150)	0.022	0.112
7.	0.58	0.70	0.134	(0.150)	0.022	0.112
8.	0.67	0.70	0.134	(0.150)	0.022	0.112
9.	0.75	0.70	0.134	(0.150)	0.022	0.112
10.	0.83	0.70	0.134	(0.150)	0.022	0.112
11.	0.92	0.70	0.134	(0.150)	0.022	0.112
12.	1.00	0.80	0.153	(0.150)	0.025	0.128
13.	1.08	0.80	0.153	(0.150)	0.025	0.128
14.	1.17	0.80	0.153	(0.150)	0.025	0.128
15.	1.25	0.80	0.153	(0.150)	0.025	0.128
16.	1.33	0.80	0.153	(0.150)	0.025	0.128
17.	1.42	0.80	0.153	(0.150)	0.025	0.128
18.	1.50	0.80	0.153	(0.150)	0.025	0.128
19.	1.58	0.80	0.153	(0.150)	0.025	0.128
20.	1.67	0.80	0.153	(0.150)	0.025	0.128
21.	1.75	0.80	0.153	(0.150)	0.025	0.128
22.	1.83	0.80	0.153	(0.150)	0.025	0.128
23.	1.92	0.80	0.153	(0.150)	0.025	0.128
24.	2.00	0.90	0.173	(0.150)	0.028	0.144
25.	2.08	0.80	0.153	(0.150)	0.025	0.128
26.	2.17	0.90	0.173	(0.150)	0.028	0.144
27.	2.25	0.90	0.173	(0.150)	0.028	0.144
28.	2.33	0.90	0.173	(0.150)	0.028	0.144
29.	2.42	0.90	0.173	(0.150)	0.028	0.144
30.	2.50	0.90	0.173	(0.150)	0.028	0.144
31.	2.58	0.90	0.173	(0.150)	0.028	0.144
32.	2.67	0.90	0.173	(0.150)	0.028	0.144
33.	2.75	1.00	0.192	(0.150)	0.031	0.160
34.	2.83	1.00	0.192	(0.150)	0.031	0.160
35.	2.92	1.00	0.192	(0.150)	0.031	0.160
36.	3.00	1.00	0.192	(0.150)	0.031	0.160
37.	3.08	1.00	0.192	(0.150)	0.031	0.160
38.	3.17	1.10	0.211	(0.150)	0.035	0.176
39.	3.25	1.10	0.211	(0.150)	0.035	0.176
40.	3.33	1.10	0.211	(0.150)	0.035	0.176
41.	3.42	1.20	0.230	(0.150)	0.038	0.192
42.	3.50	1.30	0.249	(0.150)	0.041	0.208
43.	3.58	1.40	0.268	(0.150)	0.044	0.224
44.	3.67	1.40	0.268	(0.150)	0.044	0.224

45.	3.75	1.50	0.288	(0.150)	0.047	0.240
46.	3.83	1.50	0.288	(0.150)	0.047	0.240
47.	3.92	1.60	0.307	(0.150)	0.050	0.257
48.	4.00	1.60	0.307	(0.150)	0.050	0.257
49.	4.08	1.70	0.326	(0.150)	0.053	0.273
50.	4.17	1.80	0.345	(0.150)	0.057	0.289
51.	4.25	1.90	0.364	(0.150)	0.060	0.305
52.	4.33	2.00	0.384	(0.150)	0.063	0.321
53.	4.42	2.10	0.403	(0.150)	0.066	0.337
54.	4.50	2.10	0.403	(0.150)	0.066	0.337
55.	4.58	2.20	0.422	(0.150)	0.069	0.353
56.	4.67	2.30	0.441	(0.150)	0.072	0.369
57.	4.75	2.40	0.460	(0.150)	0.075	0.385
58.	4.83	2.40	0.460	(0.150)	0.075	0.385
59.	4.92	2.50	0.479	(0.150)	0.079	0.401
60.	5.00	2.60	0.499	(0.150)	0.082	0.417
61.	5.08	3.10	0.595	(0.150)	0.097	0.497
62.	5.17	3.60	0.690	(0.150)	0.113	0.577
63.	5.25	3.90	0.748	(0.150)	0.123	0.625
64.	5.33	4.20	0.805	(0.150)	0.132	0.673
65.	5.42	4.70	0.901	(0.150)	0.148	0.754
66.	5.50	5.60	1.074	0.150	(0.176)	0.924
67.	5.58	1.90	0.364	(0.150)	0.060	0.305
68.	5.67	0.90	0.173	(0.150)	0.028	0.144
69.	5.75	0.60	0.115	(0.150)	0.019	0.096
70.	5.83	0.50	0.096	(0.150)	0.016	0.080
71.	5.92	0.30	0.058	(0.150)	0.009	0.048
72.	6.00	0.20	0.038	(0.150)	0.006	0.032

(Loss Rate Not Used)

Sum = 100.0 Sum = 16.1

Flood volume = Effective rainfall 1.34(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 0.8(Ac.Ft)
Total soil loss = 0.26(In)
Total soil loss = 0.156(Ac.Ft)
Total rainfall = 1.60(In)
Flood volume = 34976.5 Cubic Feet
Total soil loss = 6792.6 Cubic Feet

Peak flow rate of this hydrograph = 6.135(CFS)

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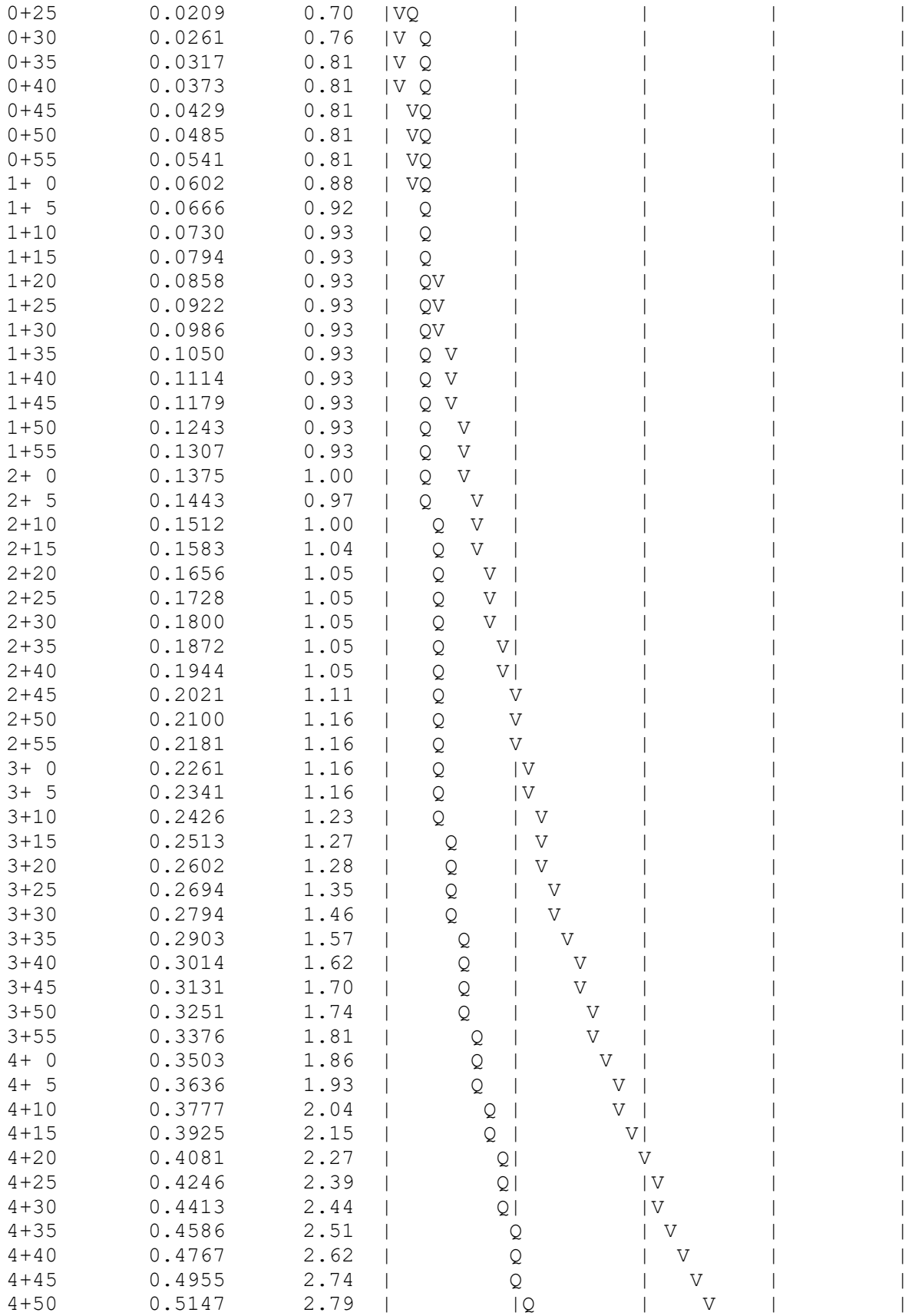
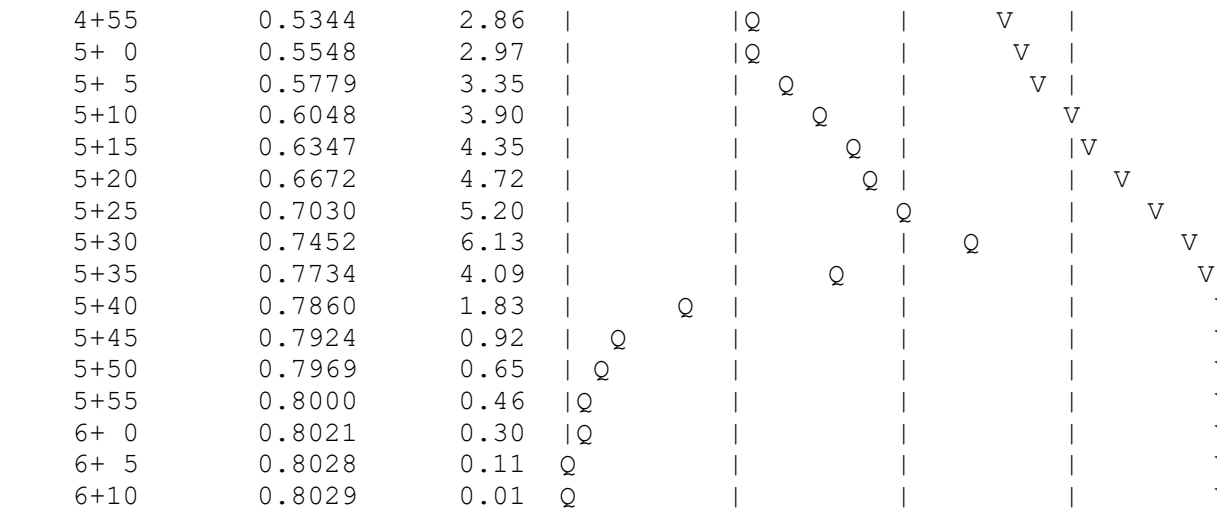
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0023	0.33	VQ	|	|	|	|
0+10	0.0065	0.61	V Q	|	|	|	|
0+15	0.0112	0.69	V Q	|	|	|	|
0+20	0.0160	0.70	V Q	|	|	|	|




4+55 0.5344 2.86
5+ 0 0.5548 2.97
5+ 5 0.5779 3.35
5+10 0.6048 3.90
5+15 0.6347 4.35
5+20 0.6672 4.72
5+25 0.7030 5.20
5+30 0.7452 6.13
5+35 0.7734 4.09
5+40 0.7860 1.83
5+45 0.7924 0.92
5+50 0.7969 0.65
5+55 0.8000 0.46
6+ 0 0.8021 0.30
6+ 5 0.8028 0.11
6+10 0.8029 0.01

U n i t H y d r o g r a p h A n a l y s i s

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Study date 11/30/23 File: 2177UHP245.out

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.00	14.40

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	5.90	42.48

STORM EVENT (YEAR) = 5.00
Area Averaged 2-Year Rainfall = 2.000(In)
Area Averaged 100-Year Rainfall = 5.900(In)

Point rain (area averaged) = 2.913(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.913(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.920	0.150	1.000	0.150
					Sum (F) =	0.150

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454
			Sum = 100.000	Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.07	0.023	(0.265)	0.004	0.019
2. 0.17	0.07	0.023	(0.264)	0.004	0.019
3. 0.25	0.07	0.023	(0.263)	0.004	0.019
4. 0.33	0.10	0.035	(0.262)	0.006	0.029
5. 0.42	0.10	0.035	(0.261)	0.006	0.029
6. 0.50	0.10	0.035	(0.260)	0.006	0.029
7. 0.58	0.10	0.035	(0.259)	0.006	0.029
8. 0.67	0.10	0.035	(0.258)	0.006	0.029
9. 0.75	0.10	0.035	(0.257)	0.006	0.029
10. 0.83	0.13	0.047	(0.256)	0.008	0.039
11. 0.92	0.13	0.047	(0.255)	0.008	0.039
12. 1.00	0.13	0.047	(0.254)	0.008	0.039
13. 1.08	0.10	0.035	(0.253)	0.006	0.029
14. 1.17	0.10	0.035	(0.252)	0.006	0.029
15. 1.25	0.10	0.035	(0.251)	0.006	0.029
16. 1.33	0.10	0.035	(0.250)	0.006	0.029
17. 1.42	0.10	0.035	(0.249)	0.006	0.029
18. 1.50	0.10	0.035	(0.248)	0.006	0.029
19. 1.58	0.10	0.035	(0.247)	0.006	0.029
20. 1.67	0.10	0.035	(0.246)	0.006	0.029
21. 1.75	0.10	0.035	(0.245)	0.006	0.029
22. 1.83	0.13	0.047	(0.244)	0.008	0.039
23. 1.92	0.13	0.047	(0.243)	0.008	0.039
24. 2.00	0.13	0.047	(0.242)	0.008	0.039
25. 2.08	0.13	0.047	(0.241)	0.008	0.039
26. 2.17	0.13	0.047	(0.240)	0.008	0.039
27. 2.25	0.13	0.047	(0.239)	0.008	0.039
28. 2.33	0.13	0.047	(0.238)	0.008	0.039
29. 2.42	0.13	0.047	(0.237)	0.008	0.039
30. 2.50	0.13	0.047	(0.236)	0.008	0.039
31. 2.58	0.17	0.058	(0.235)	0.010	0.049
32. 2.67	0.17	0.058	(0.235)	0.010	0.049
33. 2.75	0.17	0.058	(0.234)	0.010	0.049
34. 2.83	0.17	0.058	(0.233)	0.010	0.049
35. 2.92	0.17	0.058	(0.232)	0.010	0.049
36. 3.00	0.17	0.058	(0.231)	0.010	0.049
37. 3.08	0.17	0.058	(0.230)	0.010	0.049
38. 3.17	0.17	0.058	(0.229)	0.010	0.049
39. 3.25	0.17	0.058	(0.228)	0.010	0.049
40. 3.33	0.17	0.058	(0.227)	0.010	0.049
41. 3.42	0.17	0.058	(0.226)	0.010	0.049
42. 3.50	0.17	0.058	(0.225)	0.010	0.049
43. 3.58	0.17	0.058	(0.224)	0.010	0.049
44. 3.67	0.17	0.058	(0.223)	0.010	0.049

45.	3.75	0.17	0.058	(0.222)	0.010	0.049
46.	3.83	0.20	0.070	(0.221)	0.011	0.058
47.	3.92	0.20	0.070	(0.220)	0.011	0.058
48.	4.00	0.20	0.070	(0.219)	0.011	0.058
49.	4.08	0.20	0.070	(0.218)	0.011	0.058
50.	4.17	0.20	0.070	(0.217)	0.011	0.058
51.	4.25	0.20	0.070	(0.217)	0.011	0.058
52.	4.33	0.23	0.082	(0.216)	0.013	0.068
53.	4.42	0.23	0.082	(0.215)	0.013	0.068
54.	4.50	0.23	0.082	(0.214)	0.013	0.068
55.	4.58	0.23	0.082	(0.213)	0.013	0.068
56.	4.67	0.23	0.082	(0.212)	0.013	0.068
57.	4.75	0.23	0.082	(0.211)	0.013	0.068
58.	4.83	0.27	0.093	(0.210)	0.015	0.078
59.	4.92	0.27	0.093	(0.209)	0.015	0.078
60.	5.00	0.27	0.093	(0.208)	0.015	0.078
61.	5.08	0.20	0.070	(0.207)	0.011	0.058
62.	5.17	0.20	0.070	(0.207)	0.011	0.058
63.	5.25	0.20	0.070	(0.206)	0.011	0.058
64.	5.33	0.23	0.082	(0.205)	0.013	0.068
65.	5.42	0.23	0.082	(0.204)	0.013	0.068
66.	5.50	0.23	0.082	(0.203)	0.013	0.068
67.	5.58	0.27	0.093	(0.202)	0.015	0.078
68.	5.67	0.27	0.093	(0.201)	0.015	0.078
69.	5.75	0.27	0.093	(0.200)	0.015	0.078
70.	5.83	0.27	0.093	(0.199)	0.015	0.078
71.	5.92	0.27	0.093	(0.198)	0.015	0.078
72.	6.00	0.27	0.093	(0.198)	0.015	0.078
73.	6.08	0.30	0.105	(0.197)	0.017	0.088
74.	6.17	0.30	0.105	(0.196)	0.017	0.088
75.	6.25	0.30	0.105	(0.195)	0.017	0.088
76.	6.33	0.30	0.105	(0.194)	0.017	0.088
77.	6.42	0.30	0.105	(0.193)	0.017	0.088
78.	6.50	0.30	0.105	(0.192)	0.017	0.088
79.	6.58	0.33	0.117	(0.192)	0.019	0.097
80.	6.67	0.33	0.117	(0.191)	0.019	0.097
81.	6.75	0.33	0.117	(0.190)	0.019	0.097
82.	6.83	0.33	0.117	(0.189)	0.019	0.097
83.	6.92	0.33	0.117	(0.188)	0.019	0.097
84.	7.00	0.33	0.117	(0.187)	0.019	0.097
85.	7.08	0.33	0.117	(0.186)	0.019	0.097
86.	7.17	0.33	0.117	(0.186)	0.019	0.097
87.	7.25	0.33	0.117	(0.185)	0.019	0.097
88.	7.33	0.37	0.128	(0.184)	0.021	0.107
89.	7.42	0.37	0.128	(0.183)	0.021	0.107
90.	7.50	0.37	0.128	(0.182)	0.021	0.107
91.	7.58	0.40	0.140	(0.181)	0.023	0.117
92.	7.67	0.40	0.140	(0.180)	0.023	0.117
93.	7.75	0.40	0.140	(0.180)	0.023	0.117
94.	7.83	0.43	0.151	(0.179)	0.025	0.127
95.	7.92	0.43	0.151	(0.178)	0.025	0.127
96.	8.00	0.43	0.151	(0.177)	0.025	0.127
97.	8.08	0.50	0.175	(0.176)	0.029	0.146
98.	8.17	0.50	0.175	(0.176)	0.029	0.146

99.	8.25	0.50	0.175	(0.175)	0.029	0.146
100.	8.33	0.50	0.175	(0.174)	0.029	0.146
101.	8.42	0.50	0.175	(0.173)	0.029	0.146
102.	8.50	0.50	0.175	(0.172)	0.029	0.146
103.	8.58	0.53	0.186	(0.171)	0.031	0.156
104.	8.67	0.53	0.186	(0.171)	0.031	0.156
105.	8.75	0.53	0.186	(0.170)	0.031	0.156
106.	8.83	0.57	0.198	(0.169)	0.032	0.166
107.	8.92	0.57	0.198	(0.168)	0.032	0.166
108.	9.00	0.57	0.198	(0.167)	0.032	0.166
109.	9.08	0.63	0.221	(0.167)	0.036	0.185
110.	9.17	0.63	0.221	(0.166)	0.036	0.185
111.	9.25	0.63	0.221	(0.165)	0.036	0.185
112.	9.33	0.67	0.233	(0.164)	0.038	0.195
113.	9.42	0.67	0.233	(0.164)	0.038	0.195
114.	9.50	0.67	0.233	(0.163)	0.038	0.195
115.	9.58	0.70	0.245	(0.162)	0.040	0.205
116.	9.67	0.70	0.245	(0.161)	0.040	0.205
117.	9.75	0.70	0.245	(0.160)	0.040	0.205
118.	9.83	0.73	0.256	(0.160)	0.042	0.214
119.	9.92	0.73	0.256	(0.159)	0.042	0.214
120.	10.00	0.73	0.256	(0.158)	0.042	0.214
121.	10.08	0.50	0.175	(0.157)	0.029	0.146
122.	10.17	0.50	0.175	(0.157)	0.029	0.146
123.	10.25	0.50	0.175	(0.156)	0.029	0.146
124.	10.33	0.50	0.175	(0.155)	0.029	0.146
125.	10.42	0.50	0.175	(0.154)	0.029	0.146
126.	10.50	0.50	0.175	(0.154)	0.029	0.146
127.	10.58	0.67	0.233	(0.153)	0.038	0.195
128.	10.67	0.67	0.233	(0.152)	0.038	0.195
129.	10.75	0.67	0.233	(0.151)	0.038	0.195
130.	10.83	0.67	0.233	(0.151)	0.038	0.195
131.	10.92	0.67	0.233	(0.150)	0.038	0.195
132.	11.00	0.67	0.233	(0.149)	0.038	0.195
133.	11.08	0.63	0.221	(0.148)	0.036	0.185
134.	11.17	0.63	0.221	(0.148)	0.036	0.185
135.	11.25	0.63	0.221	(0.147)	0.036	0.185
136.	11.33	0.63	0.221	(0.146)	0.036	0.185
137.	11.42	0.63	0.221	(0.145)	0.036	0.185
138.	11.50	0.63	0.221	(0.145)	0.036	0.185
139.	11.58	0.57	0.198	(0.144)	0.032	0.166
140.	11.67	0.57	0.198	(0.143)	0.032	0.166
141.	11.75	0.57	0.198	(0.143)	0.032	0.166
142.	11.83	0.60	0.210	(0.142)	0.034	0.175
143.	11.92	0.60	0.210	(0.141)	0.034	0.175
144.	12.00	0.60	0.210	(0.140)	0.034	0.175
145.	12.08	0.83	0.291	(0.140)	0.048	0.244
146.	12.17	0.83	0.291	(0.139)	0.048	0.244
147.	12.25	0.83	0.291	(0.138)	0.048	0.244
148.	12.33	0.87	0.303	(0.138)	0.050	0.253
149.	12.42	0.87	0.303	(0.137)	0.050	0.253
150.	12.50	0.87	0.303	(0.136)	0.050	0.253
151.	12.58	0.93	0.326	(0.136)	0.054	0.273
152.	12.67	0.93	0.326	(0.135)	0.054	0.273

153.	12.75	0.93	0.326	(0.134)	0.054	0.273
154.	12.83	0.97	0.338	(0.134)	0.055	0.283
155.	12.92	0.97	0.338	(0.133)	0.055	0.283
156.	13.00	0.97	0.338	(0.132)	0.055	0.283
157.	13.08	1.13	0.396	(0.132)	0.065	0.331
158.	13.17	1.13	0.396	(0.131)	0.065	0.331
159.	13.25	1.13	0.396	(0.130)	0.065	0.331
160.	13.33	1.13	0.396	(0.130)	0.065	0.331
161.	13.42	1.13	0.396	(0.129)	0.065	0.331
162.	13.50	1.13	0.396	(0.128)	0.065	0.331
163.	13.58	0.77	0.268	(0.128)	0.044	0.224
164.	13.67	0.77	0.268	(0.127)	0.044	0.224
165.	13.75	0.77	0.268	(0.126)	0.044	0.224
166.	13.83	0.77	0.268	(0.126)	0.044	0.224
167.	13.92	0.77	0.268	(0.125)	0.044	0.224
168.	14.00	0.77	0.268	(0.124)	0.044	0.224
169.	14.08	0.90	0.315	(0.124)	0.052	0.263
170.	14.17	0.90	0.315	(0.123)	0.052	0.263
171.	14.25	0.90	0.315	(0.122)	0.052	0.263
172.	14.33	0.87	0.303	(0.122)	0.050	0.253
173.	14.42	0.87	0.303	(0.121)	0.050	0.253
174.	14.50	0.87	0.303	(0.121)	0.050	0.253
175.	14.58	0.87	0.303	(0.120)	0.050	0.253
176.	14.67	0.87	0.303	(0.119)	0.050	0.253
177.	14.75	0.87	0.303	(0.119)	0.050	0.253
178.	14.83	0.83	0.291	(0.118)	0.048	0.244
179.	14.92	0.83	0.291	(0.118)	0.048	0.244
180.	15.00	0.83	0.291	(0.117)	0.048	0.244
181.	15.08	0.80	0.280	(0.116)	0.046	0.234
182.	15.17	0.80	0.280	(0.116)	0.046	0.234
183.	15.25	0.80	0.280	(0.115)	0.046	0.234
184.	15.33	0.77	0.268	(0.115)	0.044	0.224
185.	15.42	0.77	0.268	(0.114)	0.044	0.224
186.	15.50	0.77	0.268	(0.113)	0.044	0.224
187.	15.58	0.63	0.221	(0.113)	0.036	0.185
188.	15.67	0.63	0.221	(0.112)	0.036	0.185
189.	15.75	0.63	0.221	(0.112)	0.036	0.185
190.	15.83	0.63	0.221	(0.111)	0.036	0.185
191.	15.92	0.63	0.221	(0.111)	0.036	0.185
192.	16.00	0.63	0.221	(0.110)	0.036	0.185
193.	16.08	0.13	0.047	(0.109)	0.008	0.039
194.	16.17	0.13	0.047	(0.109)	0.008	0.039
195.	16.25	0.13	0.047	(0.108)	0.008	0.039
196.	16.33	0.13	0.047	(0.108)	0.008	0.039
197.	16.42	0.13	0.047	(0.107)	0.008	0.039
198.	16.50	0.13	0.047	(0.107)	0.008	0.039
199.	16.58	0.10	0.035	(0.106)	0.006	0.029
200.	16.67	0.10	0.035	(0.106)	0.006	0.029
201.	16.75	0.10	0.035	(0.105)	0.006	0.029
202.	16.83	0.10	0.035	(0.104)	0.006	0.029
203.	16.92	0.10	0.035	(0.104)	0.006	0.029
204.	17.00	0.10	0.035	(0.103)	0.006	0.029
205.	17.08	0.17	0.058	(0.103)	0.010	0.049
206.	17.17	0.17	0.058	(0.102)	0.010	0.049

207. 17.25	0.17	0.058	(0.102)	0.010	0.049
208. 17.33	0.17	0.058	(0.101)	0.010	0.049
209. 17.42	0.17	0.058	(0.101)	0.010	0.049
210. 17.50	0.17	0.058	(0.100)	0.010	0.049
211. 17.58	0.17	0.058	(0.100)	0.010	0.049
212. 17.67	0.17	0.058	(0.099)	0.010	0.049
213. 17.75	0.17	0.058	(0.099)	0.010	0.049
214. 17.83	0.13	0.047	(0.098)	0.008	0.039
215. 17.92	0.13	0.047	(0.098)	0.008	0.039
216. 18.00	0.13	0.047	(0.097)	0.008	0.039
217. 18.08	0.13	0.047	(0.097)	0.008	0.039
218. 18.17	0.13	0.047	(0.096)	0.008	0.039
219. 18.25	0.13	0.047	(0.096)	0.008	0.039
220. 18.33	0.13	0.047	(0.095)	0.008	0.039
221. 18.42	0.13	0.047	(0.095)	0.008	0.039
222. 18.50	0.13	0.047	(0.095)	0.008	0.039
223. 18.58	0.10	0.035	(0.094)	0.006	0.029
224. 18.67	0.10	0.035	(0.094)	0.006	0.029
225. 18.75	0.10	0.035	(0.093)	0.006	0.029
226. 18.83	0.07	0.023	(0.093)	0.004	0.019
227. 18.92	0.07	0.023	(0.092)	0.004	0.019
228. 19.00	0.07	0.023	(0.092)	0.004	0.019
229. 19.08	0.10	0.035	(0.091)	0.006	0.029
230. 19.17	0.10	0.035	(0.091)	0.006	0.029
231. 19.25	0.10	0.035	(0.091)	0.006	0.029
232. 19.33	0.13	0.047	(0.090)	0.008	0.039
233. 19.42	0.13	0.047	(0.090)	0.008	0.039
234. 19.50	0.13	0.047	(0.089)	0.008	0.039
235. 19.58	0.10	0.035	(0.089)	0.006	0.029
236. 19.67	0.10	0.035	(0.089)	0.006	0.029
237. 19.75	0.10	0.035	(0.088)	0.006	0.029
238. 19.83	0.07	0.023	(0.088)	0.004	0.019
239. 19.92	0.07	0.023	(0.087)	0.004	0.019
240. 20.00	0.07	0.023	(0.087)	0.004	0.019
241. 20.08	0.10	0.035	(0.087)	0.006	0.029
242. 20.17	0.10	0.035	(0.086)	0.006	0.029
243. 20.25	0.10	0.035	(0.086)	0.006	0.029
244. 20.33	0.10	0.035	(0.085)	0.006	0.029
245. 20.42	0.10	0.035	(0.085)	0.006	0.029
246. 20.50	0.10	0.035	(0.085)	0.006	0.029
247. 20.58	0.10	0.035	(0.084)	0.006	0.029
248. 20.67	0.10	0.035	(0.084)	0.006	0.029
249. 20.75	0.10	0.035	(0.084)	0.006	0.029
250. 20.83	0.07	0.023	(0.083)	0.004	0.019
251. 20.92	0.07	0.023	(0.083)	0.004	0.019
252. 21.00	0.07	0.023	(0.083)	0.004	0.019
253. 21.08	0.10	0.035	(0.082)	0.006	0.029
254. 21.17	0.10	0.035	(0.082)	0.006	0.029
255. 21.25	0.10	0.035	(0.082)	0.006	0.029
256. 21.33	0.07	0.023	(0.081)	0.004	0.019
257. 21.42	0.07	0.023	(0.081)	0.004	0.019
258. 21.50	0.07	0.023	(0.081)	0.004	0.019
259. 21.58	0.10	0.035	(0.080)	0.006	0.029
260. 21.67	0.10	0.035	(0.080)	0.006	0.029

261.	21.75	0.10	0.035	(0.080)	0.006	0.029
262.	21.83	0.07	0.023	(0.080)	0.004	0.019
263.	21.92	0.07	0.023	(0.079)	0.004	0.019
264.	22.00	0.07	0.023	(0.079)	0.004	0.019
265.	22.08	0.10	0.035	(0.079)	0.006	0.029
266.	22.17	0.10	0.035	(0.079)	0.006	0.029
267.	22.25	0.10	0.035	(0.078)	0.006	0.029
268.	22.33	0.07	0.023	(0.078)	0.004	0.019
269.	22.42	0.07	0.023	(0.078)	0.004	0.019
270.	22.50	0.07	0.023	(0.078)	0.004	0.019
271.	22.58	0.07	0.023	(0.077)	0.004	0.019
272.	22.67	0.07	0.023	(0.077)	0.004	0.019
273.	22.75	0.07	0.023	(0.077)	0.004	0.019
274.	22.83	0.07	0.023	(0.077)	0.004	0.019
275.	22.92	0.07	0.023	(0.077)	0.004	0.019
276.	23.00	0.07	0.023	(0.076)	0.004	0.019
277.	23.08	0.07	0.023	(0.076)	0.004	0.019
278.	23.17	0.07	0.023	(0.076)	0.004	0.019
279.	23.25	0.07	0.023	(0.076)	0.004	0.019
280.	23.33	0.07	0.023	(0.076)	0.004	0.019
281.	23.42	0.07	0.023	(0.076)	0.004	0.019
282.	23.50	0.07	0.023	(0.075)	0.004	0.019
283.	23.58	0.07	0.023	(0.075)	0.004	0.019
284.	23.67	0.07	0.023	(0.075)	0.004	0.019
285.	23.75	0.07	0.023	(0.075)	0.004	0.019
286.	23.83	0.07	0.023	(0.075)	0.004	0.019
287.	23.92	0.07	0.023	(0.075)	0.004	0.019
288.	24.00	0.07	0.023	(0.075)	0.004	0.019

(Loss Rate Not Used)

Sum = 100.0 Sum = 29.2

Flood volume = Effective rainfall 2.44(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 1.5(Ac.Ft)
Total soil loss = 0.48(In)
Total soil loss = 0.287(Ac.Ft)
Total rainfall = 2.91(In)
Flood volume = 63657.6 Cubic Feet
Total soil loss = 12487.9 Cubic Feet

Peak flow rate of this hydrograph = 2.405(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0006	0.08	Q	|	|	|	|
0+10	0.0015	0.13	Q	|	|	|	|
0+15	0.0024	0.14	Q	|	|	|	|
0+20	0.0037	0.18	Q	|	|	|	|

0+25	0.0051	0.21	Q				
0+30	0.0066	0.21	Q				
0+35	0.0080	0.21	Q				
0+40	0.0095	0.21	Q				
0+45	0.0110	0.21	Q				
0+50	0.0127	0.25	VQ				
0+55	0.0146	0.28	VQ				
1+ 0	0.0166	0.28	VQ				
1+ 5	0.0182	0.24	Q				
1+10	0.0197	0.22	Q				
1+15	0.0212	0.21	Q				
1+20	0.0227	0.21	Q				
1+25	0.0241	0.21	Q				
1+30	0.0256	0.21	Q				
1+35	0.0270	0.21	Q				
1+40	0.0285	0.21	Q				
1+45	0.0300	0.21	Q				
1+50	0.0317	0.25	VQ				
1+55	0.0336	0.28	VQ				
2+ 0	0.0356	0.28	VQ				
2+ 5	0.0375	0.28	|Q				
2+10	0.0395	0.28	|Q				
2+15	0.0414	0.28	|Q				
2+20	0.0434	0.28	|Q				
2+25	0.0453	0.28	|Q				
2+30	0.0473	0.28	|Q				
2+35	0.0495	0.32	|Q				
2+40	0.0519	0.35	|Q				
2+45	0.0543	0.35	|Q				
2+50	0.0568	0.35	|Q				
2+55	0.0592	0.35	|Q				
3+ 0	0.0616	0.35	|Q				
3+ 5	0.0641	0.35	|Q				
3+10	0.0665	0.35	|Q				
3+15	0.0689	0.35	|Q				
3+20	0.0714	0.35	|Q				
3+25	0.0738	0.35	|QV				
3+30	0.0762	0.35	|QV				
3+35	0.0787	0.35	|QV				
3+40	0.0811	0.35	|QV				
3+45	0.0835	0.35	|QV				
3+50	0.0863	0.39	|QV				
3+55	0.0892	0.42	|QV				
4+ 0	0.0921	0.42	|QV				
4+ 5	0.0950	0.42	|QV				
4+10	0.0979	0.42	|QV				
4+15	0.1008	0.42	|QV				
4+20	0.1040	0.46	|QV				
4+25	0.1074	0.49	|QV				
4+30	0.1108	0.50	|Q V				
4+35	0.1142	0.50	|Q V				
4+40	0.1177	0.50	|Q V				
4+45	0.1211	0.50	|Q V				
4+50	0.1247	0.54	| QV				

4+55	0.1286	0.56	| QV |	|	|	|
5+ 0	0.1325	0.57	| QV |	|	|	|
5+ 5	0.1359	0.49	|Q V |	|	|	|
5+10	0.1388	0.43	|Q V |	|	|	|
5+15	0.1418	0.42	|Q V |	|	|	|
5+20	0.1450	0.46	|Q V |	|	|	|
5+25	0.1483	0.49	|Q V |	|	|	|
5+30	0.1517	0.50	|Q V |	|	|	|
5+35	0.1554	0.54	| Q V |	|	|	|
5+40	0.1593	0.56	| Q V |	|	|	|
5+45	0.1632	0.57	| Q V |	|	|	|
5+50	0.1671	0.57	| Q V |	|	|	|
5+55	0.1710	0.57	| Q V |	|	|	|
6+ 0	0.1749	0.57	| Q V |	|	|	|
6+ 5	0.1791	0.61	| Q V |	|	|	|
6+10	0.1834	0.63	| Q V |	|	|	|
6+15	0.1878	0.64	| Q V |	|	|	|
6+20	0.1922	0.64	| Q V |	|	|	|
6+25	0.1966	0.64	| Q V |	|	|	|
6+30	0.2010	0.64	| Q V |	|	|	|
6+35	0.2056	0.68	| Q V |	|	|	|
6+40	0.2105	0.70	| Q V |	|	|	|
6+45	0.2153	0.71	| Q V |	|	|	|
6+50	0.2202	0.71	| Q V |	|	|	|
6+55	0.2251	0.71	| Q V |	|	|	|
7+ 0	0.2299	0.71	| Q V |	|	|	|
7+ 5	0.2348	0.71	| Q V |	|	|	|
7+10	0.2397	0.71	| Q V |	|	|	|
7+15	0.2446	0.71	| Q V |	|	|	|
7+20	0.2497	0.75	| Q V |	|	|	|
7+25	0.2550	0.77	| Q V |	|	|	|
7+30	0.2604	0.78	| Q V |	|	|	|
7+35	0.2660	0.82	| Q V |	|	|	|
7+40	0.2718	0.84	| Q V |	|	|	|
7+45	0.2777	0.85	| Q V |	|	|	|
7+50	0.2838	0.89	| Q V |	|	|	|
7+55	0.2901	0.92	| Q V |	|	|	|
8+ 0	0.2964	0.92	| Q V |	|	|	|
8+ 5	0.3033	1.00	| Q V |	|	|	|
8+10	0.3106	1.05	| Q V |	|	|	|
8+15	0.3179	1.06	| Q V |	|	|	|
8+20	0.3252	1.06	| Q V |	|	|	|
8+25	0.3325	1.06	| Q V|	|	|	|
8+30	0.3398	1.06	| Q V|	|	|	|
8+35	0.3474	1.10	| Q V|	|	|	|
8+40	0.3551	1.13	| Q V|	|	|	|
8+45	0.3629	1.13	| Q V|	|	|	|
8+50	0.3710	1.17	| Q V	|	|	|
8+55	0.3793	1.20	| Q V	|	|	|
9+ 0	0.3875	1.20	| Q V	|	|	|
9+ 5	0.3964	1.28	| Q V	|	|	|
9+10	0.4056	1.34	| Q |V	|	|	|
9+15	0.4148	1.34	| Q |V	|	|	|
9+20	0.4243	1.38	| Q |V	|	|	|

9+25	0.4341	1.41	| Q |	|V |	|	|	|
9+30	0.4438	1.41	| Q |	| V |	|	|	|
9+35	0.4538	1.45	| Q |	| V |	|	|	|
9+40	0.4640	1.48	| Q |	| V |	|	|	|
9+45	0.4742	1.49	| Q |	| V |	|	|	|
9+50	0.4848	1.53	| Q |	| V |	|	|	|
9+55	0.4954	1.55	| Q |	| V |	|	|	|
10+ 0	0.5062	1.56	| Q |	| V |	|	|	|
10+ 5	0.5149	1.28	| Q |	| V |	|	|	|
10+10	0.5225	1.09	| Q |	| V |	|	|	|
10+15	0.5298	1.06	| Q |	| V |	|	|	|
10+20	0.5371	1.06	| Q |	| V |	|	|	|
10+25	0.5444	1.06	| Q |	| V |	|	|	|
10+30	0.5517	1.06	| Q |	| V |	|	|	|
10+35	0.5604	1.26	| Q |	| V |	|	|	|
10+40	0.5700	1.39	| Q |	| V |	|	|	|
10+45	0.5797	1.41	| Q |	| V |	|	|	|
10+50	0.5894	1.41	| Q |	| V |	|	|	|
10+55	0.5992	1.41	| Q |	| V |	|	|	|
11+ 0	0.6089	1.41	| Q |	| V |	|	|	|
11+ 5	0.6184	1.37	| Q |	| V |	|	|	|
11+10	0.6277	1.35	| Q |	| V |	|	|	|
11+15	0.6369	1.34	| Q |	| V |	|	|	|
11+20	0.6462	1.34	| Q |	| V |	|	|	|
11+25	0.6555	1.34	| Q |	| V |	|	|	|
11+30	0.6647	1.34	| Q |	| V |	|	|	|
11+35	0.6734	1.26	| Q |	| V |	|	|	|
11+40	0.6818	1.21	| Q |	| V |	|	|	|
11+45	0.6900	1.20	| Q |	| V |	|	|	|
11+50	0.6986	1.24	| Q |	| V|	|	|	|
11+55	0.7073	1.27	| Q |	| V|	|	|	|
12+ 0	0.7161	1.27	| Q |	| V|	|	|	|
12+ 5	0.7268	1.55	| Q |	| V|	|	|	|
12+10	0.7388	1.74	| Q |	| V |	|	|	|
12+15	0.7509	1.77	| Q |	| V |	|	|	|
12+20	0.7634	1.81	| Q |	| V |	|	|	|
12+25	0.7760	1.83	| Q |	| V |	|	|	|
12+30	0.7887	1.84	| Q |	| V |	|	|	|
12+35	0.8019	1.92	| Q |	| V |	|	|	|
12+40	0.8155	1.97	| Q |	| V |	|	|	|
12+45	0.8291	1.98	| Q |	| V |	|	|	|
12+50	0.8430	2.02	| Q |	| V |	|	|	|
12+55	0.8571	2.05	| Q |	| V |	|	|	|
13+ 0	0.8713	2.05	| Q |	| V |	|	|	|
13+ 5	0.8868	2.25	| Q|	| V |	|	|	|
13+10	0.9032	2.38	| Q|	| V |	|	|	|
13+15	0.9197	2.40	| Q|	| V |	|	|	|
13+20	0.9363	2.40	| Q|	| V |	|	|	|
13+25	0.9529	2.40	| Q|	| V |	|	|	|
13+30	0.9694	2.40	| Q|	| V |	|	|	|
13+35	0.9830	1.96	| Q |	| V |	|	|	|
13+40	0.9945	1.68	| Q |	| V |	|	|	|
13+45	1.0057	1.63	| Q |	| V |	|	|	|
13+50	1.0169	1.63	| Q |	| V |	|	|	|

13+55	1.0281	1.63	Q		V	
14+ 0	1.0393	1.63	Q		V	
14+ 5	1.0516	1.79	Q		V	
14+10	1.0647	1.89	Q		V	
14+15	1.0778	1.91	Q		V	
14+20	1.0907	1.87	Q		V	
14+25	1.1034	1.84	Q		V	
14+30	1.1160	1.84	Q		V	
14+35	1.1287	1.84	Q		V	
14+40	1.1414	1.84	Q		V	
14+45	1.1540	1.84	Q		V	
14+50	1.1664	1.80	Q		V	
14+55	1.1786	1.77	Q		V	
15+ 0	1.1908	1.77	Q		V	
15+ 5	1.2027	1.73	Q		V	
15+10	1.2144	1.70	Q		V	
15+15	1.2261	1.70	Q		V	
15+20	1.2375	1.66	Q		V	
15+25	1.2488	1.63	Q		V	
15+30	1.2600	1.63	Q		V	
15+35	1.2701	1.47	Q		V	
15+40	1.2795	1.36	Q		V	
15+45	1.2887	1.34	Q		V	
15+50	1.2980	1.34	Q		V	
15+55	1.3072	1.34	Q		V	
16+ 0	1.3165	1.34	Q		V	
16+ 5	1.3216	0.74	Q		V	
16+10	1.3240	0.35	Q		V	
16+15	1.3260	0.28	Q		V	
16+20	1.3279	0.28	Q		V	
16+25	1.3299	0.28	Q		V	
16+30	1.3318	0.28	Q		V	
16+35	1.3335	0.24	Q		V	
16+40	1.3350	0.22	Q		V	
16+45	1.3364	0.21	Q		V	
16+50	1.3379	0.21	Q		V	
16+55	1.3394	0.21	Q		V	
17+ 0	1.3408	0.21	Q		V	
17+ 5	1.3428	0.29	Q		V	
17+10	1.3452	0.34	Q		V	
17+15	1.3476	0.35	Q		V	
17+20	1.3501	0.35	Q		V	
17+25	1.3525	0.35	Q		V	
17+30	1.3549	0.35	Q		V	
17+35	1.3574	0.35	Q		V	
17+40	1.3598	0.35	Q		V	
17+45	1.3623	0.35	Q		V	
17+50	1.3644	0.31	Q		V	
17+55	1.3664	0.29	Q		V	
18+ 0	1.3683	0.28	Q		V	
18+ 5	1.3703	0.28	Q		V	
18+10	1.3722	0.28	Q		V	
18+15	1.3742	0.28	Q		V	
18+20	1.3761	0.28	Q		V	

18+25	1.3781	0.28	|Q	|	|	|	V |
18+30	1.3800	0.28	|Q	|	|	|	V |
18+35	1.3817	0.24	Q	|	|	|	V |
18+40	1.3832	0.22	Q	|	|	|	V |
18+45	1.3847	0.21	Q	|	|	|	V |
18+50	1.3858	0.17	Q	|	|	|	V |
18+55	1.3869	0.15	Q	|	|	|	V |
19+ 0	1.3878	0.14	Q	|	|	|	V |
19+ 5	1.3891	0.18	Q	|	|	|	V |
19+10	1.3905	0.21	Q	|	|	|	V |
19+15	1.3920	0.21	Q	|	|	|	V |
19+20	1.3937	0.25	|Q	|	|	|	V |
19+25	1.3956	0.28	|Q	|	|	|	V |
19+30	1.3976	0.28	|Q	|	|	|	V |
19+35	1.3992	0.24	Q	|	|	|	V |
19+40	1.4007	0.22	Q	|	|	|	V |
19+45	1.4022	0.21	Q	|	|	|	V |
19+50	1.4034	0.17	Q	|	|	|	V |
19+55	1.4044	0.15	Q	|	|	|	V |
20+ 0	1.4054	0.14	Q	|	|	|	V |
20+ 5	1.4066	0.18	Q	|	|	|	V |
20+10	1.4080	0.21	Q	|	|	|	V |
20+15	1.4095	0.21	Q	|	|	|	V |
20+20	1.4110	0.21	Q	|	|	|	V |
20+25	1.4124	0.21	Q	|	|	|	V |
20+30	1.4139	0.21	Q	|	|	|	V |
20+35	1.4153	0.21	Q	|	|	|	V |
20+40	1.4168	0.21	Q	|	|	|	V |
20+45	1.4183	0.21	Q	|	|	|	V |
20+50	1.4195	0.17	Q	|	|	|	V |
20+55	1.4205	0.15	Q	|	|	|	V |
21+ 0	1.4214	0.14	Q	|	|	|	V |
21+ 5	1.4227	0.18	Q	|	|	|	V |
21+10	1.4241	0.21	Q	|	|	|	V |
21+15	1.4256	0.21	Q	|	|	|	V|
21+20	1.4268	0.17	Q	|	|	|	V|
21+25	1.4278	0.15	Q	|	|	|	V|
21+30	1.4287	0.14	Q	|	|	|	V|
21+35	1.4300	0.18	Q	|	|	|	V|
21+40	1.4314	0.21	Q	|	|	|	V|
21+45	1.4329	0.21	Q	|	|	|	V|
21+50	1.4341	0.17	Q	|	|	|	V|
21+55	1.4351	0.15	Q	|	|	|	V|
22+ 0	1.4361	0.14	Q	|	|	|	V|
22+ 5	1.4373	0.18	Q	|	|	|	V|
22+10	1.4387	0.21	Q	|	|	|	V|
22+15	1.4402	0.21	Q	|	|	|	V|
22+20	1.4414	0.17	Q	|	|	|	V|
22+25	1.4424	0.15	Q	|	|	|	V|
22+30	1.4434	0.14	Q	|	|	|	V|
22+35	1.4443	0.14	Q	|	|	|	V|
22+40	1.4453	0.14	Q	|	|	|	V|
22+45	1.4463	0.14	Q	|	|	|	V|
22+50	1.4473	0.14	Q	|	|	|	V|

22+55	1.4482	0.14	Q	|	|	|	V|
23+ 0	1.4492	0.14	Q	|	|	|	V|
23+ 5	1.4502	0.14	Q	|	|	|	V|
23+10	1.4512	0.14	Q	|	|	|	V|
23+15	1.4521	0.14	Q	|	|	|	V|
23+20	1.4531	0.14	Q	|	|	|	V|
23+25	1.4541	0.14	Q	|	|	|	V|
23+30	1.4550	0.14	Q	|	|	|	V|
23+35	1.4560	0.14	Q	|	|	|	V|
23+40	1.4570	0.14	Q	|	|	|	V|
23+45	1.4580	0.14	Q	|	|	|	V|
23+50	1.4589	0.14	Q	|	|	|	V|
23+55	1.4599	0.14	Q	|	|	|	V|
24+ 0	1.4609	0.14	Q	|	|	|	V|
24+ 5	1.4613	0.06	Q	|	|	|	V|
24+10	1.4614	0.01	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	0.50	3.60

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	1.30	9.36

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 0.829(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 0.829(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.920	0.128	1.000	0.128
					Sum (F) =	0.128

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.164

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102

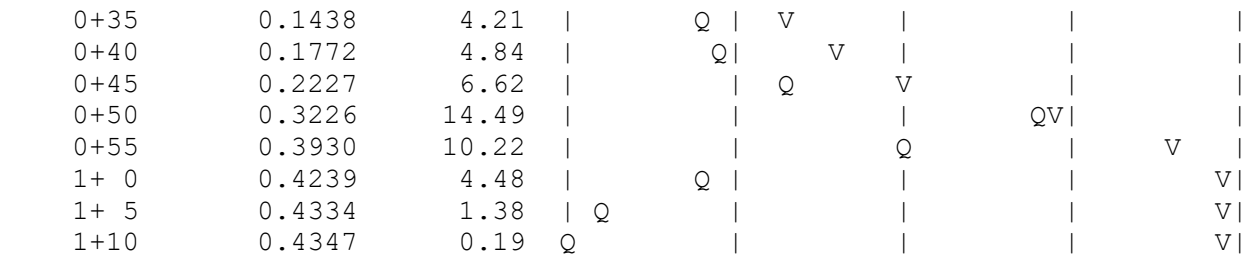
```
              2   0.167        597.229         37.205              2.700
              3   0.250        895.844          6.258              0.454
                                                                 Sum =
100.000   Sum=       7.256
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Loss rate(In./Hr) Low	Effective (In/Hr)
1.	0.08	4.20	0.418	(0.150)	0.069	0.349
2.	0.17	4.30	0.428	(0.150)	0.070	0.358
3.	0.25	5.00	0.497	(0.150)	0.082	0.416
4.	0.33	5.00	0.497	(0.150)	0.082	0.416
5.	0.42	5.80	0.577	(0.150)	0.095	0.482
6.	0.50	6.50	0.647	(0.150)	0.106	0.541
7.	0.58	7.40	0.736	(0.150)	0.121	0.615
8.	0.67	8.60	0.856	(0.150)	0.140	0.715
9.	0.75	12.30	1.224	0.150	(0.201)	1.074
10.	0.83	29.10	2.895	0.150	(0.475)	2.745
11.	0.92	6.80	0.677	(0.150)	0.111	0.566
12.	1.00	5.00	0.497	(0.150)	0.082	0.416
		(Loss Rate Not Used)				
	Sum =	100.0				Sum = 8.7

```
 Flood volume = Effective rainfall      0.72(In)
  times area       7.2(Ac.)/[(In)/(Ft.)] =       0.4(Ac.Ft)
 Total soil loss =      0.10(In)
 Total soil loss =     0.063(Ac.Ft)
 Total rainfall =      0.83(In)
 Flood volume =       18934.1 Cubic Feet
 Total soil loss =        2734.6 Cubic Feet
 ---------------------------------------------------------------------
  Peak flow rate of this hydrograph =     14.495(CFS)
 ---------------------------------------------------------------------
 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                          1 - H O U R   S T O R M
                                  R u n o f f     H y d r o g r a p h
 ---------------------------------------------------------------------
                          Hydrograph in   5   Minute intervals ((CFS))

 ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0
20.0
  ---------------------------------------------------------------------
    0+ 5       0.0099      1.43  V Q       |         |         |         |
    0+10       0.0265      2.41  | V Q     |         |         |         |
    0+15       0.0460      2.83  |   VQ    |         |         |         |
    0+20       0.0666      2.99  |    QV   |         |         |         |
    0+25       0.0893      3.29  |     Q V |         |         |         |
    0+30       0.1148      3.71  |      Q  V         |         |         |
```


0+35 0.1438 4.21
0+40 0.1772 4.84
0+45 0.2227 6.62
0+50 0.3226 14.49
0+55 0.3930 10.22
1+ 0 0.4239 4.48
1+ 5 0.4334 1.38
1+10 0.4347 0.19

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	0.85	6.12

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.00	14.40

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.850(In)
Area Averaged 100-Year Rainfall = 2.000(In)

Point rain (area averaged) = 1.323(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.323(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.920	0.128	1.000	0.128

Sum (F) = 0.128

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454

Sum =
100.000 Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	1.30	0.206	(0.150)	0.034	0.173
2. 0.17	1.30	0.206	(0.150)	0.034	0.173
3. 0.25	1.10	0.175	(0.150)	0.029	0.146
4. 0.33	1.50	0.238	(0.150)	0.039	0.199
5. 0.42	1.50	0.238	(0.150)	0.039	0.199
6. 0.50	1.80	0.286	(0.150)	0.047	0.239
7. 0.58	1.50	0.238	(0.150)	0.039	0.199
8. 0.67	1.80	0.286	(0.150)	0.047	0.239
9. 0.75	1.80	0.286	(0.150)	0.047	0.239
10. 0.83	1.50	0.238	(0.150)	0.039	0.199
11. 0.92	1.60	0.254	(0.150)	0.042	0.212
12. 1.00	1.80	0.286	(0.150)	0.047	0.239
13. 1.08	2.20	0.349	(0.150)	0.057	0.292
14. 1.17	2.20	0.349	(0.150)	0.057	0.292
15. 1.25	2.20	0.349	(0.150)	0.057	0.292
16. 1.33	2.00	0.318	(0.150)	0.052	0.265
17. 1.42	2.60	0.413	(0.150)	0.068	0.345
18. 1.50	2.70	0.429	(0.150)	0.070	0.358
19. 1.58	2.40	0.381	(0.150)	0.062	0.319
20. 1.67	2.70	0.429	(0.150)	0.070	0.358
21. 1.75	3.30	0.524	(0.150)	0.086	0.438
22. 1.83	3.10	0.492	(0.150)	0.081	0.411
23. 1.92	2.90	0.460	(0.150)	0.076	0.385
24. 2.00	3.00	0.476	(0.150)	0.078	0.398
25. 2.08	3.10	0.492	(0.150)	0.081	0.411
26. 2.17	4.20	0.667	(0.150)	0.109	0.557
27. 2.25	5.00	0.794	(0.150)	0.130	0.664
28. 2.33	3.50	0.556	(0.150)	0.091	0.465
29. 2.42	6.80	1.080	0.150	(0.177)	0.930
30. 2.50	7.30	1.159	0.150	(0.190)	1.009
31. 2.58	8.20	1.302	0.150	(0.214)	1.152
32. 2.67	5.90	0.937	0.150	(0.154)	0.787
33. 2.75	2.00	0.318	(0.150)	0.052	0.265
34. 2.83	1.80	0.286	(0.150)	0.047	0.239
35. 2.92	1.80	0.286	(0.150)	0.047	0.239
36. 3.00	0.60	0.095	(0.150)	0.016	0.080
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	13.4

Flood volume = Effective rainfall 1.12(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 0.21(In)
Total soil loss = 0.123(Ac.Ft)

Total rainfall = 1.32(In)
Flood volume = 29203.8 Cubic Feet
Total soil loss = 5376.1 Cubic Feet

Peak flow rate of this hydrograph = 7.878(CFS)

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3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0049	0.71	V Q				
0+10	0.0130	1.17	V Q				
0+15	0.0208	1.14	V Q				
0+20	0.0297	1.29	V Q				
0+25	0.0395	1.42	V Q				
0+30	0.0506	1.61	V Q				
0+35	0.0613	1.55	V Q				
0+40	0.0725	1.63	V Q				
0+45	0.0843	1.72	VQ				
0+50	0.0951	1.57	VQ				
0+55	0.1056	1.52	Q				
1+ 0	0.1169	1.64	Q				
1+ 5	0.1303	1.94	Q				
1+10	0.1447	2.10	Q				
1+15	0.1593	2.12	QV				
1+20	0.1732	2.01	Q V				
1+25	0.1888	2.27	Q V				
1+30	0.2062	2.52	Q V				
1+35	0.2229	2.43	Q V				
1+40	0.2401	2.49	Q V				
1+45	0.2601	2.91	Q V				
1+50	0.2810	3.03	Q V				
1+55	0.3009	2.89	Q V				
2+ 0	0.3206	2.86	Q V				
2+ 5	0.3409	2.94	Q V				
2+10	0.3655	3.58	Q V				
2+15	0.3960	4.42	Q V				
2+20	0.4232	3.95	Q V				
2+25	0.4602	5.37	Q V				
2+30	0.5075	6.87	Q V				
2+35	0.5617	7.88	Q V				
2+40	0.6086	6.80	Q V				
2+45	0.6343	3.74	Q V				
2+50	0.6485	2.06	Q V				
2+55	0.6605	1.75	Q V				
3+ 0	0.6679	1.08	Q V				
3+ 5	0.6702	0.32	Q V				
3+10	0.6704	0.04	Q V				

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	1.20	8.64

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.90	20.88

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 1.200(In)
Area Averaged 100-Year Rainfall = 2.900(In)

Point rain (area averaged) = 1.899(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.899(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.920	0.128	1.000	0.128

Sum (F) = 0.128

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454

Sum =
100.000 Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.50	0.114	(0.150)	0.019	0.095
2. 0.17	0.60	0.137	(0.150)	0.022	0.114
3. 0.25	0.60	0.137	(0.150)	0.022	0.114
4. 0.33	0.60	0.137	(0.150)	0.022	0.114
5. 0.42	0.60	0.137	(0.150)	0.022	0.114
6. 0.50	0.70	0.160	(0.150)	0.026	0.133
7. 0.58	0.70	0.160	(0.150)	0.026	0.133
8. 0.67	0.70	0.160	(0.150)	0.026	0.133
9. 0.75	0.70	0.160	(0.150)	0.026	0.133
10. 0.83	0.70	0.160	(0.150)	0.026	0.133
11. 0.92	0.70	0.160	(0.150)	0.026	0.133
12. 1.00	0.80	0.182	(0.150)	0.030	0.152
13. 1.08	0.80	0.182	(0.150)	0.030	0.152
14. 1.17	0.80	0.182	(0.150)	0.030	0.152
15. 1.25	0.80	0.182	(0.150)	0.030	0.152
16. 1.33	0.80	0.182	(0.150)	0.030	0.152
17. 1.42	0.80	0.182	(0.150)	0.030	0.152
18. 1.50	0.80	0.182	(0.150)	0.030	0.152
19. 1.58	0.80	0.182	(0.150)	0.030	0.152
20. 1.67	0.80	0.182	(0.150)	0.030	0.152
21. 1.75	0.80	0.182	(0.150)	0.030	0.152
22. 1.83	0.80	0.182	(0.150)	0.030	0.152
23. 1.92	0.80	0.182	(0.150)	0.030	0.152
24. 2.00	0.90	0.205	(0.150)	0.034	0.171
25. 2.08	0.80	0.182	(0.150)	0.030	0.152
26. 2.17	0.90	0.205	(0.150)	0.034	0.171
27. 2.25	0.90	0.205	(0.150)	0.034	0.171
28. 2.33	0.90	0.205	(0.150)	0.034	0.171
29. 2.42	0.90	0.205	(0.150)	0.034	0.171
30. 2.50	0.90	0.205	(0.150)	0.034	0.171
31. 2.58	0.90	0.205	(0.150)	0.034	0.171
32. 2.67	0.90	0.205	(0.150)	0.034	0.171
33. 2.75	1.00	0.228	(0.150)	0.037	0.191
34. 2.83	1.00	0.228	(0.150)	0.037	0.191
35. 2.92	1.00	0.228	(0.150)	0.037	0.191
36. 3.00	1.00	0.228	(0.150)	0.037	0.191
37. 3.08	1.00	0.228	(0.150)	0.037	0.191
38. 3.17	1.10	0.251	(0.150)	0.041	0.210
39. 3.25	1.10	0.251	(0.150)	0.041	0.210
40. 3.33	1.10	0.251	(0.150)	0.041	0.210
41. 3.42	1.20	0.274	(0.150)	0.045	0.229
42. 3.50	1.30	0.296	(0.150)	0.049	0.248

43.	3.58	1.40	0.319	(0.150)	0.052	0.267
44.	3.67	1.40	0.319	(0.150)	0.052	0.267
45.	3.75	1.50	0.342	(0.150)	0.056	0.286
46.	3.83	1.50	0.342	(0.150)	0.056	0.286
47.	3.92	1.60	0.365	(0.150)	0.060	0.305
48.	4.00	1.60	0.365	(0.150)	0.060	0.305
49.	4.08	1.70	0.387	(0.150)	0.064	0.324
50.	4.17	1.80	0.410	(0.150)	0.067	0.343
51.	4.25	1.90	0.433	(0.150)	0.071	0.362
52.	4.33	2.00	0.456	(0.150)	0.075	0.381
53.	4.42	2.10	0.479	(0.150)	0.078	0.400
54.	4.50	2.10	0.479	(0.150)	0.078	0.400
55.	4.58	2.20	0.501	(0.150)	0.082	0.419
56.	4.67	2.30	0.524	(0.150)	0.086	0.438
57.	4.75	2.40	0.547	(0.150)	0.090	0.457
58.	4.83	2.40	0.547	(0.150)	0.090	0.457
59.	4.92	2.50	0.570	(0.150)	0.093	0.476
60.	5.00	2.60	0.593	(0.150)	0.097	0.495
61.	5.08	3.10	0.707	(0.150)	0.116	0.591
62.	5.17	3.60	0.821	(0.150)	0.135	0.686
63.	5.25	3.90	0.889	(0.150)	0.146	0.743
64.	5.33	4.20	0.957	0.150	(0.157)	0.808
65.	5.42	4.70	1.071	0.150	(0.176)	0.922
66.	5.50	5.60	1.276	0.150	(0.209)	1.127
67.	5.58	1.90	0.433	(0.150)	0.071	0.362
68.	5.67	0.90	0.205	(0.150)	0.034	0.171
69.	5.75	0.60	0.137	(0.150)	0.022	0.114
70.	5.83	0.50	0.114	(0.150)	0.019	0.095
71.	5.92	0.30	0.068	(0.150)	0.011	0.057
72.	6.00	0.20	0.046	(0.150)	0.007	0.038

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.1

Flood volume = Effective rainfall 1.60(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 1.0(Ac.Ft)
Total soil loss = 0.30(In)
Total soil loss = 0.182(Ac.Ft)
Total rainfall = 1.90(In)
Flood volume = 41702.4 Cubic Feet
Total soil loss = 7938.9 Cubic Feet

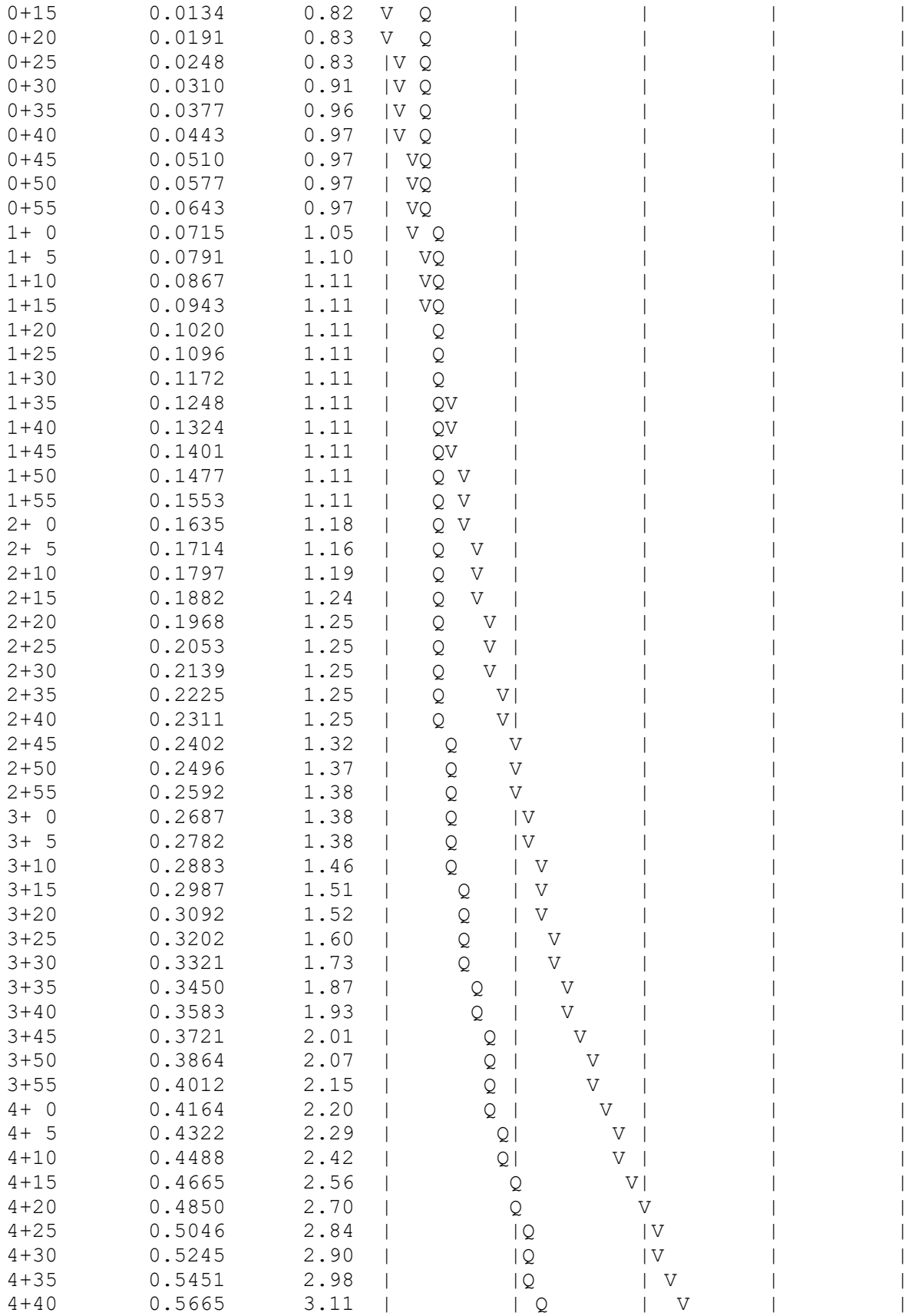
Peak flow rate of this hydrograph = 7.480(CFS)

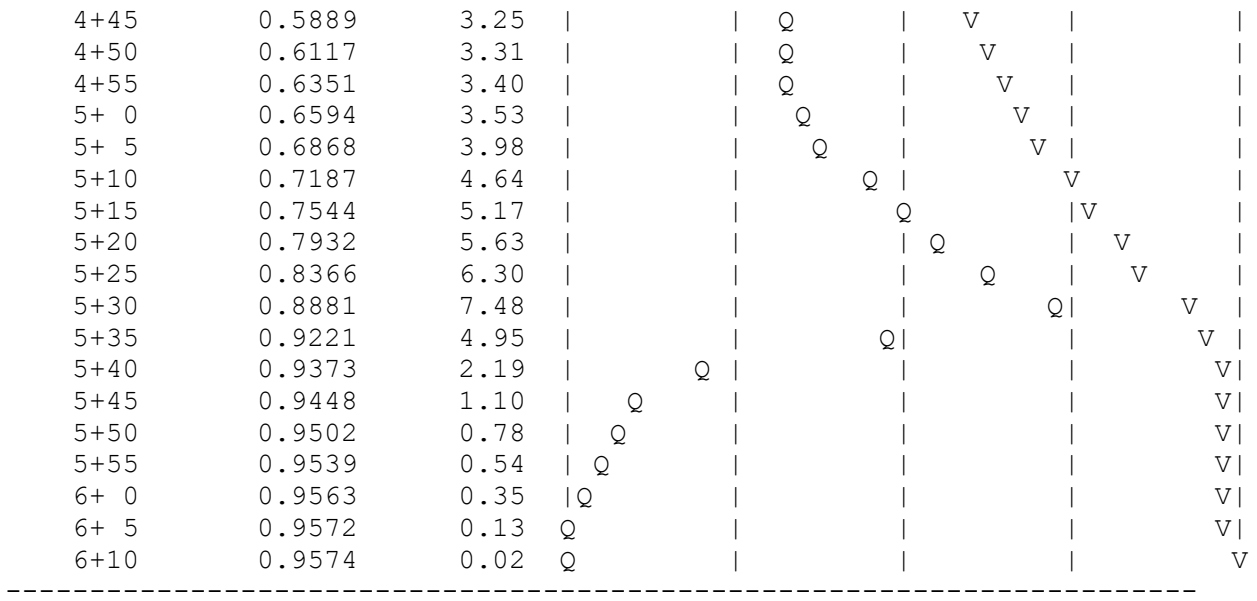
++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0027	0.39	VQ	|	|	|	|
0+10	0.0077	0.73	V Q	|	|	|	|




4+45 0.5889 3.25
4+50 0.6117 3.31
4+55 0.6351 3.40
5+ 0 0.6594 3.53
5+ 5 0.6868 3.98
5+10 0.7187 4.64
5+15 0.7544 5.17
5+20 0.7932 5.63
5+25 0.8366 6.30
5+30 0.8881 7.48
5+35 0.9221 4.95
5+40 0.9373 2.19
5+45 0.9448 1.10
5+50 0.9502 0.78
5+55 0.9539 0.54
6+ 0 0.9563 0.35
6+ 5 0.9572 0.13
6+10 0.9574 0.02

U n i t H y d r o g r a p h A n a l y s i s

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Study date 11/30/23 File: 2177UHP2410.out

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.00	14.40

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	5.90	42.48

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.000(In)
Area Averaged 100-Year Rainfall = 5.900(In)

Point rain (area averaged) = 3.604(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.604(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.920	0.128	1.000	0.128

Sum (F) = 0.128

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454

Sum =
100.000 Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.07	0.029	(0.265)	0.005	0.024
2. 0.17	0.07	0.029	(0.264)	0.005	0.024
3. 0.25	0.07	0.029	(0.263)	0.005	0.024
4. 0.33	0.10	0.043	(0.262)	0.007	0.036
5. 0.42	0.10	0.043	(0.261)	0.007	0.036
6. 0.50	0.10	0.043	(0.260)	0.007	0.036
7. 0.58	0.10	0.043	(0.259)	0.007	0.036
8. 0.67	0.10	0.043	(0.258)	0.007	0.036
9. 0.75	0.10	0.043	(0.257)	0.007	0.036
10. 0.83	0.13	0.058	(0.256)	0.009	0.048
11. 0.92	0.13	0.058	(0.255)	0.009	0.048
12. 1.00	0.13	0.058	(0.254)	0.009	0.048
13. 1.08	0.10	0.043	(0.253)	0.007	0.036
14. 1.17	0.10	0.043	(0.252)	0.007	0.036
15. 1.25	0.10	0.043	(0.251)	0.007	0.036
16. 1.33	0.10	0.043	(0.250)	0.007	0.036
17. 1.42	0.10	0.043	(0.249)	0.007	0.036
18. 1.50	0.10	0.043	(0.248)	0.007	0.036
19. 1.58	0.10	0.043	(0.247)	0.007	0.036
20. 1.67	0.10	0.043	(0.246)	0.007	0.036
21. 1.75	0.10	0.043	(0.245)	0.007	0.036
22. 1.83	0.13	0.058	(0.244)	0.009	0.048
23. 1.92	0.13	0.058	(0.243)	0.009	0.048
24. 2.00	0.13	0.058	(0.242)	0.009	0.048
25. 2.08	0.13	0.058	(0.241)	0.009	0.048
26. 2.17	0.13	0.058	(0.240)	0.009	0.048
27. 2.25	0.13	0.058	(0.239)	0.009	0.048
28. 2.33	0.13	0.058	(0.238)	0.009	0.048
29. 2.42	0.13	0.058	(0.237)	0.009	0.048
30. 2.50	0.13	0.058	(0.236)	0.009	0.048
31. 2.58	0.17	0.072	(0.235)	0.012	0.060
32. 2.67	0.17	0.072	(0.235)	0.012	0.060
33. 2.75	0.17	0.072	(0.234)	0.012	0.060
34. 2.83	0.17	0.072	(0.233)	0.012	0.060
35. 2.92	0.17	0.072	(0.232)	0.012	0.060
36. 3.00	0.17	0.072	(0.231)	0.012	0.060
37. 3.08	0.17	0.072	(0.230)	0.012	0.060
38. 3.17	0.17	0.072	(0.229)	0.012	0.060
39. 3.25	0.17	0.072	(0.228)	0.012	0.060
40. 3.33	0.17	0.072	(0.227)	0.012	0.060
41. 3.42	0.17	0.072	(0.226)	0.012	0.060
42. 3.50	0.17	0.072	(0.225)	0.012	0.060

43. 3.58	0.17	0.072	(0.224)	0.012	0.060
44. 3.67	0.17	0.072	(0.223)	0.012	0.060
45. 3.75	0.17	0.072	(0.222)	0.012	0.060
46. 3.83	0.20	0.087	(0.221)	0.014	0.072
47. 3.92	0.20	0.087	(0.220)	0.014	0.072
48. 4.00	0.20	0.087	(0.219)	0.014	0.072
49. 4.08	0.20	0.087	(0.218)	0.014	0.072
50. 4.17	0.20	0.087	(0.217)	0.014	0.072
51. 4.25	0.20	0.087	(0.217)	0.014	0.072
52. 4.33	0.23	0.101	(0.216)	0.017	0.084
53. 4.42	0.23	0.101	(0.215)	0.017	0.084
54. 4.50	0.23	0.101	(0.214)	0.017	0.084
55. 4.58	0.23	0.101	(0.213)	0.017	0.084
56. 4.67	0.23	0.101	(0.212)	0.017	0.084
57. 4.75	0.23	0.101	(0.211)	0.017	0.084
58. 4.83	0.27	0.115	(0.210)	0.019	0.096
59. 4.92	0.27	0.115	(0.209)	0.019	0.096
60. 5.00	0.27	0.115	(0.208)	0.019	0.096
61. 5.08	0.20	0.087	(0.207)	0.014	0.072
62. 5.17	0.20	0.087	(0.207)	0.014	0.072
63. 5.25	0.20	0.087	(0.206)	0.014	0.072
64. 5.33	0.23	0.101	(0.205)	0.017	0.084
65. 5.42	0.23	0.101	(0.204)	0.017	0.084
66. 5.50	0.23	0.101	(0.203)	0.017	0.084
67. 5.58	0.27	0.115	(0.202)	0.019	0.096
68. 5.67	0.27	0.115	(0.201)	0.019	0.096
69. 5.75	0.27	0.115	(0.200)	0.019	0.096
70. 5.83	0.27	0.115	(0.199)	0.019	0.096
71. 5.92	0.27	0.115	(0.198)	0.019	0.096
72. 6.00	0.27	0.115	(0.198)	0.019	0.096
73. 6.08	0.30	0.130	(0.197)	0.021	0.108
74. 6.17	0.30	0.130	(0.196)	0.021	0.108
75. 6.25	0.30	0.130	(0.195)	0.021	0.108
76. 6.33	0.30	0.130	(0.194)	0.021	0.108
77. 6.42	0.30	0.130	(0.193)	0.021	0.108
78. 6.50	0.30	0.130	(0.192)	0.021	0.108
79. 6.58	0.33	0.144	(0.192)	0.024	0.121
80. 6.67	0.33	0.144	(0.191)	0.024	0.121
81. 6.75	0.33	0.144	(0.190)	0.024	0.121
82. 6.83	0.33	0.144	(0.189)	0.024	0.121
83. 6.92	0.33	0.144	(0.188)	0.024	0.121
84. 7.00	0.33	0.144	(0.187)	0.024	0.121
85. 7.08	0.33	0.144	(0.186)	0.024	0.121
86. 7.17	0.33	0.144	(0.186)	0.024	0.121
87. 7.25	0.33	0.144	(0.185)	0.024	0.121
88. 7.33	0.37	0.159	(0.184)	0.026	0.133
89. 7.42	0.37	0.159	(0.183)	0.026	0.133
90. 7.50	0.37	0.159	(0.182)	0.026	0.133
91. 7.58	0.40	0.173	(0.181)	0.028	0.145
92. 7.67	0.40	0.173	(0.180)	0.028	0.145
93. 7.75	0.40	0.173	(0.180)	0.028	0.145
94. 7.83	0.43	0.187	(0.179)	0.031	0.157
95. 7.92	0.43	0.187	(0.178)	0.031	0.157
96. 8.00	0.43	0.187	(0.177)	0.031	0.157

97.	8.08	0.50	0.216	(0.176)	0.035	0.181
98.	8.17	0.50	0.216	(0.176)	0.035	0.181
99.	8.25	0.50	0.216	(0.175)	0.035	0.181
100.	8.33	0.50	0.216	(0.174)	0.035	0.181
101.	8.42	0.50	0.216	(0.173)	0.035	0.181
102.	8.50	0.50	0.216	(0.172)	0.035	0.181
103.	8.58	0.53	0.231	(0.171)	0.038	0.193
104.	8.67	0.53	0.231	(0.171)	0.038	0.193
105.	8.75	0.53	0.231	(0.170)	0.038	0.193
106.	8.83	0.57	0.245	(0.169)	0.040	0.205
107.	8.92	0.57	0.245	(0.168)	0.040	0.205
108.	9.00	0.57	0.245	(0.167)	0.040	0.205
109.	9.08	0.63	0.274	(0.167)	0.045	0.229
110.	9.17	0.63	0.274	(0.166)	0.045	0.229
111.	9.25	0.63	0.274	(0.165)	0.045	0.229
112.	9.33	0.67	0.288	(0.164)	0.047	0.241
113.	9.42	0.67	0.288	(0.164)	0.047	0.241
114.	9.50	0.67	0.288	(0.163)	0.047	0.241
115.	9.58	0.70	0.303	(0.162)	0.050	0.253
116.	9.67	0.70	0.303	(0.161)	0.050	0.253
117.	9.75	0.70	0.303	(0.160)	0.050	0.253
118.	9.83	0.73	0.317	(0.160)	0.052	0.265
119.	9.92	0.73	0.317	(0.159)	0.052	0.265
120.	10.00	0.73	0.317	(0.158)	0.052	0.265
121.	10.08	0.50	0.216	(0.157)	0.035	0.181
122.	10.17	0.50	0.216	(0.157)	0.035	0.181
123.	10.25	0.50	0.216	(0.156)	0.035	0.181
124.	10.33	0.50	0.216	(0.155)	0.035	0.181
125.	10.42	0.50	0.216	(0.154)	0.035	0.181
126.	10.50	0.50	0.216	(0.154)	0.035	0.181
127.	10.58	0.67	0.288	(0.153)	0.047	0.241
128.	10.67	0.67	0.288	(0.152)	0.047	0.241
129.	10.75	0.67	0.288	(0.151)	0.047	0.241
130.	10.83	0.67	0.288	(0.151)	0.047	0.241
131.	10.92	0.67	0.288	(0.150)	0.047	0.241
132.	11.00	0.67	0.288	(0.149)	0.047	0.241
133.	11.08	0.63	0.274	(0.148)	0.045	0.229
134.	11.17	0.63	0.274	(0.148)	0.045	0.229
135.	11.25	0.63	0.274	(0.147)	0.045	0.229
136.	11.33	0.63	0.274	(0.146)	0.045	0.229
137.	11.42	0.63	0.274	(0.145)	0.045	0.229
138.	11.50	0.63	0.274	(0.145)	0.045	0.229
139.	11.58	0.57	0.245	(0.144)	0.040	0.205
140.	11.67	0.57	0.245	(0.143)	0.040	0.205
141.	11.75	0.57	0.245	(0.143)	0.040	0.205
142.	11.83	0.60	0.260	(0.142)	0.043	0.217
143.	11.92	0.60	0.260	(0.141)	0.043	0.217
144.	12.00	0.60	0.260	(0.140)	0.043	0.217
145.	12.08	0.83	0.360	(0.140)	0.059	0.301
146.	12.17	0.83	0.360	(0.139)	0.059	0.301
147.	12.25	0.83	0.360	(0.138)	0.059	0.301
148.	12.33	0.87	0.375	(0.138)	0.061	0.313
149.	12.42	0.87	0.375	(0.137)	0.061	0.313
150.	12.50	0.87	0.375	(0.136)	0.061	0.313

151.	12.58	0.93	0.404	(0.136)	0.066	0.337
152.	12.67	0.93	0.404	(0.135)	0.066	0.337
153.	12.75	0.93	0.404	(0.134)	0.066	0.337
154.	12.83	0.97	0.418	(0.134)	0.069	0.350
155.	12.92	0.97	0.418	(0.133)	0.069	0.350
156.	13.00	0.97	0.418	(0.132)	0.069	0.350
157.	13.08	1.13	0.490	(0.132)	0.080	0.410
158.	13.17	1.13	0.490	(0.131)	0.080	0.410
159.	13.25	1.13	0.490	(0.130)	0.080	0.410
160.	13.33	1.13	0.490	(0.130)	0.080	0.410
161.	13.42	1.13	0.490	(0.129)	0.080	0.410
162.	13.50	1.13	0.490	(0.128)	0.080	0.410
163.	13.58	0.77	0.332	(0.128)	0.054	0.277
164.	13.67	0.77	0.332	(0.127)	0.054	0.277
165.	13.75	0.77	0.332	(0.126)	0.054	0.277
166.	13.83	0.77	0.332	(0.126)	0.054	0.277
167.	13.92	0.77	0.332	(0.125)	0.054	0.277
168.	14.00	0.77	0.332	(0.124)	0.054	0.277
169.	14.08	0.90	0.389	(0.124)	0.064	0.325
170.	14.17	0.90	0.389	(0.123)	0.064	0.325
171.	14.25	0.90	0.389	(0.122)	0.064	0.325
172.	14.33	0.87	0.375	(0.122)	0.061	0.313
173.	14.42	0.87	0.375	(0.121)	0.061	0.313
174.	14.50	0.87	0.375	(0.121)	0.061	0.313
175.	14.58	0.87	0.375	(0.120)	0.061	0.313
176.	14.67	0.87	0.375	(0.119)	0.061	0.313
177.	14.75	0.87	0.375	(0.119)	0.061	0.313
178.	14.83	0.83	0.360	(0.118)	0.059	0.301
179.	14.92	0.83	0.360	(0.118)	0.059	0.301
180.	15.00	0.83	0.360	(0.117)	0.059	0.301
181.	15.08	0.80	0.346	(0.116)	0.057	0.289
182.	15.17	0.80	0.346	(0.116)	0.057	0.289
183.	15.25	0.80	0.346	(0.115)	0.057	0.289
184.	15.33	0.77	0.332	(0.115)	0.054	0.277
185.	15.42	0.77	0.332	(0.114)	0.054	0.277
186.	15.50	0.77	0.332	(0.113)	0.054	0.277
187.	15.58	0.63	0.274	(0.113)	0.045	0.229
188.	15.67	0.63	0.274	(0.112)	0.045	0.229
189.	15.75	0.63	0.274	(0.112)	0.045	0.229
190.	15.83	0.63	0.274	(0.111)	0.045	0.229
191.	15.92	0.63	0.274	(0.111)	0.045	0.229
192.	16.00	0.63	0.274	(0.110)	0.045	0.229
193.	16.08	0.13	0.058	(0.109)	0.009	0.048
194.	16.17	0.13	0.058	(0.109)	0.009	0.048
195.	16.25	0.13	0.058	(0.108)	0.009	0.048
196.	16.33	0.13	0.058	(0.108)	0.009	0.048
197.	16.42	0.13	0.058	(0.107)	0.009	0.048
198.	16.50	0.13	0.058	(0.107)	0.009	0.048
199.	16.58	0.10	0.043	(0.106)	0.007	0.036
200.	16.67	0.10	0.043	(0.106)	0.007	0.036
201.	16.75	0.10	0.043	(0.105)	0.007	0.036
202.	16.83	0.10	0.043	(0.104)	0.007	0.036
203.	16.92	0.10	0.043	(0.104)	0.007	0.036
204.	17.00	0.10	0.043	(0.103)	0.007	0.036

205. 17.08	0.17	0.072	(0.103)	0.012	0.060
206. 17.17	0.17	0.072	(0.102)	0.012	0.060
207. 17.25	0.17	0.072	(0.102)	0.012	0.060
208. 17.33	0.17	0.072	(0.101)	0.012	0.060
209. 17.42	0.17	0.072	(0.101)	0.012	0.060
210. 17.50	0.17	0.072	(0.100)	0.012	0.060
211. 17.58	0.17	0.072	(0.100)	0.012	0.060
212. 17.67	0.17	0.072	(0.099)	0.012	0.060
213. 17.75	0.17	0.072	(0.099)	0.012	0.060
214. 17.83	0.13	0.058	(0.098)	0.009	0.048
215. 17.92	0.13	0.058	(0.098)	0.009	0.048
216. 18.00	0.13	0.058	(0.097)	0.009	0.048
217. 18.08	0.13	0.058	(0.097)	0.009	0.048
218. 18.17	0.13	0.058	(0.096)	0.009	0.048
219. 18.25	0.13	0.058	(0.096)	0.009	0.048
220. 18.33	0.13	0.058	(0.095)	0.009	0.048
221. 18.42	0.13	0.058	(0.095)	0.009	0.048
222. 18.50	0.13	0.058	(0.095)	0.009	0.048
223. 18.58	0.10	0.043	(0.094)	0.007	0.036
224. 18.67	0.10	0.043	(0.094)	0.007	0.036
225. 18.75	0.10	0.043	(0.093)	0.007	0.036
226. 18.83	0.07	0.029	(0.093)	0.005	0.024
227. 18.92	0.07	0.029	(0.092)	0.005	0.024
228. 19.00	0.07	0.029	(0.092)	0.005	0.024
229. 19.08	0.10	0.043	(0.091)	0.007	0.036
230. 19.17	0.10	0.043	(0.091)	0.007	0.036
231. 19.25	0.10	0.043	(0.091)	0.007	0.036
232. 19.33	0.13	0.058	(0.090)	0.009	0.048
233. 19.42	0.13	0.058	(0.090)	0.009	0.048
234. 19.50	0.13	0.058	(0.089)	0.009	0.048
235. 19.58	0.10	0.043	(0.089)	0.007	0.036
236. 19.67	0.10	0.043	(0.089)	0.007	0.036
237. 19.75	0.10	0.043	(0.088)	0.007	0.036
238. 19.83	0.07	0.029	(0.088)	0.005	0.024
239. 19.92	0.07	0.029	(0.087)	0.005	0.024
240. 20.00	0.07	0.029	(0.087)	0.005	0.024
241. 20.08	0.10	0.043	(0.087)	0.007	0.036
242. 20.17	0.10	0.043	(0.086)	0.007	0.036
243. 20.25	0.10	0.043	(0.086)	0.007	0.036
244. 20.33	0.10	0.043	(0.085)	0.007	0.036
245. 20.42	0.10	0.043	(0.085)	0.007	0.036
246. 20.50	0.10	0.043	(0.085)	0.007	0.036
247. 20.58	0.10	0.043	(0.084)	0.007	0.036
248. 20.67	0.10	0.043	(0.084)	0.007	0.036
249. 20.75	0.10	0.043	(0.084)	0.007	0.036
250. 20.83	0.07	0.029	(0.083)	0.005	0.024
251. 20.92	0.07	0.029	(0.083)	0.005	0.024
252. 21.00	0.07	0.029	(0.083)	0.005	0.024
253. 21.08	0.10	0.043	(0.082)	0.007	0.036
254. 21.17	0.10	0.043	(0.082)	0.007	0.036
255. 21.25	0.10	0.043	(0.082)	0.007	0.036
256. 21.33	0.07	0.029	(0.081)	0.005	0.024
257. 21.42	0.07	0.029	(0.081)	0.005	0.024
258. 21.50	0.07	0.029	(0.081)	0.005	0.024

259.	21.58	0.10	0.043	(0.080)	0.007	0.036
260.	21.67	0.10	0.043	(0.080)	0.007	0.036
261.	21.75	0.10	0.043	(0.080)	0.007	0.036
262.	21.83	0.07	0.029	(0.080)	0.005	0.024
263.	21.92	0.07	0.029	(0.079)	0.005	0.024
264.	22.00	0.07	0.029	(0.079)	0.005	0.024
265.	22.08	0.10	0.043	(0.079)	0.007	0.036
266.	22.17	0.10	0.043	(0.079)	0.007	0.036
267.	22.25	0.10	0.043	(0.078)	0.007	0.036
268.	22.33	0.07	0.029	(0.078)	0.005	0.024
269.	22.42	0.07	0.029	(0.078)	0.005	0.024
270.	22.50	0.07	0.029	(0.078)	0.005	0.024
271.	22.58	0.07	0.029	(0.077)	0.005	0.024
272.	22.67	0.07	0.029	(0.077)	0.005	0.024
273.	22.75	0.07	0.029	(0.077)	0.005	0.024
274.	22.83	0.07	0.029	(0.077)	0.005	0.024
275.	22.92	0.07	0.029	(0.077)	0.005	0.024
276.	23.00	0.07	0.029	(0.076)	0.005	0.024
277.	23.08	0.07	0.029	(0.076)	0.005	0.024
278.	23.17	0.07	0.029	(0.076)	0.005	0.024
279.	23.25	0.07	0.029	(0.076)	0.005	0.024
280.	23.33	0.07	0.029	(0.076)	0.005	0.024
281.	23.42	0.07	0.029	(0.076)	0.005	0.024
282.	23.50	0.07	0.029	(0.075)	0.005	0.024
283.	23.58	0.07	0.029	(0.075)	0.005	0.024
284.	23.67	0.07	0.029	(0.075)	0.005	0.024
285.	23.75	0.07	0.029	(0.075)	0.005	0.024
286.	23.83	0.07	0.029	(0.075)	0.005	0.024
287.	23.92	0.07	0.029	(0.075)	0.005	0.024
288.	24.00	0.07	0.029	(0.075)	0.005	0.024

(Loss Rate Not Used)

Sum = 100.0 Sum = 36.2

Flood volume = Effective rainfall 3.01(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 1.8(Ac.Ft)
Total soil loss = 0.59(In)
Total soil loss = 0.355(Ac.Ft)
Total rainfall = 3.60(In)
Flood volume = 78755.9 Cubic Feet
Total soil loss = 15449.7 Cubic Feet

Peak flow rate of this hydrograph = 2.975(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0007	0.10	Q	|	|	|	|
0+10	0.0018	0.16	Q	|	|	|	|

0+15	0.0030	0.18	Q	|	|	|	|
0+20	0.0046	0.22	Q	|	|	|	|
0+25	0.0063	0.26	VQ	|	|	|	|
0+30	0.0081	0.26	VQ	|	|	|	|
0+35	0.0099	0.26	VQ	|	|	|	|
0+40	0.0118	0.26	VQ	|	|	|	|
0+45	0.0136	0.26	VQ	|	|	|	|
0+50	0.0157	0.31	VQ	|	|	|	|
0+55	0.0181	0.34	VQ	|	|	|	|
1+ 0	0.0205	0.35	VQ	|	|	|	|
1+ 5	0.0226	0.30	VQ	|	|	|	|
1+10	0.0244	0.27	VQ	|	|	|	|
1+15	0.0262	0.26	VQ	|	|	|	|
1+20	0.0280	0.26	VQ	|	|	|	|
1+25	0.0298	0.26	VQ	|	|	|	|
1+30	0.0316	0.26	VQ	|	|	|	|
1+35	0.0335	0.26	VQ	|	|	|	|
1+40	0.0353	0.26	VQ	|	|	|	|
1+45	0.0371	0.26	VQ	|	|	|	|
1+50	0.0392	0.31	VQ	|	|	|	|
1+55	0.0416	0.34	VQ	|	|	|	|
2+ 0	0.0440	0.35	VQ	|	|	|	|
2+ 5	0.0464	0.35	|Q	|	|	|	|
2+10	0.0488	0.35	|Q	|	|	|	|
2+15	0.0512	0.35	|Q	|	|	|	|
2+20	0.0536	0.35	|Q	|	|	|	|
2+25	0.0561	0.35	|Q	|	|	|	|
2+30	0.0585	0.35	|Q	|	|	|	|
2+35	0.0612	0.40	|Q	|	|	|	|
2+40	0.0642	0.43	|Q	|	|	|	|
2+45	0.0672	0.44	|Q	|	|	|	|
2+50	0.0702	0.44	|Q	|	|	|	|
2+55	0.0732	0.44	|Q	|	|	|	|
3+ 0	0.0762	0.44	|Q	|	|	|	|
3+ 5	0.0793	0.44	|Q	|	|	|	|
3+10	0.0823	0.44	|Q	|	|	|	|
3+15	0.0853	0.44	|Q	|	|	|	|
3+20	0.0883	0.44	|Q	|	|	|	|
3+25	0.0913	0.44	|QV	|	|	|	|
3+30	0.0943	0.44	|QV	|	|	|	|
3+35	0.0973	0.44	|QV	|	|	|	|
3+40	0.1004	0.44	|QV	|	|	|	|
3+45	0.1034	0.44	|QV	|	|	|	|
3+50	0.1067	0.49	|QV	|	|	|	|
3+55	0.1103	0.52	| Q	|	|	|	|
4+ 0	0.1139	0.53	| Q	|	|	|	|
4+ 5	0.1175	0.53	| Q	|	|	|	|
4+10	0.1211	0.53	| Q	|	|	|	|
4+15	0.1248	0.53	| Q	|	|	|	|
4+20	0.1287	0.57	| Q	|	|	|	|
4+25	0.1329	0.61	| Q	|	|	|	|
4+30	0.1371	0.61	| QV	|	|	|	|
4+35	0.1413	0.61	| QV	|	|	|	|
4+40	0.1456	0.61	| QV	|	|	|	|

4+45	0.1498	0.61	QV			
4+50	0.1543	0.66	QV			
4+55	0.1591	0.69	QV			
5+ 0	0.1639	0.70	QV			
5+ 5	0.1681	0.60	QV			
5+10	0.1718	0.54	QV			
5+15	0.1754	0.53	QV			
5+20	0.1793	0.57	QV			
5+25	0.1835	0.61	Q V			
5+30	0.1877	0.61	Q V			
5+35	0.1923	0.66	Q V			
5+40	0.1971	0.69	Q V			
5+45	0.2019	0.70	Q V			
5+50	0.2067	0.70	Q V			
5+55	0.2115	0.70	Q V			
6+ 0	0.2164	0.70	Q V			
6+ 5	0.2215	0.75	Q V			
6+10	0.2269	0.78	Q V			
6+15	0.2323	0.79	Q V			
6+20	0.2378	0.79	Q V			
6+25	0.2432	0.79	Q V			
6+30	0.2486	0.79	Q V			
6+35	0.2544	0.84	Q V			
6+40	0.2604	0.87	Q V			
6+45	0.2664	0.88	Q V			
6+50	0.2724	0.88	Q V			
6+55	0.2784	0.88	Q V			
7+ 0	0.2845	0.88	Q V			
7+ 5	0.2905	0.88	Q V			
7+10	0.2965	0.88	Q V			
7+15	0.3026	0.88	Q V			
7+20	0.3089	0.92	Q V			
7+25	0.3155	0.96	Q V			
7+30	0.3221	0.96	Q V			
7+35	0.3291	1.01	Q V			
7+40	0.3363	1.04	Q V			
7+45	0.3435	1.05	Q V			
7+50	0.3511	1.10	Q V			
7+55	0.3589	1.13	Q V			
8+ 0	0.3667	1.14	Q V			
8+ 5	0.3753	1.24	Q V			
8+10	0.3842	1.30	Q V			
8+15	0.3933	1.31	Q V			
8+20	0.4023	1.31	Q V			
8+25	0.4113	1.31	Q V			
8+30	0.4204	1.31	Q V			
8+35	0.4298	1.36	Q V			
8+40	0.4394	1.39	Q V			
8+45	0.4490	1.40	Q V			
8+50	0.4590	1.45	Q V			
8+55	0.4692	1.48	Q V			
9+ 0	0.4794	1.49	Q V			
9+ 5	0.4904	1.59	Q V			
9+10	0.5017	1.65	Q V			

9+15	0.5132	1.66	Q	V			
9+20	0.5250	1.71	Q	V			
9+25	0.5370	1.74	Q	V			
9+30	0.5491	1.75	Q	V			
9+35	0.5615	1.80	Q	V			
9+40	0.5741	1.83	Q	V			
9+45	0.5867	1.84	Q	V			
9+50	0.5997	1.89	Q	V			
9+55	0.6129	1.92	Q	V			
10+ 0	0.6262	1.93	Q	V			
10+ 5	0.6371	1.58	Q	V			
10+10	0.6464	1.35	Q	V			
10+15	0.6554	1.31	Q	V			
10+20	0.6645	1.31	Q	V			
10+25	0.6735	1.31	Q	V			
10+30	0.6825	1.31	Q	V			
10+35	0.6933	1.56	Q	V			
10+40	0.7051	1.72	Q	V			
10+45	0.7172	1.75	Q	V			
10+50	0.7293	1.75	Q	V			
10+55	0.7413	1.75	Q	V			
11+ 0	0.7534	1.75	Q	V			
11+ 5	0.7651	1.70	Q	V			
11+10	0.7766	1.67	Q	V			
11+15	0.7880	1.66	Q	V			
11+20	0.7995	1.66	Q	V			
11+25	0.8109	1.66	Q	V			
11+30	0.8224	1.66	Q	V			
11+35	0.8331	1.56	Q	V			
11+40	0.8435	1.50	Q	V			
11+45	0.8537	1.49	Q	V			
11+50	0.8643	1.54	Q	V			
11+55	0.8751	1.57	Q	V			
12+ 0	0.8859	1.58	Q	V			
12+ 5	0.8992	1.92	Q	V			
12+10	0.9140	2.15	Q	V			
12+15	0.9290	2.19	Q	V			
12+20	0.9445	2.24	Q	V			
12+25	0.9601	2.27	Q	V			
12+30	0.9758	2.28	Q	V			
12+35	0.9921	2.37	Q	V			
12+40	1.0089	2.44	Q	V			
12+45	1.0258	2.45	Q	V			
12+50	1.0430	2.50	Q	V			
12+55	1.0604	2.53	Q	V			
13+ 0	1.0779	2.54	Q	V			
13+ 5	1.0971	2.79	Q	V			
13+10	1.1174	2.95	Q	V			
13+15	1.1379	2.98	Q	V			
13+20	1.1584	2.98	Q	V			
13+25	1.1789	2.98	Q	V			
13+30	1.1994	2.98	Q	V			
13+35	1.2161	2.43	Q	V			
13+40	1.2304	2.07	Q	V			

13+45	1.2442	2.01	| Q |	|	V |	|
13+50	1.2581	2.01	| Q |	|	V |	|
13+55	1.2720	2.01	| Q |	|	V |	|
14+ 0	1.2858	2.01	| Q |	|	V |	|
14+ 5	1.3010	2.21	| Q |	|	V |	|
14+10	1.3172	2.34	| Q|	|	V|	|
14+15	1.3334	2.36	| Q|	|	V|	|
14+20	1.3494	2.31	| Q|	|	V|	|
14+25	1.3651	2.28	| Q|	|	V	|
14+30	1.3807	2.28	| Q|	|	V	|
14+35	1.3964	2.28	| Q|	|	V	|
14+40	1.4121	2.28	| Q|	|	|V	|
14+45	1.4278	2.28	| Q|	|	|V	|
14+50	1.4431	2.23	| Q |	|	|V	|
14+55	1.4582	2.19	| Q |	|	| V	|
15+ 0	1.4733	2.19	| Q |	|	| V	|
15+ 5	1.4880	2.14	| Q |	|	| V	|
15+10	1.5025	2.11	| Q |	|	| V	|
15+15	1.5169	2.10	| Q |	|	| V	|
15+20	1.5311	2.05	| Q |	|	| V	|
15+25	1.5450	2.02	| Q |	|	| V	|
15+30	1.5588	2.01	| Q |	|	| V	|
15+35	1.5713	1.81	| Q |	|	| V	|
15+40	1.5829	1.68	| Q |	|	| V	|
15+45	1.5944	1.66	| Q |	|	| V	|
15+50	1.6058	1.66	| Q |	|	| V	|
15+55	1.6173	1.66	| Q |	|	| V	|
16+ 0	1.6287	1.66	| Q |	|	| V	|
16+ 5	1.6351	0.92	| Q |	|	| V	|
16+10	1.6380	0.43	|Q |	|	| V	|
16+15	1.6405	0.35	|Q |	|	| V	|
16+20	1.6429	0.35	|Q |	|	| V	|
16+25	1.6453	0.35	|Q |	|	| V	|
16+30	1.6477	0.35	|Q |	|	| V	|
16+35	1.6498	0.30	|Q |	|	| V	|
16+40	1.6516	0.27	|Q |	|	| V	|
16+45	1.6534	0.26	|Q |	|	| V	|
16+50	1.6552	0.26	|Q |	|	| V	|
16+55	1.6570	0.26	|Q |	|	| V	|
17+ 0	1.6588	0.26	|Q |	|	| V	|
17+ 5	1.6613	0.36	|Q |	|	| V	|
17+10	1.6643	0.43	|Q |	|	| V	|
17+15	1.6673	0.44	|Q |	|	| V	|
17+20	1.6703	0.44	|Q |	|	| V	|
17+25	1.6733	0.44	|Q |	|	| V	|
17+30	1.6763	0.44	|Q |	|	| V	|
17+35	1.6793	0.44	|Q |	|	| V	|
17+40	1.6823	0.44	|Q |	|	| V	|
17+45	1.6854	0.44	|Q |	|	| V	|
17+50	1.6880	0.39	|Q |	|	| V	|
17+55	1.6905	0.36	|Q |	|	| V	|
18+ 0	1.6929	0.35	|Q |	|	| V	|
18+ 5	1.6953	0.35	|Q |	|	| V	|
18+10	1.6977	0.35	|Q |	|	| V	|

18+15	1.7001	0.35	|Q	|	|	|	V |
18+20	1.7025	0.35	|Q	|	|	|	V |
18+25	1.7049	0.35	|Q	|	|	|	V |
18+30	1.7073	0.35	|Q	|	|	|	V |
18+35	1.7094	0.30	|Q	|	|	|	V |
18+40	1.7113	0.27	|Q	|	|	|	V |
18+45	1.7131	0.26	|Q	|	|	|	V |
18+50	1.7145	0.21	Q	|	|	|	V |
18+55	1.7158	0.18	Q	|	|	|	V |
19+ 0	1.7170	0.18	Q	|	|	|	V |
19+ 5	1.7185	0.22	Q	|	|	|	V |
19+10	1.7203	0.26	|Q	|	|	|	V |
19+15	1.7221	0.26	|Q	|	|	|	V |
19+20	1.7243	0.31	|Q	|	|	|	V |
19+25	1.7266	0.34	|Q	|	|	|	V |
19+30	1.7290	0.35	|Q	|	|	|	V |
19+35	1.7311	0.30	|Q	|	|	|	V |
19+40	1.7330	0.27	|Q	|	|	|	V |
19+45	1.7348	0.26	|Q	|	|	|	V |
19+50	1.7362	0.21	Q	|	|	|	V |
19+55	1.7375	0.18	Q	|	|	|	V |
20+ 0	1.7387	0.18	Q	|	|	|	V |
20+ 5	1.7402	0.22	Q	|	|	|	V |
20+10	1.7420	0.26	|Q	|	|	|	V |
20+15	1.7438	0.26	|Q	|	|	|	V |
20+20	1.7456	0.26	|Q	|	|	|	V |
20+25	1.7474	0.26	|Q	|	|	|	V |
20+30	1.7492	0.26	|Q	|	|	|	V |
20+35	1.7510	0.26	|Q	|	|	|	V |
20+40	1.7528	0.26	|Q	|	|	|	V |
20+45	1.7547	0.26	|Q	|	|	|	V |
20+50	1.7561	0.21	Q	|	|	|	V |
20+55	1.7574	0.18	Q	|	|	|	V |
21+ 0	1.7586	0.18	Q	|	|	|	V |
21+ 5	1.7601	0.22	Q	|	|	|	V |
21+10	1.7619	0.26	|Q	|	|	|	V |
21+15	1.7637	0.26	|Q	|	|	|	V|
21+20	1.7652	0.21	Q	|	|	|	V|
21+25	1.7664	0.18	Q	|	|	|	V|
21+30	1.7676	0.18	Q	|	|	|	V|
21+35	1.7692	0.22	Q	|	|	|	V|
21+40	1.7709	0.26	|Q	|	|	|	V|
21+45	1.7727	0.26	|Q	|	|	|	V|
21+50	1.7742	0.21	Q	|	|	|	V|
21+55	1.7754	0.18	Q	|	|	|	V|
22+ 0	1.7767	0.18	Q	|	|	|	V|
22+ 5	1.7782	0.22	Q	|	|	|	V|
22+10	1.7800	0.26	|Q	|	|	|	V|
22+15	1.7818	0.26	|Q	|	|	|	V|
22+20	1.7832	0.21	Q	|	|	|	V|
22+25	1.7845	0.18	Q	|	|	|	V|
22+30	1.7857	0.18	Q	|	|	|	V|
22+35	1.7869	0.18	Q	|	|	|	V|
22+40	1.7881	0.18	Q	|	|	|	V|

22+45	1.7893	0.18	Q	|	|	|	V|
22+50	1.7905	0.18	Q	|	|	|	V|
22+55	1.7917	0.18	Q	|	|	|	V|
23+ 0	1.7929	0.18	Q	|	|	|	V|
23+ 5	1.7941	0.18	Q	|	|	|	V|
23+10	1.7953	0.18	Q	|	|	|	V|
23+15	1.7965	0.18	Q	|	|	|	V|
23+20	1.7977	0.18	Q	|	|	|	V|
23+25	1.7990	0.18	Q	|	|	|	V|
23+30	1.8002	0.18	Q	|	|	|	V|
23+35	1.8014	0.18	Q	|	|	|	V|
23+40	1.8026	0.18	Q	|	|	|	V|
23+45	1.8038	0.18	Q	|	|	|	V|
23+50	1.8050	0.18	Q	|	|	|	V|
23+55	1.8062	0.18	Q	|	|	|	V|
24+ 0	1.8074	0.18	Q	|	|	|	V|
24+ 5	1.8079	0.08	Q	|	|	|	V|
24+10	1.8080	0.01	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	0.50	3.60

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	1.30	9.36

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.500(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 1.300(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.300(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.920	0.128	1.000	0.128

Sum (F) = 0.128

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.164

Slope of intensity-duration curve for a 1 hour storm =0.5000

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102

```
              2   0.167        597.229         37.205              2.700
              3   0.250        895.844          6.258              0.454
                                                                 Sum =
100.000   Sum=       7.256
-------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Loss rate(In./Hr) Low	Effective (In/Hr)
1.	0.08	4.20	0.655	(0.150)	0.107	0.548
2.	0.17	4.30	0.671	(0.150)	0.110	0.561
3.	0.25	5.00	0.780	(0.150)	0.128	0.652
4.	0.33	5.00	0.780	(0.150)	0.128	0.652
5.	0.42	5.80	0.905	(0.150)	0.148	0.756
6.	0.50	6.50	1.014	0.150	(0.166)	0.864
7.	0.58	7.40	1.154	0.150	(0.189)	1.005
8.	0.67	8.60	1.342	0.150	(0.220)	1.192
9.	0.75	12.30	1.919	0.150	(0.315)	1.769
10.	0.83	29.10	4.539	0.150	(0.744)	4.390
11.	0.92	6.80	1.061	0.150	(0.174)	0.911
12.	1.00	5.00	0.780	(0.150)	0.128	0.652
		(Loss Rate Not Used)				
Sum =		100.0				Sum = 14.0

```
 Flood volume = Effective rainfall      1.16(In)
  times area       7.2(Ac.)/[(In)/(Ft.)] =       0.7(Ac.Ft)
 Total soil loss =      0.14(In)
 Total soil loss =     0.082(Ac.Ft)
 Total rainfall =      1.30(In)
 Flood volume =       30385.6 Cubic Feet
 Total soil loss =        3588.9 Cubic Feet
 ---------------------------------------------------------------------
  Peak flow rate of this hydrograph =     23.337(CFS)
 ---------------------------------------------------------------------
 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                                          1 - H O U R   S T O R M
                                  R u n o f f     H y d r o g r a p h
 ---------------------------------------------------------------------
                           Hydrograph in   5   Minute intervals ((CFS))

 ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5
30.0
  ---------------------------------------------------------------------
    0+ 5       0.0155      2.25  V Q       |         |         |         |
    0+10       0.0415      3.78  | V  Q    |         |         |         |
    0+15       0.0721      4.44  |   VQ    |         |         |         |
    0+20       0.1044      4.69  |    VQ   |         |         |         |
    0+25       0.1400      5.16  |     Q V |         |         |         |
    0+30       0.1805      5.89  |      Q  V         |         |         |
```

```
    0+35       0.2274      6.80  |         Q|  V      |          |          |
    0+40       0.2824      8.00  |          Q     V   |          |          |
    0+45       0.3578     10.94  |          |   Q     V          |          |
    0+50       0.5185     23.34  |          |         |        V|Q         |
    0+55       0.6314     16.40  |          |         |Q         |     V    |
    1+ 0       0.6805      7.13  |         Q|         |          |         V|
    1+ 5       0.6955      2.18  | Q        |         |          |         V|
    1+10       0.6976      0.30  Q          |         |          |          V
-------------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	0.85	6.12

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.00	14.40

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.850(In)
Area Averaged 100-Year Rainfall = 2.000(In)

Point rain (area averaged) = 2.000(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.000(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.920	0.128	1.000	0.128

Sum (F) = 0.128

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454

Sum =
100.000 Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	1.30	0.312	(0.150)	0.051	0.261
2. 0.17	1.30	0.312	(0.150)	0.051	0.261
3. 0.25	1.10	0.264	(0.150)	0.043	0.221
4. 0.33	1.50	0.360	(0.150)	0.059	0.301
5. 0.42	1.50	0.360	(0.150)	0.059	0.301
6. 0.50	1.80	0.432	(0.150)	0.071	0.361
7. 0.58	1.50	0.360	(0.150)	0.059	0.301
8. 0.67	1.80	0.432	(0.150)	0.071	0.361
9. 0.75	1.80	0.432	(0.150)	0.071	0.361
10. 0.83	1.50	0.360	(0.150)	0.059	0.301
11. 0.92	1.60	0.384	(0.150)	0.063	0.321
12. 1.00	1.80	0.432	(0.150)	0.071	0.361
13. 1.08	2.20	0.528	(0.150)	0.087	0.441
14. 1.17	2.20	0.528	(0.150)	0.087	0.441
15. 1.25	2.20	0.528	(0.150)	0.087	0.441
16. 1.33	2.00	0.480	(0.150)	0.079	0.401
17. 1.42	2.60	0.624	(0.150)	0.102	0.522
18. 1.50	2.70	0.648	(0.150)	0.106	0.542
19. 1.58	2.40	0.576	(0.150)	0.094	0.482
20. 1.67	2.70	0.648	(0.150)	0.106	0.542
21. 1.75	3.30	0.792	(0.150)	0.130	0.662
22. 1.83	3.10	0.744	(0.150)	0.122	0.622
23. 1.92	2.90	0.696	(0.150)	0.114	0.582
24. 2.00	3.00	0.720	(0.150)	0.118	0.602
25. 2.08	3.10	0.744	(0.150)	0.122	0.622
26. 2.17	4.20	1.008	0.150	(0.165)	0.858
27. 2.25	5.00	1.200	0.150	(0.197)	1.050
28. 2.33	3.50	0.840	(0.150)	0.138	0.702
29. 2.42	6.80	1.632	0.150	(0.268)	1.482
30. 2.50	7.30	1.752	0.150	(0.287)	1.602
31. 2.58	8.20	1.968	0.150	(0.323)	1.818
32. 2.67	5.90	1.416	0.150	(0.232)	1.266
33. 2.75	2.00	0.480	(0.150)	0.079	0.401
34. 2.83	1.80	0.432	(0.150)	0.071	0.361
35. 2.92	1.80	0.432	(0.150)	0.071	0.361
36. 3.00	0.60	0.144	(0.150)	0.024	0.120
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	20.6

Flood volume = Effective rainfall 1.72(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 1.0(Ac.Ft)
Total soil loss = 0.28(In)
Total soil loss = 0.168(Ac.Ft)

Total rainfall = 2.00(In)
Flood volume = 44947.7 Cubic Feet
Total soil loss = 7322.7 Cubic Feet

Peak flow rate of this hydrograph = 12.464(CFS)

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3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 5.0 10.0 15.0 20.0
0+ 5	0.0074	1.07	V Q
0+10	0.0196	1.78	V Q
0+15	0.0315	1.73	V Q
0+20	0.0449	1.95	V Q
0+25	0.0597	2.15	V Q
0+30	0.0765	2.43	V Q
0+35	0.0926	2.35	VQ
0+40	0.1096	2.46	Q
0+45	0.1275	2.59	VQ
0+50	0.1438	2.37	QV
0+55	0.1596	2.29	Q V
1+ 0	0.1767	2.49	Q V
1+ 5	0.1969	2.93	Q V
1+10	0.2188	3.17	Q V
1+15	0.2408	3.20	Q V
1+20	0.2618	3.04	Q V
1+25	0.2853	3.43	Q V
1+30	0.3116	3.81	Q V
1+35	0.3369	3.68	Q V
1+40	0.3629	3.77	Q V
1+45	0.3932	4.40	Q V
1+50	0.4248	4.59	Q V
1+55	0.4549	4.37	Q V
2+ 0	0.4847	4.32	Q V
2+ 5	0.5153	4.44	Q V
2+10	0.5530	5.48	Q V
2+15	0.6006	6.91	Q V
2+20	0.6427	6.11	Q V
2+25	0.7009	8.46	Q V
2+30	0.7760	10.90	Q V
2+35	0.8618	12.46	Q V
2+40	0.9365	10.84	Q V
2+45	0.9770	5.89	Q V
2+50	0.9987	3.14	Q V
2+55	1.0169	2.64	Q V
3+ 0	1.0281	1.63	Q V
3+ 5	1.0315	0.49	Q V
3+10	1.0319	0.05	Q V

U n i t H y d r o g r a p h A n a l y s i s

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	1.20	8.64

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.90	20.88

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.200(In)
Area Averaged 100-Year Rainfall = 2.900(In)

Point rain (area averaged) = 2.900(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.900(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.920	0.128	1.000	0.128

Sum (F) = 0.128

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454

Sum =
100.000 Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.50	0.174	(0.150)	0.029	0.145
2. 0.17	0.60	0.209	(0.150)	0.034	0.175
3. 0.25	0.60	0.209	(0.150)	0.034	0.175
4. 0.33	0.60	0.209	(0.150)	0.034	0.175
5. 0.42	0.60	0.209	(0.150)	0.034	0.175
6. 0.50	0.70	0.244	(0.150)	0.040	0.204
7. 0.58	0.70	0.244	(0.150)	0.040	0.204
8. 0.67	0.70	0.244	(0.150)	0.040	0.204
9. 0.75	0.70	0.244	(0.150)	0.040	0.204
10. 0.83	0.70	0.244	(0.150)	0.040	0.204
11. 0.92	0.70	0.244	(0.150)	0.040	0.204
12. 1.00	0.80	0.278	(0.150)	0.046	0.233
13. 1.08	0.80	0.278	(0.150)	0.046	0.233
14. 1.17	0.80	0.278	(0.150)	0.046	0.233
15. 1.25	0.80	0.278	(0.150)	0.046	0.233
16. 1.33	0.80	0.278	(0.150)	0.046	0.233
17. 1.42	0.80	0.278	(0.150)	0.046	0.233
18. 1.50	0.80	0.278	(0.150)	0.046	0.233
19. 1.58	0.80	0.278	(0.150)	0.046	0.233
20. 1.67	0.80	0.278	(0.150)	0.046	0.233
21. 1.75	0.80	0.278	(0.150)	0.046	0.233
22. 1.83	0.80	0.278	(0.150)	0.046	0.233
23. 1.92	0.80	0.278	(0.150)	0.046	0.233
24. 2.00	0.90	0.313	(0.150)	0.051	0.262
25. 2.08	0.80	0.278	(0.150)	0.046	0.233
26. 2.17	0.90	0.313	(0.150)	0.051	0.262
27. 2.25	0.90	0.313	(0.150)	0.051	0.262
28. 2.33	0.90	0.313	(0.150)	0.051	0.262
29. 2.42	0.90	0.313	(0.150)	0.051	0.262
30. 2.50	0.90	0.313	(0.150)	0.051	0.262
31. 2.58	0.90	0.313	(0.150)	0.051	0.262
32. 2.67	0.90	0.313	(0.150)	0.051	0.262
33. 2.75	1.00	0.348	(0.150)	0.057	0.291
34. 2.83	1.00	0.348	(0.150)	0.057	0.291
35. 2.92	1.00	0.348	(0.150)	0.057	0.291
36. 3.00	1.00	0.348	(0.150)	0.057	0.291
37. 3.08	1.00	0.348	(0.150)	0.057	0.291
38. 3.17	1.10	0.383	(0.150)	0.063	0.320
39. 3.25	1.10	0.383	(0.150)	0.063	0.320
40. 3.33	1.10	0.383	(0.150)	0.063	0.320
41. 3.42	1.20	0.418	(0.150)	0.068	0.349
42. 3.50	1.30	0.452	(0.150)	0.074	0.378

43.	3.58	1.40	0.487	(0.150)	0.080	0.407
44.	3.67	1.40	0.487	(0.150)	0.080	0.407
45.	3.75	1.50	0.522	(0.150)	0.086	0.436
46.	3.83	1.50	0.522	(0.150)	0.086	0.436
47.	3.92	1.60	0.557	(0.150)	0.091	0.465
48.	4.00	1.60	0.557	(0.150)	0.091	0.465
49.	4.08	1.70	0.592	(0.150)	0.097	0.495
50.	4.17	1.80	0.626	(0.150)	0.103	0.524
51.	4.25	1.90	0.661	(0.150)	0.108	0.553
52.	4.33	2.00	0.696	(0.150)	0.114	0.582
53.	4.42	2.10	0.731	(0.150)	0.120	0.611
54.	4.50	2.10	0.731	(0.150)	0.120	0.611
55.	4.58	2.20	0.766	(0.150)	0.126	0.640
56.	4.67	2.30	0.800	(0.150)	0.131	0.669
57.	4.75	2.40	0.835	(0.150)	0.137	0.698
58.	4.83	2.40	0.835	(0.150)	0.137	0.698
59.	4.92	2.50	0.870	(0.150)	0.143	0.727
60.	5.00	2.60	0.905	(0.150)	0.148	0.756
61.	5.08	3.10	1.079	0.150	(0.177)	0.929
62.	5.17	3.60	1.253	0.150	(0.205)	1.103
63.	5.25	3.90	1.357	0.150	(0.223)	1.207
64.	5.33	4.20	1.462	0.150	(0.240)	1.312
65.	5.42	4.70	1.636	0.150	(0.268)	1.486
66.	5.50	5.60	1.949	0.150	(0.320)	1.799
67.	5.58	1.90	0.661	(0.150)	0.108	0.553
68.	5.67	0.90	0.313	(0.150)	0.051	0.262
69.	5.75	0.60	0.209	(0.150)	0.034	0.175
70.	5.83	0.50	0.174	(0.150)	0.029	0.145
71.	5.92	0.30	0.104	(0.150)	0.017	0.087
72.	6.00	0.20	0.070	(0.150)	0.011	0.058

(Loss Rate Not Used)

Sum = 100.0 Sum = 29.6

Flood volume = Effective rainfall 2.47(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 1.5(Ac.Ft)
Total soil loss = 0.43(In)
Total soil loss = 0.259(Ac.Ft)
Total rainfall = 2.90(In)
Flood volume = 64526.1 Cubic Feet
Total soil loss = 11266.4 Cubic Feet

Peak flow rate of this hydrograph = 11.994(CFS)

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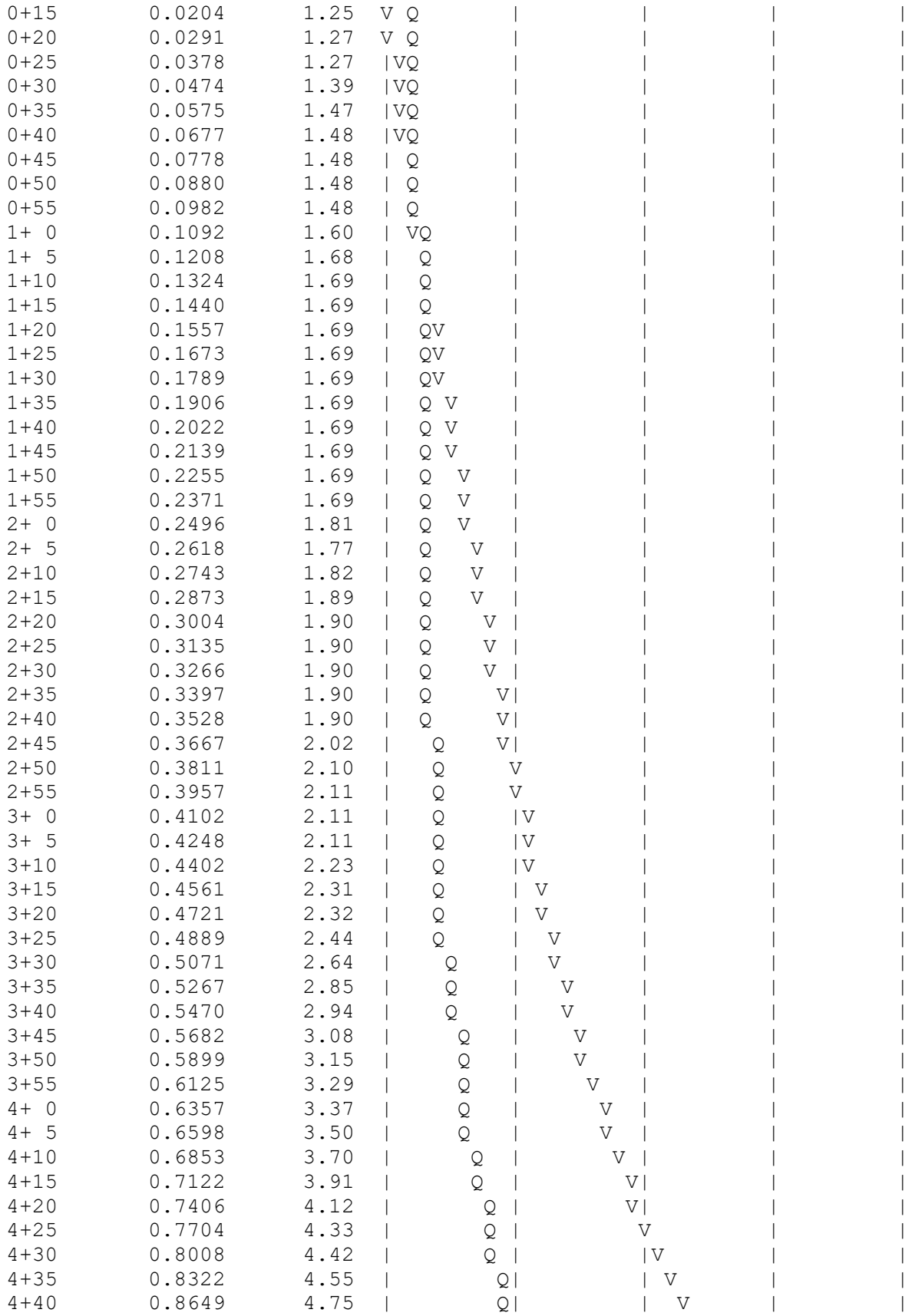
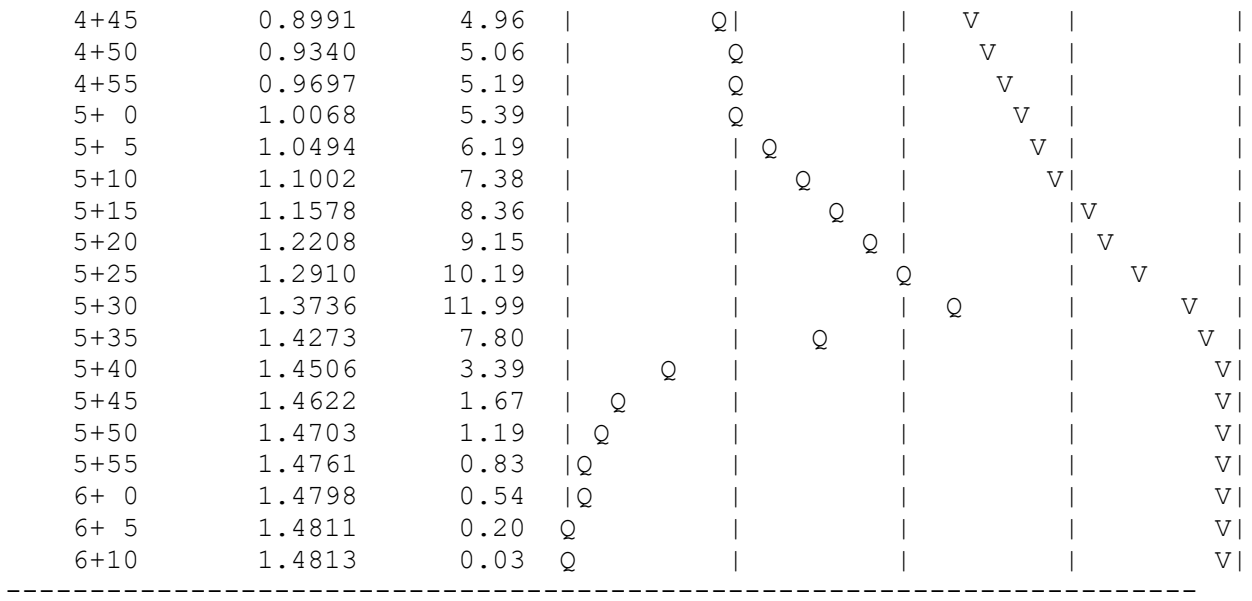
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0041	0.60	VQ	|	|	|	|
0+10	0.0118	1.11	V Q	|	|	|	|




4+45 0.8991 4.96
4+50 0.9340 5.06
4+55 0.9697 5.19
5+ 0 1.0068 5.39
5+ 5 1.0494 6.19
5+10 1.1002 7.38
5+15 1.1578 8.36
5+20 1.2208 9.15
5+25 1.2910 10.19
5+30 1.3736 11.99
5+35 1.4273 7.80
5+40 1.4506 3.39
5+45 1.4622 1.67
5+50 1.4703 1.19
5+55 1.4761 0.83
6+ 0 1.4798 0.54
6+ 5 1.4811 0.20
6+10 1.4813 0.03

U n i t H y d r o g r a p h A n a l y s i s

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Study date 11/30/23 File: 2177UHP24100.out

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2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	2.00	14.40

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.20	5.90	42.48

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.000(In)
Area Averaged 100-Year Rainfall = 5.900(In)

Point rain (area averaged) = 5.900(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 5.900(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.200	32.00	0.920

Total Area Entered = 7.20(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	32.0	0.742	0.920	0.128	1.000	0.128

Sum (F) = 0.128

Area averaged mean soil loss (F) (In/Hr) = 0.150
Minimum soil loss rate ((In/Hr)) = 0.075
(for 24 hour storm duration)
Note: User entry of the f value
Soil low loss rate (decimal) = 0.164

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period	Time (hrs)	% of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	298.615	56.537	4.102
2	0.167	597.229	37.205	2.700
3	0.250	895.844	6.258	0.454

Sum =
100.000 Sum= 7.256

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	0.07	0.047	(0.265)	0.008	0.039
2. 0.17	0.07	0.047	(0.264)	0.008	0.039
3. 0.25	0.07	0.047	(0.263)	0.008	0.039
4. 0.33	0.10	0.071	(0.262)	0.012	0.059
5. 0.42	0.10	0.071	(0.261)	0.012	0.059
6. 0.50	0.10	0.071	(0.260)	0.012	0.059
7. 0.58	0.10	0.071	(0.259)	0.012	0.059
8. 0.67	0.10	0.071	(0.258)	0.012	0.059
9. 0.75	0.10	0.071	(0.257)	0.012	0.059
10. 0.83	0.13	0.094	(0.256)	0.015	0.079
11. 0.92	0.13	0.094	(0.255)	0.015	0.079
12. 1.00	0.13	0.094	(0.254)	0.015	0.079
13. 1.08	0.10	0.071	(0.253)	0.012	0.059
14. 1.17	0.10	0.071	(0.252)	0.012	0.059
15. 1.25	0.10	0.071	(0.251)	0.012	0.059
16. 1.33	0.10	0.071	(0.250)	0.012	0.059
17. 1.42	0.10	0.071	(0.249)	0.012	0.059
18. 1.50	0.10	0.071	(0.248)	0.012	0.059
19. 1.58	0.10	0.071	(0.247)	0.012	0.059
20. 1.67	0.10	0.071	(0.246)	0.012	0.059
21. 1.75	0.10	0.071	(0.245)	0.012	0.059
22. 1.83	0.13	0.094	(0.244)	0.015	0.079
23. 1.92	0.13	0.094	(0.243)	0.015	0.079
24. 2.00	0.13	0.094	(0.242)	0.015	0.079
25. 2.08	0.13	0.094	(0.241)	0.015	0.079
26. 2.17	0.13	0.094	(0.240)	0.015	0.079
27. 2.25	0.13	0.094	(0.239)	0.015	0.079
28. 2.33	0.13	0.094	(0.238)	0.015	0.079
29. 2.42	0.13	0.094	(0.237)	0.015	0.079
30. 2.50	0.13	0.094	(0.236)	0.015	0.079
31. 2.58	0.17	0.118	(0.235)	0.019	0.099
32. 2.67	0.17	0.118	(0.235)	0.019	0.099
33. 2.75	0.17	0.118	(0.234)	0.019	0.099
34. 2.83	0.17	0.118	(0.233)	0.019	0.099
35. 2.92	0.17	0.118	(0.232)	0.019	0.099
36. 3.00	0.17	0.118	(0.231)	0.019	0.099
37. 3.08	0.17	0.118	(0.230)	0.019	0.099
38. 3.17	0.17	0.118	(0.229)	0.019	0.099
39. 3.25	0.17	0.118	(0.228)	0.019	0.099
40. 3.33	0.17	0.118	(0.227)	0.019	0.099
41. 3.42	0.17	0.118	(0.226)	0.019	0.099
42. 3.50	0.17	0.118	(0.225)	0.019	0.099

43. 3.58	0.17	0.118	(0.224)	0.019	0.099
44. 3.67	0.17	0.118	(0.223)	0.019	0.099
45. 3.75	0.17	0.118	(0.222)	0.019	0.099
46. 3.83	0.20	0.142	(0.221)	0.023	0.118
47. 3.92	0.20	0.142	(0.220)	0.023	0.118
48. 4.00	0.20	0.142	(0.219)	0.023	0.118
49. 4.08	0.20	0.142	(0.218)	0.023	0.118
50. 4.17	0.20	0.142	(0.217)	0.023	0.118
51. 4.25	0.20	0.142	(0.217)	0.023	0.118
52. 4.33	0.23	0.165	(0.216)	0.027	0.138
53. 4.42	0.23	0.165	(0.215)	0.027	0.138
54. 4.50	0.23	0.165	(0.214)	0.027	0.138
55. 4.58	0.23	0.165	(0.213)	0.027	0.138
56. 4.67	0.23	0.165	(0.212)	0.027	0.138
57. 4.75	0.23	0.165	(0.211)	0.027	0.138
58. 4.83	0.27	0.189	(0.210)	0.031	0.158
59. 4.92	0.27	0.189	(0.209)	0.031	0.158
60. 5.00	0.27	0.189	(0.208)	0.031	0.158
61. 5.08	0.20	0.142	(0.207)	0.023	0.118
62. 5.17	0.20	0.142	(0.207)	0.023	0.118
63. 5.25	0.20	0.142	(0.206)	0.023	0.118
64. 5.33	0.23	0.165	(0.205)	0.027	0.138
65. 5.42	0.23	0.165	(0.204)	0.027	0.138
66. 5.50	0.23	0.165	(0.203)	0.027	0.138
67. 5.58	0.27	0.189	(0.202)	0.031	0.158
68. 5.67	0.27	0.189	(0.201)	0.031	0.158
69. 5.75	0.27	0.189	(0.200)	0.031	0.158
70. 5.83	0.27	0.189	(0.199)	0.031	0.158
71. 5.92	0.27	0.189	(0.198)	0.031	0.158
72. 6.00	0.27	0.189	(0.198)	0.031	0.158
73. 6.08	0.30	0.212	(0.197)	0.035	0.178
74. 6.17	0.30	0.212	(0.196)	0.035	0.178
75. 6.25	0.30	0.212	(0.195)	0.035	0.178
76. 6.33	0.30	0.212	(0.194)	0.035	0.178
77. 6.42	0.30	0.212	(0.193)	0.035	0.178
78. 6.50	0.30	0.212	(0.192)	0.035	0.178
79. 6.58	0.33	0.236	(0.192)	0.039	0.197
80. 6.67	0.33	0.236	(0.191)	0.039	0.197
81. 6.75	0.33	0.236	(0.190)	0.039	0.197
82. 6.83	0.33	0.236	(0.189)	0.039	0.197
83. 6.92	0.33	0.236	(0.188)	0.039	0.197
84. 7.00	0.33	0.236	(0.187)	0.039	0.197
85. 7.08	0.33	0.236	(0.186)	0.039	0.197
86. 7.17	0.33	0.236	(0.186)	0.039	0.197
87. 7.25	0.33	0.236	(0.185)	0.039	0.197
88. 7.33	0.37	0.260	(0.184)	0.043	0.217
89. 7.42	0.37	0.260	(0.183)	0.043	0.217
90. 7.50	0.37	0.260	(0.182)	0.043	0.217
91. 7.58	0.40	0.283	(0.181)	0.046	0.237
92. 7.67	0.40	0.283	(0.180)	0.046	0.237
93. 7.75	0.40	0.283	(0.180)	0.046	0.237
94. 7.83	0.43	0.307	(0.179)	0.050	0.256
95. 7.92	0.43	0.307	(0.178)	0.050	0.256
96. 8.00	0.43	0.307	(0.177)	0.050	0.256

97.	8.08	0.50	0.354	(0.176)	0.058	0.296
98.	8.17	0.50	0.354	(0.176)	0.058	0.296
99.	8.25	0.50	0.354	(0.175)	0.058	0.296
100.	8.33	0.50	0.354	(0.174)	0.058	0.296
101.	8.42	0.50	0.354	(0.173)	0.058	0.296
102.	8.50	0.50	0.354	(0.172)	0.058	0.296
103.	8.58	0.53	0.378	(0.171)	0.062	0.316
104.	8.67	0.53	0.378	(0.171)	0.062	0.316
105.	8.75	0.53	0.378	(0.170)	0.062	0.316
106.	8.83	0.57	0.401	(0.169)	0.066	0.335
107.	8.92	0.57	0.401	(0.168)	0.066	0.335
108.	9.00	0.57	0.401	(0.167)	0.066	0.335
109.	9.08	0.63	0.448	(0.167)	0.074	0.375
110.	9.17	0.63	0.448	(0.166)	0.074	0.375
111.	9.25	0.63	0.448	(0.165)	0.074	0.375
112.	9.33	0.67	0.472	(0.164)	0.077	0.395
113.	9.42	0.67	0.472	(0.164)	0.077	0.395
114.	9.50	0.67	0.472	(0.163)	0.077	0.395
115.	9.58	0.70	0.496	(0.162)	0.081	0.414
116.	9.67	0.70	0.496	(0.161)	0.081	0.414
117.	9.75	0.70	0.496	(0.160)	0.081	0.414
118.	9.83	0.73	0.519	(0.160)	0.085	0.434
119.	9.92	0.73	0.519	(0.159)	0.085	0.434
120.	10.00	0.73	0.519	(0.158)	0.085	0.434
121.	10.08	0.50	0.354	(0.157)	0.058	0.296
122.	10.17	0.50	0.354	(0.157)	0.058	0.296
123.	10.25	0.50	0.354	(0.156)	0.058	0.296
124.	10.33	0.50	0.354	(0.155)	0.058	0.296
125.	10.42	0.50	0.354	(0.154)	0.058	0.296
126.	10.50	0.50	0.354	(0.154)	0.058	0.296
127.	10.58	0.67	0.472	(0.153)	0.077	0.395
128.	10.67	0.67	0.472	(0.152)	0.077	0.395
129.	10.75	0.67	0.472	(0.151)	0.077	0.395
130.	10.83	0.67	0.472	(0.151)	0.077	0.395
131.	10.92	0.67	0.472	(0.150)	0.077	0.395
132.	11.00	0.67	0.472	(0.149)	0.077	0.395
133.	11.08	0.63	0.448	(0.148)	0.074	0.375
134.	11.17	0.63	0.448	(0.148)	0.074	0.375
135.	11.25	0.63	0.448	(0.147)	0.074	0.375
136.	11.33	0.63	0.448	(0.146)	0.074	0.375
137.	11.42	0.63	0.448	(0.145)	0.074	0.375
138.	11.50	0.63	0.448	(0.145)	0.074	0.375
139.	11.58	0.57	0.401	(0.144)	0.066	0.335
140.	11.67	0.57	0.401	(0.143)	0.066	0.335
141.	11.75	0.57	0.401	(0.143)	0.066	0.335
142.	11.83	0.60	0.425	(0.142)	0.070	0.355
143.	11.92	0.60	0.425	(0.141)	0.070	0.355
144.	12.00	0.60	0.425	(0.140)	0.070	0.355
145.	12.08	0.83	0.590	(0.140)	0.097	0.493
146.	12.17	0.83	0.590	(0.139)	0.097	0.493
147.	12.25	0.83	0.590	(0.138)	0.097	0.493
148.	12.33	0.87	0.614	(0.138)	0.101	0.513
149.	12.42	0.87	0.614	(0.137)	0.101	0.513
150.	12.50	0.87	0.614	(0.136)	0.101	0.513

151.	12.58	0.93	0.661	(0.136)	0.108	0.552
152.	12.67	0.93	0.661	(0.135)	0.108	0.552
153.	12.75	0.93	0.661	(0.134)	0.108	0.552
154.	12.83	0.97	0.684	(0.134)	0.112	0.572
155.	12.92	0.97	0.684	(0.133)	0.112	0.572
156.	13.00	0.97	0.684	(0.132)	0.112	0.572
157.	13.08	1.13	0.802	0.132	(0.132)	0.671
158.	13.17	1.13	0.802	0.131	(0.132)	0.672
159.	13.25	1.13	0.802	0.130	(0.132)	0.672
160.	13.33	1.13	0.802	0.130	(0.132)	0.673
161.	13.42	1.13	0.802	0.129	(0.132)	0.674
162.	13.50	1.13	0.802	0.128	(0.132)	0.674
163.	13.58	0.77	0.543	(0.128)	0.089	0.454
164.	13.67	0.77	0.543	(0.127)	0.089	0.454
165.	13.75	0.77	0.543	(0.126)	0.089	0.454
166.	13.83	0.77	0.543	(0.126)	0.089	0.454
167.	13.92	0.77	0.543	(0.125)	0.089	0.454
168.	14.00	0.77	0.543	(0.124)	0.089	0.454
169.	14.08	0.90	0.637	(0.124)	0.104	0.533
170.	14.17	0.90	0.637	(0.123)	0.104	0.533
171.	14.25	0.90	0.637	(0.122)	0.104	0.533
172.	14.33	0.87	0.614	(0.122)	0.101	0.513
173.	14.42	0.87	0.614	(0.121)	0.101	0.513
174.	14.50	0.87	0.614	(0.121)	0.101	0.513
175.	14.58	0.87	0.614	(0.120)	0.101	0.513
176.	14.67	0.87	0.614	(0.119)	0.101	0.513
177.	14.75	0.87	0.614	(0.119)	0.101	0.513
178.	14.83	0.83	0.590	(0.118)	0.097	0.493
179.	14.92	0.83	0.590	(0.118)	0.097	0.493
180.	15.00	0.83	0.590	(0.117)	0.097	0.493
181.	15.08	0.80	0.566	(0.116)	0.093	0.474
182.	15.17	0.80	0.566	(0.116)	0.093	0.474
183.	15.25	0.80	0.566	(0.115)	0.093	0.474
184.	15.33	0.77	0.543	(0.115)	0.089	0.454
185.	15.42	0.77	0.543	(0.114)	0.089	0.454
186.	15.50	0.77	0.543	(0.113)	0.089	0.454
187.	15.58	0.63	0.448	(0.113)	0.074	0.375
188.	15.67	0.63	0.448	(0.112)	0.074	0.375
189.	15.75	0.63	0.448	(0.112)	0.074	0.375
190.	15.83	0.63	0.448	(0.111)	0.074	0.375
191.	15.92	0.63	0.448	(0.111)	0.074	0.375
192.	16.00	0.63	0.448	(0.110)	0.074	0.375
193.	16.08	0.13	0.094	(0.109)	0.015	0.079
194.	16.17	0.13	0.094	(0.109)	0.015	0.079
195.	16.25	0.13	0.094	(0.108)	0.015	0.079
196.	16.33	0.13	0.094	(0.108)	0.015	0.079
197.	16.42	0.13	0.094	(0.107)	0.015	0.079
198.	16.50	0.13	0.094	(0.107)	0.015	0.079
199.	16.58	0.10	0.071	(0.106)	0.012	0.059
200.	16.67	0.10	0.071	(0.106)	0.012	0.059
201.	16.75	0.10	0.071	(0.105)	0.012	0.059
202.	16.83	0.10	0.071	(0.104)	0.012	0.059
203.	16.92	0.10	0.071	(0.104)	0.012	0.059
204.	17.00	0.10	0.071	(0.103)	0.012	0.059

205. 17.08	0.17	0.118	(0.103)	0.019	0.099
206. 17.17	0.17	0.118	(0.102)	0.019	0.099
207. 17.25	0.17	0.118	(0.102)	0.019	0.099
208. 17.33	0.17	0.118	(0.101)	0.019	0.099
209. 17.42	0.17	0.118	(0.101)	0.019	0.099
210. 17.50	0.17	0.118	(0.100)	0.019	0.099
211. 17.58	0.17	0.118	(0.100)	0.019	0.099
212. 17.67	0.17	0.118	(0.099)	0.019	0.099
213. 17.75	0.17	0.118	(0.099)	0.019	0.099
214. 17.83	0.13	0.094	(0.098)	0.015	0.079
215. 17.92	0.13	0.094	(0.098)	0.015	0.079
216. 18.00	0.13	0.094	(0.097)	0.015	0.079
217. 18.08	0.13	0.094	(0.097)	0.015	0.079
218. 18.17	0.13	0.094	(0.096)	0.015	0.079
219. 18.25	0.13	0.094	(0.096)	0.015	0.079
220. 18.33	0.13	0.094	(0.095)	0.015	0.079
221. 18.42	0.13	0.094	(0.095)	0.015	0.079
222. 18.50	0.13	0.094	(0.095)	0.015	0.079
223. 18.58	0.10	0.071	(0.094)	0.012	0.059
224. 18.67	0.10	0.071	(0.094)	0.012	0.059
225. 18.75	0.10	0.071	(0.093)	0.012	0.059
226. 18.83	0.07	0.047	(0.093)	0.008	0.039
227. 18.92	0.07	0.047	(0.092)	0.008	0.039
228. 19.00	0.07	0.047	(0.092)	0.008	0.039
229. 19.08	0.10	0.071	(0.091)	0.012	0.059
230. 19.17	0.10	0.071	(0.091)	0.012	0.059
231. 19.25	0.10	0.071	(0.091)	0.012	0.059
232. 19.33	0.13	0.094	(0.090)	0.015	0.079
233. 19.42	0.13	0.094	(0.090)	0.015	0.079
234. 19.50	0.13	0.094	(0.089)	0.015	0.079
235. 19.58	0.10	0.071	(0.089)	0.012	0.059
236. 19.67	0.10	0.071	(0.089)	0.012	0.059
237. 19.75	0.10	0.071	(0.088)	0.012	0.059
238. 19.83	0.07	0.047	(0.088)	0.008	0.039
239. 19.92	0.07	0.047	(0.087)	0.008	0.039
240. 20.00	0.07	0.047	(0.087)	0.008	0.039
241. 20.08	0.10	0.071	(0.087)	0.012	0.059
242. 20.17	0.10	0.071	(0.086)	0.012	0.059
243. 20.25	0.10	0.071	(0.086)	0.012	0.059
244. 20.33	0.10	0.071	(0.085)	0.012	0.059
245. 20.42	0.10	0.071	(0.085)	0.012	0.059
246. 20.50	0.10	0.071	(0.085)	0.012	0.059
247. 20.58	0.10	0.071	(0.084)	0.012	0.059
248. 20.67	0.10	0.071	(0.084)	0.012	0.059
249. 20.75	0.10	0.071	(0.084)	0.012	0.059
250. 20.83	0.07	0.047	(0.083)	0.008	0.039
251. 20.92	0.07	0.047	(0.083)	0.008	0.039
252. 21.00	0.07	0.047	(0.083)	0.008	0.039
253. 21.08	0.10	0.071	(0.082)	0.012	0.059
254. 21.17	0.10	0.071	(0.082)	0.012	0.059
255. 21.25	0.10	0.071	(0.082)	0.012	0.059
256. 21.33	0.07	0.047	(0.081)	0.008	0.039
257. 21.42	0.07	0.047	(0.081)	0.008	0.039
258. 21.50	0.07	0.047	(0.081)	0.008	0.039

259.	21.58	0.10	0.071	(0.080)	0.012	0.059
260.	21.67	0.10	0.071	(0.080)	0.012	0.059
261.	21.75	0.10	0.071	(0.080)	0.012	0.059
262.	21.83	0.07	0.047	(0.080)	0.008	0.039
263.	21.92	0.07	0.047	(0.079)	0.008	0.039
264.	22.00	0.07	0.047	(0.079)	0.008	0.039
265.	22.08	0.10	0.071	(0.079)	0.012	0.059
266.	22.17	0.10	0.071	(0.079)	0.012	0.059
267.	22.25	0.10	0.071	(0.078)	0.012	0.059
268.	22.33	0.07	0.047	(0.078)	0.008	0.039
269.	22.42	0.07	0.047	(0.078)	0.008	0.039
270.	22.50	0.07	0.047	(0.078)	0.008	0.039
271.	22.58	0.07	0.047	(0.077)	0.008	0.039
272.	22.67	0.07	0.047	(0.077)	0.008	0.039
273.	22.75	0.07	0.047	(0.077)	0.008	0.039
274.	22.83	0.07	0.047	(0.077)	0.008	0.039
275.	22.92	0.07	0.047	(0.077)	0.008	0.039
276.	23.00	0.07	0.047	(0.076)	0.008	0.039
277.	23.08	0.07	0.047	(0.076)	0.008	0.039
278.	23.17	0.07	0.047	(0.076)	0.008	0.039
279.	23.25	0.07	0.047	(0.076)	0.008	0.039
280.	23.33	0.07	0.047	(0.076)	0.008	0.039
281.	23.42	0.07	0.047	(0.076)	0.008	0.039
282.	23.50	0.07	0.047	(0.075)	0.008	0.039
283.	23.58	0.07	0.047	(0.075)	0.008	0.039
284.	23.67	0.07	0.047	(0.075)	0.008	0.039
285.	23.75	0.07	0.047	(0.075)	0.008	0.039
286.	23.83	0.07	0.047	(0.075)	0.008	0.039
287.	23.92	0.07	0.047	(0.075)	0.008	0.039
288.	24.00	0.07	0.047	(0.075)	0.008	0.039

(Loss Rate Not Used)

Sum = 100.0 Sum = 59.2

Flood volume = Effective rainfall 4.93(In)
times area 7.2(Ac.)/[(In)/(Ft.)] = 3.0(Ac.Ft)
Total soil loss = 0.97(In)
Total soil loss = 0.580(Ac.Ft)
Total rainfall = 5.90(In)
Flood volume = 128933.8 Cubic Feet
Total soil loss = 25266.4 Cubic Feet

Peak flow rate of this hydrograph = 4.892(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0011	0.16	Q	|	|	|	|
0+10	0.0030	0.27	VQ	|	|	|	|

0+15	0.0049	0.29	VQ	|	|	|	|
0+20	0.0075	0.37	VQ	|	|	|	|
0+25	0.0104	0.42	VQ	|	|	|	|
0+30	0.0133	0.43	VQ	|	|	|	|
0+35	0.0163	0.43	VQ	|	|	|	|
0+40	0.0192	0.43	VQ	|	|	|	|
0+45	0.0222	0.43	VQ	|	|	|	|
0+50	0.0257	0.51	V Q	|	|	|	|
0+55	0.0296	0.56	V Q	|	|	|	|
1+ 0	0.0336	0.57	V Q	|	|	|	|
1+ 5	0.0369	0.49	VQ	|	|	|	|
1+10	0.0400	0.44	VQ	|	|	|	|
1+15	0.0429	0.43	VQ	|	|	|	|
1+20	0.0459	0.43	VQ	|	|	|	|
1+25	0.0488	0.43	VQ	|	|	|	|
1+30	0.0518	0.43	VQ	|	|	|	|
1+35	0.0548	0.43	VQ	|	|	|	|
1+40	0.0577	0.43	VQ	|	|	|	|
1+45	0.0607	0.43	VQ	|	|	|	|
1+50	0.0642	0.51	V Q	|	|	|	|
1+55	0.0681	0.56	V Q	|	|	|	|
2+ 0	0.0720	0.57	V Q	|	|	|	|
2+ 5	0.0760	0.57	|VQ	|	|	|	|
2+10	0.0799	0.57	|VQ	|	|	|	|
2+15	0.0839	0.57	|VQ	|	|	|	|
2+20	0.0878	0.57	|VQ	|	|	|	|
2+25	0.0918	0.57	|VQ	|	|	|	|
2+30	0.0957	0.57	|VQ	|	|	|	|
2+35	0.1002	0.65	|VQ	|	|	|	|
2+40	0.1051	0.71	|VQ	|	|	|	|
2+45	0.1100	0.72	|VQ	|	|	|	|
2+50	0.1149	0.72	|VQ	|	|	|	|
2+55	0.1199	0.72	|VQ	|	|	|	|
3+ 0	0.1248	0.72	|VQ	|	|	|	|
3+ 5	0.1297	0.72	|VQ	|	|	|	|
3+10	0.1347	0.72	|VQ	|	|	|	|
3+15	0.1396	0.72	|VQ	|	|	|	|
3+20	0.1445	0.72	|VQ	|	|	|	|
3+25	0.1495	0.72	| Q	|	|	|	|
3+30	0.1544	0.72	| Q	|	|	|	|
3+35	0.1593	0.72	| Q	|	|	|	|
3+40	0.1643	0.72	| Q	|	|	|	|
3+45	0.1692	0.72	| Q	|	|	|	|
3+50	0.1747	0.80	| VQ	|	|	|	|
3+55	0.1805	0.85	| VQ	|	|	|	|
4+ 0	0.1865	0.86	| VQ	|	|	|	|
4+ 5	0.1924	0.86	| VQ	|	|	|	|
4+10	0.1983	0.86	| VQ	|	|	|	|
4+15	0.2042	0.86	| VQ	|	|	|	|
4+20	0.2107	0.94	| VQ	|	|	|	|
4+25	0.2175	0.99	| VQ	|	|	|	|
4+30	0.2244	1.00	| VQ	|	|	|	|
4+35	0.2313	1.00	| VQ	|	|	|	|
4+40	0.2383	1.00	| VQ	|	|	|	|

4+45	0.2452	1.00	VQ				
4+50	0.2526	1.08	VQ				
4+55	0.2604	1.14	VQ				
5+ 0	0.2683	1.15	VQ				
5+ 5	0.2751	0.98	Q				
5+10	0.2812	0.88	Q				
5+15	0.2871	0.86	Q				
5+20	0.2936	0.94	Q				
5+25	0.3004	0.99	QV				
5+30	0.3073	1.00	Q				
5+35	0.3148	1.08	Q				
5+40	0.3226	1.14	Q				
5+45	0.3305	1.15	Q				
5+50	0.3384	1.15	Q				
5+55	0.3463	1.15	Q				
6+ 0	0.3542	1.15	Q				
6+ 5	0.3626	1.23	Q				
6+10	0.3714	1.28	Q				
6+15	0.3803	1.29	Q				
6+20	0.3892	1.29	Q				
6+25	0.3981	1.29	Q				
6+30	0.4069	1.29	Q				
6+35	0.4164	1.37	Q				
6+40	0.4262	1.42	Q				
6+45	0.4360	1.43	Q				
6+50	0.4459	1.43	QV				
6+55	0.4558	1.43	QV				
7+ 0	0.4656	1.43	QV				
7+ 5	0.4755	1.43	QV				
7+10	0.4854	1.43	QV				
7+15	0.4952	1.43	QV				
7+20	0.5057	1.51	Q				
7+25	0.5164	1.57	Q				
7+30	0.5273	1.58	QV				
7+35	0.5387	1.66	QV				
7+40	0.5505	1.71	QV				
7+45	0.5623	1.72	QV				
7+50	0.5747	1.80	Q				
7+55	0.5875	1.85	Q				
8+ 0	0.6003	1.86	QV				
8+ 5	0.6142	2.02	Q				
8+10	0.6289	2.13	Q				
8+15	0.6437	2.15	Q				
8+20	0.6585	2.15	Q				
8+25	0.6733	2.15	QV				
8+30	0.6881	2.15	QV				
8+35	0.7035	2.23	QV				
8+40	0.7192	2.28	Q				
8+45	0.7350	2.29	Q				
8+50	0.7513	2.37	QV				
8+55	0.7680	2.43	QV				
9+ 0	0.7848	2.43	QV				
9+ 5	0.8027	2.60	Q				
9+10	0.8213	2.70	QV				

9+15	0.8400	2.72	QV			
9+20	0.8593	2.80	|Q			
9+25	0.8790	2.86	|Q			
9+30	0.8987	2.86	|QV			
9+35	0.9190	2.95	|QV			
9+40	0.9397	3.00	|QV			
9+45	0.9604	3.01	| Q			
9+50	0.9817	3.09	| QV			
9+55	1.0033	3.14	| QV			
10+ 0	1.0250	3.15	| QV			
10+ 5	1.0428	2.58	Q V			
10+10	1.0580	2.21	Q | V			
10+15	1.0728	2.15	Q | V			
10+20	1.0876	2.15	Q | V			
10+25	1.1024	2.15	Q | V			
10+30	1.1172	2.15	Q | V			
10+35	1.1348	2.55	Q V			
10+40	1.1542	2.82	|Q V			
10+45	1.1739	2.86	|Q V			
10+50	1.1937	2.86	|Q V			
10+55	1.2134	2.86	|Q V			
11+ 0	1.2331	2.86	|Q V			
11+ 5	1.2523	2.78	|Q V			
11+10	1.2711	2.73	Q V			
11+15	1.2899	2.72	Q V			
11+20	1.3086	2.72	Q V			
11+25	1.3273	2.72	Q V			
11+30	1.3461	2.72	Q V			
11+35	1.3637	2.56	Q V			
11+40	1.3806	2.45	Q| V			
11+45	1.3974	2.43	Q| V			
11+50	1.4147	2.52	Q V|			
11+55	1.4324	2.57	Q V|			
12+ 0	1.4502	2.58	Q V|			
12+ 5	1.4718	3.15	| Q V|			
12+10	1.4960	3.52	| Q V			
12+15	1.5207	3.58	| Q V			
12+20	1.5459	3.66	| Q V			
12+25	1.5715	3.72	| Q |V			
12+30	1.5972	3.72	| Q |V			
12+35	1.6239	3.89	| Q |V			
12+40	1.6514	3.99	| Q | V			
12+45	1.6790	4.01	| Q | V			
12+50	1.7072	4.09	| Q | V			
12+55	1.7358	4.14	| Q | V			
13+ 0	1.7644	4.15	| Q | V			
13+ 5	1.7958	4.56	| Q | V			
13+10	1.8290	4.83	| Q| V			
13+15	1.8626	4.88	| Q| V			
13+20	1.8962	4.88	| Q| V			
13+25	1.9299	4.89	| Q| V			
13+30	1.9636	4.89	| Q| V			
13+35	1.9911	3.99	| Q | V			
13+40	2.0144	3.39	| Q | V			

13+45	2.0371	3.29		Q		V	
13+50	2.0598	3.29		Q		V	
13+55	2.0825	3.29		Q		V	
14+ 0	2.1052	3.29		Q		V	
14+ 5	2.1301	3.62		Q		V	
14+10	2.1565	3.83		Q		V	
14+15	2.1831	3.87		Q		V	
14+20	2.2092	3.79		Q		V	
14+25	2.2349	3.73		Q		V	
14+30	2.2606	3.72		Q		V	
14+35	2.2862	3.72		Q		V	
14+40	2.3119	3.72		Q		V	
14+45	2.3375	3.72		Q		V	
14+50	2.3626	3.64		Q		V	
14+55	2.3873	3.59		Q		V	
15+ 0	2.4120	3.58		Q		V	
15+ 5	2.4361	3.50		Q		V	
15+10	2.4598	3.45		Q		V	
15+15	2.4835	3.44		Q		V	
15+20	2.5066	3.36		Q		V	
15+25	2.5294	3.30		Q		V	
15+30	2.5521	3.29		Q		V	
15+35	2.5725	2.97		Q		V	
15+40	2.5915	2.76		Q		V	
15+45	2.6103	2.72		Q		V	
15+50	2.6290	2.72		Q		V	
15+55	2.6477	2.72		Q		V	
16+ 0	2.6665	2.72		Q		V	
16+ 5	2.6769	1.51	Q			V	
16+10	2.6817	0.71	Q			V	
16+15	2.6857	0.57	Q			V	
16+20	2.6896	0.57	Q			V	
16+25	2.6936	0.57	Q			V	
16+30	2.6975	0.57	Q			V	
16+35	2.7009	0.49	Q			V	
16+40	2.7039	0.44	Q			V	
16+45	2.7069	0.43	Q			V	
16+50	2.7099	0.43	Q			V	
16+55	2.7128	0.43	Q			V	
17+ 0	2.7158	0.43	Q			V	
17+ 5	2.7198	0.59	Q			V	
17+10	2.7247	0.70	Q			V	
17+15	2.7296	0.72	Q			V	
17+20	2.7345	0.72	Q			V	
17+25	2.7395	0.72	Q			V	
17+30	2.7444	0.72	Q			V	
17+35	2.7493	0.72	Q			V	
17+40	2.7542	0.72	Q			V	
17+45	2.7592	0.72	Q			V	
17+50	2.7636	0.64	Q			V	
17+55	2.7676	0.58	Q			V	
18+ 0	2.7715	0.57	Q			V	
18+ 5	2.7755	0.57	Q			V	
18+10	2.7794	0.57	Q			V	

18+15	2.7833	0.57	| Q	|	|	|	V |
18+20	2.7873	0.57	| Q	|	|	|	V |
18+25	2.7912	0.57	| Q	|	|	|	V |
18+30	2.7952	0.57	| Q	|	|	|	V |
18+35	2.7986	0.49	|Q	|	|	|	V |
18+40	2.8016	0.44	|Q	|	|	|	V |
18+45	2.8046	0.43	|Q	|	|	|	V |
18+50	2.8070	0.35	|Q	|	|	|	V |
18+55	2.8090	0.30	|Q	|	|	|	V |
19+ 0	2.8110	0.29	|Q	|	|	|	V |
19+ 5	2.8135	0.37	|Q	|	|	|	V |
19+10	2.8164	0.42	|Q	|	|	|	V |
19+15	2.8193	0.43	|Q	|	|	|	V |
19+20	2.8229	0.51	| Q	|	|	|	V |
19+25	2.8268	0.56	| Q	|	|	|	V |
19+30	2.8307	0.57	| Q	|	|	|	V |
19+35	2.8341	0.49	|Q	|	|	|	V |
19+40	2.8371	0.44	|Q	|	|	|	V |
19+45	2.8401	0.43	|Q	|	|	|	V |
19+50	2.8425	0.35	|Q	|	|	|	V |
19+55	2.8445	0.30	|Q	|	|	|	V |
20+ 0	2.8465	0.29	|Q	|	|	|	V |
20+ 5	2.8490	0.37	|Q	|	|	|	V |
20+10	2.8519	0.42	|Q	|	|	|	V |
20+15	2.8549	0.43	|Q	|	|	|	V |
20+20	2.8578	0.43	|Q	|	|	|	V |
20+25	2.8608	0.43	|Q	|	|	|	V |
20+30	2.8637	0.43	|Q	|	|	|	V |
20+35	2.8667	0.43	|Q	|	|	|	V |
20+40	2.8697	0.43	|Q	|	|	|	V |
20+45	2.8726	0.43	|Q	|	|	|	V |
20+50	2.8750	0.35	|Q	|	|	|	V |
20+55	2.8771	0.30	|Q	|	|	|	V |
21+ 0	2.8790	0.29	|Q	|	|	|	V |
21+ 5	2.8816	0.37	|Q	|	|	|	V |
21+10	2.8845	0.42	|Q	|	|	|	V |
21+15	2.8874	0.43	|Q	|	|	|	V|
21+20	2.8898	0.35	|Q	|	|	|	V|
21+25	2.8919	0.30	|Q	|	|	|	V|
21+30	2.8938	0.29	|Q	|	|	|	V|
21+35	2.8964	0.37	|Q	|	|	|	V|
21+40	2.8993	0.42	|Q	|	|	|	V|
21+45	2.9022	0.43	|Q	|	|	|	V|
21+50	2.9046	0.35	|Q	|	|	|	V|
21+55	2.9066	0.30	|Q	|	|	|	V|
22+ 0	2.9086	0.29	|Q	|	|	|	V|
22+ 5	2.9112	0.37	|Q	|	|	|	V|
22+10	2.9141	0.42	|Q	|	|	|	V|
22+15	2.9170	0.43	|Q	|	|	|	V|
22+20	2.9194	0.35	|Q	|	|	|	V|
22+25	2.9214	0.30	|Q	|	|	|	V|
22+30	2.9234	0.29	|Q	|	|	|	V|
22+35	2.9254	0.29	|Q	|	|	|	V|
22+40	2.9274	0.29	|Q	|	|	|	V|

22+45	2.9293	0.29	|Q	|	|	|	V|
22+50	2.9313	0.29	|Q	|	|	|	V|
22+55	2.9333	0.29	|Q	|	|	|	V|
23+ 0	2.9353	0.29	|Q	|	|	|	V|
23+ 5	2.9372	0.29	|Q	|	|	|	V|
23+10	2.9392	0.29	|Q	|	|	|	V|
23+15	2.9412	0.29	|Q	|	|	|	V|
23+20	2.9431	0.29	|Q	|	|	|	V|
23+25	2.9451	0.29	|Q	|	|	|	V|
23+30	2.9471	0.29	|Q	|	|	|	V|
23+35	2.9491	0.29	|Q	|	|	|	V|
23+40	2.9510	0.29	|Q	|	|	|	V|
23+45	2.9530	0.29	|Q	|	|	|	V|
23+50	2.9550	0.29	|Q	|	|	|	V|
23+55	2.9570	0.29	|Q	|	|	|	V|
24+ 0	2.9589	0.29	|Q	|	|	|	V|
24+ 5	2.9598	0.12	Q	|	|	|	V|
24+10	2.9599	0.02	Q	|	|	|	V|

WATERSHED C: TRIBUTARY TO DRYWELL

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             0.50                   0.17

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             1.30                   0.43

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    0.500(In)
      Area Averaged 100-Year Rainfall =    1.300(In)

      Point rain (area averaged) =    0.500(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    0.500(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.867        0.191        1.000      0.191
                                                          Sum (F) =
0.191
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-
      Slope of intensity-duration curve for a 1 hour storm =0.5000
      ------------------------------------------------------------------
--

                           U n i t  H y d r o g r a p h
                                VALLEY S-Curve
      ------------------------------------------------------------------
                           Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                      Graph %           (CFS)
      ------------------------------------------------------------------
-
                 1   0.083       1068.017        100.000             0.333
                                                                  Sum =
100.000   Sum=       0.333
------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	4.20	0.252	(0.191)	0.052	0.200
2. 0.17	4.30	0.258	(0.191)	0.053	0.205
3. 0.25	5.00	0.300	(0.191)	0.062	0.238
4. 0.33	5.00	0.300	(0.191)	0.062	0.238
5. 0.42	5.80	0.348	(0.191)	0.072	0.276
6. 0.50	6.50	0.390	(0.191)	0.080	0.310
7. 0.58	7.40	0.444	(0.191)	0.091	0.353
8. 0.67	8.60	0.516	(0.191)	0.106	0.410
9. 0.75	12.30	0.738	(0.191)	0.152	0.586
10. 0.83	29.10	1.746	0.191	(0.360)	1.555
11. 0.92	6.80	0.408	(0.191)	0.084	0.324
12. 1.00	5.00	0.300	(0.191)	0.062	0.238
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	4.9

Flood volume = Effective rainfall 0.41(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.09(In)
Total soil loss = 0.002(Ac.Ft)
Total rainfall = 0.50(In)
Flood volume = 492.4 Cubic Feet
Total soil loss = 106.6 Cubic Feet

Peak flow rate of this hydrograph = 0.517(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0005	0.07	QV				
0+10	0.0009	0.07	Q V				
0+15	0.0015	0.08	Q V				
0+20	0.0020	0.08	Q V				
0+25	0.0027	0.09	Q V				
0+30	0.0034	0.10	Q V				
0+35	0.0042	0.12	Q V				
0+40	0.0051	0.14	Q V				
0+45	0.0065	0.19	Q V				
0+50	0.0100	0.52	Q V				
0+55	0.0108	0.11	Q V				
1+ 0	0.0113	0.08	Q V				

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             0.85                    0.28

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.00                    0.66

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    0.850(In)
      Area Averaged 100-Year Rainfall =    2.000(In)

      Point rain (area averaged) =    0.850(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    0.850(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.867        0.191        1.000      0.191
                                                          Sum (F) =
0.191
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                1   0.083       1068.017        100.000             0.333
                                                                Sum =
100.000   Sum=       0.333
---------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum
calculated loss
```

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1. 0.08	1.30	0.133	(0.191)		0.027	0.105
2. 0.17	1.30	0.133	(0.191)		0.027	0.105
3. 0.25	1.10	0.112	(0.191)		0.023	0.089
4. 0.33	1.50	0.153	(0.191)		0.032	0.121
5. 0.42	1.50	0.153	(0.191)		0.032	0.121
6. 0.50	1.80	0.184	(0.191)		0.038	0.146
7. 0.58	1.50	0.153	(0.191)		0.032	0.121
8. 0.67	1.80	0.184	(0.191)		0.038	0.146
9. 0.75	1.80	0.184	(0.191)		0.038	0.146
10. 0.83	1.50	0.153	(0.191)		0.032	0.121
11. 0.92	1.60	0.163	(0.191)		0.034	0.130
12. 1.00	1.80	0.184	(0.191)		0.038	0.146
13. 1.08	2.20	0.224	(0.191)		0.046	0.178
14. 1.17	2.20	0.224	(0.191)		0.046	0.178
15. 1.25	2.20	0.224	(0.191)		0.046	0.178
16. 1.33	2.00	0.204	(0.191)		0.042	0.162
17. 1.42	2.60	0.265	(0.191)		0.055	0.211
18. 1.50	2.70	0.275	(0.191)		0.057	0.219
19. 1.58	2.40	0.245	(0.191)		0.050	0.194
20. 1.67	2.70	0.275	(0.191)		0.057	0.219
21. 1.75	3.30	0.337	(0.191)		0.069	0.267
22. 1.83	3.10	0.316	(0.191)		0.065	0.251
23. 1.92	2.90	0.296	(0.191)		0.061	0.235
24. 2.00	3.00	0.306	(0.191)		0.063	0.243
25. 2.08	3.10	0.316	(0.191)		0.065	0.251
26. 2.17	4.20	0.428	(0.191)		0.088	0.340
27. 2.25	5.00	0.510	(0.191)		0.105	0.405
28. 2.33	3.50	0.357	(0.191)		0.074	0.283
29. 2.42	6.80	0.694	(0.191)		0.143	0.551
30. 2.50	7.30	0.745	(0.191)		0.153	0.591
31. 2.58	8.20	0.836	(0.191)		0.172	0.664
32. 2.67	5.90	0.602	(0.191)		0.124	0.478
33. 2.75	2.00	0.204	(0.191)		0.042	0.162
34. 2.83	1.80	0.184	(0.191)		0.038	0.146
35. 2.92	1.80	0.184	(0.191)		0.038	0.146
36. 3.00	0.60	0.061	(0.191)		0.013	0.049
	(Loss Rate Not Used)					
Sum =	100.0				Sum =	8.1

Flood volume = Effective rainfall 0.67(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.18(In)
Total soil loss = 0.005(Ac.Ft)
Total rainfall = 0.85(In)
Flood volume = 808.5 Cubic Feet
Total soil loss = 209.8 Cubic Feet

Peak flow rate of this hydrograph = 0.221(CFS)

++

3 - H O U R S T O R M

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.04	Q				
0+10	0.0005	0.04	QV				
0+15	0.0007	0.03	QV				
0+20	0.0010	0.04	Q V				
0+25	0.0012	0.04	Q V				
0+30	0.0016	0.05	Q V				
0+35	0.0019	0.04	Q V				
0+40	0.0022	0.05	Q V				
0+45	0.0025	0.05	Q V				
0+50	0.0028	0.04	Q V				
0+55	0.0031	0.04	Q V				
1+ 0	0.0034	0.05	Q V				
1+ 5	0.0038	0.06	Q V				
1+10	0.0043	0.06	Q V				
1+15	0.0047	0.06	Q V				
1+20	0.0050	0.05	Q V				
1+25	0.0055	0.07	Q V				
1+30	0.0060	0.07	Q V				
1+35	0.0065	0.06	Q V				
1+40	0.0070	0.07	Q V				
1+45	0.0076	0.09	Q V				
1+50	0.0081	0.08	Q V				
1+55	0.0087	0.08	Q V				
2+ 0	0.0092	0.08	Q V				
2+ 5	0.0098	0.08	Q V				
2+10	0.0106	0.11	Q V				
2+15	0.0115	0.13	Q V				
2+20	0.0122	0.09	Q V				
2+25	0.0134	0.18	Q V				
2+30	0.0148	0.20	Q V				
2+35	0.0163	0.22	Q V				
2+40	0.0174	0.16	Q V				
2+45	0.0178	0.05	Q V				
2+50	0.0181	0.05	Q V				
2+55	0.0184	0.05	Q V				
3+ 0	0.0186	0.02	Q V				

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             1.20                   0.40

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.90                   0.96

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    1.200(In)
      Area Averaged 100-Year Rainfall =    2.900(In)

      Point rain (area averaged) =    1.200(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.200(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.867        0.191        1.000      0.191
                                                          Sum (F) =
0.191
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                1   0.083       1068.017        100.000             0.333
                                                                Sum =
100.000   Sum=       0.333
---------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum
calculated loss
```

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.50	0.072	(0.191)		0.015	0.057
2.	0.17	0.60	0.086	(0.191)		0.018	0.069
3.	0.25	0.60	0.086	(0.191)		0.018	0.069
4.	0.33	0.60	0.086	(0.191)		0.018	0.069
5.	0.42	0.60	0.086	(0.191)		0.018	0.069
6.	0.50	0.70	0.101	(0.191)		0.021	0.080
7.	0.58	0.70	0.101	(0.191)		0.021	0.080
8.	0.67	0.70	0.101	(0.191)		0.021	0.080
9.	0.75	0.70	0.101	(0.191)		0.021	0.080
10.	0.83	0.70	0.101	(0.191)		0.021	0.080
11.	0.92	0.70	0.101	(0.191)		0.021	0.080
12.	1.00	0.80	0.115	(0.191)		0.024	0.091
13.	1.08	0.80	0.115	(0.191)		0.024	0.091
14.	1.17	0.80	0.115	(0.191)		0.024	0.091
15.	1.25	0.80	0.115	(0.191)		0.024	0.091
16.	1.33	0.80	0.115	(0.191)		0.024	0.091
17.	1.42	0.80	0.115	(0.191)		0.024	0.091
18.	1.50	0.80	0.115	(0.191)		0.024	0.091
19.	1.58	0.80	0.115	(0.191)		0.024	0.091
20.	1.67	0.80	0.115	(0.191)		0.024	0.091
21.	1.75	0.80	0.115	(0.191)		0.024	0.091
22.	1.83	0.80	0.115	(0.191)		0.024	0.091
23.	1.92	0.80	0.115	(0.191)		0.024	0.091
24.	2.00	0.90	0.130	(0.191)		0.027	0.103
25.	2.08	0.80	0.115	(0.191)		0.024	0.091
26.	2.17	0.90	0.130	(0.191)		0.027	0.103
27.	2.25	0.90	0.130	(0.191)		0.027	0.103
28.	2.33	0.90	0.130	(0.191)		0.027	0.103
29.	2.42	0.90	0.130	(0.191)		0.027	0.103
30.	2.50	0.90	0.130	(0.191)		0.027	0.103
31.	2.58	0.90	0.130	(0.191)		0.027	0.103
32.	2.67	0.90	0.130	(0.191)		0.027	0.103
33.	2.75	1.00	0.144	(0.191)		0.030	0.114
34.	2.83	1.00	0.144	(0.191)		0.030	0.114
35.	2.92	1.00	0.144	(0.191)		0.030	0.114
36.	3.00	1.00	0.144	(0.191)		0.030	0.114
37.	3.08	1.00	0.144	(0.191)		0.030	0.114
38.	3.17	1.10	0.158	(0.191)		0.033	0.126
39.	3.25	1.10	0.158	(0.191)		0.033	0.126
40.	3.33	1.10	0.158	(0.191)		0.033	0.126
41.	3.42	1.20	0.173	(0.191)		0.036	0.137
42.	3.50	1.30	0.187	(0.191)		0.039	0.149
43.	3.58	1.40	0.202	(0.191)		0.042	0.160
44.	3.67	1.40	0.202	(0.191)		0.042	0.160
45.	3.75	1.50	0.216	(0.191)		0.044	0.172
46.	3.83	1.50	0.216	(0.191)		0.044	0.172
47.	3.92	1.60	0.230	(0.191)		0.047	0.183
48.	4.00	1.60	0.230	(0.191)		0.047	0.183
49.	4.08	1.70	0.245	(0.191)		0.050	0.194

50. 4.17	1.80	0.259	(0.191)	0.053	0.206
51. 4.25	1.90	0.274	(0.191)	0.056	0.217
52. 4.33	2.00	0.288	(0.191)	0.059	0.229
53. 4.42	2.10	0.302	(0.191)	0.062	0.240
54. 4.50	2.10	0.302	(0.191)	0.062	0.240
55. 4.58	2.20	0.317	(0.191)	0.065	0.252
56. 4.67	2.30	0.331	(0.191)	0.068	0.263
57. 4.75	2.40	0.346	(0.191)	0.071	0.274
58. 4.83	2.40	0.346	(0.191)	0.071	0.274
59. 4.92	2.50	0.360	(0.191)	0.074	0.286
60. 5.00	2.60	0.374	(0.191)	0.077	0.297
61. 5.08	3.10	0.446	(0.191)	0.092	0.354
62. 5.17	3.60	0.518	(0.191)	0.107	0.412
63. 5.25	3.90	0.562	(0.191)	0.116	0.446
64. 5.33	4.20	0.605	(0.191)	0.125	0.480
65. 5.42	4.70	0.677	(0.191)	0.139	0.537
66. 5.50	5.60	0.806	(0.191)	0.166	0.640
67. 5.58	1.90	0.274	(0.191)	0.056	0.217
68. 5.67	0.90	0.130	(0.191)	0.027	0.103
69. 5.75	0.60	0.086	(0.191)	0.018	0.069
70. 5.83	0.50	0.072	(0.191)	0.015	0.057
71. 5.92	0.30	0.043	(0.191)	0.009	0.034
72. 6.00	0.20	0.029	(0.191)	0.006	0.023

(Loss Rate Not Used)

Sum = 100.0 Sum = 11.4

Flood volume = Effective rainfall 0.95(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.25(In)
Total soil loss = 0.007(Ac.Ft)
Total rainfall = 1.20(In)
Flood volume = 1141.4 Cubic Feet
Total soil loss = 296.1 Cubic Feet

Peak flow rate of this hydrograph = 0.213(CFS)

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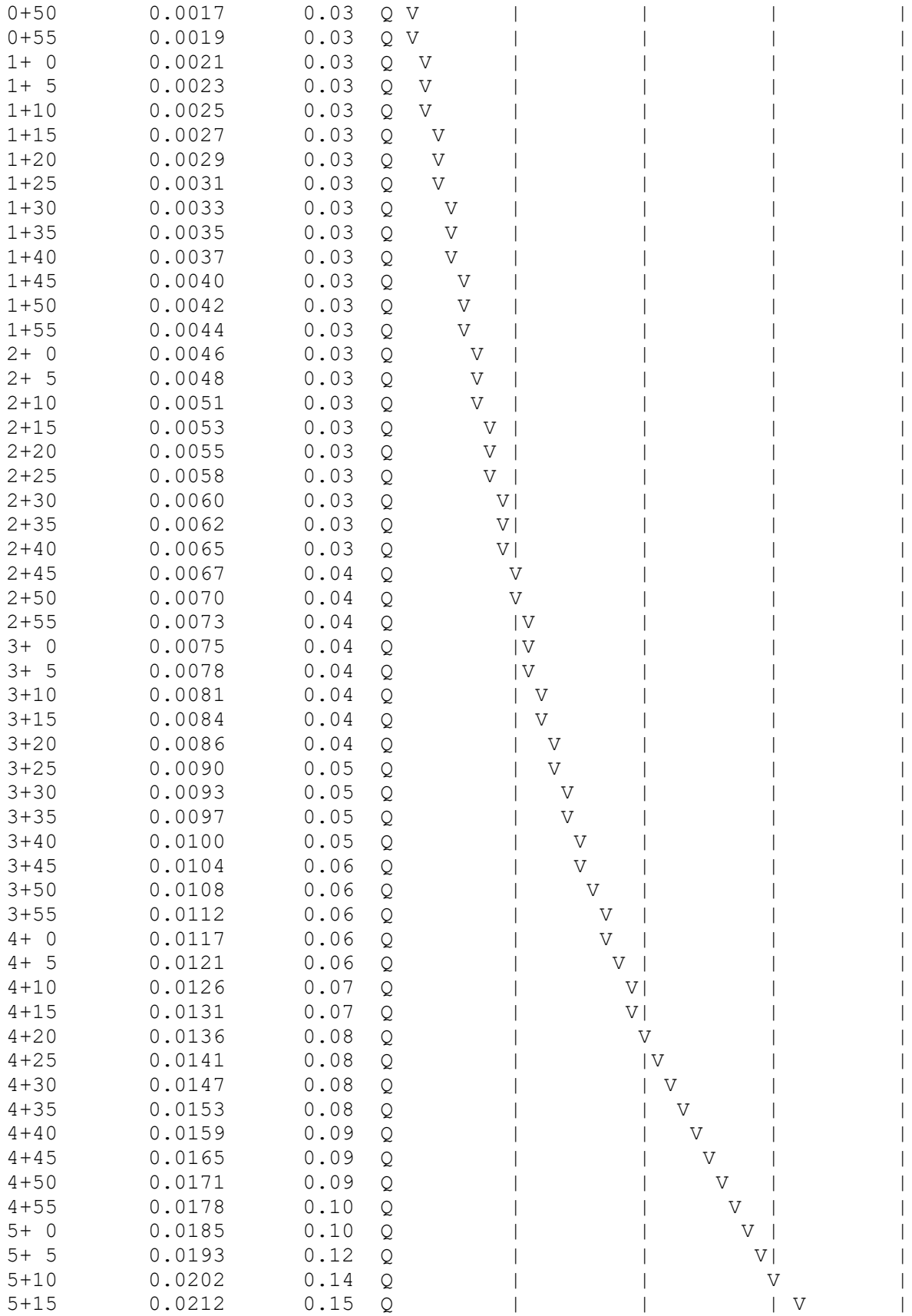
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0003	0.02	Q	|	|	|	|
0+15	0.0004	0.02	Q	|	|	|	|
0+20	0.0006	0.02	Q	|	|	|	|
0+25	0.0008	0.02	QV	|	|	|	|
0+30	0.0009	0.03	QV	|	|	|	|
0+35	0.0011	0.03	QV	|	|	|	|
0+40	0.0013	0.03	QV	|	|	|	|
0+45	0.0015	0.03	Q V	|	|	|	|


0+50 0.0017 0.03 Q V
0+55 0.0019 0.03 Q V
1+ 0 0.0021 0.03 Q V
1+ 5 0.0023 0.03 Q V
1+10 0.0025 0.03 Q V
1+15 0.0027 0.03 Q V
1+20 0.0029 0.03 Q V
1+25 0.0031 0.03 Q V
1+30 0.0033 0.03 Q V
1+35 0.0035 0.03 Q V
1+40 0.0037 0.03 Q V
1+45 0.0040 0.03 Q V
1+50 0.0042 0.03 Q V
1+55 0.0044 0.03 Q V
2+ 0 0.0046 0.03 Q V
2+ 5 0.0048 0.03 Q V
2+10 0.0051 0.03 Q V
2+15 0.0053 0.03 Q V
2+20 0.0055 0.03 Q V
2+25 0.0058 0.03 Q V
2+30 0.0060 0.03 Q V
2+35 0.0062 0.03 Q V
2+40 0.0065 0.03 Q V
2+45 0.0067 0.04 Q V
2+50 0.0070 0.04 Q V
2+55 0.0073 0.04 Q V
3+ 0 0.0075 0.04 Q V
3+ 5 0.0078 0.04 Q V
3+10 0.0081 0.04 Q V
3+15 0.0084 0.04 Q V
3+20 0.0086 0.04 Q V
3+25 0.0090 0.05 Q V
3+30 0.0093 0.05 Q V
3+35 0.0097 0.05 Q V
3+40 0.0100 0.05 Q V
3+45 0.0104 0.06 Q V
3+50 0.0108 0.06 Q V
3+55 0.0112 0.06 Q V
4+ 0 0.0117 0.06 Q V
4+ 5 0.0121 0.06 Q V
4+10 0.0126 0.07 Q V
4+15 0.0131 0.07 Q V
4+20 0.0136 0.08 Q V
4+25 0.0141 0.08 Q V
4+30 0.0147 0.08 Q V
4+35 0.0153 0.08 Q V
4+40 0.0159 0.09 Q V
4+45 0.0165 0.09 Q V
4+50 0.0171 0.09 Q V
4+55 0.0178 0.10 Q V
5+ 0 0.0185 0.10 Q V
5+ 5 0.0193 0.12 Q V
5+10 0.0202 0.14 Q V
5+15 0.0212 0.15 Q V

```
    5+20       0.0224      0.16  Q          |          |          |   V      |
    5+25       0.0236      0.18  Q          |          |          |     V    |
    5+30       0.0250      0.21  Q          |          |          |       V  |
    5+35       0.0255      0.07  Q          |          |          |         V|
    5+40       0.0258      0.03  Q          |          |          |         V|
    5+45       0.0259      0.02  Q          |          |          |         V|
    5+50       0.0261      0.02  Q          |          |          |         V|
    5+55       0.0261      0.01  Q          |          |          |         V|
    6+ 0       0.0262      0.01  Q          |          |          |          V
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPDRYWELL242.out

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.00                    0.66

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             5.90                    1.95

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    2.000(In)
      Area Averaged 100-Year Rainfall =    5.900(In)

      Point rain (area averaged) =    2.000(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    2.000(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.867        0.191        1.000      0.191
                                                          Sum (F) =
0.191
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                           U n i t  H y d r o g r a p h
                                VALLEY S-Curve
      ------------------------------------------------------------------
                           Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                1   0.083       1068.017        100.000             0.333
                                                                Sum =
100.000   Sum=       0.333
---------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum
calculated loss
```

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1. 0.08	0.07	0.016	(0.339)	0.003	0.013
2. 0.17	0.07	0.016	(0.338)	0.003	0.013
3. 0.25	0.07	0.016	(0.336)	0.003	0.013
4. 0.33	0.10	0.024	(0.335)	0.005	0.019
5. 0.42	0.10	0.024	(0.334)	0.005	0.019
6. 0.50	0.10	0.024	(0.332)	0.005	0.019
7. 0.58	0.10	0.024	(0.331)	0.005	0.019
8. 0.67	0.10	0.024	(0.330)	0.005	0.019
9. 0.75	0.10	0.024	(0.329)	0.005	0.019
10. 0.83	0.13	0.032	(0.327)	0.007	0.025
11. 0.92	0.13	0.032	(0.326)	0.007	0.025
12. 1.00	0.13	0.032	(0.325)	0.007	0.025
13. 1.08	0.10	0.024	(0.323)	0.005	0.019
14. 1.17	0.10	0.024	(0.322)	0.005	0.019
15. 1.25	0.10	0.024	(0.321)	0.005	0.019
16. 1.33	0.10	0.024	(0.320)	0.005	0.019
17. 1.42	0.10	0.024	(0.318)	0.005	0.019
18. 1.50	0.10	0.024	(0.317)	0.005	0.019
19. 1.58	0.10	0.024	(0.316)	0.005	0.019
20. 1.67	0.10	0.024	(0.315)	0.005	0.019
21. 1.75	0.10	0.024	(0.313)	0.005	0.019
22. 1.83	0.13	0.032	(0.312)	0.007	0.025
23. 1.92	0.13	0.032	(0.311)	0.007	0.025
24. 2.00	0.13	0.032	(0.309)	0.007	0.025
25. 2.08	0.13	0.032	(0.308)	0.007	0.025
26. 2.17	0.13	0.032	(0.307)	0.007	0.025
27. 2.25	0.13	0.032	(0.306)	0.007	0.025
28. 2.33	0.13	0.032	(0.304)	0.007	0.025
29. 2.42	0.13	0.032	(0.303)	0.007	0.025
30. 2.50	0.13	0.032	(0.302)	0.007	0.025
31. 2.58	0.17	0.040	(0.301)	0.008	0.032
32. 2.67	0.17	0.040	(0.300)	0.008	0.032
33. 2.75	0.17	0.040	(0.298)	0.008	0.032
34. 2.83	0.17	0.040	(0.297)	0.008	0.032
35. 2.92	0.17	0.040	(0.296)	0.008	0.032
36. 3.00	0.17	0.040	(0.295)	0.008	0.032
37. 3.08	0.17	0.040	(0.293)	0.008	0.032
38. 3.17	0.17	0.040	(0.292)	0.008	0.032
39. 3.25	0.17	0.040	(0.291)	0.008	0.032
40. 3.33	0.17	0.040	(0.290)	0.008	0.032
41. 3.42	0.17	0.040	(0.289)	0.008	0.032
42. 3.50	0.17	0.040	(0.287)	0.008	0.032
43. 3.58	0.17	0.040	(0.286)	0.008	0.032
44. 3.67	0.17	0.040	(0.285)	0.008	0.032
45. 3.75	0.17	0.040	(0.284)	0.008	0.032
46. 3.83	0.20	0.048	(0.283)	0.010	0.038
47. 3.92	0.20	0.048	(0.281)	0.010	0.038
48. 4.00	0.20	0.048	(0.280)	0.010	0.038
49. 4.08	0.20	0.048	(0.279)	0.010	0.038

50.	4.17	0.20	0.048	(0.278)	0.010	0.038
51.	4.25	0.20	0.048	(0.277)	0.010	0.038
52.	4.33	0.23	0.056	(0.275)	0.012	0.044
53.	4.42	0.23	0.056	(0.274)	0.012	0.044
54.	4.50	0.23	0.056	(0.273)	0.012	0.044
55.	4.58	0.23	0.056	(0.272)	0.012	0.044
56.	4.67	0.23	0.056	(0.271)	0.012	0.044
57.	4.75	0.23	0.056	(0.270)	0.012	0.044
58.	4.83	0.27	0.064	(0.268)	0.013	0.051
59.	4.92	0.27	0.064	(0.267)	0.013	0.051
60.	5.00	0.27	0.064	(0.266)	0.013	0.051
61.	5.08	0.20	0.048	(0.265)	0.010	0.038
62.	5.17	0.20	0.048	(0.264)	0.010	0.038
63.	5.25	0.20	0.048	(0.263)	0.010	0.038
64.	5.33	0.23	0.056	(0.261)	0.012	0.044
65.	5.42	0.23	0.056	(0.260)	0.012	0.044
66.	5.50	0.23	0.056	(0.259)	0.012	0.044
67.	5.58	0.27	0.064	(0.258)	0.013	0.051
68.	5.67	0.27	0.064	(0.257)	0.013	0.051
69.	5.75	0.27	0.064	(0.256)	0.013	0.051
70.	5.83	0.27	0.064	(0.255)	0.013	0.051
71.	5.92	0.27	0.064	(0.254)	0.013	0.051
72.	6.00	0.27	0.064	(0.252)	0.013	0.051
73.	6.08	0.30	0.072	(0.251)	0.015	0.057
74.	6.17	0.30	0.072	(0.250)	0.015	0.057
75.	6.25	0.30	0.072	(0.249)	0.015	0.057
76.	6.33	0.30	0.072	(0.248)	0.015	0.057
77.	6.42	0.30	0.072	(0.247)	0.015	0.057
78.	6.50	0.30	0.072	(0.246)	0.015	0.057
79.	6.58	0.33	0.080	(0.245)	0.016	0.064
80.	6.67	0.33	0.080	(0.244)	0.016	0.064
81.	6.75	0.33	0.080	(0.242)	0.016	0.064
82.	6.83	0.33	0.080	(0.241)	0.016	0.064
83.	6.92	0.33	0.080	(0.240)	0.016	0.064
84.	7.00	0.33	0.080	(0.239)	0.016	0.064
85.	7.08	0.33	0.080	(0.238)	0.016	0.064
86.	7.17	0.33	0.080	(0.237)	0.016	0.064
87.	7.25	0.33	0.080	(0.236)	0.016	0.064
88.	7.33	0.37	0.088	(0.235)	0.018	0.070
89.	7.42	0.37	0.088	(0.234)	0.018	0.070
90.	7.50	0.37	0.088	(0.233)	0.018	0.070
91.	7.58	0.40	0.096	(0.232)	0.020	0.076
92.	7.67	0.40	0.096	(0.231)	0.020	0.076
93.	7.75	0.40	0.096	(0.229)	0.020	0.076
94.	7.83	0.43	0.104	(0.228)	0.021	0.083
95.	7.92	0.43	0.104	(0.227)	0.021	0.083
96.	8.00	0.43	0.104	(0.226)	0.021	0.083
97.	8.08	0.50	0.120	(0.225)	0.025	0.095
98.	8.17	0.50	0.120	(0.224)	0.025	0.095
99.	8.25	0.50	0.120	(0.223)	0.025	0.095
100.	8.33	0.50	0.120	(0.222)	0.025	0.095
101.	8.42	0.50	0.120	(0.221)	0.025	0.095
102.	8.50	0.50	0.120	(0.220)	0.025	0.095
103.	8.58	0.53	0.128	(0.219)	0.026	0.102

104.	8.67	0.53	0.128	(0.218)	0.026	0.102
105.	8.75	0.53	0.128	(0.217)	0.026	0.102
106.	8.83	0.57	0.136	(0.216)	0.028	0.108
107.	8.92	0.57	0.136	(0.215)	0.028	0.108
108.	9.00	0.57	0.136	(0.214)	0.028	0.108
109.	9.08	0.63	0.152	(0.213)	0.031	0.121
110.	9.17	0.63	0.152	(0.212)	0.031	0.121
111.	9.25	0.63	0.152	(0.211)	0.031	0.121
112.	9.33	0.67	0.160	(0.210)	0.033	0.127
113.	9.42	0.67	0.160	(0.209)	0.033	0.127
114.	9.50	0.67	0.160	(0.208)	0.033	0.127
115.	9.58	0.70	0.168	(0.207)	0.035	0.133
116.	9.67	0.70	0.168	(0.206)	0.035	0.133
117.	9.75	0.70	0.168	(0.205)	0.035	0.133
118.	9.83	0.73	0.176	(0.204)	0.036	0.140
119.	9.92	0.73	0.176	(0.203)	0.036	0.140
120.	10.00	0.73	0.176	(0.202)	0.036	0.140
121.	10.08	0.50	0.120	(0.201)	0.025	0.095
122.	10.17	0.50	0.120	(0.200)	0.025	0.095
123.	10.25	0.50	0.120	(0.199)	0.025	0.095
124.	10.33	0.50	0.120	(0.198)	0.025	0.095
125.	10.42	0.50	0.120	(0.197)	0.025	0.095
126.	10.50	0.50	0.120	(0.196)	0.025	0.095
127.	10.58	0.67	0.160	(0.195)	0.033	0.127
128.	10.67	0.67	0.160	(0.194)	0.033	0.127
129.	10.75	0.67	0.160	(0.193)	0.033	0.127
130.	10.83	0.67	0.160	(0.192)	0.033	0.127
131.	10.92	0.67	0.160	(0.191)	0.033	0.127
132.	11.00	0.67	0.160	(0.190)	0.033	0.127
133.	11.08	0.63	0.152	(0.189)	0.031	0.121
134.	11.17	0.63	0.152	(0.189)	0.031	0.121
135.	11.25	0.63	0.152	(0.188)	0.031	0.121
136.	11.33	0.63	0.152	(0.187)	0.031	0.121
137.	11.42	0.63	0.152	(0.186)	0.031	0.121
138.	11.50	0.63	0.152	(0.185)	0.031	0.121
139.	11.58	0.57	0.136	(0.184)	0.028	0.108
140.	11.67	0.57	0.136	(0.183)	0.028	0.108
141.	11.75	0.57	0.136	(0.182)	0.028	0.108
142.	11.83	0.60	0.144	(0.181)	0.030	0.114
143.	11.92	0.60	0.144	(0.180)	0.030	0.114
144.	12.00	0.60	0.144	(0.179)	0.030	0.114
145.	12.08	0.83	0.200	(0.179)	0.041	0.159
146.	12.17	0.83	0.200	(0.178)	0.041	0.159
147.	12.25	0.83	0.200	(0.177)	0.041	0.159
148.	12.33	0.87	0.208	(0.176)	0.043	0.165
149.	12.42	0.87	0.208	(0.175)	0.043	0.165
150.	12.50	0.87	0.208	(0.174)	0.043	0.165
151.	12.58	0.93	0.224	(0.173)	0.046	0.178
152.	12.67	0.93	0.224	(0.172)	0.046	0.178
153.	12.75	0.93	0.224	(0.171)	0.046	0.178
154.	12.83	0.97	0.232	(0.171)	0.048	0.184
155.	12.92	0.97	0.232	(0.170)	0.048	0.184
156.	13.00	0.97	0.232	(0.169)	0.048	0.184
157.	13.08	1.13	0.272	(0.168)	0.056	0.216

158. 13.17	1.13	0.272	(0.167)	0.056	0.216
159. 13.25	1.13	0.272	(0.166)	0.056	0.216
160. 13.33	1.13	0.272	(0.165)	0.056	0.216
161. 13.42	1.13	0.272	(0.165)	0.056	0.216
162. 13.50	1.13	0.272	(0.164)	0.056	0.216
163. 13.58	0.77	0.184	(0.163)	0.038	0.146
164. 13.67	0.77	0.184	(0.162)	0.038	0.146
165. 13.75	0.77	0.184	(0.161)	0.038	0.146
166. 13.83	0.77	0.184	(0.160)	0.038	0.146
167. 13.92	0.77	0.184	(0.160)	0.038	0.146
168. 14.00	0.77	0.184	(0.159)	0.038	0.146
169. 14.08	0.90	0.216	(0.158)	0.044	0.172
170. 14.17	0.90	0.216	(0.157)	0.044	0.172
171. 14.25	0.90	0.216	(0.156)	0.044	0.172
172. 14.33	0.87	0.208	(0.156)	0.043	0.165
173. 14.42	0.87	0.208	(0.155)	0.043	0.165
174. 14.50	0.87	0.208	(0.154)	0.043	0.165
175. 14.58	0.87	0.208	(0.153)	0.043	0.165
176. 14.67	0.87	0.208	(0.152)	0.043	0.165
177. 14.75	0.87	0.208	(0.152)	0.043	0.165
178. 14.83	0.83	0.200	(0.151)	0.041	0.159
179. 14.92	0.83	0.200	(0.150)	0.041	0.159
180. 15.00	0.83	0.200	(0.149)	0.041	0.159
181. 15.08	0.80	0.192	(0.149)	0.040	0.152
182. 15.17	0.80	0.192	(0.148)	0.040	0.152
183. 15.25	0.80	0.192	(0.147)	0.040	0.152
184. 15.33	0.77	0.184	(0.146)	0.038	0.146
185. 15.42	0.77	0.184	(0.146)	0.038	0.146
186. 15.50	0.77	0.184	(0.145)	0.038	0.146
187. 15.58	0.63	0.152	(0.144)	0.031	0.121
188. 15.67	0.63	0.152	(0.143)	0.031	0.121
189. 15.75	0.63	0.152	(0.143)	0.031	0.121
190. 15.83	0.63	0.152	(0.142)	0.031	0.121
191. 15.92	0.63	0.152	(0.141)	0.031	0.121
192. 16.00	0.63	0.152	(0.140)	0.031	0.121
193. 16.08	0.13	0.032	(0.140)	0.007	0.025
194. 16.17	0.13	0.032	(0.139)	0.007	0.025
195. 16.25	0.13	0.032	(0.138)	0.007	0.025
196. 16.33	0.13	0.032	(0.138)	0.007	0.025
197. 16.42	0.13	0.032	(0.137)	0.007	0.025
198. 16.50	0.13	0.032	(0.136)	0.007	0.025
199. 16.58	0.10	0.024	(0.135)	0.005	0.019
200. 16.67	0.10	0.024	(0.135)	0.005	0.019
201. 16.75	0.10	0.024	(0.134)	0.005	0.019
202. 16.83	0.10	0.024	(0.133)	0.005	0.019
203. 16.92	0.10	0.024	(0.133)	0.005	0.019
204. 17.00	0.10	0.024	(0.132)	0.005	0.019
205. 17.08	0.17	0.040	(0.131)	0.008	0.032
206. 17.17	0.17	0.040	(0.131)	0.008	0.032
207. 17.25	0.17	0.040	(0.130)	0.008	0.032
208. 17.33	0.17	0.040	(0.129)	0.008	0.032
209. 17.42	0.17	0.040	(0.129)	0.008	0.032
210. 17.50	0.17	0.040	(0.128)	0.008	0.032
211. 17.58	0.17	0.040	(0.128)	0.008	0.032

212. 17.67	0.17	0.040	(0.127)	0.008	0.032
213. 17.75	0.17	0.040	(0.126)	0.008	0.032
214. 17.83	0.13	0.032	(0.126)	0.007	0.025
215. 17.92	0.13	0.032	(0.125)	0.007	0.025
216. 18.00	0.13	0.032	(0.124)	0.007	0.025
217. 18.08	0.13	0.032	(0.124)	0.007	0.025
218. 18.17	0.13	0.032	(0.123)	0.007	0.025
219. 18.25	0.13	0.032	(0.123)	0.007	0.025
220. 18.33	0.13	0.032	(0.122)	0.007	0.025
221. 18.42	0.13	0.032	(0.121)	0.007	0.025
222. 18.50	0.13	0.032	(0.121)	0.007	0.025
223. 18.58	0.10	0.024	(0.120)	0.005	0.019
224. 18.67	0.10	0.024	(0.120)	0.005	0.019
225. 18.75	0.10	0.024	(0.119)	0.005	0.019
226. 18.83	0.07	0.016	(0.118)	0.003	0.013
227. 18.92	0.07	0.016	(0.118)	0.003	0.013
228. 19.00	0.07	0.016	(0.117)	0.003	0.013
229. 19.08	0.10	0.024	(0.117)	0.005	0.019
230. 19.17	0.10	0.024	(0.116)	0.005	0.019
231. 19.25	0.10	0.024	(0.116)	0.005	0.019
232. 19.33	0.13	0.032	(0.115)	0.007	0.025
233. 19.42	0.13	0.032	(0.115)	0.007	0.025
234. 19.50	0.13	0.032	(0.114)	0.007	0.025
235. 19.58	0.10	0.024	(0.114)	0.005	0.019
236. 19.67	0.10	0.024	(0.113)	0.005	0.019
237. 19.75	0.10	0.024	(0.113)	0.005	0.019
238. 19.83	0.07	0.016	(0.112)	0.003	0.013
239. 19.92	0.07	0.016	(0.112)	0.003	0.013
240. 20.00	0.07	0.016	(0.111)	0.003	0.013
241. 20.08	0.10	0.024	(0.111)	0.005	0.019
242. 20.17	0.10	0.024	(0.110)	0.005	0.019
243. 20.25	0.10	0.024	(0.110)	0.005	0.019
244. 20.33	0.10	0.024	(0.109)	0.005	0.019
245. 20.42	0.10	0.024	(0.109)	0.005	0.019
246. 20.50	0.10	0.024	(0.108)	0.005	0.019
247. 20.58	0.10	0.024	(0.108)	0.005	0.019
248. 20.67	0.10	0.024	(0.107)	0.005	0.019
249. 20.75	0.10	0.024	(0.107)	0.005	0.019
250. 20.83	0.07	0.016	(0.106)	0.003	0.013
251. 20.92	0.07	0.016	(0.106)	0.003	0.013
252. 21.00	0.07	0.016	(0.106)	0.003	0.013
253. 21.08	0.10	0.024	(0.105)	0.005	0.019
254. 21.17	0.10	0.024	(0.105)	0.005	0.019
255. 21.25	0.10	0.024	(0.104)	0.005	0.019
256. 21.33	0.07	0.016	(0.104)	0.003	0.013
257. 21.42	0.07	0.016	(0.104)	0.003	0.013
258. 21.50	0.07	0.016	(0.103)	0.003	0.013
259. 21.58	0.10	0.024	(0.103)	0.005	0.019
260. 21.67	0.10	0.024	(0.102)	0.005	0.019
261. 21.75	0.10	0.024	(0.102)	0.005	0.019
262. 21.83	0.07	0.016	(0.102)	0.003	0.013
263. 21.92	0.07	0.016	(0.101)	0.003	0.013
264. 22.00	0.07	0.016	(0.101)	0.003	0.013
265. 22.08	0.10	0.024	(0.101)	0.005	0.019

266.	22.17	0.10	0.024	(0.100)	0.005	0.019
267.	22.25	0.10	0.024	(0.100)	0.005	0.019
268.	22.33	0.07	0.016	(0.100)	0.003	0.013
269.	22.42	0.07	0.016	(0.099)	0.003	0.013
270.	22.50	0.07	0.016	(0.099)	0.003	0.013
271.	22.58	0.07	0.016	(0.099)	0.003	0.013
272.	22.67	0.07	0.016	(0.099)	0.003	0.013
273.	22.75	0.07	0.016	(0.098)	0.003	0.013
274.	22.83	0.07	0.016	(0.098)	0.003	0.013
275.	22.92	0.07	0.016	(0.098)	0.003	0.013
276.	23.00	0.07	0.016	(0.097)	0.003	0.013
277.	23.08	0.07	0.016	(0.097)	0.003	0.013
278.	23.17	0.07	0.016	(0.097)	0.003	0.013
279.	23.25	0.07	0.016	(0.097)	0.003	0.013
280.	23.33	0.07	0.016	(0.097)	0.003	0.013
281.	23.42	0.07	0.016	(0.096)	0.003	0.013
282.	23.50	0.07	0.016	(0.096)	0.003	0.013
283.	23.58	0.07	0.016	(0.096)	0.003	0.013
284.	23.67	0.07	0.016	(0.096)	0.003	0.013
285.	23.75	0.07	0.016	(0.096)	0.003	0.013
286.	23.83	0.07	0.016	(0.096)	0.003	0.013
287.	23.92	0.07	0.016	(0.096)	0.003	0.013
288.	24.00	0.07	0.016	(0.096)	0.003	0.013

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.1

Flood volume = Effective rainfall 1.59(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.41(In)
Total soil loss = 0.011(Ac.Ft)
Total rainfall = 2.00(In)
Flood volume = 1902.3 Cubic Feet
Total soil loss = 493.5 Cubic Feet

Peak flow rate of this hydrograph = 0.072(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0001	0.00	Q	|	|	|	|
0+15	0.0001	0.00	Q	|	|	|	|
0+20	0.0001	0.01	Q	|	|	|	|
0+25	0.0002	0.01	Q	|	|	|	|
0+30	0.0002	0.01	Q	|	|	|	|
0+35	0.0003	0.01	Q	|	|	|	|
0+40	0.0003	0.01	Q	|	|	|	|
0+45	0.0003	0.01	Q	|	|	|	|

0+50	0.0004	0.01	Q	|	|	|	|
0+55	0.0005	0.01	Q	|	|	|	|
1+ 0	0.0005	0.01	Q	|	|	|	|
1+ 5	0.0006	0.01	Q	|	|	|	|
1+10	0.0006	0.01	Q	|	|	|	|
1+15	0.0007	0.01	Q	|	|	|	|
1+20	0.0007	0.01	Q	|	|	|	|
1+25	0.0007	0.01	Q	|	|	|	|
1+30	0.0008	0.01	Q	|	|	|	|
1+35	0.0008	0.01	Q	|	|	|	|
1+40	0.0009	0.01	Q	|	|	|	|
1+45	0.0009	0.01	Q	|	|	|	|
1+50	0.0010	0.01	Q	|	|	|	|
1+55	0.0010	0.01	Q	|	|	|	|
2+ 0	0.0011	0.01	Q	|	|	|	|
2+ 5	0.0011	0.01	QV	|	|	|	|
2+10	0.0012	0.01	QV	|	|	|	|
2+15	0.0013	0.01	QV	|	|	|	|
2+20	0.0013	0.01	QV	|	|	|	|
2+25	0.0014	0.01	QV	|	|	|	|
2+30	0.0014	0.01	QV	|	|	|	|
2+35	0.0015	0.01	QV	|	|	|	|
2+40	0.0016	0.01	QV	|	|	|	|
2+45	0.0017	0.01	QV	|	|	|	|
2+50	0.0017	0.01	QV	|	|	|	|
2+55	0.0018	0.01	QV	|	|	|	|
3+ 0	0.0019	0.01	QV	|	|	|	|
3+ 5	0.0020	0.01	QV	|	|	|	|
3+10	0.0020	0.01	QV	|	|	|	|
3+15	0.0021	0.01	QV	|	|	|	|
3+20	0.0022	0.01	QV	|	|	|	|
3+25	0.0022	0.01	Q V	|	|	|	|
3+30	0.0023	0.01	Q V	|	|	|	|
3+35	0.0024	0.01	Q V	|	|	|	|
3+40	0.0025	0.01	Q V	|	|	|	|
3+45	0.0025	0.01	Q V	|	|	|	|
3+50	0.0026	0.01	Q V	|	|	|	|
3+55	0.0027	0.01	Q V	|	|	|	|
4+ 0	0.0028	0.01	Q V	|	|	|	|
4+ 5	0.0029	0.01	Q V	|	|	|	|
4+10	0.0030	0.01	Q V	|	|	|	|
4+15	0.0031	0.01	Q V	|	|	|	|
4+20	0.0032	0.01	Q V	|	|	|	|
4+25	0.0033	0.01	Q V	|	|	|	|
4+30	0.0034	0.01	Q V	|	|	|	|
4+35	0.0035	0.01	Q V	|	|	|	|
4+40	0.0036	0.01	Q V	|	|	|	|
4+45	0.0037	0.01	Q V	|	|	|	|
4+50	0.0038	0.02	Q V	|	|	|	|
4+55	0.0039	0.02	Q V	|	|	|	|
5+ 0	0.0040	0.02	Q V	|	|	|	|
5+ 5	0.0041	0.01	Q V	|	|	|	|
5+10	0.0042	0.01	Q V	|	|	|	|
5+15	0.0043	0.01	Q V	|	|	|	|

5+20	0.0044	0.01	Q	V	|	|	|	|
5+25	0.0045	0.01	Q	V	|	|	|	|
5+30	0.0046	0.01	Q	V	|	|	|	|
5+35	0.0047	0.02	Q	V	|	|	|	|
5+40	0.0048	0.02	Q	V	|	|	|	|
5+45	0.0049	0.02	Q	V	|	|	|	|
5+50	0.0051	0.02	Q	V	|	|	|	|
5+55	0.0052	0.02	Q	V	|	|	|	|
6+ 0	0.0053	0.02	Q	V	|	|	|	|
6+ 5	0.0054	0.02	Q	V	|	|	|	|
6+10	0.0055	0.02	Q	V	|	|	|	|
6+15	0.0057	0.02	Q	V	|	|	|	|
6+20	0.0058	0.02	Q	V	|	|	|	|
6+25	0.0059	0.02	Q	V	|	|	|	|
6+30	0.0061	0.02	Q	V	|	|	|	|
6+35	0.0062	0.02	Q	V	|	|	|	|
6+40	0.0064	0.02	Q	V	|	|	|	|
6+45	0.0065	0.02	Q	V	|	|	|	|
6+50	0.0067	0.02	Q	V	|	|	|	|
6+55	0.0068	0.02	Q	V	|	|	|	|
7+ 0	0.0069	0.02	Q	V	|	|	|	|
7+ 5	0.0071	0.02	Q	V	|	|	|	|
7+10	0.0072	0.02	Q	V	|	|	|	|
7+15	0.0074	0.02	Q	V	|	|	|	|
7+20	0.0075	0.02	Q	V	|	|	|	|
7+25	0.0077	0.02	Q	V	|	|	|	|
7+30	0.0079	0.02	Q	V	|	|	|	|
7+35	0.0080	0.03	Q	V	|	|	|	|
7+40	0.0082	0.03	Q	V	|	|	|	|
7+45	0.0084	0.03	Q	V	|	|	|	|
7+50	0.0086	0.03	Q	V	|	|	|	|
7+55	0.0088	0.03	Q	V	|	|	|	|
8+ 0	0.0090	0.03	Q	V	|	|	|	|
8+ 5	0.0092	0.03	Q	V	|	|	|	|
8+10	0.0094	0.03	Q	V	|	|	|	|
8+15	0.0096	0.03	Q	V	|	|	|	|
8+20	0.0098	0.03	Q	V	|	|	|	|
8+25	0.0100	0.03	Q	V	|	|	|	|
8+30	0.0103	0.03	Q	V	|	|	|	|
8+35	0.0105	0.03	Q	V	|	|	|	|
8+40	0.0107	0.03	Q	V	|	|	|	|
8+45	0.0110	0.03	Q	V	|	|	|	|
8+50	0.0112	0.04	Q	V	|	|	|	|
8+55	0.0115	0.04	Q	V	|	|	|	|
9+ 0	0.0117	0.04	Q	V	|	|	|	|
9+ 5	0.0120	0.04	Q	V	|	|	|	|
9+10	0.0123	0.04	Q	V	|	|	|	|
9+15	0.0125	0.04	Q	V	|	|	|	|
9+20	0.0128	0.04	Q	V	|	|	|	|
9+25	0.0131	0.04	Q	V	|	|	|	|
9+30	0.0134	0.04	Q	V	|	|	|	|
9+35	0.0137	0.04	Q	V	|	|	|	|
9+40	0.0140	0.04	Q	V	|	|	|	|
9+45	0.0143	0.04	Q	V	|	|	|	|

9+50	0.0146	0.05	Q	V			
9+55	0.0150	0.05	Q	V			
10+ 0	0.0153	0.05	Q	V			
10+ 5	0.0155	0.03	Q	V			
10+10	0.0157	0.03	Q	V			
10+15	0.0159	0.03	Q	V			
10+20	0.0162	0.03	Q	V			
10+25	0.0164	0.03	Q	V			
10+30	0.0166	0.03	Q	V			
10+35	0.0169	0.04	Q	V			
10+40	0.0172	0.04	Q	V			
10+45	0.0175	0.04	Q	V			
10+50	0.0178	0.04	Q	V			
10+55	0.0181	0.04	Q	V			
11+ 0	0.0183	0.04	Q	V			
11+ 5	0.0186	0.04	Q	V			
11+10	0.0189	0.04	Q	V			
11+15	0.0192	0.04	Q	V			
11+20	0.0194	0.04	Q	V			
11+25	0.0197	0.04	Q	V			
11+30	0.0200	0.04	Q	V			
11+35	0.0202	0.04	Q	V			
11+40	0.0205	0.04	Q	V			
11+45	0.0207	0.04	Q	V			
11+50	0.0210	0.04	Q	V			
11+55	0.0213	0.04	Q	V			
12+ 0	0.0215	0.04	Q	V			
12+ 5	0.0219	0.05	Q	V			
12+10	0.0223	0.05	Q	V			
12+15	0.0226	0.05	Q	V			
12+20	0.0230	0.05	Q	V			
12+25	0.0234	0.05	Q	V			
12+30	0.0238	0.05	Q	V			
12+35	0.0242	0.06	Q	V			
12+40	0.0246	0.06	Q	V			
12+45	0.0250	0.06	Q	V			
12+50	0.0254	0.06	Q	V			
12+55	0.0258	0.06	Q	V			
13+ 0	0.0262	0.06	Q	V			
13+ 5	0.0267	0.07	Q	V			
13+10	0.0272	0.07	Q	V			
13+15	0.0277	0.07	Q	V			
13+20	0.0282	0.07	Q	V			
13+25	0.0287	0.07	Q	V			
13+30	0.0292	0.07	Q	V			
13+35	0.0296	0.05	Q	V			
13+40	0.0299	0.05	Q	V			
13+45	0.0302	0.05	Q	V			
13+50	0.0306	0.05	Q	V			
13+55	0.0309	0.05	Q	V			
14+ 0	0.0312	0.05	Q	V			
14+ 5	0.0316	0.06	Q	V			
14+10	0.0320	0.06	Q	V			
14+15	0.0324	0.06	Q	V			

14+20	0.0328	0.05	Q	|	|	V	|
14+25	0.0332	0.05	Q	|	|	V	|
14+30	0.0335	0.05	Q	|	|	V	|
14+35	0.0339	0.05	Q	|	|	|V	|
14+40	0.0343	0.05	Q	|	|	|V	|
14+45	0.0347	0.05	Q	|	|	|V	|
14+50	0.0350	0.05	Q	|	|	| V	|
14+55	0.0354	0.05	Q	|	|	| V	|
15+ 0	0.0358	0.05	Q	|	|	| V	|
15+ 5	0.0361	0.05	Q	|	|	| V	|
15+10	0.0365	0.05	Q	|	|	| V	|
15+15	0.0368	0.05	Q	|	|	| V	|
15+20	0.0371	0.05	Q	|	|	| V	|
15+25	0.0375	0.05	Q	|	|	| V	|
15+30	0.0378	0.05	Q	|	|	| V	|
15+35	0.0381	0.04	Q	|	|	| V	|
15+40	0.0384	0.04	Q	|	|	| V	|
15+45	0.0386	0.04	Q	|	|	| V	|
15+50	0.0389	0.04	Q	|	|	| V	|
15+55	0.0392	0.04	Q	|	|	| V	|
16+ 0	0.0395	0.04	Q	|	|	| V	|
16+ 5	0.0395	0.01	Q	|	|	| V	|
16+10	0.0396	0.01	Q	|	|	| V	|
16+15	0.0397	0.01	Q	|	|	| V	|
16+20	0.0397	0.01	Q	|	|	| V	|
16+25	0.0398	0.01	Q	|	|	| V	|
16+30	0.0398	0.01	Q	|	|	| V	|
16+35	0.0399	0.01	Q	|	|	| V	|
16+40	0.0399	0.01	Q	|	|	| V	|
16+45	0.0400	0.01	Q	|	|	| V	|
16+50	0.0400	0.01	Q	|	|	| V	|
16+55	0.0400	0.01	Q	|	|	| V	|
17+ 0	0.0401	0.01	Q	|	|	| V	|
17+ 5	0.0402	0.01	Q	|	|	| V	|
17+10	0.0402	0.01	Q	|	|	| V	|
17+15	0.0403	0.01	Q	|	|	| V	|
17+20	0.0404	0.01	Q	|	|	| V	|
17+25	0.0405	0.01	Q	|	|	| V	|
17+30	0.0405	0.01	Q	|	|	| V	|
17+35	0.0406	0.01	Q	|	|	| V	|
17+40	0.0407	0.01	Q	|	|	| V	|
17+45	0.0407	0.01	Q	|	|	| V	|
17+50	0.0408	0.01	Q	|	|	| V	|
17+55	0.0409	0.01	Q	|	|	| V	|
18+ 0	0.0409	0.01	Q	|	|	| V	|
18+ 5	0.0410	0.01	Q	|	|	| V	|
18+10	0.0410	0.01	Q	|	|	| V	|
18+15	0.0411	0.01	Q	|	|	| V	|
18+20	0.0412	0.01	Q	|	|	| V	|
18+25	0.0412	0.01	Q	|	|	| V	|
18+30	0.0413	0.01	Q	|	|	| V	|
18+35	0.0413	0.01	Q	|	|	| V	|
18+40	0.0414	0.01	Q	|	|	| V	|
18+45	0.0414	0.01	Q	|	|	| V	|

18+50	0.0414	0.00	Q	|	|	|	V |
18+55	0.0415	0.00	Q	|	|	|	V |
19+ 0	0.0415	0.00	Q	|	|	|	V |
19+ 5	0.0415	0.01	Q	|	|	|	V |
19+10	0.0416	0.01	Q	|	|	|	V |
19+15	0.0416	0.01	Q	|	|	|	V |
19+20	0.0417	0.01	Q	|	|	|	V |
19+25	0.0417	0.01	Q	|	|	|	V |
19+30	0.0418	0.01	Q	|	|	|	V |
19+35	0.0418	0.01	Q	|	|	|	V |
19+40	0.0419	0.01	Q	|	|	|	V |
19+45	0.0419	0.01	Q	|	|	|	V |
19+50	0.0420	0.00	Q	|	|	|	V |
19+55	0.0420	0.00	Q	|	|	|	V |
20+ 0	0.0420	0.00	Q	|	|	|	V |
20+ 5	0.0421	0.01	Q	|	|	|	V |
20+10	0.0421	0.01	Q	|	|	|	V |
20+15	0.0421	0.01	Q	|	|	|	V |
20+20	0.0422	0.01	Q	|	|	|	V |
20+25	0.0422	0.01	Q	|	|	|	V |
20+30	0.0423	0.01	Q	|	|	|	V |
20+35	0.0423	0.01	Q	|	|	|	V |
20+40	0.0424	0.01	Q	|	|	|	V |
20+45	0.0424	0.01	Q	|	|	|	V |
20+50	0.0424	0.00	Q	|	|	|	V |
20+55	0.0425	0.00	Q	|	|	|	V |
21+ 0	0.0425	0.00	Q	|	|	|	V |
21+ 5	0.0425	0.01	Q	|	|	|	V |
21+10	0.0426	0.01	Q	|	|	|	V |
21+15	0.0426	0.01	Q	|	|	|	V|
21+20	0.0427	0.00	Q	|	|	|	V|
21+25	0.0427	0.00	Q	|	|	|	V|
21+30	0.0427	0.00	Q	|	|	|	V|
21+35	0.0428	0.01	Q	|	|	|	V|
21+40	0.0428	0.01	Q	|	|	|	V|
21+45	0.0428	0.01	Q	|	|	|	V|
21+50	0.0429	0.00	Q	|	|	|	V|
21+55	0.0429	0.00	Q	|	|	|	V|
22+ 0	0.0429	0.00	Q	|	|	|	V|
22+ 5	0.0430	0.01	Q	|	|	|	V|
22+10	0.0430	0.01	Q	|	|	|	V|
22+15	0.0431	0.01	Q	|	|	|	V|
22+20	0.0431	0.00	Q	|	|	|	V|
22+25	0.0431	0.00	Q	|	|	|	V|
22+30	0.0431	0.00	Q	|	|	|	V|
22+35	0.0432	0.00	Q	|	|	|	V|
22+40	0.0432	0.00	Q	|	|	|	V|
22+45	0.0432	0.00	Q	|	|	|	V|
22+50	0.0433	0.00	Q	|	|	|	V|
22+55	0.0433	0.00	Q	|	|	|	V|
23+ 0	0.0433	0.00	Q	|	|	|	V|
23+ 5	0.0433	0.00	Q	|	|	|	V|
23+10	0.0434	0.00	Q	|	|	|	V|
23+15	0.0434	0.00	Q	|	|	|	V|

23+20	0.0434	0.00	Q	|	|	|	V|
23+25	0.0435	0.00	Q	|	|	|	V|
23+30	0.0435	0.00	Q	|	|	|	V|
23+35	0.0435	0.00	Q	|	|	|	V|
23+40	0.0436	0.00	Q	|	|	|	V|
23+45	0.0436	0.00	Q	|	|	|	V|
23+50	0.0436	0.00	Q	|	|	|	V|
23+55	0.0436	0.00	Q	|	|	|	V|
24+ 0	0.0437	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             0.50                   0.17

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             1.30                   0.43

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    0.500(In)
      Area Averaged 100-Year Rainfall =    1.300(In)

      Point rain (area averaged) =    0.687(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    0.687(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.867        0.191        1.000      0.191
                                                          Sum (F) =
0.191
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------------
-
      Slope of intensity-duration curve for a 1 hour storm =0.5000
      ------------------------------------------------------------------------
--

                              U n i t  H y d r o g r a p h
                                   VALLEY S-Curve
      ------------------------------------------------------------------------
                              Unit Hydrograph Data
      ------------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------------
-
                  1   0.083       1068.017        100.000              0.333
                                                                    Sum =
100.000   Sum=       0.333
------------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	4.20	0.346	(0.191)	0.071	0.275
2. 0.17	4.30	0.355	(0.191)	0.073	0.282
3. 0.25	5.00	0.412	(0.191)	0.085	0.327
4. 0.33	5.00	0.412	(0.191)	0.085	0.327
5. 0.42	5.80	0.478	(0.191)	0.099	0.380
6. 0.50	6.50	0.536	(0.191)	0.110	0.426
7. 0.58	7.40	0.610	(0.191)	0.126	0.485
8. 0.67	8.60	0.709	(0.191)	0.146	0.563
9. 0.75	12.30	1.015	0.191	(0.209)	0.823
10. 0.83	29.10	2.400	0.191	(0.494)	2.209
11. 0.92	6.80	0.561	(0.191)	0.116	0.445
12. 1.00	5.00	0.412	(0.191)	0.085	0.327
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	6.9

Flood volume = Effective rainfall 0.57(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.11(In)
Total soil loss = 0.003(Ac.Ft)
Total rainfall = 0.69(In)
Flood volume = 685.8 Cubic Feet
Total soil loss = 137.6 Cubic Feet

Peak flow rate of this hydrograph = 0.735(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0006	0.09	QV
0+10	0.0013	0.09	Q V
0+15	0.0020	0.11	Q V
0+20	0.0028	0.11	Q V
0+25	0.0036	0.13	Q V
0+30	0.0046	0.14	Q V
0+35	0.0057	0.16	Q V
0+40	0.0070	0.19	Q V
0+45	0.0089	0.27	Q V
0+50	0.0140	0.74	Q V
0+55	0.0150	0.15	Q V
1+ 0	0.0157	0.11	Q V

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             0.85                   0.28

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.00                   0.66

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    0.850(In)
      Area Averaged 100-Year Rainfall =    2.000(In)

      Point rain (area averaged) =    1.119(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.119(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.867        0.191       1.000      0.191
                                                           Sum (F) =
0.191
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                           U n i t  H y d r o g r a p h
                                VALLEY S-Curve
      ------------------------------------------------------------------
                           Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                           Graph %            (CFS)
      ------------------------------------------------------------------
-
                1   0.083       1068.017        100.000              0.333
                                                                Sum =
100.000   Sum=       0.333
-----------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum
calculated loss
```

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)			Effective
(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1. 0.08	1.30	0.175	(0.191)		0.036	0.139
2. 0.17	1.30	0.175	(0.191)		0.036	0.139
3. 0.25	1.10	0.148	(0.191)		0.030	0.117
4. 0.33	1.50	0.201	(0.191)		0.042	0.160
5. 0.42	1.50	0.201	(0.191)		0.042	0.160
6. 0.50	1.80	0.242	(0.191)		0.050	0.192
7. 0.58	1.50	0.201	(0.191)		0.042	0.160
8. 0.67	1.80	0.242	(0.191)		0.050	0.192
9. 0.75	1.80	0.242	(0.191)		0.050	0.192
10. 0.83	1.50	0.201	(0.191)		0.042	0.160
11. 0.92	1.60	0.215	(0.191)		0.044	0.171
12. 1.00	1.80	0.242	(0.191)		0.050	0.192
13. 1.08	2.20	0.296	(0.191)		0.061	0.235
14. 1.17	2.20	0.296	(0.191)		0.061	0.235
15. 1.25	2.20	0.296	(0.191)		0.061	0.235
16. 1.33	2.00	0.269	(0.191)		0.055	0.213
17. 1.42	2.60	0.349	(0.191)		0.072	0.277
18. 1.50	2.70	0.363	(0.191)		0.075	0.288
19. 1.58	2.40	0.322	(0.191)		0.066	0.256
20. 1.67	2.70	0.363	(0.191)		0.075	0.288
21. 1.75	3.30	0.443	(0.191)		0.091	0.352
22. 1.83	3.10	0.416	(0.191)		0.086	0.331
23. 1.92	2.90	0.390	(0.191)		0.080	0.309
24. 2.00	3.00	0.403	(0.191)		0.083	0.320
25. 2.08	3.10	0.416	(0.191)		0.086	0.331
26. 2.17	4.20	0.564	(0.191)		0.116	0.448
27. 2.25	5.00	0.672	(0.191)		0.138	0.533
28. 2.33	3.50	0.470	(0.191)		0.097	0.373
29. 2.42	6.80	0.913	(0.191)		0.188	0.725
30. 2.50	7.30	0.981	0.191	(	0.202)	0.789
31. 2.58	8.20	1.101	0.191	(	0.227)	0.910
32. 2.67	5.90	0.793	(0.191)		0.163	0.629
33. 2.75	2.00	0.269	(0.191)		0.055	0.213
34. 2.83	1.80	0.242	(0.191)		0.050	0.192
35. 2.92	1.80	0.242	(0.191)		0.050	0.192
36. 3.00	0.60	0.081	(0.191)		0.017	0.064
	(Loss Rate Not Used)					
Sum =	100.0					Sum = 10.7

Flood volume = Effective rainfall 0.89(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.23(In)
Total soil loss = 0.006(Ac.Ft)
Total rainfall = 1.12(In)
Flood volume = 1069.3 Cubic Feet
Total soil loss = 271.6 Cubic Feet

Peak flow rate of this hydrograph = 0.303(CFS)

++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.05	Q				
0+10	0.0006	0.05	QV				
0+15	0.0009	0.04	QV				
0+20	0.0013	0.05	Q V				
0+25	0.0016	0.05	Q V				
0+30	0.0021	0.06	Q V				
0+35	0.0024	0.05	Q V				
0+40	0.0029	0.06	Q V				
0+45	0.0033	0.06	Q V				
0+50	0.0037	0.05	Q V				
0+55	0.0041	0.06	Q V				
1+ 0	0.0045	0.06	Q V				
1+ 5	0.0051	0.08	Q V				
1+10	0.0056	0.08	Q V				
1+15	0.0061	0.08	Q V				
1+20	0.0066	0.07	Q V				
1+25	0.0073	0.09	Q V				
1+30	0.0079	0.10	Q V				
1+35	0.0085	0.09	Q V				
1+40	0.0092	0.10	Q V				
1+45	0.0100	0.12	Q V				
1+50	0.0107	0.11	Q V				
1+55	0.0114	0.10	Q V				
2+ 0	0.0122	0.11	Q V				
2+ 5	0.0129	0.11	Q V				
2+10	0.0140	0.15	Q V				
2+15	0.0152	0.18	Q V				
2+20	0.0160	0.12	Q V				
2+25	0.0177	0.24	Q V				
2+30	0.0195	0.26	Q V				
2+35	0.0216	0.30	Q V				
2+40	0.0230	0.21	Q V				
2+45	0.0235	0.07	Q V				
2+50	0.0240	0.06	Q V				
2+55	0.0244	0.06	Q V				
3+ 0	0.0245	0.02	Q V				

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             1.20                   0.40

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.90                   0.96

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    1.200(In)
      Area Averaged 100-Year Rainfall =    2.900(In)

      Point rain (area averaged) =    1.598(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.598(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.867        0.191        1.000      0.191
                                                          Sum (F) =
0.191
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                1   0.083       1068.017        100.000             0.333
                                                                Sum =
100.000   Sum=       0.333
---------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum
calculated loss
```

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.50	0.096	(0.191)		0.020	0.076
2.	0.17	0.60	0.115	(0.191)		0.024	0.091
3.	0.25	0.60	0.115	(0.191)		0.024	0.091
4.	0.33	0.60	0.115	(0.191)		0.024	0.091
5.	0.42	0.60	0.115	(0.191)		0.024	0.091
6.	0.50	0.70	0.134	(0.191)		0.028	0.107
7.	0.58	0.70	0.134	(0.191)		0.028	0.107
8.	0.67	0.70	0.134	(0.191)		0.028	0.107
9.	0.75	0.70	0.134	(0.191)		0.028	0.107
10.	0.83	0.70	0.134	(0.191)		0.028	0.107
11.	0.92	0.70	0.134	(0.191)		0.028	0.107
12.	1.00	0.80	0.153	(0.191)		0.032	0.122
13.	1.08	0.80	0.153	(0.191)		0.032	0.122
14.	1.17	0.80	0.153	(0.191)		0.032	0.122
15.	1.25	0.80	0.153	(0.191)		0.032	0.122
16.	1.33	0.80	0.153	(0.191)		0.032	0.122
17.	1.42	0.80	0.153	(0.191)		0.032	0.122
18.	1.50	0.80	0.153	(0.191)		0.032	0.122
19.	1.58	0.80	0.153	(0.191)		0.032	0.122
20.	1.67	0.80	0.153	(0.191)		0.032	0.122
21.	1.75	0.80	0.153	(0.191)		0.032	0.122
22.	1.83	0.80	0.153	(0.191)		0.032	0.122
23.	1.92	0.80	0.153	(0.191)		0.032	0.122
24.	2.00	0.90	0.173	(0.191)		0.036	0.137
25.	2.08	0.80	0.153	(0.191)		0.032	0.122
26.	2.17	0.90	0.173	(0.191)		0.036	0.137
27.	2.25	0.90	0.173	(0.191)		0.036	0.137
28.	2.33	0.90	0.173	(0.191)		0.036	0.137
29.	2.42	0.90	0.173	(0.191)		0.036	0.137
30.	2.50	0.90	0.173	(0.191)		0.036	0.137
31.	2.58	0.90	0.173	(0.191)		0.036	0.137
32.	2.67	0.90	0.173	(0.191)		0.036	0.137
33.	2.75	1.00	0.192	(0.191)		0.040	0.152
34.	2.83	1.00	0.192	(0.191)		0.040	0.152
35.	2.92	1.00	0.192	(0.191)		0.040	0.152
36.	3.00	1.00	0.192	(0.191)		0.040	0.152
37.	3.08	1.00	0.192	(0.191)		0.040	0.152
38.	3.17	1.10	0.211	(0.191)		0.043	0.168
39.	3.25	1.10	0.211	(0.191)		0.043	0.168
40.	3.33	1.10	0.211	(0.191)		0.043	0.168
41.	3.42	1.20	0.230	(0.191)		0.047	0.183
42.	3.50	1.30	0.249	(0.191)		0.051	0.198
43.	3.58	1.40	0.268	(0.191)		0.055	0.213
44.	3.67	1.40	0.268	(0.191)		0.055	0.213
45.	3.75	1.50	0.288	(0.191)		0.059	0.228
46.	3.83	1.50	0.288	(0.191)		0.059	0.228
47.	3.92	1.60	0.307	(0.191)		0.063	0.244
48.	4.00	1.60	0.307	(0.191)		0.063	0.244
49.	4.08	1.70	0.326	(0.191)		0.067	0.259

50. 4.17	1.80	0.345	(0.191)	0.071	0.274
51. 4.25	1.90	0.364	(0.191)	0.075	0.289
52. 4.33	2.00	0.384	(0.191)	0.079	0.305
53. 4.42	2.10	0.403	(0.191)	0.083	0.320
54. 4.50	2.10	0.403	(0.191)	0.083	0.320
55. 4.58	2.20	0.422	(0.191)	0.087	0.335
56. 4.67	2.30	0.441	(0.191)	0.091	0.350
57. 4.75	2.40	0.460	(0.191)	0.095	0.365
58. 4.83	2.40	0.460	(0.191)	0.095	0.365
59. 4.92	2.50	0.479	(0.191)	0.099	0.381
60. 5.00	2.60	0.499	(0.191)	0.103	0.396
61. 5.08	3.10	0.595	(0.191)	0.122	0.472
62. 5.17	3.60	0.690	(0.191)	0.142	0.548
63. 5.25	3.90	0.748	(0.191)	0.154	0.594
64. 5.33	4.20	0.805	(0.191)	0.166	0.640
65. 5.42	4.70	0.901	(0.191)	0.186	0.716
66. 5.50	5.60	1.074	0.191	(0.221)	0.883
67. 5.58	1.90	0.364	(0.191)	0.075	0.289
68. 5.67	0.90	0.173	(0.191)	0.036	0.137
69. 5.75	0.60	0.115	(0.191)	0.024	0.091
70. 5.83	0.50	0.096	(0.191)	0.020	0.076
71. 5.92	0.30	0.058	(0.191)	0.012	0.046
72. 6.00	0.20	0.038	(0.191)	0.008	0.030

(Loss Rate Not Used)

Sum = 100.0 Sum = 15.3

Flood volume = Effective rainfall 1.27(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.33(In)
Total soil loss = 0.009(Ac.Ft)
Total rainfall = 1.60(In)
Flood volume = 1523.1 Cubic Feet
Total soil loss = 391.4 Cubic Feet

Peak flow rate of this hydrograph = 0.294(CFS)

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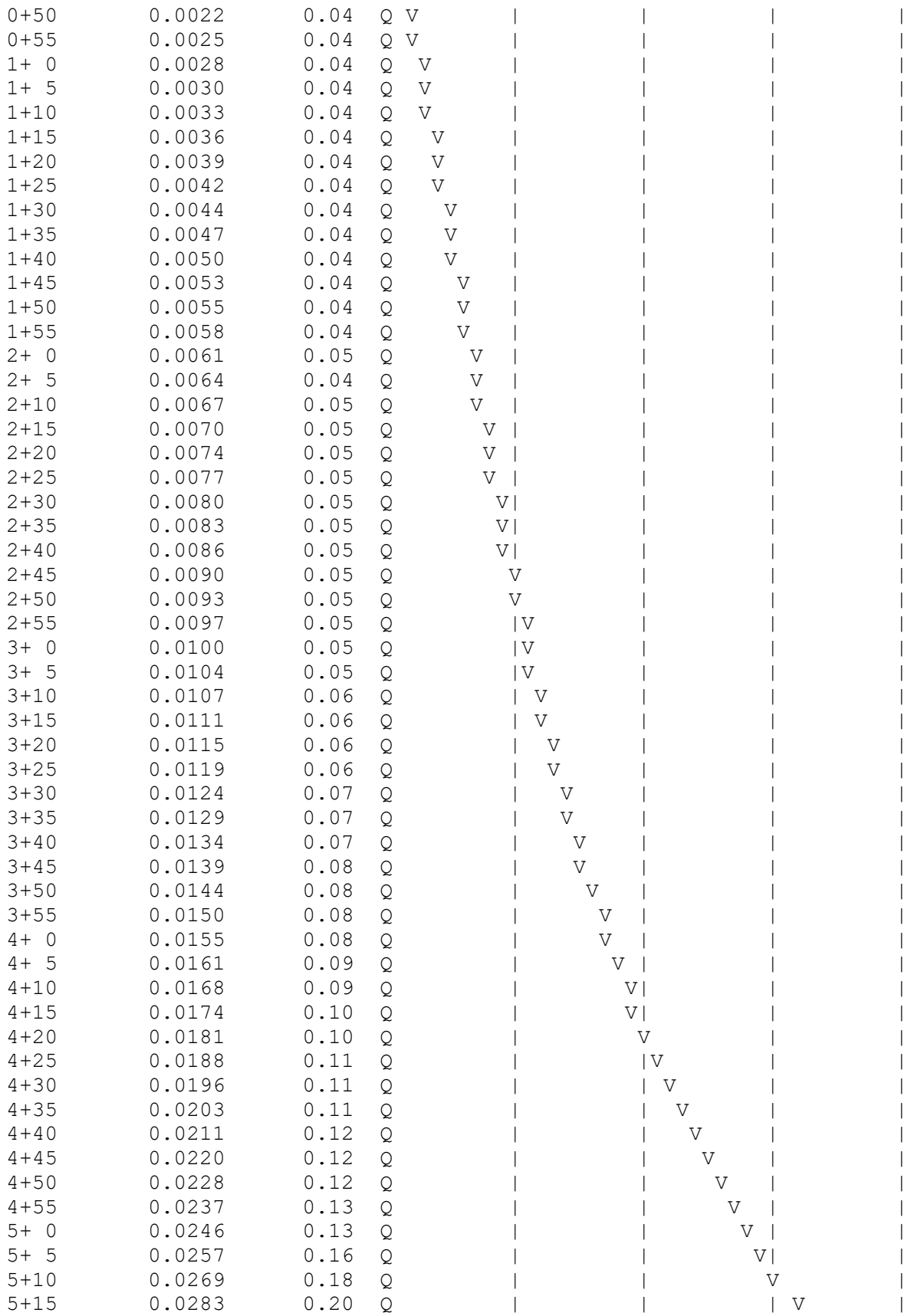
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q				
0+10	0.0004	0.03	Q				
0+15	0.0006	0.03	Q				
0+20	0.0008	0.03	Q				
0+25	0.0010	0.03	QV				
0+30	0.0013	0.04	QV				
0+35	0.0015	0.04	QV				
0+40	0.0017	0.04	QV				
0+45	0.0020	0.04	Q V				



```
    5+20       0.0298      0.21  Q          |          |          |   V      |
    5+25       0.0314      0.24  Q          |          |          |    V     |
    5+30       0.0334      0.29  |Q         |          |          |       V  |
    5+35       0.0341      0.10  Q          |          |          |         V|
    5+40       0.0344      0.05  Q          |          |          |         V|
    5+45       0.0346      0.03  Q          |          |          |         V|
    5+50       0.0348      0.03  Q          |          |          |         V|
    5+55       0.0349      0.02  Q          |          |          |         V|
    6+ 0       0.0350      0.01  Q          |          |          |         V|
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPDRYWELL245.out

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.00                    0.66

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             5.90                    1.95

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    2.000(In)
      Area Averaged 100-Year Rainfall =    5.900(In)

      Point rain (area averaged) =    2.913(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    2.913(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  16.2      0.870     0.867        0.191        1.000      0.191
                                                          Sum (F) =
0.191
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                           U n i t  H y d r o g r a p h
                                VALLEY S-Curve
      ------------------------------------------------------------------
                           Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %           (CFS)
      ------------------------------------------------------------------
-
                1   0.083       1068.017        100.000             0.333
                                                                Sum =
100.000   Sum=       0.333
---------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum
calculated loss
```

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)			Effective
(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1. 0.08	0.07	0.023	(0.339)		0.005	0.019
2. 0.17	0.07	0.023	(0.338)		0.005	0.019
3. 0.25	0.07	0.023	(0.336)		0.005	0.019
4. 0.33	0.10	0.035	(0.335)		0.007	0.028
5. 0.42	0.10	0.035	(0.334)		0.007	0.028
6. 0.50	0.10	0.035	(0.332)		0.007	0.028
7. 0.58	0.10	0.035	(0.331)		0.007	0.028
8. 0.67	0.10	0.035	(0.330)		0.007	0.028
9. 0.75	0.10	0.035	(0.329)		0.007	0.028
10. 0.83	0.13	0.047	(0.327)		0.010	0.037
11. 0.92	0.13	0.047	(0.326)		0.010	0.037
12. 1.00	0.13	0.047	(0.325)		0.010	0.037
13. 1.08	0.10	0.035	(0.323)		0.007	0.028
14. 1.17	0.10	0.035	(0.322)		0.007	0.028
15. 1.25	0.10	0.035	(0.321)		0.007	0.028
16. 1.33	0.10	0.035	(0.320)		0.007	0.028
17. 1.42	0.10	0.035	(0.318)		0.007	0.028
18. 1.50	0.10	0.035	(0.317)		0.007	0.028
19. 1.58	0.10	0.035	(0.316)		0.007	0.028
20. 1.67	0.10	0.035	(0.315)		0.007	0.028
21. 1.75	0.10	0.035	(0.313)		0.007	0.028
22. 1.83	0.13	0.047	(0.312)		0.010	0.037
23. 1.92	0.13	0.047	(0.311)		0.010	0.037
24. 2.00	0.13	0.047	(0.309)		0.010	0.037
25. 2.08	0.13	0.047	(0.308)		0.010	0.037
26. 2.17	0.13	0.047	(0.307)		0.010	0.037
27. 2.25	0.13	0.047	(0.306)		0.010	0.037
28. 2.33	0.13	0.047	(0.304)		0.010	0.037
29. 2.42	0.13	0.047	(0.303)		0.010	0.037
30. 2.50	0.13	0.047	(0.302)		0.010	0.037
31. 2.58	0.17	0.058	(0.301)		0.012	0.046
32. 2.67	0.17	0.058	(0.300)		0.012	0.046
33. 2.75	0.17	0.058	(0.298)		0.012	0.046
34. 2.83	0.17	0.058	(0.297)		0.012	0.046
35. 2.92	0.17	0.058	(0.296)		0.012	0.046
36. 3.00	0.17	0.058	(0.295)		0.012	0.046
37. 3.08	0.17	0.058	(0.293)		0.012	0.046
38. 3.17	0.17	0.058	(0.292)		0.012	0.046
39. 3.25	0.17	0.058	(0.291)		0.012	0.046
40. 3.33	0.17	0.058	(0.290)		0.012	0.046
41. 3.42	0.17	0.058	(0.289)		0.012	0.046
42. 3.50	0.17	0.058	(0.287)		0.012	0.046
43. 3.58	0.17	0.058	(0.286)		0.012	0.046
44. 3.67	0.17	0.058	(0.285)		0.012	0.046
45. 3.75	0.17	0.058	(0.284)		0.012	0.046
46. 3.83	0.20	0.070	(0.283)		0.014	0.056
47. 3.92	0.20	0.070	(0.281)		0.014	0.056
48. 4.00	0.20	0.070	(0.280)		0.014	0.056
49. 4.08	0.20	0.070	(0.279)		0.014	0.056

50.	4.17	0.20	0.070	(0.278)	0.014	0.056
51.	4.25	0.20	0.070	(0.277)	0.014	0.056
52.	4.33	0.23	0.082	(0.275)	0.017	0.065
53.	4.42	0.23	0.082	(0.274)	0.017	0.065
54.	4.50	0.23	0.082	(0.273)	0.017	0.065
55.	4.58	0.23	0.082	(0.272)	0.017	0.065
56.	4.67	0.23	0.082	(0.271)	0.017	0.065
57.	4.75	0.23	0.082	(0.270)	0.017	0.065
58.	4.83	0.27	0.093	(0.268)	0.019	0.074
59.	4.92	0.27	0.093	(0.267)	0.019	0.074
60.	5.00	0.27	0.093	(0.266)	0.019	0.074
61.	5.08	0.20	0.070	(0.265)	0.014	0.056
62.	5.17	0.20	0.070	(0.264)	0.014	0.056
63.	5.25	0.20	0.070	(0.263)	0.014	0.056
64.	5.33	0.23	0.082	(0.261)	0.017	0.065
65.	5.42	0.23	0.082	(0.260)	0.017	0.065
66.	5.50	0.23	0.082	(0.259)	0.017	0.065
67.	5.58	0.27	0.093	(0.258)	0.019	0.074
68.	5.67	0.27	0.093	(0.257)	0.019	0.074
69.	5.75	0.27	0.093	(0.256)	0.019	0.074
70.	5.83	0.27	0.093	(0.255)	0.019	0.074
71.	5.92	0.27	0.093	(0.254)	0.019	0.074
72.	6.00	0.27	0.093	(0.252)	0.019	0.074
73.	6.08	0.30	0.105	(0.251)	0.022	0.083
74.	6.17	0.30	0.105	(0.250)	0.022	0.083
75.	6.25	0.30	0.105	(0.249)	0.022	0.083
76.	6.33	0.30	0.105	(0.248)	0.022	0.083
77.	6.42	0.30	0.105	(0.247)	0.022	0.083
78.	6.50	0.30	0.105	(0.246)	0.022	0.083
79.	6.58	0.33	0.117	(0.245)	0.024	0.093
80.	6.67	0.33	0.117	(0.244)	0.024	0.093
81.	6.75	0.33	0.117	(0.242)	0.024	0.093
82.	6.83	0.33	0.117	(0.241)	0.024	0.093
83.	6.92	0.33	0.117	(0.240)	0.024	0.093
84.	7.00	0.33	0.117	(0.239)	0.024	0.093
85.	7.08	0.33	0.117	(0.238)	0.024	0.093
86.	7.17	0.33	0.117	(0.237)	0.024	0.093
87.	7.25	0.33	0.117	(0.236)	0.024	0.093
88.	7.33	0.37	0.128	(0.235)	0.026	0.102
89.	7.42	0.37	0.128	(0.234)	0.026	0.102
90.	7.50	0.37	0.128	(0.233)	0.026	0.102
91.	7.58	0.40	0.140	(0.232)	0.029	0.111
92.	7.67	0.40	0.140	(0.231)	0.029	0.111
93.	7.75	0.40	0.140	(0.229)	0.029	0.111
94.	7.83	0.43	0.152	(0.228)	0.031	0.120
95.	7.92	0.43	0.152	(0.227)	0.031	0.120
96.	8.00	0.43	0.152	(0.226)	0.031	0.120
97.	8.08	0.50	0.175	(0.225)	0.036	0.139
98.	8.17	0.50	0.175	(0.224)	0.036	0.139
99.	8.25	0.50	0.175	(0.223)	0.036	0.139
100.	8.33	0.50	0.175	(0.222)	0.036	0.139
101.	8.42	0.50	0.175	(0.221)	0.036	0.139
102.	8.50	0.50	0.175	(0.220)	0.036	0.139
103.	8.58	0.53	0.186	(0.219)	0.038	0.148

104.	8.67	0.53	0.186	(0.218)	0.038	0.148
105.	8.75	0.53	0.186	(0.217)	0.038	0.148
106.	8.83	0.57	0.198	(0.216)	0.041	0.157
107.	8.92	0.57	0.198	(0.215)	0.041	0.157
108.	9.00	0.57	0.198	(0.214)	0.041	0.157
109.	9.08	0.63	0.221	(0.213)	0.046	0.176
110.	9.17	0.63	0.221	(0.212)	0.046	0.176
111.	9.25	0.63	0.221	(0.211)	0.046	0.176
112.	9.33	0.67	0.233	(0.210)	0.048	0.185
113.	9.42	0.67	0.233	(0.209)	0.048	0.185
114.	9.50	0.67	0.233	(0.208)	0.048	0.185
115.	9.58	0.70	0.245	(0.207)	0.050	0.194
116.	9.67	0.70	0.245	(0.206)	0.050	0.194
117.	9.75	0.70	0.245	(0.205)	0.050	0.194
118.	9.83	0.73	0.256	(0.204)	0.053	0.204
119.	9.92	0.73	0.256	(0.203)	0.053	0.204
120.	10.00	0.73	0.256	(0.202)	0.053	0.204
121.	10.08	0.50	0.175	(0.201)	0.036	0.139
122.	10.17	0.50	0.175	(0.200)	0.036	0.139
123.	10.25	0.50	0.175	(0.199)	0.036	0.139
124.	10.33	0.50	0.175	(0.198)	0.036	0.139
125.	10.42	0.50	0.175	(0.197)	0.036	0.139
126.	10.50	0.50	0.175	(0.196)	0.036	0.139
127.	10.58	0.67	0.233	(0.195)	0.048	0.185
128.	10.67	0.67	0.233	(0.194)	0.048	0.185
129.	10.75	0.67	0.233	(0.193)	0.048	0.185
130.	10.83	0.67	0.233	(0.192)	0.048	0.185
131.	10.92	0.67	0.233	(0.191)	0.048	0.185
132.	11.00	0.67	0.233	(0.190)	0.048	0.185
133.	11.08	0.63	0.221	(0.189)	0.046	0.176
134.	11.17	0.63	0.221	(0.189)	0.046	0.176
135.	11.25	0.63	0.221	(0.188)	0.046	0.176
136.	11.33	0.63	0.221	(0.187)	0.046	0.176
137.	11.42	0.63	0.221	(0.186)	0.046	0.176
138.	11.50	0.63	0.221	(0.185)	0.046	0.176
139.	11.58	0.57	0.198	(0.184)	0.041	0.157
140.	11.67	0.57	0.198	(0.183)	0.041	0.157
141.	11.75	0.57	0.198	(0.182)	0.041	0.157
142.	11.83	0.60	0.210	(0.181)	0.043	0.167
143.	11.92	0.60	0.210	(0.180)	0.043	0.167
144.	12.00	0.60	0.210	(0.179)	0.043	0.167
145.	12.08	0.83	0.291	(0.179)	0.060	0.231
146.	12.17	0.83	0.291	(0.178)	0.060	0.231
147.	12.25	0.83	0.291	(0.177)	0.060	0.231
148.	12.33	0.87	0.303	(0.176)	0.062	0.241
149.	12.42	0.87	0.303	(0.175)	0.062	0.241
150.	12.50	0.87	0.303	(0.174)	0.062	0.241
151.	12.58	0.93	0.326	(0.173)	0.067	0.259
152.	12.67	0.93	0.326	(0.172)	0.067	0.259
153.	12.75	0.93	0.326	(0.171)	0.067	0.259
154.	12.83	0.97	0.338	(0.171)	0.070	0.268
155.	12.92	0.97	0.338	(0.170)	0.070	0.268
156.	13.00	0.97	0.338	(0.169)	0.070	0.268
157.	13.08	1.13	0.396	(0.168)	0.082	0.315

158.	13.17	1.13	0.396	(0.167)	0.082	0.315
159.	13.25	1.13	0.396	(0.166)	0.082	0.315
160.	13.33	1.13	0.396	(0.165)	0.082	0.315
161.	13.42	1.13	0.396	(0.165)	0.082	0.315
162.	13.50	1.13	0.396	(0.164)	0.082	0.315
163.	13.58	0.77	0.268	(0.163)	0.055	0.213
164.	13.67	0.77	0.268	(0.162)	0.055	0.213
165.	13.75	0.77	0.268	(0.161)	0.055	0.213
166.	13.83	0.77	0.268	(0.160)	0.055	0.213
167.	13.92	0.77	0.268	(0.160)	0.055	0.213
168.	14.00	0.77	0.268	(0.159)	0.055	0.213
169.	14.08	0.90	0.315	(0.158)	0.065	0.250
170.	14.17	0.90	0.315	(0.157)	0.065	0.250
171.	14.25	0.90	0.315	(0.156)	0.065	0.250
172.	14.33	0.87	0.303	(0.156)	0.062	0.241
173.	14.42	0.87	0.303	(0.155)	0.062	0.241
174.	14.50	0.87	0.303	(0.154)	0.062	0.241
175.	14.58	0.87	0.303	(0.153)	0.062	0.241
176.	14.67	0.87	0.303	(0.152)	0.062	0.241
177.	14.75	0.87	0.303	(0.152)	0.062	0.241
178.	14.83	0.83	0.291	(0.151)	0.060	0.231
179.	14.92	0.83	0.291	(0.150)	0.060	0.231
180.	15.00	0.83	0.291	(0.149)	0.060	0.231
181.	15.08	0.80	0.280	(0.149)	0.058	0.222
182.	15.17	0.80	0.280	(0.148)	0.058	0.222
183.	15.25	0.80	0.280	(0.147)	0.058	0.222
184.	15.33	0.77	0.268	(0.146)	0.055	0.213
185.	15.42	0.77	0.268	(0.146)	0.055	0.213
186.	15.50	0.77	0.268	(0.145)	0.055	0.213
187.	15.58	0.63	0.221	(0.144)	0.046	0.176
188.	15.67	0.63	0.221	(0.143)	0.046	0.176
189.	15.75	0.63	0.221	(0.143)	0.046	0.176
190.	15.83	0.63	0.221	(0.142)	0.046	0.176
191.	15.92	0.63	0.221	(0.141)	0.046	0.176
192.	16.00	0.63	0.221	(0.140)	0.046	0.176
193.	16.08	0.13	0.047	(0.140)	0.010	0.037
194.	16.17	0.13	0.047	(0.139)	0.010	0.037
195.	16.25	0.13	0.047	(0.138)	0.010	0.037
196.	16.33	0.13	0.047	(0.138)	0.010	0.037
197.	16.42	0.13	0.047	(0.137)	0.010	0.037
198.	16.50	0.13	0.047	(0.136)	0.010	0.037
199.	16.58	0.10	0.035	(0.135)	0.007	0.028
200.	16.67	0.10	0.035	(0.135)	0.007	0.028
201.	16.75	0.10	0.035	(0.134)	0.007	0.028
202.	16.83	0.10	0.035	(0.133)	0.007	0.028
203.	16.92	0.10	0.035	(0.133)	0.007	0.028
204.	17.00	0.10	0.035	(0.132)	0.007	0.028
205.	17.08	0.17	0.058	(0.131)	0.012	0.046
206.	17.17	0.17	0.058	(0.131)	0.012	0.046
207.	17.25	0.17	0.058	(0.130)	0.012	0.046
208.	17.33	0.17	0.058	(0.129)	0.012	0.046
209.	17.42	0.17	0.058	(0.129)	0.012	0.046
210.	17.50	0.17	0.058	(0.128)	0.012	0.046
211.	17.58	0.17	0.058	(0.128)	0.012	0.046

212. 17.67	0.17	0.058	(0.127)	0.012	0.046
213. 17.75	0.17	0.058	(0.126)	0.012	0.046
214. 17.83	0.13	0.047	(0.126)	0.010	0.037
215. 17.92	0.13	0.047	(0.125)	0.010	0.037
216. 18.00	0.13	0.047	(0.124)	0.010	0.037
217. 18.08	0.13	0.047	(0.124)	0.010	0.037
218. 18.17	0.13	0.047	(0.123)	0.010	0.037
219. 18.25	0.13	0.047	(0.123)	0.010	0.037
220. 18.33	0.13	0.047	(0.122)	0.010	0.037
221. 18.42	0.13	0.047	(0.121)	0.010	0.037
222. 18.50	0.13	0.047	(0.121)	0.010	0.037
223. 18.58	0.10	0.035	(0.120)	0.007	0.028
224. 18.67	0.10	0.035	(0.120)	0.007	0.028
225. 18.75	0.10	0.035	(0.119)	0.007	0.028
226. 18.83	0.07	0.023	(0.118)	0.005	0.019
227. 18.92	0.07	0.023	(0.118)	0.005	0.019
228. 19.00	0.07	0.023	(0.117)	0.005	0.019
229. 19.08	0.10	0.035	(0.117)	0.007	0.028
230. 19.17	0.10	0.035	(0.116)	0.007	0.028
231. 19.25	0.10	0.035	(0.116)	0.007	0.028
232. 19.33	0.13	0.047	(0.115)	0.010	0.037
233. 19.42	0.13	0.047	(0.115)	0.010	0.037
234. 19.50	0.13	0.047	(0.114)	0.010	0.037
235. 19.58	0.10	0.035	(0.114)	0.007	0.028
236. 19.67	0.10	0.035	(0.113)	0.007	0.028
237. 19.75	0.10	0.035	(0.113)	0.007	0.028
238. 19.83	0.07	0.023	(0.112)	0.005	0.019
239. 19.92	0.07	0.023	(0.112)	0.005	0.019
240. 20.00	0.07	0.023	(0.111)	0.005	0.019
241. 20.08	0.10	0.035	(0.111)	0.007	0.028
242. 20.17	0.10	0.035	(0.110)	0.007	0.028
243. 20.25	0.10	0.035	(0.110)	0.007	0.028
244. 20.33	0.10	0.035	(0.109)	0.007	0.028
245. 20.42	0.10	0.035	(0.109)	0.007	0.028
246. 20.50	0.10	0.035	(0.108)	0.007	0.028
247. 20.58	0.10	0.035	(0.108)	0.007	0.028
248. 20.67	0.10	0.035	(0.107)	0.007	0.028
249. 20.75	0.10	0.035	(0.107)	0.007	0.028
250. 20.83	0.07	0.023	(0.106)	0.005	0.019
251. 20.92	0.07	0.023	(0.106)	0.005	0.019
252. 21.00	0.07	0.023	(0.106)	0.005	0.019
253. 21.08	0.10	0.035	(0.105)	0.007	0.028
254. 21.17	0.10	0.035	(0.105)	0.007	0.028
255. 21.25	0.10	0.035	(0.104)	0.007	0.028
256. 21.33	0.07	0.023	(0.104)	0.005	0.019
257. 21.42	0.07	0.023	(0.104)	0.005	0.019
258. 21.50	0.07	0.023	(0.103)	0.005	0.019
259. 21.58	0.10	0.035	(0.103)	0.007	0.028
260. 21.67	0.10	0.035	(0.102)	0.007	0.028
261. 21.75	0.10	0.035	(0.102)	0.007	0.028
262. 21.83	0.07	0.023	(0.102)	0.005	0.019
263. 21.92	0.07	0.023	(0.101)	0.005	0.019
264. 22.00	0.07	0.023	(0.101)	0.005	0.019
265. 22.08	0.10	0.035	(0.101)	0.007	0.028

266.	22.17	0.10	0.035	(0.100)	0.007	0.028
267.	22.25	0.10	0.035	(0.100)	0.007	0.028
268.	22.33	0.07	0.023	(0.100)	0.005	0.019
269.	22.42	0.07	0.023	(0.099)	0.005	0.019
270.	22.50	0.07	0.023	(0.099)	0.005	0.019
271.	22.58	0.07	0.023	(0.099)	0.005	0.019
272.	22.67	0.07	0.023	(0.099)	0.005	0.019
273.	22.75	0.07	0.023	(0.098)	0.005	0.019
274.	22.83	0.07	0.023	(0.098)	0.005	0.019
275.	22.92	0.07	0.023	(0.098)	0.005	0.019
276.	23.00	0.07	0.023	(0.097)	0.005	0.019
277.	23.08	0.07	0.023	(0.097)	0.005	0.019
278.	23.17	0.07	0.023	(0.097)	0.005	0.019
279.	23.25	0.07	0.023	(0.097)	0.005	0.019
280.	23.33	0.07	0.023	(0.097)	0.005	0.019
281.	23.42	0.07	0.023	(0.096)	0.005	0.019
282.	23.50	0.07	0.023	(0.096)	0.005	0.019
283.	23.58	0.07	0.023	(0.096)	0.005	0.019
284.	23.67	0.07	0.023	(0.096)	0.005	0.019
285.	23.75	0.07	0.023	(0.096)	0.005	0.019
286.	23.83	0.07	0.023	(0.096)	0.005	0.019
287.	23.92	0.07	0.023	(0.096)	0.005	0.019
288.	24.00	0.07	0.023	(0.096)	0.005	0.019

(Loss Rate Not Used)

Sum = 100.0 Sum = 27.8

Flood volume = Effective rainfall 2.31(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.60(In)
Total soil loss = 0.017(Ac.Ft)
Total rainfall = 2.91(In)
Flood volume = 2771.1 Cubic Feet
Total soil loss = 719.0 Cubic Feet

Peak flow rate of this hydrograph = 0.105(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.01	Q	|	|	|	|
0+10	0.0001	0.01	Q	|	|	|	|
0+15	0.0001	0.01	Q	|	|	|	|
0+20	0.0002	0.01	Q	|	|	|	|
0+25	0.0003	0.01	Q	|	|	|	|
0+30	0.0003	0.01	Q	|	|	|	|
0+35	0.0004	0.01	Q	|	|	|	|
0+40	0.0004	0.01	Q	|	|	|	|
0+45	0.0005	0.01	Q	|	|	|	|

0+50	0.0006	0.01	Q	|	|	|	|
0+55	0.0007	0.01	Q	|	|	|	|
1+ 0	0.0008	0.01	Q	|	|	|	|
1+ 5	0.0008	0.01	Q	|	|	|	|
1+10	0.0009	0.01	Q	|	|	|	|
1+15	0.0010	0.01	Q	|	|	|	|
1+20	0.0010	0.01	Q	|	|	|	|
1+25	0.0011	0.01	Q	|	|	|	|
1+30	0.0011	0.01	Q	|	|	|	|
1+35	0.0012	0.01	Q	|	|	|	|
1+40	0.0013	0.01	Q	|	|	|	|
1+45	0.0013	0.01	Q	|	|	|	|
1+50	0.0014	0.01	Q	|	|	|	|
1+55	0.0015	0.01	Q	|	|	|	|
2+ 0	0.0016	0.01	Q	|	|	|	|
2+ 5	0.0017	0.01	QV	|	|	|	|
2+10	0.0018	0.01	QV	|	|	|	|
2+15	0.0018	0.01	QV	|	|	|	|
2+20	0.0019	0.01	QV	|	|	|	|
2+25	0.0020	0.01	QV	|	|	|	|
2+30	0.0021	0.01	QV	|	|	|	|
2+35	0.0022	0.02	QV	|	|	|	|
2+40	0.0023	0.02	QV	|	|	|	|
2+45	0.0024	0.02	QV	|	|	|	|
2+50	0.0025	0.02	QV	|	|	|	|
2+55	0.0026	0.02	QV	|	|	|	|
3+ 0	0.0027	0.02	QV	|	|	|	|
3+ 5	0.0028	0.02	QV	|	|	|	|
3+10	0.0029	0.02	QV	|	|	|	|
3+15	0.0031	0.02	QV	|	|	|	|
3+20	0.0032	0.02	QV	|	|	|	|
3+25	0.0033	0.02	Q V	|	|	|	|
3+30	0.0034	0.02	Q V	|	|	|	|
3+35	0.0035	0.02	Q V	|	|	|	|
3+40	0.0036	0.02	Q V	|	|	|	|
3+45	0.0037	0.02	Q V	|	|	|	|
3+50	0.0038	0.02	Q V	|	|	|	|
3+55	0.0039	0.02	Q V	|	|	|	|
4+ 0	0.0041	0.02	Q V	|	|	|	|
4+ 5	0.0042	0.02	Q V	|	|	|	|
4+10	0.0043	0.02	Q V	|	|	|	|
4+15	0.0045	0.02	Q V	|	|	|	|
4+20	0.0046	0.02	Q V	|	|	|	|
4+25	0.0047	0.02	Q V	|	|	|	|
4+30	0.0049	0.02	Q V	|	|	|	|
4+35	0.0050	0.02	Q V	|	|	|	|
4+40	0.0052	0.02	Q V	|	|	|	|
4+45	0.0053	0.02	Q V	|	|	|	|
4+50	0.0055	0.02	Q V	|	|	|	|
4+55	0.0057	0.02	Q V	|	|	|	|
5+ 0	0.0059	0.02	Q V	|	|	|	|
5+ 5	0.0060	0.02	Q V	|	|	|	|
5+10	0.0061	0.02	Q V	|	|	|	|
5+15	0.0062	0.02	Q V	|	|	|	|

5+20	0.0064	0.02	Q	V	|	|	|	|
5+25	0.0065	0.02	Q	V	|	|	|	|
5+30	0.0067	0.02	Q	V	|	|	|	|
5+35	0.0068	0.02	Q	V	|	|	|	|
5+40	0.0070	0.02	Q	V	|	|	|	|
5+45	0.0072	0.02	Q	V	|	|	|	|
5+50	0.0074	0.02	Q	V	|	|	|	|
5+55	0.0075	0.02	Q	V	|	|	|	|
6+ 0	0.0077	0.02	Q	V	|	|	|	|
6+ 5	0.0079	0.03	Q	V	|	|	|	|
6+10	0.0081	0.03	Q	V	|	|	|	|
6+15	0.0083	0.03	Q	V	|	|	|	|
6+20	0.0085	0.03	Q	V	|	|	|	|
6+25	0.0087	0.03	Q	V	|	|	|	|
6+30	0.0088	0.03	Q	V	|	|	|	|
6+35	0.0091	0.03	Q	V	|	|	|	|
6+40	0.0093	0.03	Q	V	|	|	|	|
6+45	0.0095	0.03	Q	V	|	|	|	|
6+50	0.0097	0.03	Q	V	|	|	|	|
6+55	0.0099	0.03	Q	V	|	|	|	|
7+ 0	0.0101	0.03	Q	V	|	|	|	|
7+ 5	0.0103	0.03	Q	V	|	|	|	|
7+10	0.0105	0.03	Q	V	|	|	|	|
7+15	0.0108	0.03	Q	V	|	|	|	|
7+20	0.0110	0.03	Q	V	|	|	|	|
7+25	0.0112	0.03	Q	V	|	|	|	|
7+30	0.0115	0.03	Q	V	|	|	|	|
7+35	0.0117	0.04	Q	V	|	|	|	|
7+40	0.0120	0.04	Q	V	|	|	|	|
7+45	0.0122	0.04	Q	V	|	|	|	|
7+50	0.0125	0.04	Q	V	|	|	|	|
7+55	0.0128	0.04	Q	V	|	|	|	|
8+ 0	0.0130	0.04	Q	V	|	|	|	|
8+ 5	0.0134	0.05	Q	V	|	|	|	|
8+10	0.0137	0.05	Q	V	|	|	|	|
8+15	0.0140	0.05	Q	V	|	|	|	|
8+20	0.0143	0.05	Q	V	|	|	|	|
8+25	0.0146	0.05	Q	V	|	|	|	|
8+30	0.0149	0.05	Q	V	|	|	|	|
8+35	0.0153	0.05	Q	V	|	|	|	|
8+40	0.0156	0.05	Q	V	|	|	|	|
8+45	0.0160	0.05	Q	V	|	|	|	|
8+50	0.0163	0.05	Q	V	|	|	|	|
8+55	0.0167	0.05	Q	V	|	|	|	|
9+ 0	0.0170	0.05	Q	V	|	|	|	|
9+ 5	0.0175	0.06	Q	V	|	|	|	|
9+10	0.0179	0.06	Q	V	|	|	|	|
9+15	0.0183	0.06	Q	V	|	|	|	|
9+20	0.0187	0.06	Q	V	|	|	|	|
9+25	0.0191	0.06	Q	V	|	|	|	|
9+30	0.0195	0.06	Q	V	|	|	|	|
9+35	0.0200	0.06	Q	V	|	|	|	|
9+40	0.0204	0.06	Q	V	|	|	|	|
9+45	0.0209	0.06	Q	V	|	|	|	|

9+50	0.0213	0.07	Q	| V |			
9+55	0.0218	0.07	Q	| V |			
10+ 0	0.0223	0.07	Q	| V |			
10+ 5	0.0226	0.05	Q	| V |			
10+10	0.0229	0.05	Q	| V |			
10+15	0.0232	0.05	Q	| V |			
10+20	0.0235	0.05	Q	| V |			
10+25	0.0239	0.05	Q	| V |			
10+30	0.0242	0.05	Q	| V |			
10+35	0.0246	0.06	Q	| V |			
10+40	0.0250	0.06	Q	| V |			
10+45	0.0254	0.06	Q	| V |			
10+50	0.0259	0.06	Q	| V |			
10+55	0.0263	0.06	Q	| V |			
11+ 0	0.0267	0.06	Q	| V |			
11+ 5	0.0271	0.06	Q	| V |			
11+10	0.0275	0.06	Q	| V |			
11+15	0.0279	0.06	Q	| V |			
11+20	0.0283	0.06	Q	| V |			
11+25	0.0287	0.06	Q	| V |			
11+30	0.0291	0.06	Q	| V |			
11+35	0.0295	0.05	Q	| V |			
11+40	0.0299	0.05	Q	| V |			
11+45	0.0302	0.05	Q	| V |			
11+50	0.0306	0.06	Q	| V|			
11+55	0.0310	0.06	Q	| V|			
12+ 0	0.0314	0.06	Q	| V|			
12+ 5	0.0319	0.08	Q	| V |			
12+10	0.0324	0.08	Q	| V |			
12+15	0.0330	0.08	Q	| V |			
12+20	0.0335	0.08	Q	|V |			
12+25	0.0341	0.08	Q	|V |			
12+30	0.0346	0.08	Q	|V |			
12+35	0.0352	0.09	Q	| V |			
12+40	0.0358	0.09	Q	| V |			
12+45	0.0364	0.09	Q	| V |			
12+50	0.0370	0.09	Q	| V |			
12+55	0.0376	0.09	Q	| V |			
13+ 0	0.0382	0.09	Q	| V |			
13+ 5	0.0390	0.10	Q	| V |			
13+10	0.0397	0.10	Q	| V |			
13+15	0.0404	0.10	Q	| V |			
13+20	0.0411	0.10	Q	| V |			
13+25	0.0418	0.10	Q	| V |			
13+30	0.0426	0.10	Q	| V |			
13+35	0.0430	0.07	Q	| V |			
13+40	0.0435	0.07	Q	| V |			
13+45	0.0440	0.07	Q	| V |			
13+50	0.0445	0.07	Q	| V |			
13+55	0.0450	0.07	Q	| V |			
14+ 0	0.0455	0.07	Q	| V |			
14+ 5	0.0461	0.08	Q	| V |			
14+10	0.0466	0.08	Q	| V|			
14+15	0.0472	0.08	Q	| V|			

14+20	0.0478	0.08	Q	|	|	V	|
14+25	0.0483	0.08	Q	|	|	V	|
14+30	0.0489	0.08	Q	|	|	V	|
14+35	0.0494	0.08	Q	|	|	|V	|
14+40	0.0500	0.08	Q	|	|	|V	|
14+45	0.0505	0.08	Q	|	|	|V	|
14+50	0.0510	0.08	Q	|	|	| V	|
14+55	0.0516	0.08	Q	|	|	| V	|
15+ 0	0.0521	0.08	Q	|	|	| V	|
15+ 5	0.0526	0.07	Q	|	|	| V	|
15+10	0.0531	0.07	Q	|	|	| V	|
15+15	0.0536	0.07	Q	|	|	| V	|
15+20	0.0541	0.07	Q	|	|	| V	|
15+25	0.0546	0.07	Q	|	|	| V	|
15+30	0.0551	0.07	Q	|	|	| V	|
15+35	0.0555	0.06	Q	|	|	| V	|
15+40	0.0559	0.06	Q	|	|	| V	|
15+45	0.0563	0.06	Q	|	|	| V	|
15+50	0.0567	0.06	Q	|	|	| V	|
15+55	0.0571	0.06	Q	|	|	| V	|
16+ 0	0.0575	0.06	Q	|	|	| V	|
16+ 5	0.0576	0.01	Q	|	|	| V	|
16+10	0.0577	0.01	Q	|	|	| V	|
16+15	0.0578	0.01	Q	|	|	| V	|
16+20	0.0578	0.01	Q	|	|	| V	|
16+25	0.0579	0.01	Q	|	|	| V	|
16+30	0.0580	0.01	Q	|	|	| V	|
16+35	0.0581	0.01	Q	|	|	| V	|
16+40	0.0581	0.01	Q	|	|	| V	|
16+45	0.0582	0.01	Q	|	|	| V	|
16+50	0.0583	0.01	Q	|	|	| V	|
16+55	0.0583	0.01	Q	|	|	| V	|
17+ 0	0.0584	0.01	Q	|	|	| V	|
17+ 5	0.0585	0.02	Q	|	|	| V	|
17+10	0.0586	0.02	Q	|	|	| V	|
17+15	0.0587	0.02	Q	|	|	| V	|
17+20	0.0588	0.02	Q	|	|	| V	|
17+25	0.0589	0.02	Q	|	|	| V	|
17+30	0.0590	0.02	Q	|	|	| V	|
17+35	0.0591	0.02	Q	|	|	| V	|
17+40	0.0592	0.02	Q	|	|	| V	|
17+45	0.0594	0.02	Q	|	|	| V	|
17+50	0.0594	0.01	Q	|	|	| V	|
17+55	0.0595	0.01	Q	|	|	| V	|
18+ 0	0.0596	0.01	Q	|	|	| V	|
18+ 5	0.0597	0.01	Q	|	|	| V	|
18+10	0.0598	0.01	Q	|	|	| V	|
18+15	0.0599	0.01	Q	|	|	| V	|
18+20	0.0599	0.01	Q	|	|	| V	|
18+25	0.0600	0.01	Q	|	|	| V	|
18+30	0.0601	0.01	Q	|	|	| V	|
18+35	0.0602	0.01	Q	|	|	| V	|
18+40	0.0602	0.01	Q	|	|	| V	|
18+45	0.0603	0.01	Q	|	|	| V	|

18+50	0.0604	0.01	Q	|	|	|	V |
18+55	0.0604	0.01	Q	|	|	|	V |
19+ 0	0.0604	0.01	Q	|	|	|	V |
19+ 5	0.0605	0.01	Q	|	|	|	V |
19+10	0.0606	0.01	Q	|	|	|	V |
19+15	0.0606	0.01	Q	|	|	|	V |
19+20	0.0607	0.01	Q	|	|	|	V |
19+25	0.0608	0.01	Q	|	|	|	V |
19+30	0.0609	0.01	Q	|	|	|	V |
19+35	0.0609	0.01	Q	|	|	|	V |
19+40	0.0610	0.01	Q	|	|	|	V |
19+45	0.0611	0.01	Q	|	|	|	V |
19+50	0.0611	0.01	Q	|	|	|	V |
19+55	0.0612	0.01	Q	|	|	|	V |
20+ 0	0.0612	0.01	Q	|	|	|	V |
20+ 5	0.0613	0.01	Q	|	|	|	V |
20+10	0.0613	0.01	Q	|	|	|	V |
20+15	0.0614	0.01	Q	|	|	|	V |
20+20	0.0615	0.01	Q	|	|	|	V |
20+25	0.0615	0.01	Q	|	|	|	V |
20+30	0.0616	0.01	Q	|	|	|	V |
20+35	0.0616	0.01	Q	|	|	|	V |
20+40	0.0617	0.01	Q	|	|	|	V |
20+45	0.0618	0.01	Q	|	|	|	V |
20+50	0.0618	0.01	Q	|	|	|	V |
20+55	0.0619	0.01	Q	|	|	|	V |
21+ 0	0.0619	0.01	Q	|	|	|	V |
21+ 5	0.0620	0.01	Q	|	|	|	V |
21+10	0.0620	0.01	Q	|	|	|	V |
21+15	0.0621	0.01	Q	|	|	|	V|
21+20	0.0621	0.01	Q	|	|	|	V|
21+25	0.0622	0.01	Q	|	|	|	V|
21+30	0.0622	0.01	Q	|	|	|	V|
21+35	0.0623	0.01	Q	|	|	|	V|
21+40	0.0623	0.01	Q	|	|	|	V|
21+45	0.0624	0.01	Q	|	|	|	V|
21+50	0.0624	0.01	Q	|	|	|	V|
21+55	0.0625	0.01	Q	|	|	|	V|
22+ 0	0.0625	0.01	Q	|	|	|	V|
22+ 5	0.0626	0.01	Q	|	|	|	V|
22+10	0.0627	0.01	Q	|	|	|	V|
22+15	0.0627	0.01	Q	|	|	|	V|
22+20	0.0628	0.01	Q	|	|	|	V|
22+25	0.0628	0.01	Q	|	|	|	V|
22+30	0.0629	0.01	Q	|	|	|	V|
22+35	0.0629	0.01	Q	|	|	|	V|
22+40	0.0629	0.01	Q	|	|	|	V|
22+45	0.0630	0.01	Q	|	|	|	V|
22+50	0.0630	0.01	Q	|	|	|	V|
22+55	0.0631	0.01	Q	|	|	|	V|
23+ 0	0.0631	0.01	Q	|	|	|	V|
23+ 5	0.0631	0.01	Q	|	|	|	V|
23+10	0.0632	0.01	Q	|	|	|	V|
23+15	0.0632	0.01	Q	|	|	|	V|

23+20	0.0633	0.01	Q	|	|	|	V|
23+25	0.0633	0.01	Q	|	|	|	V|
23+30	0.0634	0.01	Q	|	|	|	V|
23+35	0.0634	0.01	Q	|	|	|	V|
23+40	0.0634	0.01	Q	|	|	|	V|
23+45	0.0635	0.01	Q	|	|	|	V|
23+50	0.0635	0.01	Q	|	|	|	V|
23+55	0.0636	0.01	Q	|	|	|	V|
24+ 0	0.0636	0.01	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             0.50                   0.17

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             1.30                   0.43

      STORM EVENT (YEAR) =   10.00
      Area Averaged 2-Year Rainfall =    0.500(In)
      Area Averaged 100-Year Rainfall =    1.300(In)

      Point rain (area averaged) =    0.829(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    0.829(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.867        0.163        1.000      0.163
                                                          Sum (F) =
0.163
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-
      Slope of intensity-duration curve for a 1 hour storm =0.5000
      ------------------------------------------------------------------
--

                           U n i t  H y d r o g r a p h
                                VALLEY S-Curve
      ------------------------------------------------------------------
                           Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                      Graph %            (CFS)
      ------------------------------------------------------------------
-
                  1   0.083       1068.017        100.000              0.333
                                                                  Sum =
100.000   Sum=       0.333
-----------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	4.20	0.418	(0.191)	0.086	0.332
2. 0.17	4.30	0.428	(0.191)	0.088	0.340
3. 0.25	5.00	0.497	(0.191)	0.102	0.395
4. 0.33	5.00	0.497	(0.191)	0.102	0.395
5. 0.42	5.80	0.577	(0.191)	0.119	0.458
6. 0.50	6.50	0.647	(0.191)	0.133	0.513
7. 0.58	7.40	0.736	(0.191)	0.152	0.585
8. 0.67	8.60	0.856	(0.191)	0.176	0.679
9. 0.75	12.30	1.224	0.191	(0.252)	1.033
10. 0.83	29.10	2.895	0.191	(0.596)	2.704
11. 0.92	6.80	0.677	(0.191)	0.139	0.537
12. 1.00	5.00	0.497	(0.191)	0.102	0.395
	(Loss Rate Not Used)				
Sum =	100.0			Sum =	8.4

Flood volume = Effective rainfall 0.70(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.13(In)
Total soil loss = 0.004(Ac.Ft)
Total rainfall = 0.83(In)
Flood volume = 835.1 Cubic Feet
Total soil loss = 158.1 Cubic Feet

Peak flow rate of this hydrograph = 0.900(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0008	0.11	QV				
0+10	0.0015	0.11	Q V				
0+15	0.0024	0.13	Q V				
0+20	0.0033	0.13	Q V				
0+25	0.0044	0.15	Q V				
0+30	0.0056	0.17	Q V				
0+35	0.0069	0.19	Q V				
0+40	0.0085	0.23	Q V				
0+45	0.0108	0.34	Q V				
0+50	0.0170	0.90	Q V				
0+55	0.0183	0.18	Q V				

```
    1+ 0       0.0192      0.13  Q         |         |         |         V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             0.85                   0.28

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.00                   0.66

      STORM EVENT (YEAR) =   10.00
      Area Averaged 2-Year Rainfall =    0.850(In)
      Area Averaged 100-Year Rainfall =    2.000(In)

      Point rain (area averaged) =    1.323(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.323(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.867        0.163        1.000      0.163
                                                          Sum (F) =
0.163
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083       1068.017        100.000             0.333
                                                                 Sum =
100.000   Sum=       0.333
------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

	Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1.	0.08	1.30	0.206	(0.191)		0.043	0.164
2.	0.17	1.30	0.206	(0.191)		0.043	0.164
3.	0.25	1.10	0.175	(0.191)		0.036	0.139
4.	0.33	1.50	0.238	(0.191)		0.049	0.189
5.	0.42	1.50	0.238	(0.191)		0.049	0.189
6.	0.50	1.80	0.286	(0.191)		0.059	0.227
7.	0.58	1.50	0.238	(0.191)		0.049	0.189
8.	0.67	1.80	0.286	(0.191)		0.059	0.227
9.	0.75	1.80	0.286	(0.191)		0.059	0.227
10.	0.83	1.50	0.238	(0.191)		0.049	0.189
11.	0.92	1.60	0.254	(0.191)		0.052	0.202
12.	1.00	1.80	0.286	(0.191)		0.059	0.227
13.	1.08	2.20	0.349	(0.191)		0.072	0.277
14.	1.17	2.20	0.349	(0.191)		0.072	0.277
15.	1.25	2.20	0.349	(0.191)		0.072	0.277
16.	1.33	2.00	0.318	(0.191)		0.065	0.252
17.	1.42	2.60	0.413	(0.191)		0.085	0.328
18.	1.50	2.70	0.429	(0.191)		0.088	0.340
19.	1.58	2.40	0.381	(0.191)		0.078	0.303
20.	1.67	2.70	0.429	(0.191)		0.088	0.340
21.	1.75	3.30	0.524	(0.191)		0.108	0.416
22.	1.83	3.10	0.492	(0.191)		0.101	0.391
23.	1.92	2.90	0.460	(0.191)		0.095	0.366
24.	2.00	3.00	0.476	(0.191)		0.098	0.378
25.	2.08	3.10	0.492	(0.191)		0.101	0.391
26.	2.17	4.20	0.667	(0.191)		0.137	0.529
27.	2.25	5.00	0.794	(0.191)		0.164	0.630
28.	2.33	3.50	0.556	(0.191)		0.114	0.441
29.	2.42	6.80	1.080	0.191	(	0.222)	0.888
30.	2.50	7.30	1.159	0.191	(	0.239)	0.968
31.	2.58	8.20	1.302	0.191	(	0.268)	1.111
32.	2.67	5.90	0.937	0.191	(	0.193)	0.746
33.	2.75	2.00	0.318	(0.191)		0.065	0.252
34.	2.83	1.80	0.286	(0.191)		0.059	0.227
35.	2.92	1.80	0.286	(0.191)		0.059	0.227
36.	3.00	0.60	0.095	(0.191)		0.020	0.076
		(Loss Rate Not Used)					
Sum =		100.0					Sum = 12.8

Flood volume = Effective rainfall 1.06(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.26(In)
Total soil loss = 0.007(Ac.Ft)
Total rainfall = 1.32(In)
Flood volume = 1274.2 Cubic Feet
Total soil loss = 310.8 Cubic Feet

Peak flow rate of this hydrograph = 0.370(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0004	0.05	Q
0+10	0.0008	0.05	QV
0+15	0.0011	0.05	QV
0+20	0.0015	0.06	Q V
0+25	0.0019	0.06	Q V
0+30	0.0025	0.08	Q V
0+35	0.0029	0.06	Q V
0+40	0.0034	0.08	Q V
0+45	0.0039	0.08	Q V
0+50	0.0044	0.06	Q V
0+55	0.0048	0.07	Q V
1+ 0	0.0053	0.08	Q V
1+ 5	0.0060	0.09	Q V
1+10	0.0066	0.09	Q V
1+15	0.0073	0.09	Q V
1+20	0.0078	0.08	Q V
1+25	0.0086	0.11	Q V
1+30	0.0094	0.11	Q V
1+35	0.0101	0.10	Q V
1+40	0.0108	0.11	Q V
1+45	0.0118	0.14	Q V
1+50	0.0127	0.13	Q V
1+55	0.0135	0.12	Q V
2+ 0	0.0144	0.13	Q V
2+ 5	0.0153	0.13	Q V
2+10	0.0165	0.18	Q V
2+15	0.0179	0.21	Q V
2+20	0.0190	0.15	Q V
2+25	0.0210	0.30	Q V
2+30	0.0232	0.32	Q V
2+35	0.0258	0.37	Q V
2+40	0.0275	0.25	Q V
2+45	0.0280	0.08	Q V
2+50	0.0286	0.08	Q V
2+55	0.0291	0.08	Q V
3+ 0	0.0293	0.03	Q V

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             1.20                   0.40

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.90                   0.96

      STORM EVENT (YEAR) =   10.00
      Area Averaged 2-Year Rainfall =    1.200(In)
      Area Averaged 100-Year Rainfall =    2.900(In)

      Point rain (area averaged) =    1.899(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.899(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.867        0.163        1.000      0.163
                                                          Sum (F) =
0.163
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083       1068.017        100.000             0.333
                                                                 Sum =
100.000   Sum=       0.333
------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.50	0.114	(0.191)		0.023	0.090
2.	0.17	0.60	0.137	(0.191)		0.028	0.109
3.	0.25	0.60	0.137	(0.191)		0.028	0.109
4.	0.33	0.60	0.137	(0.191)		0.028	0.109
5.	0.42	0.60	0.137	(0.191)		0.028	0.109
6.	0.50	0.70	0.160	(0.191)		0.033	0.127
7.	0.58	0.70	0.160	(0.191)		0.033	0.127
8.	0.67	0.70	0.160	(0.191)		0.033	0.127
9.	0.75	0.70	0.160	(0.191)		0.033	0.127
10.	0.83	0.70	0.160	(0.191)		0.033	0.127
11.	0.92	0.70	0.160	(0.191)		0.033	0.127
12.	1.00	0.80	0.182	(0.191)		0.038	0.145
13.	1.08	0.80	0.182	(0.191)		0.038	0.145
14.	1.17	0.80	0.182	(0.191)		0.038	0.145
15.	1.25	0.80	0.182	(0.191)		0.038	0.145
16.	1.33	0.80	0.182	(0.191)		0.038	0.145
17.	1.42	0.80	0.182	(0.191)		0.038	0.145
18.	1.50	0.80	0.182	(0.191)		0.038	0.145
19.	1.58	0.80	0.182	(0.191)		0.038	0.145
20.	1.67	0.80	0.182	(0.191)		0.038	0.145
21.	1.75	0.80	0.182	(0.191)		0.038	0.145
22.	1.83	0.80	0.182	(0.191)		0.038	0.145
23.	1.92	0.80	0.182	(0.191)		0.038	0.145
24.	2.00	0.90	0.205	(0.191)		0.042	0.163
25.	2.08	0.80	0.182	(0.191)		0.038	0.145
26.	2.17	0.90	0.205	(0.191)		0.042	0.163
27.	2.25	0.90	0.205	(0.191)		0.042	0.163
28.	2.33	0.90	0.205	(0.191)		0.042	0.163
29.	2.42	0.90	0.205	(0.191)		0.042	0.163
30.	2.50	0.90	0.205	(0.191)		0.042	0.163
31.	2.58	0.90	0.205	(0.191)		0.042	0.163
32.	2.67	0.90	0.205	(0.191)		0.042	0.163
33.	2.75	1.00	0.228	(0.191)		0.047	0.181
34.	2.83	1.00	0.228	(0.191)		0.047	0.181
35.	2.92	1.00	0.228	(0.191)		0.047	0.181
36.	3.00	1.00	0.228	(0.191)		0.047	0.181
37.	3.08	1.00	0.228	(0.191)		0.047	0.181
38.	3.17	1.10	0.251	(0.191)		0.052	0.199
39.	3.25	1.10	0.251	(0.191)		0.052	0.199
40.	3.33	1.10	0.251	(0.191)		0.052	0.199
41.	3.42	1.20	0.274	(0.191)		0.056	0.217
42.	3.50	1.30	0.296	(0.191)		0.061	0.235
43.	3.58	1.40	0.319	(0.191)		0.066	0.253
44.	3.67	1.40	0.319	(0.191)		0.066	0.253
45.	3.75	1.50	0.342	(0.191)		0.070	0.271
46.	3.83	1.50	0.342	(0.191)		0.070	0.271
47.	3.92	1.60	0.365	(0.191)		0.075	0.290

48.	4.00	1.60	0.365	(0.191)	0.075	0.290
49.	4.08	1.70	0.387	(0.191)	0.080	0.308
50.	4.17	1.80	0.410	(0.191)	0.085	0.326
51.	4.25	1.90	0.433	(0.191)	0.089	0.344
52.	4.33	2.00	0.456	(0.191)	0.094	0.362
53.	4.42	2.10	0.479	(0.191)	0.099	0.380
54.	4.50	2.10	0.479	(0.191)	0.099	0.380
55.	4.58	2.20	0.501	(0.191)	0.103	0.398
56.	4.67	2.30	0.524	(0.191)	0.108	0.416
57.	4.75	2.40	0.547	(0.191)	0.113	0.434
58.	4.83	2.40	0.547	(0.191)	0.113	0.434
59.	4.92	2.50	0.570	(0.191)	0.117	0.452
60.	5.00	2.60	0.593	(0.191)	0.122	0.471
61.	5.08	3.10	0.707	(0.191)	0.146	0.561
62.	5.17	3.60	0.821	(0.191)	0.169	0.652
63.	5.25	3.90	0.889	(0.191)	0.183	0.706
64.	5.33	4.20	0.957	0.191	(0.197)	0.766
65.	5.42	4.70	1.071	0.191	(0.221)	0.880
66.	5.50	5.60	1.276	0.191	(0.263)	1.085
67.	5.58	1.90	0.433	(0.191)	0.089	0.344
68.	5.67	0.90	0.205	(0.191)	0.042	0.163
69.	5.75	0.60	0.137	(0.191)	0.028	0.109
70.	5.83	0.50	0.114	(0.191)	0.023	0.090
71.	5.92	0.30	0.068	(0.191)	0.014	0.054
72.	6.00	0.20	0.046	(0.191)	0.009	0.036

(Loss Rate Not Used)

Sum = 100.0 Sum = 18.2

Flood volume = Effective rainfall 1.52(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.38(In)
Total soil loss = 0.011(Ac.Ft)
Total rainfall = 1.90(In)
Flood volume = 1817.3 Cubic Feet
Total soil loss = 458.0 Cubic Feet

Peak flow rate of this hydrograph = 0.361(CFS)

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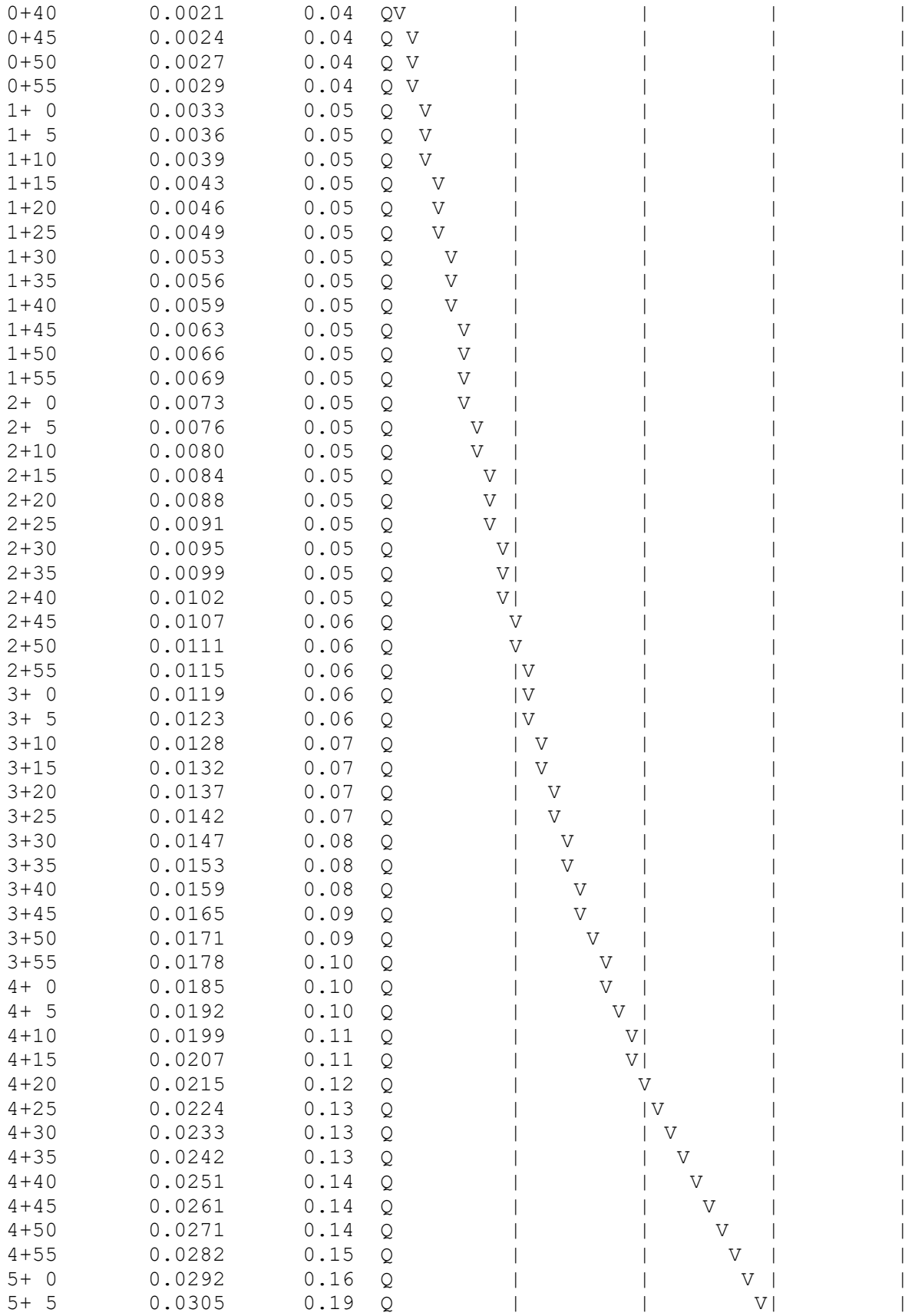
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.03	Q	|	|	|	|
0+10	0.0005	0.04	Q	|	|	|	|
0+15	0.0007	0.04	Q	|	|	|	|
0+20	0.0010	0.04	Q	|	|	|	|
0+25	0.0012	0.04	QV	|	|	|	|
0+30	0.0015	0.04	QV	|	|	|	|
0+35	0.0018	0.04	QV	|	|	|	|



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    5+10       0.0320      0.22  Q          |          |          V          |
    5+15       0.0336      0.23  Q          |          |          | V        |
    5+20       0.0354      0.25  |Q         |          |          |  V       |
    5+25       0.0374      0.29  |Q         |          |          |    V     |
    5+30       0.0399      0.36  |Q         |          |          |       V  |
    5+35       0.0407      0.11  Q          |          |          |        V |
    5+40       0.0411      0.05  Q          |          |          |        V |
    5+45       0.0413      0.04  Q          |          |          |        V |
    5+50       0.0415      0.03  Q          |          |          |        V |
    5+55       0.0416      0.02  Q          |          |          |        V |
    6+ 0       0.0417      0.01  Q          |          |          |         V
---------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPDRYWELL2410.out

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      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.00                    0.66

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             5.90                    1.95

      STORM EVENT (YEAR) =   10.00
      Area Averaged 2-Year Rainfall =    2.000(In)
      Area Averaged 100-Year Rainfall =    5.900(In)

      Point rain (area averaged) =    3.604(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    3.604(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.867        0.163        1.000      0.163
                                                          Sum (F) =
0.163
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083       1068.017        100.000             0.333
                                                                 Sum =
100.000   Sum=       0.333
------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.07	0.029	(0.339)		0.006	0.023
2.	0.17	0.07	0.029	(0.338)		0.006	0.023
3.	0.25	0.07	0.029	(0.336)		0.006	0.023
4.	0.33	0.10	0.043	(0.335)		0.009	0.034
5.	0.42	0.10	0.043	(0.334)		0.009	0.034
6.	0.50	0.10	0.043	(0.332)		0.009	0.034
7.	0.58	0.10	0.043	(0.331)		0.009	0.034
8.	0.67	0.10	0.043	(0.330)		0.009	0.034
9.	0.75	0.10	0.043	(0.329)		0.009	0.034
10.	0.83	0.13	0.058	(0.327)		0.012	0.046
11.	0.92	0.13	0.058	(0.326)		0.012	0.046
12.	1.00	0.13	0.058	(0.325)		0.012	0.046
13.	1.08	0.10	0.043	(0.323)		0.009	0.034
14.	1.17	0.10	0.043	(0.322)		0.009	0.034
15.	1.25	0.10	0.043	(0.321)		0.009	0.034
16.	1.33	0.10	0.043	(0.320)		0.009	0.034
17.	1.42	0.10	0.043	(0.318)		0.009	0.034
18.	1.50	0.10	0.043	(0.317)		0.009	0.034
19.	1.58	0.10	0.043	(0.316)		0.009	0.034
20.	1.67	0.10	0.043	(0.315)		0.009	0.034
21.	1.75	0.10	0.043	(0.313)		0.009	0.034
22.	1.83	0.13	0.058	(0.312)		0.012	0.046
23.	1.92	0.13	0.058	(0.311)		0.012	0.046
24.	2.00	0.13	0.058	(0.309)		0.012	0.046
25.	2.08	0.13	0.058	(0.308)		0.012	0.046
26.	2.17	0.13	0.058	(0.307)		0.012	0.046
27.	2.25	0.13	0.058	(0.306)		0.012	0.046
28.	2.33	0.13	0.058	(0.304)		0.012	0.046
29.	2.42	0.13	0.058	(0.303)		0.012	0.046
30.	2.50	0.13	0.058	(0.302)		0.012	0.046
31.	2.58	0.17	0.072	(0.301)		0.015	0.057
32.	2.67	0.17	0.072	(0.300)		0.015	0.057
33.	2.75	0.17	0.072	(0.298)		0.015	0.057
34.	2.83	0.17	0.072	(0.297)		0.015	0.057
35.	2.92	0.17	0.072	(0.296)		0.015	0.057
36.	3.00	0.17	0.072	(0.295)		0.015	0.057
37.	3.08	0.17	0.072	(0.293)		0.015	0.057
38.	3.17	0.17	0.072	(0.292)		0.015	0.057
39.	3.25	0.17	0.072	(0.291)		0.015	0.057
40.	3.33	0.17	0.072	(0.290)		0.015	0.057
41.	3.42	0.17	0.072	(0.289)		0.015	0.057
42.	3.50	0.17	0.072	(0.287)		0.015	0.057
43.	3.58	0.17	0.072	(0.286)		0.015	0.057
44.	3.67	0.17	0.072	(0.285)		0.015	0.057
45.	3.75	0.17	0.072	(0.284)		0.015	0.057
46.	3.83	0.20	0.087	(0.283)		0.018	0.069
47.	3.92	0.20	0.087	(0.281)		0.018	0.069

48.	4.00	0.20	0.087	(0.280)	0.018	0.069
49.	4.08	0.20	0.087	(0.279)	0.018	0.069
50.	4.17	0.20	0.087	(0.278)	0.018	0.069
51.	4.25	0.20	0.087	(0.277)	0.018	0.069
52.	4.33	0.23	0.101	(0.275)	0.021	0.080
53.	4.42	0.23	0.101	(0.274)	0.021	0.080
54.	4.50	0.23	0.101	(0.273)	0.021	0.080
55.	4.58	0.23	0.101	(0.272)	0.021	0.080
56.	4.67	0.23	0.101	(0.271)	0.021	0.080
57.	4.75	0.23	0.101	(0.270)	0.021	0.080
58.	4.83	0.27	0.115	(0.268)	0.024	0.092
59.	4.92	0.27	0.115	(0.267)	0.024	0.092
60.	5.00	0.27	0.115	(0.266)	0.024	0.092
61.	5.08	0.20	0.087	(0.265)	0.018	0.069
62.	5.17	0.20	0.087	(0.264)	0.018	0.069
63.	5.25	0.20	0.087	(0.263)	0.018	0.069
64.	5.33	0.23	0.101	(0.261)	0.021	0.080
65.	5.42	0.23	0.101	(0.260)	0.021	0.080
66.	5.50	0.23	0.101	(0.259)	0.021	0.080
67.	5.58	0.27	0.115	(0.258)	0.024	0.092
68.	5.67	0.27	0.115	(0.257)	0.024	0.092
69.	5.75	0.27	0.115	(0.256)	0.024	0.092
70.	5.83	0.27	0.115	(0.255)	0.024	0.092
71.	5.92	0.27	0.115	(0.254)	0.024	0.092
72.	6.00	0.27	0.115	(0.252)	0.024	0.092
73.	6.08	0.30	0.130	(0.251)	0.027	0.103
74.	6.17	0.30	0.130	(0.250)	0.027	0.103
75.	6.25	0.30	0.130	(0.249)	0.027	0.103
76.	6.33	0.30	0.130	(0.248)	0.027	0.103
77.	6.42	0.30	0.130	(0.247)	0.027	0.103
78.	6.50	0.30	0.130	(0.246)	0.027	0.103
79.	6.58	0.33	0.144	(0.245)	0.030	0.114
80.	6.67	0.33	0.144	(0.244)	0.030	0.114
81.	6.75	0.33	0.144	(0.242)	0.030	0.114
82.	6.83	0.33	0.144	(0.241)	0.030	0.114
83.	6.92	0.33	0.144	(0.240)	0.030	0.114
84.	7.00	0.33	0.144	(0.239)	0.030	0.114
85.	7.08	0.33	0.144	(0.238)	0.030	0.114
86.	7.17	0.33	0.144	(0.237)	0.030	0.114
87.	7.25	0.33	0.144	(0.236)	0.030	0.114
88.	7.33	0.37	0.159	(0.235)	0.033	0.126
89.	7.42	0.37	0.159	(0.234)	0.033	0.126
90.	7.50	0.37	0.159	(0.233)	0.033	0.126
91.	7.58	0.40	0.173	(0.232)	0.036	0.137
92.	7.67	0.40	0.173	(0.231)	0.036	0.137
93.	7.75	0.40	0.173	(0.229)	0.036	0.137
94.	7.83	0.43	0.187	(0.228)	0.039	0.149
95.	7.92	0.43	0.187	(0.227)	0.039	0.149
96.	8.00	0.43	0.187	(0.226)	0.039	0.149
97.	8.08	0.50	0.216	(0.225)	0.045	0.172
98.	8.17	0.50	0.216	(0.224)	0.045	0.172
99.	8.25	0.50	0.216	(0.223)	0.045	0.172
100.	8.33	0.50	0.216	(0.222)	0.045	0.172
101.	8.42	0.50	0.216	(0.221)	0.045	0.172

102.	8.50	0.50	0.216	(0.220)	0.045	0.172
103.	8.58	0.53	0.231	(0.219)	0.048	0.183
104.	8.67	0.53	0.231	(0.218)	0.048	0.183
105.	8.75	0.53	0.231	(0.217)	0.048	0.183
106.	8.83	0.57	0.245	(0.216)	0.050	0.195
107.	8.92	0.57	0.245	(0.215)	0.050	0.195
108.	9.00	0.57	0.245	(0.214)	0.050	0.195
109.	9.08	0.63	0.274	(0.213)	0.056	0.218
110.	9.17	0.63	0.274	(0.212)	0.056	0.218
111.	9.25	0.63	0.274	(0.211)	0.056	0.218
112.	9.33	0.67	0.288	(0.210)	0.059	0.229
113.	9.42	0.67	0.288	(0.209)	0.059	0.229
114.	9.50	0.67	0.288	(0.208)	0.059	0.229
115.	9.58	0.70	0.303	(0.207)	0.062	0.240
116.	9.67	0.70	0.303	(0.206)	0.062	0.240
117.	9.75	0.70	0.303	(0.205)	0.062	0.240
118.	9.83	0.73	0.317	(0.204)	0.065	0.252
119.	9.92	0.73	0.317	(0.203)	0.065	0.252
120.	10.00	0.73	0.317	(0.202)	0.065	0.252
121.	10.08	0.50	0.216	(0.201)	0.045	0.172
122.	10.17	0.50	0.216	(0.200)	0.045	0.172
123.	10.25	0.50	0.216	(0.199)	0.045	0.172
124.	10.33	0.50	0.216	(0.198)	0.045	0.172
125.	10.42	0.50	0.216	(0.197)	0.045	0.172
126.	10.50	0.50	0.216	(0.196)	0.045	0.172
127.	10.58	0.67	0.288	(0.195)	0.059	0.229
128.	10.67	0.67	0.288	(0.194)	0.059	0.229
129.	10.75	0.67	0.288	(0.193)	0.059	0.229
130.	10.83	0.67	0.288	(0.192)	0.059	0.229
131.	10.92	0.67	0.288	(0.191)	0.059	0.229
132.	11.00	0.67	0.288	(0.190)	0.059	0.229
133.	11.08	0.63	0.274	(0.189)	0.056	0.218
134.	11.17	0.63	0.274	(0.189)	0.056	0.218
135.	11.25	0.63	0.274	(0.188)	0.056	0.218
136.	11.33	0.63	0.274	(0.187)	0.056	0.218
137.	11.42	0.63	0.274	(0.186)	0.056	0.218
138.	11.50	0.63	0.274	(0.185)	0.056	0.218
139.	11.58	0.57	0.245	(0.184)	0.050	0.195
140.	11.67	0.57	0.245	(0.183)	0.050	0.195
141.	11.75	0.57	0.245	(0.182)	0.050	0.195
142.	11.83	0.60	0.260	(0.181)	0.053	0.206
143.	11.92	0.60	0.260	(0.180)	0.053	0.206
144.	12.00	0.60	0.260	(0.179)	0.053	0.206
145.	12.08	0.83	0.360	(0.179)	0.074	0.286
146.	12.17	0.83	0.360	(0.178)	0.074	0.286
147.	12.25	0.83	0.360	(0.177)	0.074	0.286
148.	12.33	0.87	0.375	(0.176)	0.077	0.298
149.	12.42	0.87	0.375	(0.175)	0.077	0.298
150.	12.50	0.87	0.375	(0.174)	0.077	0.298
151.	12.58	0.93	0.404	(0.173)	0.083	0.321
152.	12.67	0.93	0.404	(0.172)	0.083	0.321
153.	12.75	0.93	0.404	(0.171)	0.083	0.321
154.	12.83	0.97	0.418	(0.171)	0.086	0.332
155.	12.92	0.97	0.418	(0.170)	0.086	0.332

156. 13.00	0.97	0.418	(0.169)	0.086	0.332
157. 13.08	1.13	0.490	(0.168)	0.101	0.389
158. 13.17	1.13	0.490	(0.167)	0.101	0.389
159. 13.25	1.13	0.490	(0.166)	0.101	0.389
160. 13.33	1.13	0.490	(0.165)	0.101	0.389
161. 13.42	1.13	0.490	(0.165)	0.101	0.389
162. 13.50	1.13	0.490	(0.164)	0.101	0.389
163. 13.58	0.77	0.332	(0.163)	0.068	0.263
164. 13.67	0.77	0.332	(0.162)	0.068	0.263
165. 13.75	0.77	0.332	(0.161)	0.068	0.263
166. 13.83	0.77	0.332	(0.160)	0.068	0.263
167. 13.92	0.77	0.332	(0.160)	0.068	0.263
168. 14.00	0.77	0.332	(0.159)	0.068	0.263
169. 14.08	0.90	0.389	(0.158)	0.080	0.309
170. 14.17	0.90	0.389	(0.157)	0.080	0.309
171. 14.25	0.90	0.389	(0.156)	0.080	0.309
172. 14.33	0.87	0.375	(0.156)	0.077	0.298
173. 14.42	0.87	0.375	(0.155)	0.077	0.298
174. 14.50	0.87	0.375	(0.154)	0.077	0.298
175. 14.58	0.87	0.375	(0.153)	0.077	0.298
176. 14.67	0.87	0.375	(0.152)	0.077	0.298
177. 14.75	0.87	0.375	(0.152)	0.077	0.298
178. 14.83	0.83	0.360	(0.151)	0.074	0.286
179. 14.92	0.83	0.360	(0.150)	0.074	0.286
180. 15.00	0.83	0.360	(0.149)	0.074	0.286
181. 15.08	0.80	0.346	(0.149)	0.071	0.275
182. 15.17	0.80	0.346	(0.148)	0.071	0.275
183. 15.25	0.80	0.346	(0.147)	0.071	0.275
184. 15.33	0.77	0.332	(0.146)	0.068	0.263
185. 15.42	0.77	0.332	(0.146)	0.068	0.263
186. 15.50	0.77	0.332	(0.145)	0.068	0.263
187. 15.58	0.63	0.274	(0.144)	0.056	0.218
188. 15.67	0.63	0.274	(0.143)	0.056	0.218
189. 15.75	0.63	0.274	(0.143)	0.056	0.218
190. 15.83	0.63	0.274	(0.142)	0.056	0.218
191. 15.92	0.63	0.274	(0.141)	0.056	0.218
192. 16.00	0.63	0.274	(0.140)	0.056	0.218
193. 16.08	0.13	0.058	(0.140)	0.012	0.046
194. 16.17	0.13	0.058	(0.139)	0.012	0.046
195. 16.25	0.13	0.058	(0.138)	0.012	0.046
196. 16.33	0.13	0.058	(0.138)	0.012	0.046
197. 16.42	0.13	0.058	(0.137)	0.012	0.046
198. 16.50	0.13	0.058	(0.136)	0.012	0.046
199. 16.58	0.10	0.043	(0.135)	0.009	0.034
200. 16.67	0.10	0.043	(0.135)	0.009	0.034
201. 16.75	0.10	0.043	(0.134)	0.009	0.034
202. 16.83	0.10	0.043	(0.133)	0.009	0.034
203. 16.92	0.10	0.043	(0.133)	0.009	0.034
204. 17.00	0.10	0.043	(0.132)	0.009	0.034
205. 17.08	0.17	0.072	(0.131)	0.015	0.057
206. 17.17	0.17	0.072	(0.131)	0.015	0.057
207. 17.25	0.17	0.072	(0.130)	0.015	0.057
208. 17.33	0.17	0.072	(0.129)	0.015	0.057
209. 17.42	0.17	0.072	(0.129)	0.015	0.057

210. 17.50	0.17	0.072	(0.128)	0.015	0.057
211. 17.58	0.17	0.072	(0.128)	0.015	0.057
212. 17.67	0.17	0.072	(0.127)	0.015	0.057
213. 17.75	0.17	0.072	(0.126)	0.015	0.057
214. 17.83	0.13	0.058	(0.126)	0.012	0.046
215. 17.92	0.13	0.058	(0.125)	0.012	0.046
216. 18.00	0.13	0.058	(0.124)	0.012	0.046
217. 18.08	0.13	0.058	(0.124)	0.012	0.046
218. 18.17	0.13	0.058	(0.123)	0.012	0.046
219. 18.25	0.13	0.058	(0.123)	0.012	0.046
220. 18.33	0.13	0.058	(0.122)	0.012	0.046
221. 18.42	0.13	0.058	(0.121)	0.012	0.046
222. 18.50	0.13	0.058	(0.121)	0.012	0.046
223. 18.58	0.10	0.043	(0.120)	0.009	0.034
224. 18.67	0.10	0.043	(0.120)	0.009	0.034
225. 18.75	0.10	0.043	(0.119)	0.009	0.034
226. 18.83	0.07	0.029	(0.118)	0.006	0.023
227. 18.92	0.07	0.029	(0.118)	0.006	0.023
228. 19.00	0.07	0.029	(0.117)	0.006	0.023
229. 19.08	0.10	0.043	(0.117)	0.009	0.034
230. 19.17	0.10	0.043	(0.116)	0.009	0.034
231. 19.25	0.10	0.043	(0.116)	0.009	0.034
232. 19.33	0.13	0.058	(0.115)	0.012	0.046
233. 19.42	0.13	0.058	(0.115)	0.012	0.046
234. 19.50	0.13	0.058	(0.114)	0.012	0.046
235. 19.58	0.10	0.043	(0.114)	0.009	0.034
236. 19.67	0.10	0.043	(0.113)	0.009	0.034
237. 19.75	0.10	0.043	(0.113)	0.009	0.034
238. 19.83	0.07	0.029	(0.112)	0.006	0.023
239. 19.92	0.07	0.029	(0.112)	0.006	0.023
240. 20.00	0.07	0.029	(0.111)	0.006	0.023
241. 20.08	0.10	0.043	(0.111)	0.009	0.034
242. 20.17	0.10	0.043	(0.110)	0.009	0.034
243. 20.25	0.10	0.043	(0.110)	0.009	0.034
244. 20.33	0.10	0.043	(0.109)	0.009	0.034
245. 20.42	0.10	0.043	(0.109)	0.009	0.034
246. 20.50	0.10	0.043	(0.108)	0.009	0.034
247. 20.58	0.10	0.043	(0.108)	0.009	0.034
248. 20.67	0.10	0.043	(0.107)	0.009	0.034
249. 20.75	0.10	0.043	(0.107)	0.009	0.034
250. 20.83	0.07	0.029	(0.106)	0.006	0.023
251. 20.92	0.07	0.029	(0.106)	0.006	0.023
252. 21.00	0.07	0.029	(0.106)	0.006	0.023
253. 21.08	0.10	0.043	(0.105)	0.009	0.034
254. 21.17	0.10	0.043	(0.105)	0.009	0.034
255. 21.25	0.10	0.043	(0.104)	0.009	0.034
256. 21.33	0.07	0.029	(0.104)	0.006	0.023
257. 21.42	0.07	0.029	(0.104)	0.006	0.023
258. 21.50	0.07	0.029	(0.103)	0.006	0.023
259. 21.58	0.10	0.043	(0.103)	0.009	0.034
260. 21.67	0.10	0.043	(0.102)	0.009	0.034
261. 21.75	0.10	0.043	(0.102)	0.009	0.034
262. 21.83	0.07	0.029	(0.102)	0.006	0.023
263. 21.92	0.07	0.029	(0.101)	0.006	0.023

264. 22.00	0.07	0.029	(0.101)	0.006	0.023
265. 22.08	0.10	0.043	(0.101)	0.009	0.034
266. 22.17	0.10	0.043	(0.100)	0.009	0.034
267. 22.25	0.10	0.043	(0.100)	0.009	0.034
268. 22.33	0.07	0.029	(0.100)	0.006	0.023
269. 22.42	0.07	0.029	(0.099)	0.006	0.023
270. 22.50	0.07	0.029	(0.099)	0.006	0.023
271. 22.58	0.07	0.029	(0.099)	0.006	0.023
272. 22.67	0.07	0.029	(0.099)	0.006	0.023
273. 22.75	0.07	0.029	(0.098)	0.006	0.023
274. 22.83	0.07	0.029	(0.098)	0.006	0.023
275. 22.92	0.07	0.029	(0.098)	0.006	0.023
276. 23.00	0.07	0.029	(0.097)	0.006	0.023
277. 23.08	0.07	0.029	(0.097)	0.006	0.023
278. 23.17	0.07	0.029	(0.097)	0.006	0.023
279. 23.25	0.07	0.029	(0.097)	0.006	0.023
280. 23.33	0.07	0.029	(0.097)	0.006	0.023
281. 23.42	0.07	0.029	(0.096)	0.006	0.023
282. 23.50	0.07	0.029	(0.096)	0.006	0.023
283. 23.58	0.07	0.029	(0.096)	0.006	0.023
284. 23.67	0.07	0.029	(0.096)	0.006	0.023
285. 23.75	0.07	0.029	(0.096)	0.006	0.023
286. 23.83	0.07	0.029	(0.096)	0.006	0.023
287. 23.92	0.07	0.029	(0.096)	0.006	0.023
288. 24.00	0.07	0.029	(0.096)	0.006	0.023

(Loss Rate Not Used)

Sum = 100.0 Sum = 34.3

Flood volume = Effective rainfall 2.86(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.74(In)
Total soil loss = 0.020(Ac.Ft)
Total rainfall = 3.60(In)
Flood volume = 3428.3 Cubic Feet
Total soil loss = 889.5 Cubic Feet

Peak flow rate of this hydrograph = 0.130(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0001	0.01	Q	|	|	|	|
0+15	0.0002	0.01	Q	|	|	|	|
0+20	0.0002	0.01	Q	|	|	|	|
0+25	0.0003	0.01	Q	|	|	|	|
0+30	0.0004	0.01	Q	|	|	|	|
0+35	0.0005	0.01	Q	|	|	|	|

0+40	0.0006	0.01	Q	|	|	|	|
0+45	0.0006	0.01	Q	|	|	|	|
0+50	0.0007	0.02	Q	|	|	|	|
0+55	0.0008	0.02	Q	|	|	|	|
1+ 0	0.0009	0.02	Q	|	|	|	|
1+ 5	0.0010	0.01	Q	|	|	|	|
1+10	0.0011	0.01	Q	|	|	|	|
1+15	0.0012	0.01	Q	|	|	|	|
1+20	0.0013	0.01	Q	|	|	|	|
1+25	0.0013	0.01	Q	|	|	|	|
1+30	0.0014	0.01	Q	|	|	|	|
1+35	0.0015	0.01	Q	|	|	|	|
1+40	0.0016	0.01	Q	|	|	|	|
1+45	0.0017	0.01	Q	|	|	|	|
1+50	0.0018	0.02	Q	|	|	|	|
1+55	0.0019	0.02	Q	|	|	|	|
2+ 0	0.0020	0.02	QV	|	|	|	|
2+ 5	0.0021	0.02	QV	|	|	|	|
2+10	0.0022	0.02	QV	|	|	|	|
2+15	0.0023	0.02	QV	|	|	|	|
2+20	0.0024	0.02	QV	|	|	|	|
2+25	0.0025	0.02	QV	|	|	|	|
2+30	0.0026	0.02	QV	|	|	|	|
2+35	0.0027	0.02	QV	|	|	|	|
2+40	0.0029	0.02	QV	|	|	|	|
2+45	0.0030	0.02	QV	|	|	|	|
2+50	0.0031	0.02	QV	|	|	|	|
2+55	0.0033	0.02	QV	|	|	|	|
3+ 0	0.0034	0.02	QV	|	|	|	|
3+ 5	0.0035	0.02	QV	|	|	|	|
3+10	0.0036	0.02	QV	|	|	|	|
3+15	0.0038	0.02	QV	|	|	|	|
3+20	0.0039	0.02	QV	|	|	|	|
3+25	0.0040	0.02	Q V	|	|	|	|
3+30	0.0042	0.02	Q V	|	|	|	|
3+35	0.0043	0.02	Q V	|	|	|	|
3+40	0.0044	0.02	Q V	|	|	|	|
3+45	0.0046	0.02	Q V	|	|	|	|
3+50	0.0047	0.02	Q V	|	|	|	|
3+55	0.0049	0.02	Q V	|	|	|	|
4+ 0	0.0050	0.02	Q V	|	|	|	|
4+ 5	0.0052	0.02	Q V	|	|	|	|
4+10	0.0054	0.02	Q V	|	|	|	|
4+15	0.0055	0.02	Q V	|	|	|	|
4+20	0.0057	0.03	Q V	|	|	|	|
4+25	0.0059	0.03	Q V	|	|	|	|
4+30	0.0061	0.03	Q V	|	|	|	|
4+35	0.0062	0.03	Q V	|	|	|	|
4+40	0.0064	0.03	Q V	|	|	|	|
4+45	0.0066	0.03	Q V	|	|	|	|
4+50	0.0068	0.03	Q V	|	|	|	|
4+55	0.0070	0.03	Q V	|	|	|	|
5+ 0	0.0072	0.03	Q V	|	|	|	|
5+ 5	0.0074	0.02	Q V	|	|	|	|

5+10	0.0076	0.02	Q	V	|	|	|	|
5+15	0.0077	0.02	Q	V	|	|	|	|
5+20	0.0079	0.03	Q	V	|	|	|	|
5+25	0.0081	0.03	Q	V	|	|	|	|
5+30	0.0083	0.03	Q	V	|	|	|	|
5+35	0.0085	0.03	Q	V	|	|	|	|
5+40	0.0087	0.03	Q	V	|	|	|	|
5+45	0.0089	0.03	Q	V	|	|	|	|
5+50	0.0091	0.03	Q	V	|	|	|	|
5+55	0.0093	0.03	Q	V	|	|	|	|
6+ 0	0.0095	0.03	Q	V	|	|	|	|
6+ 5	0.0098	0.03	Q	V	|	|	|	|
6+10	0.0100	0.03	Q	V	|	|	|	|
6+15	0.0102	0.03	Q	V	|	|	|	|
6+20	0.0105	0.03	Q	V	|	|	|	|
6+25	0.0107	0.03	Q	V	|	|	|	|
6+30	0.0109	0.03	Q	V	|	|	|	|
6+35	0.0112	0.04	Q	V	|	|	|	|
6+40	0.0115	0.04	Q	V	|	|	|	|
6+45	0.0117	0.04	Q	V	|	|	|	|
6+50	0.0120	0.04	Q	V	|	|	|	|
6+55	0.0123	0.04	Q	V	|	|	|	|
7+ 0	0.0125	0.04	Q	V	|	|	|	|
7+ 5	0.0128	0.04	Q	V	|	|	|	|
7+10	0.0130	0.04	Q	V	|	|	|	|
7+15	0.0133	0.04	Q	V	|	|	|	|
7+20	0.0136	0.04	Q	V	|	|	|	|
7+25	0.0139	0.04	Q	V	|	|	|	|
7+30	0.0142	0.04	Q	V	|	|	|	|
7+35	0.0145	0.05	Q	V	|	|	|	|
7+40	0.0148	0.05	Q	V	|	|	|	|
7+45	0.0151	0.05	Q	V	|	|	|	|
7+50	0.0155	0.05	Q	V	|	|	|	|
7+55	0.0158	0.05	Q	V	|	|	|	|
8+ 0	0.0161	0.05	Q	V	|	|	|	|
8+ 5	0.0165	0.06	Q	V	|	|	|	|
8+10	0.0169	0.06	Q	V	|	|	|	|
8+15	0.0173	0.06	Q	V	|	|	|	|
8+20	0.0177	0.06	Q	V	|	|	|	|
8+25	0.0181	0.06	Q	V	|	|	|	|
8+30	0.0185	0.06	Q	V	|	|	|	|
8+35	0.0189	0.06	Q	V	|	|	|	|
8+40	0.0193	0.06	Q	V	|	|	|	|
8+45	0.0198	0.06	Q	V	|	|	|	|
8+50	0.0202	0.06	Q	V	|	|	|	|
8+55	0.0206	0.06	Q	V	|	|	|	|
9+ 0	0.0211	0.06	Q	V	|	|	|	|
9+ 5	0.0216	0.07	Q	V	|	|	|	|
9+10	0.0221	0.07	Q	V	|	|	|	|
9+15	0.0226	0.07	Q	V	|	|	|	|
9+20	0.0231	0.08	Q	V	|	|	|	|
9+25	0.0236	0.08	Q	V	|	|	|	|
9+30	0.0242	0.08	Q	V	|	|	|	|
9+35	0.0247	0.08	Q	V	|	|	|	|

9+40	0.0253	0.08	Q	V			
9+45	0.0258	0.08	Q	V			
9+50	0.0264	0.08	Q	V			
9+55	0.0270	0.08	Q	V			
10+ 0	0.0275	0.08	Q	V			
10+ 5	0.0279	0.06	Q	V			
10+10	0.0283	0.06	Q	V			
10+15	0.0287	0.06	Q	V			
10+20	0.0291	0.06	Q	V			
10+25	0.0295	0.06	Q	V			
10+30	0.0299	0.06	Q	V			
10+35	0.0304	0.08	Q	V			
10+40	0.0310	0.08	Q	V			
10+45	0.0315	0.08	Q	V			
10+50	0.0320	0.08	Q	V			
10+55	0.0325	0.08	Q	V			
11+ 0	0.0331	0.08	Q	V			
11+ 5	0.0336	0.07	Q	V			
11+10	0.0341	0.07	Q	V			
11+15	0.0346	0.07	Q	V			
11+20	0.0350	0.07	Q	V			
11+25	0.0355	0.07	Q	V			
11+30	0.0360	0.07	Q	V			
11+35	0.0365	0.06	Q	V			
11+40	0.0369	0.06	Q	V			
11+45	0.0374	0.06	Q	V			
11+50	0.0379	0.07	Q	V			
11+55	0.0383	0.07	Q	V			
12+ 0	0.0388	0.07	Q	V			
12+ 5	0.0395	0.10	Q	V			
12+10	0.0401	0.10	Q	V			
12+15	0.0408	0.10	Q	V			
12+20	0.0415	0.10	Q	V			
12+25	0.0421	0.10	Q	V			
12+30	0.0428	0.10	Q	V			
12+35	0.0435	0.11	Q	V			
12+40	0.0443	0.11	Q	V			
12+45	0.0450	0.11	Q	V			
12+50	0.0458	0.11	Q	V			
12+55	0.0465	0.11	Q	V			
13+ 0	0.0473	0.11	Q	V			
13+ 5	0.0482	0.13	Q	V			
13+10	0.0491	0.13	Q	V			
13+15	0.0500	0.13	Q	V			
13+20	0.0509	0.13	Q	V			
13+25	0.0518	0.13	Q	V			
13+30	0.0527	0.13	Q	V			
13+35	0.0533	0.09	Q	V			
13+40	0.0539	0.09	Q	V			
13+45	0.0545	0.09	Q	V			
13+50	0.0551	0.09	Q	V			
13+55	0.0557	0.09	Q	V			
14+ 0	0.0563	0.09	Q	V			
14+ 5	0.0570	0.10	Q	V			

14+10	0.0577	0.10	Q	|	|	V|	|
14+15	0.0584	0.10	Q	|	|	V|	|
14+20	0.0591	0.10	Q	|	|	V	|
14+25	0.0598	0.10	Q	|	|	V	|
14+30	0.0604	0.10	Q	|	|	V	|
14+35	0.0611	0.10	Q	|	|	|V	|
14+40	0.0618	0.10	Q	|	|	|V	|
14+45	0.0625	0.10	Q	|	|	|V	|
14+50	0.0631	0.10	Q	|	|	| V	|
14+55	0.0638	0.10	Q	|	|	| V	|
15+ 0	0.0645	0.10	Q	|	|	| V	|
15+ 5	0.0651	0.09	Q	|	|	| V	|
15+10	0.0657	0.09	Q	|	|	| V	|
15+15	0.0663	0.09	Q	|	|	| V	|
15+20	0.0670	0.09	Q	|	|	| V	|
15+25	0.0676	0.09	Q	|	|	| V	|
15+30	0.0682	0.09	Q	|	|	| V	|
15+35	0.0687	0.07	Q	|	|	| V	|
15+40	0.0692	0.07	Q	|	|	| V	|
15+45	0.0697	0.07	Q	|	|	| V	|
15+50	0.0702	0.07	Q	|	|	| V	|
15+55	0.0706	0.07	Q	|	|	| V	|
16+ 0	0.0711	0.07	Q	|	|	| V	|
16+ 5	0.0713	0.02	Q	|	|	| V	|
16+10	0.0714	0.02	Q	|	|	| V	|
16+15	0.0715	0.02	Q	|	|	| V	|
16+20	0.0716	0.02	Q	|	|	| V	|
16+25	0.0717	0.02	Q	|	|	| V	|
16+30	0.0718	0.02	Q	|	|	| V	|
16+35	0.0719	0.01	Q	|	|	| V	|
16+40	0.0719	0.01	Q	|	|	| V	|
16+45	0.0720	0.01	Q	|	|	| V	|
16+50	0.0721	0.01	Q	|	|	| V	|
16+55	0.0722	0.01	Q	|	|	| V	|
17+ 0	0.0723	0.01	Q	|	|	| V	|
17+ 5	0.0724	0.02	Q	|	|	| V	|
17+10	0.0725	0.02	Q	|	|	| V	|
17+15	0.0726	0.02	Q	|	|	| V	|
17+20	0.0728	0.02	Q	|	|	| V	|
17+25	0.0729	0.02	Q	|	|	| V	|
17+30	0.0730	0.02	Q	|	|	| V	|
17+35	0.0732	0.02	Q	|	|	| V	|
17+40	0.0733	0.02	Q	|	|	| V	|
17+45	0.0734	0.02	Q	|	|	| V	|
17+50	0.0735	0.02	Q	|	|	| V	|
17+55	0.0736	0.02	Q	|	|	| V	|
18+ 0	0.0737	0.02	Q	|	|	| V	|
18+ 5	0.0739	0.02	Q	|	|	| V	|
18+10	0.0740	0.02	Q	|	|	| V	|
18+15	0.0741	0.02	Q	|	|	| V	|
18+20	0.0742	0.02	Q	|	|	| V	|
18+25	0.0743	0.02	Q	|	|	| V	|
18+30	0.0744	0.02	Q	|	|	| V	|
18+35	0.0745	0.01	Q	|	|	| V	|

18+40	0.0745	0.01	Q	|	|	|	V |
18+45	0.0746	0.01	Q	|	|	|	V |
18+50	0.0747	0.01	Q	|	|	|	V |
18+55	0.0747	0.01	Q	|	|	|	V |
19+ 0	0.0748	0.01	Q	|	|	|	V |
19+ 5	0.0748	0.01	Q	|	|	|	V |
19+10	0.0749	0.01	Q	|	|	|	V |
19+15	0.0750	0.01	Q	|	|	|	V |
19+20	0.0751	0.02	Q	|	|	|	V |
19+25	0.0752	0.02	Q	|	|	|	V |
19+30	0.0753	0.02	Q	|	|	|	V |
19+35	0.0754	0.01	Q	|	|	|	V |
19+40	0.0755	0.01	Q	|	|	|	V |
19+45	0.0756	0.01	Q	|	|	|	V |
19+50	0.0756	0.01	Q	|	|	|	V |
19+55	0.0757	0.01	Q	|	|	|	V |
20+ 0	0.0757	0.01	Q	|	|	|	V |
20+ 5	0.0758	0.01	Q	|	|	|	V |
20+10	0.0759	0.01	Q	|	|	|	V |
20+15	0.0759	0.01	Q	|	|	|	V |
20+20	0.0760	0.01	Q	|	|	|	V |
20+25	0.0761	0.01	Q	|	|	|	V |
20+30	0.0762	0.01	Q	|	|	|	V |
20+35	0.0763	0.01	Q	|	|	|	V |
20+40	0.0763	0.01	Q	|	|	|	V |
20+45	0.0764	0.01	Q	|	|	|	V |
20+50	0.0765	0.01	Q	|	|	|	V |
20+55	0.0765	0.01	Q	|	|	|	V |
21+ 0	0.0766	0.01	Q	|	|	|	V |
21+ 5	0.0767	0.01	Q	|	|	|	V |
21+10	0.0767	0.01	Q	|	|	|	V|
21+15	0.0768	0.01	Q	|	|	|	V|
21+20	0.0769	0.01	Q	|	|	|	V|
21+25	0.0769	0.01	Q	|	|	|	V|
21+30	0.0770	0.01	Q	|	|	|	V|
21+35	0.0771	0.01	Q	|	|	|	V|
21+40	0.0771	0.01	Q	|	|	|	V|
21+45	0.0772	0.01	Q	|	|	|	V|
21+50	0.0773	0.01	Q	|	|	|	V|
21+55	0.0773	0.01	Q	|	|	|	V|
22+ 0	0.0774	0.01	Q	|	|	|	V|
22+ 5	0.0774	0.01	Q	|	|	|	V|
22+10	0.0775	0.01	Q	|	|	|	V|
22+15	0.0776	0.01	Q	|	|	|	V|
22+20	0.0777	0.01	Q	|	|	|	V|
22+25	0.0777	0.01	Q	|	|	|	V|
22+30	0.0778	0.01	Q	|	|	|	V|
22+35	0.0778	0.01	Q	|	|	|	V|
22+40	0.0779	0.01	Q	|	|	|	V|
22+45	0.0779	0.01	Q	|	|	|	V|
22+50	0.0780	0.01	Q	|	|	|	V|
22+55	0.0780	0.01	Q	|	|	|	V|
23+ 0	0.0781	0.01	Q	|	|	|	V|
23+ 5	0.0781	0.01	Q	|	|	|	V|

23+10	0.0782	0.01	Q	|	|	|	V|
23+15	0.0782	0.01	Q	|	|	|	V|
23+20	0.0783	0.01	Q	|	|	|	V|
23+25	0.0783	0.01	Q	|	|	|	V|
23+30	0.0784	0.01	Q	|	|	|	V|
23+35	0.0784	0.01	Q	|	|	|	V|
23+40	0.0785	0.01	Q	|	|	|	V|
23+45	0.0785	0.01	Q	|	|	|	V|
23+50	0.0786	0.01	Q	|	|	|	V|
23+55	0.0787	0.01	Q	|	|	|	V|
24+ 0	0.0787	0.01	Q	|	|	|	V

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             0.50                   0.17

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             1.30                   0.43

      STORM EVENT (YEAR) =  100.00
      Area Averaged 2-Year Rainfall =    0.500(In)
      Area Averaged 100-Year Rainfall =    1.300(In)

      Point rain (area averaged) =    1.300(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    1.300(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.867        0.163       1.000      0.163
                                                          Sum (F) =
0.163
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-
      Slope of intensity-duration curve for a 1 hour storm =0.5000
      ------------------------------------------------------------------
--

                           U n i t  H y d r o g r a p h
                                VALLEY S-Curve
      ------------------------------------------------------------------
                           Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                      Graph %            (CFS)
      ------------------------------------------------------------------
-
                  1   0.083       1068.017        100.000              0.333
                                                                  Sum =
100.000   Sum=       0.333
-----------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1. 0.08	4.20	0.655	(0.191)	0.135	0.520
2. 0.17	4.30	0.671	(0.191)	0.138	0.533
3. 0.25	5.00	0.780	(0.191)	0.161	0.619
4. 0.33	5.00	0.780	(0.191)	0.161	0.619
5. 0.42	5.80	0.905	(0.191)	0.186	0.718
6. 0.50	6.50	1.014	0.191	(0.209)	0.823
7. 0.58	7.40	1.154	0.191	(0.238)	0.963
8. 0.67	8.60	1.342	0.191	(0.276)	1.150
9. 0.75	12.30	1.919	0.191	(0.395)	1.728
10. 0.83	29.10	4.540	0.191	(0.935)	4.348
11. 0.92	6.80	1.061	0.191	(0.219)	0.870
12. 1.00	5.00	0.780	(0.191)	0.161	0.619
	(Loss Rate Not Used)				
Sum =	100.0				Sum = 13.5

Flood volume = Effective rainfall 1.13(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.17(In)
Total soil loss = 0.005(Ac.Ft)
Total rainfall = 1.30(In)
Flood volume = 1348.7 Cubic Feet
Total soil loss = 208.5 Cubic Feet

Peak flow rate of this hydrograph = 1.447(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0012	0.17	QV
0+10	0.0024	0.18	Q V
0+15	0.0038	0.21	Q V
0+20	0.0053	0.21	Q V
0+25	0.0069	0.24	Q V
0+30	0.0088	0.27	|Q |V
0+35	0.0110	0.32	|Q | V
0+40	0.0136	0.38	|Q | V
0+45	0.0176	0.57	| Q | V
0+50	0.0276	1.45	| Q | V
0+55	0.0295	0.29	|Q | V

```
    1+ 0       0.0310      0.21  Q         |         |         |        V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             0.85                   0.28

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.00                   0.66

      STORM EVENT (YEAR) =  100.00
      Area Averaged 2-Year Rainfall =    0.850(In)
      Area Averaged 100-Year Rainfall =    2.000(In)

      Point rain (area averaged) =    2.000(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    2.000(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.867        0.163        1.000      0.163
                                                          Sum (F) =
0.163
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083       1068.017        100.000             0.333
                                                                 Sum =
100.000   Sum=       0.333
------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

	Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1.	0.08	1.30	0.312	(0.191)		0.064	0.248
2.	0.17	1.30	0.312	(0.191)		0.064	0.248
3.	0.25	1.10	0.264	(0.191)		0.054	0.210
4.	0.33	1.50	0.360	(0.191)		0.074	0.286
5.	0.42	1.50	0.360	(0.191)		0.074	0.286
6.	0.50	1.80	0.432	(0.191)		0.089	0.343
7.	0.58	1.50	0.360	(0.191)		0.074	0.286
8.	0.67	1.80	0.432	(0.191)		0.089	0.343
9.	0.75	1.80	0.432	(0.191)		0.089	0.343
10.	0.83	1.50	0.360	(0.191)		0.074	0.286
11.	0.92	1.60	0.384	(0.191)		0.079	0.305
12.	1.00	1.80	0.432	(0.191)		0.089	0.343
13.	1.08	2.20	0.528	(0.191)		0.109	0.419
14.	1.17	2.20	0.528	(0.191)		0.109	0.419
15.	1.25	2.20	0.528	(0.191)		0.109	0.419
16.	1.33	2.00	0.480	(0.191)		0.099	0.381
17.	1.42	2.60	0.624	(0.191)		0.129	0.495
18.	1.50	2.70	0.648	(0.191)		0.133	0.515
19.	1.58	2.40	0.576	(0.191)		0.119	0.457
20.	1.67	2.70	0.648	(0.191)		0.133	0.515
21.	1.75	3.30	0.792	(0.191)		0.163	0.629
22.	1.83	3.10	0.744	(0.191)		0.153	0.591
23.	1.92	2.90	0.696	(0.191)		0.143	0.553
24.	2.00	3.00	0.720	(0.191)		0.148	0.572
25.	2.08	3.10	0.744	(0.191)		0.153	0.591
26.	2.17	4.20	1.008	0.191	(	0.208)	0.817
27.	2.25	5.00	1.200	0.191	(	0.247)	1.009
28.	2.33	3.50	0.840	(0.191)		0.173	0.667
29.	2.42	6.80	1.632	0.191	(	0.336)	1.441
30.	2.50	7.30	1.752	0.191	(	0.361)	1.561
31.	2.58	8.20	1.968	0.191	(	0.405)	1.777
32.	2.67	5.90	1.416	0.191	(	0.292)	1.225
33.	2.75	2.00	0.480	(0.191)		0.099	0.381
34.	2.83	1.80	0.432	(0.191)		0.089	0.343
35.	2.92	1.80	0.432	(0.191)		0.089	0.343
36.	3.00	0.60	0.144	(0.191)		0.030	0.114
		(Loss Rate Not Used)					
Sum =		100.0					Sum = 19.8

Flood volume = Effective rainfall 1.65(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.35(In)
Total soil loss = 0.010(Ac.Ft)
Total rainfall = 2.00(In)
Flood volume = 1972.3 Cubic Feet
Total soil loss = 423.5 Cubic Feet

Peak flow rate of this hydrograph = 0.591(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0006	0.08	Q
0+10	0.0011	0.08	QV
0+15	0.0016	0.07	QV
0+20	0.0023	0.10	Q V
0+25	0.0029	0.10	Q V
0+30	0.0037	0.11	Q V
0+35	0.0044	0.10	Q V
0+40	0.0052	0.11	Q V
0+45	0.0059	0.11	Q V
0+50	0.0066	0.10	Q V
0+55	0.0073	0.10	Q V
1+ 0	0.0081	0.11	Q V
1+ 5	0.0090	0.14	Q V
1+10	0.0100	0.14	Q V
1+15	0.0110	0.14	Q V
1+20	0.0118	0.13	Q V
1+25	0.0130	0.16	Q V
1+30	0.0141	0.17	Q V
1+35	0.0152	0.15	Q V
1+40	0.0164	0.17	Q V
1+45	0.0178	0.21	Q V
1+50	0.0192	0.20	Q V
1+55	0.0204	0.18	Q V
2+ 0	0.0217	0.19	Q V
2+ 5	0.0231	0.20	Q V
2+10	0.0250	0.27	Q V
2+15	0.0273	0.34	Q V
2+20	0.0288	0.22	Q V
2+25	0.0321	0.48	Q V
2+30	0.0357	0.52	Q V
2+35	0.0398	0.59	Q V
2+40	0.0426	0.41	Q V
2+45	0.0434	0.13	Q V
2+50	0.0442	0.11	Q V
2+55	0.0450	0.11	Q V
3+ 0	0.0453	0.04	Q V

U n i t H y d r o g r a p h A n a l y s i s

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             1.20                   0.40

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.90                   0.96

      STORM EVENT (YEAR) =  100.00
      Area Averaged 2-Year Rainfall =    1.200(In)
      Area Averaged 100-Year Rainfall =    2.900(In)

      Point rain (area averaged) =    2.900(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    2.900(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.867        0.163        1.000      0.163
                                                          Sum (F) =
0.163
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083       1068.017        100.000             0.333
                                                                 Sum =
100.000   Sum=       0.333
------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.50	0.174	(0.191)		0.036	0.138
2.	0.17	0.60	0.209	(0.191)		0.043	0.166
3.	0.25	0.60	0.209	(0.191)		0.043	0.166
4.	0.33	0.60	0.209	(0.191)		0.043	0.166
5.	0.42	0.60	0.209	(0.191)		0.043	0.166
6.	0.50	0.70	0.244	(0.191)		0.050	0.193
7.	0.58	0.70	0.244	(0.191)		0.050	0.193
8.	0.67	0.70	0.244	(0.191)		0.050	0.193
9.	0.75	0.70	0.244	(0.191)		0.050	0.193
10.	0.83	0.70	0.244	(0.191)		0.050	0.193
11.	0.92	0.70	0.244	(0.191)		0.050	0.193
12.	1.00	0.80	0.278	(0.191)		0.057	0.221
13.	1.08	0.80	0.278	(0.191)		0.057	0.221
14.	1.17	0.80	0.278	(0.191)		0.057	0.221
15.	1.25	0.80	0.278	(0.191)		0.057	0.221
16.	1.33	0.80	0.278	(0.191)		0.057	0.221
17.	1.42	0.80	0.278	(0.191)		0.057	0.221
18.	1.50	0.80	0.278	(0.191)		0.057	0.221
19.	1.58	0.80	0.278	(0.191)		0.057	0.221
20.	1.67	0.80	0.278	(0.191)		0.057	0.221
21.	1.75	0.80	0.278	(0.191)		0.057	0.221
22.	1.83	0.80	0.278	(0.191)		0.057	0.221
23.	1.92	0.80	0.278	(0.191)		0.057	0.221
24.	2.00	0.90	0.313	(0.191)		0.065	0.249
25.	2.08	0.80	0.278	(0.191)		0.057	0.221
26.	2.17	0.90	0.313	(0.191)		0.065	0.249
27.	2.25	0.90	0.313	(0.191)		0.065	0.249
28.	2.33	0.90	0.313	(0.191)		0.065	0.249
29.	2.42	0.90	0.313	(0.191)		0.065	0.249
30.	2.50	0.90	0.313	(0.191)		0.065	0.249
31.	2.58	0.90	0.313	(0.191)		0.065	0.249
32.	2.67	0.90	0.313	(0.191)		0.065	0.249
33.	2.75	1.00	0.348	(0.191)		0.072	0.276
34.	2.83	1.00	0.348	(0.191)		0.072	0.276
35.	2.92	1.00	0.348	(0.191)		0.072	0.276
36.	3.00	1.00	0.348	(0.191)		0.072	0.276
37.	3.08	1.00	0.348	(0.191)		0.072	0.276
38.	3.17	1.10	0.383	(0.191)		0.079	0.304
39.	3.25	1.10	0.383	(0.191)		0.079	0.304
40.	3.33	1.10	0.383	(0.191)		0.079	0.304
41.	3.42	1.20	0.418	(0.191)		0.086	0.332
42.	3.50	1.30	0.452	(0.191)		0.093	0.359
43.	3.58	1.40	0.487	(0.191)		0.100	0.387
44.	3.67	1.40	0.487	(0.191)		0.100	0.387
45.	3.75	1.50	0.522	(0.191)		0.108	0.414
46.	3.83	1.50	0.522	(0.191)		0.108	0.414
47.	3.92	1.60	0.557	(0.191)		0.115	0.442

48.	4.00	1.60	0.557	(0.191)	0.115	0.442
49.	4.08	1.70	0.592	(0.191)	0.122	0.470
50.	4.17	1.80	0.626	(0.191)	0.129	0.497
51.	4.25	1.90	0.661	(0.191)	0.136	0.525
52.	4.33	2.00	0.696	(0.191)	0.143	0.553
53.	4.42	2.10	0.731	(0.191)	0.151	0.580
54.	4.50	2.10	0.731	(0.191)	0.151	0.580
55.	4.58	2.20	0.766	(0.191)	0.158	0.608
56.	4.67	2.30	0.800	(0.191)	0.165	0.636
57.	4.75	2.40	0.835	(0.191)	0.172	0.663
58.	4.83	2.40	0.835	(0.191)	0.172	0.663
59.	4.92	2.50	0.870	(0.191)	0.179	0.691
60.	5.00	2.60	0.905	(0.191)	0.186	0.718
61.	5.08	3.10	1.079	0.191	(0.222)	0.888
62.	5.17	3.60	1.253	0.191	(0.258)	1.062
63.	5.25	3.90	1.357	0.191	(0.280)	1.166
64.	5.33	4.20	1.462	0.191	(0.301)	1.270
65.	5.42	4.70	1.636	0.191	(0.337)	1.444
66.	5.50	5.60	1.949	0.191	(0.401)	1.758
67.	5.58	1.90	0.661	(0.191)	0.136	0.525
68.	5.67	0.90	0.313	(0.191)	0.065	0.249
69.	5.75	0.60	0.209	(0.191)	0.043	0.166
70.	5.83	0.50	0.174	(0.191)	0.036	0.138
71.	5.92	0.30	0.104	(0.191)	0.022	0.083
72.	6.00	0.20	0.070	(0.191)	0.014	0.055

(Loss Rate Not Used)

Sum = 100.0 Sum = 28.3

Flood volume = Effective rainfall 2.36(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.54(In)
Total soil loss = 0.015(Ac.Ft)
Total rainfall = 2.90(In)
Flood volume = 2823.4 Cubic Feet
Total soil loss = 650.5 Cubic Feet

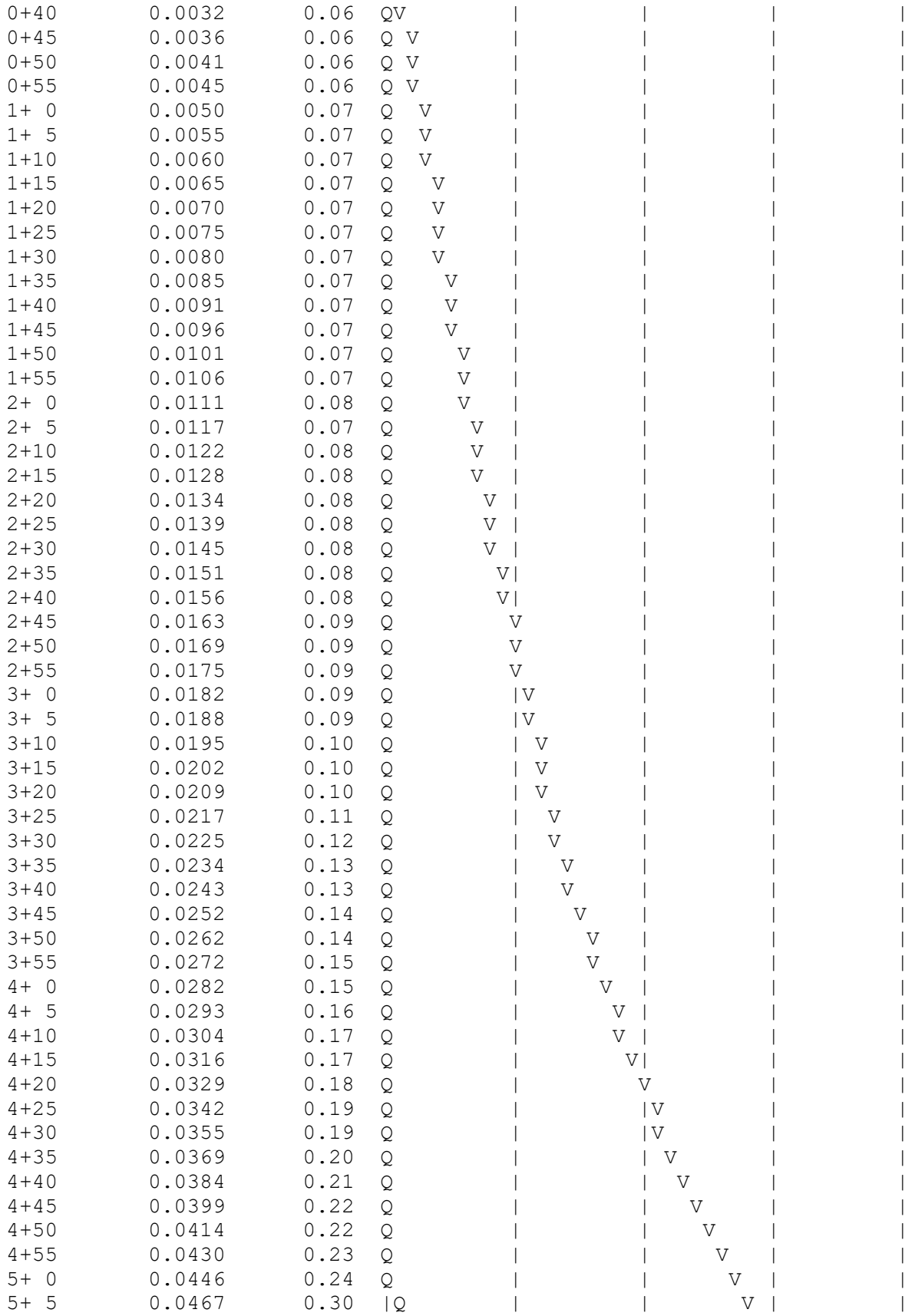
Peak flow rate of this hydrograph = 0.585(CFS)

++

6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0003	0.05	Q	|	|	|	|
0+10	0.0007	0.06	Q	|	|	|	|
0+15	0.0011	0.06	Q	|	|	|	|
0+20	0.0015	0.06	Q	|	|	|	|
0+25	0.0018	0.06	QV	|	|	|	|
0+30	0.0023	0.06	QV	|	|	|	|
0+35	0.0027	0.06	QV	|	|	|	|



```
    5+10       0.0491      0.35  |Q        |          |          V          |
    5+15       0.0518      0.39  |Q        |          |          |V         |
    5+20       0.0547      0.42  |Q        |          |          |  V       |
    5+25       0.0580      0.48  |Q        |          |          |    V     |
    5+30       0.0620      0.58  | Q       |          |          |       V  |
    5+35       0.0632      0.17  Q         |          |          |         V|
    5+40       0.0638      0.08  Q         |          |          |         V|
    5+45       0.0642      0.06  Q         |          |          |         V|
    5+50       0.0645      0.05  Q         |          |          |         V|
    5+55       0.0647      0.03  Q         |          |          |         V|
    6+ 0       0.0648      0.02  Q         |          |          |          V
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

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Study date 03/27/24 File: 2177UHPDRYWELL24100.out

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```
      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             2.00                    0.66

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
                          0.33             5.90                    1.95

      STORM EVENT (YEAR) =  100.00
      Area Averaged 2-Year Rainfall =    2.000(In)
      Area Averaged 100-Year Rainfall =    5.900(In)

      Point rain (area averaged) =    5.900(In)
      Areal adjustment factor =  100.00 %
      Adjusted average point rain =    5.900(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
                0.330           32.00         0.867
       Total Area Entered =      0.33(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
      32.0  32.0      0.742     0.867        0.163        1.000      0.163
                                                          Sum (F) =
0.163
      Area averaged mean soil loss (F) (In/Hr) =  0.191
      Minimum soil loss rate ((In/Hr)) =  0.096
      (for 24 hour storm duration)
      Note: User entry of the f value
      Soil low loss rate (decimal) =   0.206
      ------------------------------------------------------------------
-

                          U n i t  H y d r o g r a p h
                               VALLEY S-Curve
      ------------------------------------------------------------------
                          Unit Hydrograph Data
      ------------------------------------------------------------------
-
      Unit time period   Time % of lag   Distribution   Unit Hydrograph
                (hrs)                        Graph %          (CFS)
      ------------------------------------------------------------------
-
                 1   0.083       1068.017        100.000             0.333
                                                                 Sum =
100.000   Sum=       0.333
------------------------------------------------------------------
```

The following loss rate calculations reflect use of the minimum calculated loss
rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)			Effective
	(Hr.)	Percent	(In/Hr)	Max		Low	(In/Hr)
1.	0.08	0.07	0.047	(0.339)		0.010	0.037
2.	0.17	0.07	0.047	(0.338)		0.010	0.037
3.	0.25	0.07	0.047	(0.336)		0.010	0.037
4.	0.33	0.10	0.071	(0.335)		0.015	0.056
5.	0.42	0.10	0.071	(0.334)		0.015	0.056
6.	0.50	0.10	0.071	(0.332)		0.015	0.056
7.	0.58	0.10	0.071	(0.331)		0.015	0.056
8.	0.67	0.10	0.071	(0.330)		0.015	0.056
9.	0.75	0.10	0.071	(0.329)		0.015	0.056
10.	0.83	0.13	0.094	(0.327)		0.019	0.075
11.	0.92	0.13	0.094	(0.326)		0.019	0.075
12.	1.00	0.13	0.094	(0.325)		0.019	0.075
13.	1.08	0.10	0.071	(0.323)		0.015	0.056
14.	1.17	0.10	0.071	(0.322)		0.015	0.056
15.	1.25	0.10	0.071	(0.321)		0.015	0.056
16.	1.33	0.10	0.071	(0.320)		0.015	0.056
17.	1.42	0.10	0.071	(0.318)		0.015	0.056
18.	1.50	0.10	0.071	(0.317)		0.015	0.056
19.	1.58	0.10	0.071	(0.316)		0.015	0.056
20.	1.67	0.10	0.071	(0.315)		0.015	0.056
21.	1.75	0.10	0.071	(0.313)		0.015	0.056
22.	1.83	0.13	0.094	(0.312)		0.019	0.075
23.	1.92	0.13	0.094	(0.311)		0.019	0.075
24.	2.00	0.13	0.094	(0.309)		0.019	0.075
25.	2.08	0.13	0.094	(0.308)		0.019	0.075
26.	2.17	0.13	0.094	(0.307)		0.019	0.075
27.	2.25	0.13	0.094	(0.306)		0.019	0.075
28.	2.33	0.13	0.094	(0.304)		0.019	0.075
29.	2.42	0.13	0.094	(0.303)		0.019	0.075
30.	2.50	0.13	0.094	(0.302)		0.019	0.075
31.	2.58	0.17	0.118	(0.301)		0.024	0.094
32.	2.67	0.17	0.118	(0.300)		0.024	0.094
33.	2.75	0.17	0.118	(0.298)		0.024	0.094
34.	2.83	0.17	0.118	(0.297)		0.024	0.094
35.	2.92	0.17	0.118	(0.296)		0.024	0.094
36.	3.00	0.17	0.118	(0.295)		0.024	0.094
37.	3.08	0.17	0.118	(0.293)		0.024	0.094
38.	3.17	0.17	0.118	(0.292)		0.024	0.094
39.	3.25	0.17	0.118	(0.291)		0.024	0.094
40.	3.33	0.17	0.118	(0.290)		0.024	0.094
41.	3.42	0.17	0.118	(0.289)		0.024	0.094
42.	3.50	0.17	0.118	(0.287)		0.024	0.094
43.	3.58	0.17	0.118	(0.286)		0.024	0.094
44.	3.67	0.17	0.118	(0.285)		0.024	0.094
45.	3.75	0.17	0.118	(0.284)		0.024	0.094
46.	3.83	0.20	0.142	(0.283)		0.029	0.112
47.	3.92	0.20	0.142	(0.281)		0.029	0.112

48.	4.00	0.20	0.142	(0.280)	0.029	0.112
49.	4.08	0.20	0.142	(0.279)	0.029	0.112
50.	4.17	0.20	0.142	(0.278)	0.029	0.112
51.	4.25	0.20	0.142	(0.277)	0.029	0.112
52.	4.33	0.23	0.165	(0.275)	0.034	0.131
53.	4.42	0.23	0.165	(0.274)	0.034	0.131
54.	4.50	0.23	0.165	(0.273)	0.034	0.131
55.	4.58	0.23	0.165	(0.272)	0.034	0.131
56.	4.67	0.23	0.165	(0.271)	0.034	0.131
57.	4.75	0.23	0.165	(0.270)	0.034	0.131
58.	4.83	0.27	0.189	(0.268)	0.039	0.150
59.	4.92	0.27	0.189	(0.267)	0.039	0.150
60.	5.00	0.27	0.189	(0.266)	0.039	0.150
61.	5.08	0.20	0.142	(0.265)	0.029	0.112
62.	5.17	0.20	0.142	(0.264)	0.029	0.112
63.	5.25	0.20	0.142	(0.263)	0.029	0.112
64.	5.33	0.23	0.165	(0.261)	0.034	0.131
65.	5.42	0.23	0.165	(0.260)	0.034	0.131
66.	5.50	0.23	0.165	(0.259)	0.034	0.131
67.	5.58	0.27	0.189	(0.258)	0.039	0.150
68.	5.67	0.27	0.189	(0.257)	0.039	0.150
69.	5.75	0.27	0.189	(0.256)	0.039	0.150
70.	5.83	0.27	0.189	(0.255)	0.039	0.150
71.	5.92	0.27	0.189	(0.254)	0.039	0.150
72.	6.00	0.27	0.189	(0.252)	0.039	0.150
73.	6.08	0.30	0.212	(0.251)	0.044	0.169
74.	6.17	0.30	0.212	(0.250)	0.044	0.169
75.	6.25	0.30	0.212	(0.249)	0.044	0.169
76.	6.33	0.30	0.212	(0.248)	0.044	0.169
77.	6.42	0.30	0.212	(0.247)	0.044	0.169
78.	6.50	0.30	0.212	(0.246)	0.044	0.169
79.	6.58	0.33	0.236	(0.245)	0.049	0.187
80.	6.67	0.33	0.236	(0.244)	0.049	0.187
81.	6.75	0.33	0.236	(0.242)	0.049	0.187
82.	6.83	0.33	0.236	(0.241)	0.049	0.187
83.	6.92	0.33	0.236	(0.240)	0.049	0.187
84.	7.00	0.33	0.236	(0.239)	0.049	0.187
85.	7.08	0.33	0.236	(0.238)	0.049	0.187
86.	7.17	0.33	0.236	(0.237)	0.049	0.187
87.	7.25	0.33	0.236	(0.236)	0.049	0.187
88.	7.33	0.37	0.260	(0.235)	0.053	0.206
89.	7.42	0.37	0.260	(0.234)	0.053	0.206
90.	7.50	0.37	0.260	(0.233)	0.053	0.206
91.	7.58	0.40	0.283	(0.232)	0.058	0.225
92.	7.67	0.40	0.283	(0.231)	0.058	0.225
93.	7.75	0.40	0.283	(0.229)	0.058	0.225
94.	7.83	0.43	0.307	(0.228)	0.063	0.244
95.	7.92	0.43	0.307	(0.227)	0.063	0.244
96.	8.00	0.43	0.307	(0.226)	0.063	0.244
97.	8.08	0.50	0.354	(0.225)	0.073	0.281
98.	8.17	0.50	0.354	(0.224)	0.073	0.281
99.	8.25	0.50	0.354	(0.223)	0.073	0.281
100.	8.33	0.50	0.354	(0.222)	0.073	0.281
101.	8.42	0.50	0.354	(0.221)	0.073	0.281

102.	8.50	0.50	0.354	(0.220)	0.073	0.281
103.	8.58	0.53	0.378	(0.219)	0.078	0.300
104.	8.67	0.53	0.378	(0.218)	0.078	0.300
105.	8.75	0.53	0.378	(0.217)	0.078	0.300
106.	8.83	0.57	0.401	(0.216)	0.083	0.319
107.	8.92	0.57	0.401	(0.215)	0.083	0.319
108.	9.00	0.57	0.401	(0.214)	0.083	0.319
109.	9.08	0.63	0.448	(0.213)	0.092	0.356
110.	9.17	0.63	0.448	(0.212)	0.092	0.356
111.	9.25	0.63	0.448	(0.211)	0.092	0.356
112.	9.33	0.67	0.472	(0.210)	0.097	0.375
113.	9.42	0.67	0.472	(0.209)	0.097	0.375
114.	9.50	0.67	0.472	(0.208)	0.097	0.375
115.	9.58	0.70	0.496	(0.207)	0.102	0.394
116.	9.67	0.70	0.496	(0.206)	0.102	0.394
117.	9.75	0.70	0.496	(0.205)	0.102	0.394
118.	9.83	0.73	0.519	(0.204)	0.107	0.412
119.	9.92	0.73	0.519	(0.203)	0.107	0.412
120.	10.00	0.73	0.519	(0.202)	0.107	0.412
121.	10.08	0.50	0.354	(0.201)	0.073	0.281
122.	10.17	0.50	0.354	(0.200)	0.073	0.281
123.	10.25	0.50	0.354	(0.199)	0.073	0.281
124.	10.33	0.50	0.354	(0.198)	0.073	0.281
125.	10.42	0.50	0.354	(0.197)	0.073	0.281
126.	10.50	0.50	0.354	(0.196)	0.073	0.281
127.	10.58	0.67	0.472	(0.195)	0.097	0.375
128.	10.67	0.67	0.472	(0.194)	0.097	0.375
129.	10.75	0.67	0.472	(0.193)	0.097	0.375
130.	10.83	0.67	0.472	(0.192)	0.097	0.375
131.	10.92	0.67	0.472	(0.191)	0.097	0.375
132.	11.00	0.67	0.472	(0.190)	0.097	0.375
133.	11.08	0.63	0.448	(0.189)	0.092	0.356
134.	11.17	0.63	0.448	(0.189)	0.092	0.356
135.	11.25	0.63	0.448	(0.188)	0.092	0.356
136.	11.33	0.63	0.448	(0.187)	0.092	0.356
137.	11.42	0.63	0.448	(0.186)	0.092	0.356
138.	11.50	0.63	0.448	(0.185)	0.092	0.356
139.	11.58	0.57	0.401	(0.184)	0.083	0.319
140.	11.67	0.57	0.401	(0.183)	0.083	0.319
141.	11.75	0.57	0.401	(0.182)	0.083	0.319
142.	11.83	0.60	0.425	(0.181)	0.088	0.337
143.	11.92	0.60	0.425	(0.180)	0.088	0.337
144.	12.00	0.60	0.425	(0.179)	0.088	0.337
145.	12.08	0.83	0.590	(0.179)	0.122	0.468
146.	12.17	0.83	0.590	(0.178)	0.122	0.468
147.	12.25	0.83	0.590	(0.177)	0.122	0.468
148.	12.33	0.87	0.614	(0.176)	0.126	0.487
149.	12.42	0.87	0.614	(0.175)	0.126	0.487
150.	12.50	0.87	0.614	(0.174)	0.126	0.487
151.	12.58	0.93	0.661	(0.173)	0.136	0.525
152.	12.67	0.93	0.661	(0.172)	0.136	0.525
153.	12.75	0.93	0.661	(0.171)	0.136	0.525
154.	12.83	0.97	0.684	(0.171)	0.141	0.543
155.	12.92	0.97	0.684	(0.170)	0.141	0.543

156.	13.00	0.97	0.684	(	0.169)	0.141		0.543
157.	13.08	1.13	0.802	(	0.168)	0.165		0.637
158.	13.17	1.13	0.802	(	0.167)	0.165		0.637
159.	13.25	1.13	0.802	(	0.166)	0.165		0.637
160.	13.33	1.13	0.802	(	0.165)	0.165		0.637
161.	13.42	1.13	0.802		0.165	(0.165)		0.638
162.	13.50	1.13	0.802		0.164	(0.165)		0.639
163.	13.58	0.77	0.543	(	0.163)	0.112		0.431
164.	13.67	0.77	0.543	(	0.162)	0.112		0.431
165.	13.75	0.77	0.543	(	0.161)	0.112		0.431
166.	13.83	0.77	0.543	(	0.160)	0.112		0.431
167.	13.92	0.77	0.543	(	0.160)	0.112		0.431
168.	14.00	0.77	0.543	(	0.159)	0.112		0.431
169.	14.08	0.90	0.637	(	0.158)	0.131		0.506
170.	14.17	0.90	0.637	(	0.157)	0.131		0.506
171.	14.25	0.90	0.637	(	0.156)	0.131		0.506
172.	14.33	0.87	0.614	(	0.156)	0.126		0.487
173.	14.42	0.87	0.614	(	0.155)	0.126		0.487
174.	14.50	0.87	0.614	(	0.154)	0.126		0.487
175.	14.58	0.87	0.614	(	0.153)	0.126		0.487
176.	14.67	0.87	0.614	(	0.152)	0.126		0.487
177.	14.75	0.87	0.614	(	0.152)	0.126		0.487
178.	14.83	0.83	0.590	(	0.151)	0.122		0.468
179.	14.92	0.83	0.590	(	0.150)	0.122		0.468
180.	15.00	0.83	0.590	(	0.149)	0.122		0.468
181.	15.08	0.80	0.566	(	0.149)	0.117		0.450
182.	15.17	0.80	0.566	(	0.148)	0.117		0.450
183.	15.25	0.80	0.566	(	0.147)	0.117		0.450
184.	15.33	0.77	0.543	(	0.146)	0.112		0.431
185.	15.42	0.77	0.543	(	0.146)	0.112		0.431
186.	15.50	0.77	0.543	(	0.145)	0.112		0.431
187.	15.58	0.63	0.448	(	0.144)	0.092		0.356
188.	15.67	0.63	0.448	(	0.143)	0.092		0.356
189.	15.75	0.63	0.448	(	0.143)	0.092		0.356
190.	15.83	0.63	0.448	(	0.142)	0.092		0.356
191.	15.92	0.63	0.448	(	0.141)	0.092		0.356
192.	16.00	0.63	0.448	(	0.140)	0.092		0.356
193.	16.08	0.13	0.094	(	0.140)	0.019		0.075
194.	16.17	0.13	0.094	(	0.139)	0.019		0.075
195.	16.25	0.13	0.094	(	0.138)	0.019		0.075
196.	16.33	0.13	0.094	(	0.138)	0.019		0.075
197.	16.42	0.13	0.094	(	0.137)	0.019		0.075
198.	16.50	0.13	0.094	(	0.136)	0.019		0.075
199.	16.58	0.10	0.071	(	0.135)	0.015		0.056
200.	16.67	0.10	0.071	(	0.135)	0.015		0.056
201.	16.75	0.10	0.071	(	0.134)	0.015		0.056
202.	16.83	0.10	0.071	(	0.133)	0.015		0.056
203.	16.92	0.10	0.071	(	0.133)	0.015		0.056
204.	17.00	0.10	0.071	(	0.132)	0.015		0.056
205.	17.08	0.17	0.118	(	0.131)	0.024		0.094
206.	17.17	0.17	0.118	(	0.131)	0.024		0.094
207.	17.25	0.17	0.118	(	0.130)	0.024		0.094
208.	17.33	0.17	0.118	(	0.129)	0.024		0.094
209.	17.42	0.17	0.118	(	0.129)	0.024		0.094

210. 17.50	0.17	0.118	(0.128)	0.024	0.094
211. 17.58	0.17	0.118	(0.128)	0.024	0.094
212. 17.67	0.17	0.118	(0.127)	0.024	0.094
213. 17.75	0.17	0.118	(0.126)	0.024	0.094
214. 17.83	0.13	0.094	(0.126)	0.019	0.075
215. 17.92	0.13	0.094	(0.125)	0.019	0.075
216. 18.00	0.13	0.094	(0.124)	0.019	0.075
217. 18.08	0.13	0.094	(0.124)	0.019	0.075
218. 18.17	0.13	0.094	(0.123)	0.019	0.075
219. 18.25	0.13	0.094	(0.123)	0.019	0.075
220. 18.33	0.13	0.094	(0.122)	0.019	0.075
221. 18.42	0.13	0.094	(0.121)	0.019	0.075
222. 18.50	0.13	0.094	(0.121)	0.019	0.075
223. 18.58	0.10	0.071	(0.120)	0.015	0.056
224. 18.67	0.10	0.071	(0.120)	0.015	0.056
225. 18.75	0.10	0.071	(0.119)	0.015	0.056
226. 18.83	0.07	0.047	(0.118)	0.010	0.037
227. 18.92	0.07	0.047	(0.118)	0.010	0.037
228. 19.00	0.07	0.047	(0.117)	0.010	0.037
229. 19.08	0.10	0.071	(0.117)	0.015	0.056
230. 19.17	0.10	0.071	(0.116)	0.015	0.056
231. 19.25	0.10	0.071	(0.116)	0.015	0.056
232. 19.33	0.13	0.094	(0.115)	0.019	0.075
233. 19.42	0.13	0.094	(0.115)	0.019	0.075
234. 19.50	0.13	0.094	(0.114)	0.019	0.075
235. 19.58	0.10	0.071	(0.114)	0.015	0.056
236. 19.67	0.10	0.071	(0.113)	0.015	0.056
237. 19.75	0.10	0.071	(0.113)	0.015	0.056
238. 19.83	0.07	0.047	(0.112)	0.010	0.037
239. 19.92	0.07	0.047	(0.112)	0.010	0.037
240. 20.00	0.07	0.047	(0.111)	0.010	0.037
241. 20.08	0.10	0.071	(0.111)	0.015	0.056
242. 20.17	0.10	0.071	(0.110)	0.015	0.056
243. 20.25	0.10	0.071	(0.110)	0.015	0.056
244. 20.33	0.10	0.071	(0.109)	0.015	0.056
245. 20.42	0.10	0.071	(0.109)	0.015	0.056
246. 20.50	0.10	0.071	(0.108)	0.015	0.056
247. 20.58	0.10	0.071	(0.108)	0.015	0.056
248. 20.67	0.10	0.071	(0.107)	0.015	0.056
249. 20.75	0.10	0.071	(0.107)	0.015	0.056
250. 20.83	0.07	0.047	(0.106)	0.010	0.037
251. 20.92	0.07	0.047	(0.106)	0.010	0.037
252. 21.00	0.07	0.047	(0.106)	0.010	0.037
253. 21.08	0.10	0.071	(0.105)	0.015	0.056
254. 21.17	0.10	0.071	(0.105)	0.015	0.056
255. 21.25	0.10	0.071	(0.104)	0.015	0.056
256. 21.33	0.07	0.047	(0.104)	0.010	0.037
257. 21.42	0.07	0.047	(0.104)	0.010	0.037
258. 21.50	0.07	0.047	(0.103)	0.010	0.037
259. 21.58	0.10	0.071	(0.103)	0.015	0.056
260. 21.67	0.10	0.071	(0.102)	0.015	0.056
261. 21.75	0.10	0.071	(0.102)	0.015	0.056
262. 21.83	0.07	0.047	(0.102)	0.010	0.037
263. 21.92	0.07	0.047	(0.101)	0.010	0.037

264. 22.00	0.07	0.047	(0.101)	0.010	0.037
265. 22.08	0.10	0.071	(0.101)	0.015	0.056
266. 22.17	0.10	0.071	(0.100)	0.015	0.056
267. 22.25	0.10	0.071	(0.100)	0.015	0.056
268. 22.33	0.07	0.047	(0.100)	0.010	0.037
269. 22.42	0.07	0.047	(0.099)	0.010	0.037
270. 22.50	0.07	0.047	(0.099)	0.010	0.037
271. 22.58	0.07	0.047	(0.099)	0.010	0.037
272. 22.67	0.07	0.047	(0.099)	0.010	0.037
273. 22.75	0.07	0.047	(0.098)	0.010	0.037
274. 22.83	0.07	0.047	(0.098)	0.010	0.037
275. 22.92	0.07	0.047	(0.098)	0.010	0.037
276. 23.00	0.07	0.047	(0.097)	0.010	0.037
277. 23.08	0.07	0.047	(0.097)	0.010	0.037
278. 23.17	0.07	0.047	(0.097)	0.010	0.037
279. 23.25	0.07	0.047	(0.097)	0.010	0.037
280. 23.33	0.07	0.047	(0.097)	0.010	0.037
281. 23.42	0.07	0.047	(0.096)	0.010	0.037
282. 23.50	0.07	0.047	(0.096)	0.010	0.037
283. 23.58	0.07	0.047	(0.096)	0.010	0.037
284. 23.67	0.07	0.047	(0.096)	0.010	0.037
285. 23.75	0.07	0.047	(0.096)	0.010	0.037
286. 23.83	0.07	0.047	(0.096)	0.010	0.037
287. 23.92	0.07	0.047	(0.096)	0.010	0.037
288. 24.00	0.07	0.047	(0.096)	0.010	0.037

(Loss Rate Not Used)

Sum = 100.0 Sum = 56.2

Flood volume = Effective rainfall 4.68(In)
times area 0.3(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 1.22(In)
Total soil loss = 0.033(Ac.Ft)
Total rainfall = 5.90(In)
Flood volume = 5611.9 Cubic Feet
Total soil loss = 1455.7 Cubic Feet

Peak flow rate of this hydrograph = 0.212(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0002	0.01	Q	|	|	|	|
0+15	0.0003	0.01	Q	|	|	|	|
0+20	0.0004	0.02	Q	|	|	|	|
0+25	0.0005	0.02	Q	|	|	|	|
0+30	0.0006	0.02	Q	|	|	|	|
0+35	0.0008	0.02	Q	|	|	|	|

0+40	0.0009	0.02	Q	|	|	|	|
0+45	0.0010	0.02	Q	|	|	|	|
0+50	0.0012	0.02	Q	|	|	|	|
0+55	0.0014	0.02	Q	|	|	|	|
1+ 0	0.0015	0.02	Q	|	|	|	|
1+ 5	0.0017	0.02	Q	|	|	|	|
1+10	0.0018	0.02	Q	|	|	|	|
1+15	0.0019	0.02	Q	|	|	|	|
1+20	0.0021	0.02	Q	|	|	|	|
1+25	0.0022	0.02	Q	|	|	|	|
1+30	0.0023	0.02	Q	|	|	|	|
1+35	0.0024	0.02	Q	|	|	|	|
1+40	0.0026	0.02	Q	|	|	|	|
1+45	0.0027	0.02	Q	|	|	|	|
1+50	0.0029	0.02	Q	|	|	|	|
1+55	0.0030	0.02	Q	|	|	|	|
2+ 0	0.0032	0.02	Q	|	|	|	|
2+ 5	0.0034	0.02	QV	|	|	|	|
2+10	0.0036	0.02	QV	|	|	|	|
2+15	0.0037	0.02	QV	|	|	|	|
2+20	0.0039	0.02	QV	|	|	|	|
2+25	0.0041	0.02	QV	|	|	|	|
2+30	0.0043	0.02	QV	|	|	|	|
2+35	0.0045	0.03	QV	|	|	|	|
2+40	0.0047	0.03	QV	|	|	|	|
2+45	0.0049	0.03	QV	|	|	|	|
2+50	0.0051	0.03	QV	|	|	|	|
2+55	0.0053	0.03	QV	|	|	|	|
3+ 0	0.0055	0.03	QV	|	|	|	|
3+ 5	0.0058	0.03	QV	|	|	|	|
3+10	0.0060	0.03	QV	|	|	|	|
3+15	0.0062	0.03	QV	|	|	|	|
3+20	0.0064	0.03	QV	|	|	|	|
3+25	0.0066	0.03	Q V	|	|	|	|
3+30	0.0068	0.03	Q V	|	|	|	|
3+35	0.0070	0.03	Q V	|	|	|	|
3+40	0.0073	0.03	Q V	|	|	|	|
3+45	0.0075	0.03	Q V	|	|	|	|
3+50	0.0077	0.04	Q V	|	|	|	|
3+55	0.0080	0.04	Q V	|	|	|	|
4+ 0	0.0082	0.04	Q V	|	|	|	|
4+ 5	0.0085	0.04	Q V	|	|	|	|
4+10	0.0088	0.04	Q V	|	|	|	|
4+15	0.0090	0.04	Q V	|	|	|	|
4+20	0.0093	0.04	Q V	|	|	|	|
4+25	0.0096	0.04	Q V	|	|	|	|
4+30	0.0099	0.04	Q V	|	|	|	|
4+35	0.0102	0.04	Q V	|	|	|	|
4+40	0.0105	0.04	Q V	|	|	|	|
4+45	0.0108	0.04	Q V	|	|	|	|
4+50	0.0112	0.05	Q V	|	|	|	|
4+55	0.0115	0.05	Q V	|	|	|	|
5+ 0	0.0119	0.05	Q V	|	|	|	|
5+ 5	0.0121	0.04	Q V	|	|	|	|

5+10	0.0124	0.04	Q	V	|	|	|	|
5+15	0.0126	0.04	Q	V	|	|	|	|
5+20	0.0129	0.04	Q	V	|	|	|	|
5+25	0.0132	0.04	Q	V	|	|	|	|
5+30	0.0135	0.04	Q	V	|	|	|	|
5+35	0.0139	0.05	Q	V	|	|	|	|
5+40	0.0142	0.05	Q	V	|	|	|	|
5+45	0.0146	0.05	Q	V	|	|	|	|
5+50	0.0149	0.05	Q	V	|	|	|	|
5+55	0.0152	0.05	Q	V	|	|	|	|
6+ 0	0.0156	0.05	Q	V	|	|	|	|
6+ 5	0.0160	0.06	Q	V	|	|	|	|
6+10	0.0164	0.06	Q	V	|	|	|	|
6+15	0.0167	0.06	Q	V	|	|	|	|
6+20	0.0171	0.06	Q	V	|	|	|	|
6+25	0.0175	0.06	Q	V	|	|	|	|
6+30	0.0179	0.06	Q	V	|	|	|	|
6+35	0.0183	0.06	Q	V	|	|	|	|
6+40	0.0188	0.06	Q	V	|	|	|	|
6+45	0.0192	0.06	Q	V	|	|	|	|
6+50	0.0196	0.06	Q	V	|	|	|	|
6+55	0.0201	0.06	Q	V	|	|	|	|
7+ 0	0.0205	0.06	Q	V	|	|	|	|
7+ 5	0.0209	0.06	Q	V	|	|	|	|
7+10	0.0213	0.06	Q	V	|	|	|	|
7+15	0.0218	0.06	Q	V	|	|	|	|
7+20	0.0222	0.07	Q	V	|	|	|	|
7+25	0.0227	0.07	Q	V	|	|	|	|
7+30	0.0232	0.07	Q	V	|	|	|	|
7+35	0.0237	0.07	Q	V	|	|	|	|
7+40	0.0242	0.07	Q	V	|	|	|	|
7+45	0.0247	0.07	Q	V	|	|	|	|
7+50	0.0253	0.08	Q	V	|	|	|	|
7+55	0.0259	0.08	Q	V	|	|	|	|
8+ 0	0.0264	0.08	Q	V	|	|	|	|
8+ 5	0.0271	0.09	Q	V	|	|	|	|
8+10	0.0277	0.09	Q	V	|	|	|	|
8+15	0.0283	0.09	Q	V	|	|	|	|
8+20	0.0290	0.09	Q	V	|	|	|	|
8+25	0.0296	0.09	Q	V	|	|	|	|
8+30	0.0303	0.09	Q	V	|	|	|	|
8+35	0.0310	0.10	Q	V	|	|	|	|
8+40	0.0316	0.10	Q	V	|	|	|	|
8+45	0.0323	0.10	Q	V	|	|	|	|
8+50	0.0331	0.11	Q	V	|	|	|	|
8+55	0.0338	0.11	Q	V	|	|	|	|
9+ 0	0.0345	0.11	Q	V	|	|	|	|
9+ 5	0.0353	0.12	Q	V	|	|	|	|
9+10	0.0362	0.12	Q	V	|	|	|	|
9+15	0.0370	0.12	Q	V	|	|	|	|
9+20	0.0378	0.12	Q	V	|	|	|	|
9+25	0.0387	0.12	Q	V	|	|	|	|
9+30	0.0395	0.12	Q	V	|	|	|	|
9+35	0.0405	0.13	Q	V	|	|	|	|

9+40	0.0414	0.13	Q	V			
9+45	0.0423	0.13	Q	V			
9+50	0.0432	0.14	Q	V			
9+55	0.0441	0.14	Q	V			
10+ 0	0.0451	0.14	Q	V			
10+ 5	0.0457	0.09	Q	V			
10+10	0.0464	0.09	Q	V			
10+15	0.0470	0.09	Q	V			
10+20	0.0477	0.09	Q	V			
10+25	0.0483	0.09	Q	V			
10+30	0.0490	0.09	Q	V			
10+35	0.0498	0.12	Q	V			
10+40	0.0507	0.12	Q	V			
10+45	0.0515	0.12	Q	V			
10+50	0.0524	0.12	Q	V			
10+55	0.0532	0.12	Q	V			
11+ 0	0.0541	0.12	Q	V			
11+ 5	0.0549	0.12	Q	V			
11+10	0.0557	0.12	Q	V			
11+15	0.0566	0.12	Q	V			
11+20	0.0574	0.12	Q	V			
11+25	0.0582	0.12	Q	V			
11+30	0.0590	0.12	Q	V			
11+35	0.0597	0.11	Q	V			
11+40	0.0605	0.11	Q	V			
11+45	0.0612	0.11	Q	V			
11+50	0.0620	0.11	Q	V			
11+55	0.0627	0.11	Q	V			
12+ 0	0.0635	0.11	Q	V			
12+ 5	0.0646	0.16	Q	V			
12+10	0.0657	0.16	Q	V			
12+15	0.0667	0.16	Q	V			
12+20	0.0678	0.16	Q	V			
12+25	0.0690	0.16	Q	V			
12+30	0.0701	0.16	Q	V			
12+35	0.0713	0.17	Q	V			
12+40	0.0725	0.17	Q	V			
12+45	0.0737	0.17	Q	V			
12+50	0.0749	0.18	Q	V			
12+55	0.0762	0.18	Q	V			
13+ 0	0.0774	0.18	Q	V			
13+ 5	0.0789	0.21	Q	V			
13+10	0.0803	0.21	Q	V			
13+15	0.0818	0.21	Q	V			
13+20	0.0833	0.21	Q	V			
13+25	0.0847	0.21	Q	V			
13+30	0.0862	0.21	Q	V			
13+35	0.0872	0.14	Q	V			
13+40	0.0882	0.14	Q	V			
13+45	0.0892	0.14	Q	V			
13+50	0.0901	0.14	Q	V			
13+55	0.0911	0.14	Q	V			
14+ 0	0.0921	0.14	Q	V			
14+ 5	0.0933	0.17	Q	V			

14+10	0.0944	0.17	Q	|	|	V|	|
14+15	0.0956	0.17	Q	|	|	V|	|
14+20	0.0967	0.16	Q	|	|	V	|
14+25	0.0978	0.16	Q	|	|	V	|
14+30	0.0989	0.16	Q	|	|	V	|
14+35	0.1001	0.16	Q	|	|	|V	|
14+40	0.1012	0.16	Q	|	|	|V	|
14+45	0.1023	0.16	Q	|	|	|V	|
14+50	0.1034	0.16	Q	|	|	| V	|
14+55	0.1044	0.16	Q	|	|	| V	|
15+ 0	0.1055	0.16	Q	|	|	| V	|
15+ 5	0.1065	0.15	Q	|	|	| V	|
15+10	0.1076	0.15	Q	|	|	| V	|
15+15	0.1086	0.15	Q	|	|	| V	|
15+20	0.1096	0.14	Q	|	|	| V	|
15+25	0.1106	0.14	Q	|	|	| V	|
15+30	0.1116	0.14	Q	|	|	| V	|
15+35	0.1124	0.12	Q	|	|	| V	|
15+40	0.1132	0.12	Q	|	|	| V	|
15+45	0.1140	0.12	Q	|	|	| V	|
15+50	0.1148	0.12	Q	|	|	| V	|
15+55	0.1156	0.12	Q	|	|	| V	|
16+ 0	0.1165	0.12	Q	|	|	| V	|
16+ 5	0.1166	0.02	Q	|	|	| V	|
16+10	0.1168	0.02	Q	|	|	| V	|
16+15	0.1170	0.02	Q	|	|	| V	|
16+20	0.1172	0.02	Q	|	|	| V	|
16+25	0.1173	0.02	Q	|	|	| V	|
16+30	0.1175	0.02	Q	|	|	| V	|
16+35	0.1176	0.02	Q	|	|	| V	|
16+40	0.1178	0.02	Q	|	|	| V	|
16+45	0.1179	0.02	Q	|	|	| V	|
16+50	0.1180	0.02	Q	|	|	| V	|
16+55	0.1181	0.02	Q	|	|	| V	|
17+ 0	0.1183	0.02	Q	|	|	| V	|
17+ 5	0.1185	0.03	Q	|	|	| V	|
17+10	0.1187	0.03	Q	|	|	| V	|
17+15	0.1189	0.03	Q	|	|	| V	|
17+20	0.1191	0.03	Q	|	|	| V	|
17+25	0.1193	0.03	Q	|	|	| V	|
17+30	0.1196	0.03	Q	|	|	| V	|
17+35	0.1198	0.03	Q	|	|	| V	|
17+40	0.1200	0.03	Q	|	|	| V	|
17+45	0.1202	0.03	Q	|	|	| V	|
17+50	0.1204	0.02	Q	|	|	| V	|
17+55	0.1205	0.02	Q	|	|	| V	|
18+ 0	0.1207	0.02	Q	|	|	| V	|
18+ 5	0.1209	0.02	Q	|	|	| V	|
18+10	0.1211	0.02	Q	|	|	| V	|
18+15	0.1212	0.02	Q	|	|	| V	|
18+20	0.1214	0.02	Q	|	|	| V	|
18+25	0.1216	0.02	Q	|	|	| V	|
18+30	0.1217	0.02	Q	|	|	| V	|
18+35	0.1219	0.02	Q	|	|	| V	|

18+40	0.1220	0.02	Q	|	|	|	V |
18+45	0.1221	0.02	Q	|	|	|	V |
18+50	0.1222	0.01	Q	|	|	|	V |
18+55	0.1223	0.01	Q	|	|	|	V |
19+ 0	0.1224	0.01	Q	|	|	|	V |
19+ 5	0.1225	0.02	Q	|	|	|	V |
19+10	0.1226	0.02	Q	|	|	|	V |
19+15	0.1228	0.02	Q	|	|	|	V |
19+20	0.1229	0.02	Q	|	|	|	V |
19+25	0.1231	0.02	Q	|	|	|	V |
19+30	0.1233	0.02	Q	|	|	|	V |
19+35	0.1234	0.02	Q	|	|	|	V |
19+40	0.1235	0.02	Q	|	|	|	V |
19+45	0.1237	0.02	Q	|	|	|	V |
19+50	0.1238	0.01	Q	|	|	|	V |
19+55	0.1239	0.01	Q	|	|	|	V |
20+ 0	0.1239	0.01	Q	|	|	|	V |
20+ 5	0.1241	0.02	Q	|	|	|	V |
20+10	0.1242	0.02	Q	|	|	|	V |
20+15	0.1243	0.02	Q	|	|	|	V |
20+20	0.1245	0.02	Q	|	|	|	V |
20+25	0.1246	0.02	Q	|	|	|	V |
20+30	0.1247	0.02	Q	|	|	|	V |
20+35	0.1248	0.02	Q	|	|	|	V |
20+40	0.1250	0.02	Q	|	|	|	V |
20+45	0.1251	0.02	Q	|	|	|	V |
20+50	0.1252	0.01	Q	|	|	|	V |
20+55	0.1253	0.01	Q	|	|	|	V |
21+ 0	0.1254	0.01	Q	|	|	|	V |
21+ 5	0.1255	0.02	Q	|	|	|	V |
21+10	0.1256	0.02	Q	|	|	|	V|
21+15	0.1257	0.02	Q	|	|	|	V|
21+20	0.1258	0.01	Q	|	|	|	V|
21+25	0.1259	0.01	Q	|	|	|	V|
21+30	0.1260	0.01	Q	|	|	|	V|
21+35	0.1261	0.02	Q	|	|	|	V|
21+40	0.1263	0.02	Q	|	|	|	V|
21+45	0.1264	0.02	Q	|	|	|	V|
21+50	0.1265	0.01	Q	|	|	|	V|
21+55	0.1266	0.01	Q	|	|	|	V|
22+ 0	0.1266	0.01	Q	|	|	|	V|
22+ 5	0.1268	0.02	Q	|	|	|	V|
22+10	0.1269	0.02	Q	|	|	|	V|
22+15	0.1270	0.02	Q	|	|	|	V|
22+20	0.1271	0.01	Q	|	|	|	V|
22+25	0.1272	0.01	Q	|	|	|	V|
22+30	0.1273	0.01	Q	|	|	|	V|
22+35	0.1274	0.01	Q	|	|	|	V|
22+40	0.1275	0.01	Q	|	|	|	V|
22+45	0.1275	0.01	Q	|	|	|	V|
22+50	0.1276	0.01	Q	|	|	|	V|
22+55	0.1277	0.01	Q	|	|	|	V|
23+ 0	0.1278	0.01	Q	|	|	|	V|
23+ 5	0.1279	0.01	Q	|	|	|	V|

23+10	0.1280	0.01	Q	|	|	|	V|
23+15	0.1281	0.01	Q	|	|	|	V|
23+20	0.1281	0.01	Q	|	|	|	V|
23+25	0.1282	0.01	Q	|	|	|	V|
23+30	0.1283	0.01	Q	|	|	|	V|
23+35	0.1284	0.01	Q	|	|	|	V|
23+40	0.1285	0.01	Q	|	|	|	V|
23+45	0.1286	0.01	Q	|	|	|	V|
23+50	0.1287	0.01	Q	|	|	|	V|
23+55	0.1287	0.01	Q	|	|	|	V|
24+ 0	0.1288	0.01	Q	|	|	|	V

Appendix “C-2” – Routed Hydrographs

WATERSHED B: UNDERGROUND DETENTION/INFILTRATION ROUTING

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
2 YR - 1 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP12.rte
**********HYDROGRAPH DATA**********
Number of intervals = 14
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 8.414 (CFS)
Total volume = 0.258 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 14
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 2.1 4.21 6.31 8.41 (Ft.)	Depth
0.083	0.86	0.00	0.003	O I | | | |	0.01
0.167	1.45	0.00	0.011	O I | | | |	0.04
0.250	1.71	0.00	0.022	O I | | | |	0.07
0.333	1.80	0.00	0.034	O I | | | |	0.12
0.417	1.99	0.00	0.047	O I| | | |	0.16
0.500	2.24	0.00	0.062	O I | | |	0.21
0.583	2.54	0.00	0.078	O |I | | |	0.27
0.667	2.92	0.00	0.097	O | I | | |	0.33
0.750	3.87	0.00	0.120	O | I | | |	0.41
0.833	8.41	0.00	0.162	O | | | I	0.55
0.917	5.99	0.00	0.212	O | | I | |	0.72
1.000	2.68	0.00	0.242	O | I | | |	0.82
1.083	0.83	0.00	0.254	O I | | | |	0.86
1.167	0.11	0.00	0.257	O | | | |	0.87
1.250	0.00	0.00	0.258	O | | | |	0.88

Remaining water in basin = 0.26 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 15

```
            Time interval =    5.0 (Min.)
            Maximum/Peak flow rate =       0.001 (CFS)
            Total volume =      0.000 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)     0.000    0.000    0.000    0.000    0.000
      Vol (Ac.Ft)     0.000    0.000    0.000    0.000    0.000
****************************************************************************

----------------------------------------------------------------------
```

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
2 YR - 3 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP32.rte
**********HYDROGRAPH DATA**********
Number of intervals = 38
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 4.815 (CFS)
Total volume = 0.426 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 38
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 1.2 2.41 3.61 4.81	Depth (Ft.)
0.083	0.45	0.00	0.002	O I | | | |	0.01
0.167	0.75	0.00	0.006	O I | | | |	0.02
0.250	0.73	0.00	0.011	O I | | | |	0.04
0.333	0.83	0.00	0.016	O I | | | |	0.06
0.417	0.91	0.00	0.022	O I | | | |	0.08
0.500	1.03	0.00	0.029	O I | | | |	0.10
0.583	1.00	0.00	0.036	O I | | | |	0.12
0.667	1.05	0.00	0.043	O I | | | |	0.15
0.750	1.10	0.00	0.050	O I| | | |	0.17
0.833	1.01	0.00	0.058	O I | | | |	0.20
0.917	0.98	0.00	0.064	O I | | | |	0.22
1.000	1.06	0.00	0.071	O I| | | |	0.24
1.083	1.25	0.00	0.079	O I | | |	0.27
1.167	1.35	0.00	0.088	O I | | |	0.30
1.250	1.36	0.00	0.098	O |I | | |	0.33
1.333	1.29	0.00	0.107	O I | | |	0.36
1.417	1.46	0.00	0.116	O |I | | |	0.40
1.500	1.62	0.00	0.127	O | I | | |	0.43
1.583	1.56	0.00	0.138	O | I | | |	0.47
1.667	1.60	0.00	0.149	O | I | | |	0.51
1.750	1.87	0.00	0.161	O | I | | |	

0.55

1.833	1.95	0.00	0.174	O	|	I	|	|	|	0.59
1.917	1.86	0.00	0.187	O	|	I	|	|	|	0.64
2.000	1.84	0.00	0.200	O	|	I	|	|	|	0.68
2.083	1.89	0.00	0.212	O	|	I	|	|	|	0.72
2.167	2.30	0.00	0.227	O	|	I	|	|	|	0.77
2.250	2.84	0.00	0.245	O	|	|	I	|	|	0.83
2.333	2.54	0.00	0.263	O	|	I	|	|	|	0.89
2.417	3.38	0.00	0.283	O	|	|	I	|	|	0.96
2.500	4.26	0.01	0.310	O	|	|	|	I	|	1.04
2.583	4.81	0.04	0.341	O	|	|	|	|	I	1.11
2.667	4.24	0.07	0.371	O	|	|	|	I	|	1.18
2.750	2.38	0.09	0.394	O	|	I	|	|	|	1.23
2.833	1.32	0.10	0.406	O	I	|	|	|	|	1.26
2.917	1.12	0.10	0.414	O	I	|	|	|	|	1.27
3.000	0.69	0.10	0.419	O	I	|	|	|	|	1.28
3.083	0.21	0.10	0.421	O	I	|	|	|	|	1.29
3.167	0.02	0.10	0.422	O	|	|	|	|	|	1.29
3.250	0.00	0.10	0.421	O	|	|	|	|	|	1.29
3.333	0.00	0.10	0.420	O	|	|	|	|	|	1.29
3.417	0.00	0.10	0.420	O	|	|	|	|	|	1.29
3.500	0.00	0.10	0.419	O	|	|	|	|	|	1.28
3.583	0.00	0.10	0.418	O	|	|	|	|	|	1.28
3.667	0.00	0.10	0.417	O	|	|	|	|	|	1.28
3.750	0.00	0.10	0.417	O	|	|	|	|	|	1.28
3.833	0.00	0.10	0.416	O	|	|	|	|	|	1.28
3.917	0.00	0.10	0.415	O	|	|	|	|	|	1.28
4.000	0.00	0.10	0.415	O	|	|	|	|	|	1.27
4.083	0.00	0.10	0.414	O	|	|	|	|	|	1.27
4.167	0.00	0.10	0.413	O	|	|	|	|	|	1.27

4.250	0.00	0.10	0.413	O	|	|	|	|	1.27
4.333	0.00	0.10	0.412	O	|	|	|	|	1.27
4.417	0.00	0.10	0.411	O	|	|	|	|	1.27
4.500	0.00	0.10	0.410	O	|	|	|	|	1.27
4.583	0.00	0.10	0.410	O	|	|	|	|	1.26
4.667	0.00	0.10	0.409	O	|	|	|	|	1.26
4.750	0.00	0.10	0.408	O	|	|	|	|	1.26
4.833	0.00	0.10	0.408	O	|	|	|	|	1.26
4.917	0.00	0.10	0.407	O	|	|	|	|	1.26
5.000	0.00	0.10	0.406	O	|	|	|	|	1.26
5.083	0.00	0.10	0.406	O	|	|	|	|	1.26
5.167	0.00	0.10	0.405	O	|	|	|	|	1.25
5.250	0.00	0.10	0.404	O	|	|	|	|	1.25
5.333	0.00	0.10	0.404	O	|	|	|	|	1.25
5.417	0.00	0.10	0.403	O	|	|	|	|	1.25
5.500	0.00	0.10	0.402	O	|	|	|	|	1.25
5.583	0.00	0.10	0.402	O	|	|	|	|	1.25
5.667	0.00	0.10	0.401	O	|	|	|	|	1.25
5.750	0.00	0.09	0.400	O	|	|	|	|	1.24
5.833	0.00	0.09	0.400	O	|	|	|	|	1.24
5.917	0.00	0.09	0.399	O	|	|	|	|	1.24
6.000	0.00	0.09	0.398	O	|	|	|	|	1.24
6.083	0.00	0.09	0.398	O	|	|	|	|	1.24
6.167	0.00	0.09	0.397	O	|	|	|	|	1.24
6.250	0.00	0.09	0.397	O	|	|	|	|	1.24
6.333	0.00	0.09	0.396	O	|	|	|	|	1.23
6.417	0.00	0.09	0.395	O	|	|	|	|	1.23
6.500	0.00	0.09	0.395	O	|	|	|	|	1.23
6.583	0.00	0.09	0.394	O	|	|	|	|	

1.23

6.667	0.00	0.09	0.393	O	|	|	|	1.23
6.750	0.00	0.09	0.393	O	|	|	|	1.23
6.833	0.00	0.09	0.392	O	|	|	|	1.23
6.917	0.00	0.09	0.392	O	|	|	|	1.22
7.000	0.00	0.09	0.391	O	|	|	|	1.22
7.083	0.00	0.09	0.390	O	|	|	|	1.22
7.167	0.00	0.09	0.390	O	|	|	|	1.22
7.250	0.00	0.08	0.389	O	|	|	|	1.22
7.333	0.00	0.08	0.389	O	|	|	|	1.22
7.417	0.00	0.08	0.388	O	|	|	|	1.22
7.500	0.00	0.08	0.388	O	|	|	|	1.21
7.583	0.00	0.08	0.387	O	|	|	|	1.21
7.667	0.00	0.08	0.386	O	|	|	|	1.21
7.750	0.00	0.08	0.386	O	|	|	|	1.21
7.833	0.00	0.08	0.385	O	|	|	|	1.21
7.917	0.00	0.08	0.385	O	|	|	|	1.21
8.000	0.00	0.08	0.384	O	|	|	|	1.21
8.083	0.00	0.08	0.384	O	|	|	|	1.21
8.167	0.00	0.08	0.383	O	|	|	|	1.20
8.250	0.00	0.08	0.382	O	|	|	|	1.20
8.333	0.00	0.08	0.382	O	|	|	|	1.20
8.417	0.00	0.08	0.381	O	|	|	|	1.20
8.500	0.00	0.08	0.381	O	|	|	|	1.20
8.583	0.00	0.08	0.380	O	|	|	|	1.20
8.667	0.00	0.08	0.380	O	|	|	|	1.20
8.750	0.00	0.08	0.379	O	|	|	|	1.20
8.833	0.00	0.08	0.379	O	|	|	|	1.19
8.917	0.00	0.08	0.378	O	|	|	|	1.19

9.000	0.00	0.07	0.378	O	|	|	|	1.19
9.083	0.00	0.07	0.377	O	|	|	|	1.19
9.167	0.00	0.07	0.377	O	|	|	|	1.19
9.250	0.00	0.07	0.376	O	|	|	|	1.19
9.333	0.00	0.07	0.376	O	|	|	|	1.19
9.417	0.00	0.07	0.375	O	|	|	|	1.19
9.500	0.00	0.07	0.375	O	|	|	|	1.19
9.583	0.00	0.07	0.374	O	|	|	|	1.18
9.667	0.00	0.07	0.374	O	|	|	|	1.18
9.750	0.00	0.07	0.373	O	|	|	|	1.18
9.833	0.00	0.07	0.373	O	|	|	|	1.18
9.917	0.00	0.07	0.372	O	|	|	|	1.18
10.000	0.00	0.07	0.372	O	|	|	|	1.18
10.083	0.00	0.07	0.371	O	|	|	|	1.18
10.167	0.00	0.07	0.371	O	|	|	|	1.18
10.250	0.00	0.07	0.370	O	|	|	|	1.18
10.333	0.00	0.07	0.370	O	|	|	|	1.17
10.417	0.00	0.07	0.369	O	|	|	|	1.17
10.500	0.00	0.07	0.369	O	|	|	|	1.17
10.583	0.00	0.07	0.368	O	|	|	|	1.17
10.667	0.00	0.07	0.368	O	|	|	|	1.17
10.750	0.00	0.07	0.368	O	|	|	|	1.17
10.833	0.00	0.07	0.367	O	|	|	|	1.17
10.917	0.00	0.07	0.367	O	|	|	|	1.17
11.000	0.00	0.06	0.366	O	|	|	|	1.17
11.083	0.00	0.06	0.366	O	|	|	|	1.16
11.167	0.00	0.06	0.365	O	|	|	|	1.16
11.250	0.00	0.06	0.365	O	|	|	|	1.16
11.333	0.00	0.06	0.364	O	|	|	|	

1.16

11.417	0.00	0.06	0.364	O	|	|	|	1.16
11.500	0.00	0.06	0.364	O	|	|	|	1.16
11.583	0.00	0.06	0.363	O	|	|	|	1.16
11.667	0.00	0.06	0.363	O	|	|	|	1.16
11.750	0.00	0.06	0.362	O	|	|	|	1.16
11.833	0.00	0.06	0.362	O	|	|	|	1.16
11.917	0.00	0.06	0.361	O	|	|	|	1.15
12.000	0.00	0.06	0.361	O	|	|	|	1.15
12.083	0.00	0.06	0.361	O	|	|	|	1.15
12.167	0.00	0.06	0.360	O	|	|	|	1.15
12.250	0.00	0.06	0.360	O	|	|	|	1.15
12.333	0.00	0.06	0.359	O	|	|	|	1.15
12.417	0.00	0.06	0.359	O	|	|	|	1.15
12.500	0.00	0.06	0.359	O	|	|	|	1.15
12.583	0.00	0.06	0.358	O	|	|	|	1.15
12.667	0.00	0.06	0.358	O	|	|	|	1.15
12.750	0.00	0.06	0.357	O	|	|	|	1.15
12.833	0.00	0.06	0.357	O	|	|	|	1.14
12.917	0.00	0.06	0.357	O	|	|	|	1.14
13.000	0.00	0.06	0.356	O	|	|	|	1.14
13.083	0.00	0.06	0.356	O	|	|	|	1.14
13.167	0.00	0.06	0.356	O	|	|	|	1.14
13.250	0.00	0.05	0.355	O	|	|	|	1.14
13.333	0.00	0.05	0.355	O	|	|	|	1.14
13.417	0.00	0.05	0.354	O	|	|	|	1.14
13.500	0.00	0.05	0.354	O	|	|	|	1.14
13.583	0.00	0.05	0.354	O	|	|	|	1.14
13.667	0.00	0.05	0.353	O	|	|	|	1.14

13.750	0.00	0.05	0.353	O	|	|	|	|	1.14
13.833	0.00	0.05	0.353	O	|	|	|	|	1.13
13.917	0.00	0.05	0.352	O	|	|	|	|	1.13
14.000	0.00	0.05	0.352	O	|	|	|	|	1.13
14.083	0.00	0.05	0.351	O	|	|	|	|	1.13
14.167	0.00	0.05	0.351	O	|	|	|	|	1.13
14.250	0.00	0.05	0.351	O	|	|	|	|	1.13
14.333	0.00	0.05	0.350	O	|	|	|	|	1.13
14.417	0.00	0.05	0.350	O	|	|	|	|	1.13
14.500	0.00	0.05	0.350	O	|	|	|	|	1.13
14.583	0.00	0.05	0.349	O	|	|	|	|	1.13
14.667	0.00	0.05	0.349	O	|	|	|	|	1.13
14.750	0.00	0.05	0.349	O	|	|	|	|	1.13
14.833	0.00	0.05	0.348	O	|	|	|	|	1.12
14.917	0.00	0.05	0.348	O	|	|	|	|	1.12
15.000	0.00	0.05	0.348	O	|	|	|	|	1.12
15.083	0.00	0.05	0.347	O	|	|	|	|	1.12
15.167	0.00	0.05	0.347	O	|	|	|	|	1.12
15.250	0.00	0.05	0.347	O	|	|	|	|	1.12
15.333	0.00	0.05	0.346	O	|	|	|	|	1.12
15.417	0.00	0.05	0.346	O	|	|	|	|	1.12
15.500	0.00	0.05	0.346	O	|	|	|	|	1.12
15.583	0.00	0.05	0.345	O	|	|	|	|	1.12
15.667	0.00	0.05	0.345	O	|	|	|	|	1.12
15.750	0.00	0.05	0.345	O	|	|	|	|	1.12
15.833	0.00	0.05	0.344	O	|	|	|	|	1.12
15.917	0.00	0.05	0.344	O	|	|	|	|	1.12
16.000	0.00	0.04	0.344	O	|	|	|	|	1.11
16.083	0.00	0.04	0.344	O	|	|	|	|	

1.11

16.167	0.00	0.04	0.343	O	|	|	|	1.11
16.250	0.00	0.04	0.343	O	|	|	|	1.11
16.333	0.00	0.04	0.343	O	|	|	|	1.11
16.417	0.00	0.04	0.342	O	|	|	|	1.11
16.500	0.00	0.04	0.342	O	|	|	|	1.11
16.583	0.00	0.04	0.342	O	|	|	|	1.11
16.667	0.00	0.04	0.341	O	|	|	|	1.11
16.750	0.00	0.04	0.341	O	|	|	|	1.11
16.833	0.00	0.04	0.341	O	|	|	|	1.11
16.917	0.00	0.04	0.341	O	|	|	|	1.11
17.000	0.00	0.04	0.340	O	|	|	|	1.11
17.083	0.00	0.04	0.340	O	|	|	|	1.11
17.167	0.00	0.04	0.340	O	|	|	|	1.10
17.250	0.00	0.04	0.339	O	|	|	|	1.10
17.333	0.00	0.04	0.339	O	|	|	|	1.10
17.417	0.00	0.04	0.339	O	|	|	|	1.10
17.500	0.00	0.04	0.339	O	|	|	|	1.10
17.583	0.00	0.04	0.338	O	|	|	|	1.10
17.667	0.00	0.04	0.338	O	|	|	|	1.10
17.750	0.00	0.04	0.338	O	|	|	|	1.10
17.833	0.00	0.04	0.337	O	|	|	|	1.10
17.917	0.00	0.04	0.337	O	|	|	|	1.10
18.000	0.00	0.04	0.337	O	|	|	|	1.10
18.083	0.00	0.04	0.337	O	|	|	|	1.10
18.167	0.00	0.04	0.336	O	|	|	|	1.10
18.250	0.00	0.04	0.336	O	|	|	|	1.10
18.333	0.00	0.04	0.336	O	|	|	|	1.10
18.417	0.00	0.04	0.336	O	|	|	|	1.10

18.500	0.00	0.04	0.335	O	|	|	|	|	1.09
18.583	0.00	0.04	0.335	O	|	|	|	|	1.09
18.667	0.00	0.04	0.335	O	|	|	|	|	1.09
18.750	0.00	0.04	0.335	O	|	|	|	|	1.09
18.833	0.00	0.04	0.334	O	|	|	|	|	1.09
18.917	0.00	0.04	0.334	O	|	|	|	|	1.09
19.000	0.00	0.04	0.334	O	|	|	|	|	1.09
19.083	0.00	0.04	0.334	O	|	|	|	|	1.09
19.167	0.00	0.04	0.333	O	|	|	|	|	1.09
19.250	0.00	0.04	0.333	O	|	|	|	|	1.09
19.333	0.00	0.04	0.333	O	|	|	|	|	1.09
19.417	0.00	0.04	0.333	O	|	|	|	|	1.09
19.500	0.00	0.03	0.332	O	|	|	|	|	1.09
19.583	0.00	0.03	0.332	O	|	|	|	|	1.09
19.667	0.00	0.03	0.332	O	|	|	|	|	1.09
19.750	0.00	0.03	0.332	O	|	|	|	|	1.09
19.833	0.00	0.03	0.331	O	|	|	|	|	1.09
19.917	0.00	0.03	0.331	O	|	|	|	|	1.09
20.000	0.00	0.03	0.331	O	|	|	|	|	1.08
20.083	0.00	0.03	0.331	O	|	|	|	|	1.08
20.167	0.00	0.03	0.331	O	|	|	|	|	1.08
20.250	0.00	0.03	0.330	O	|	|	|	|	1.08
20.333	0.00	0.03	0.330	O	|	|	|	|	1.08
20.417	0.00	0.03	0.330	O	|	|	|	|	1.08
20.500	0.00	0.03	0.330	O	|	|	|	|	1.08
20.583	0.00	0.03	0.329	O	|	|	|	|	1.08
20.667	0.00	0.03	0.329	O	|	|	|	|	1.08
20.750	0.00	0.03	0.329	O	|	|	|	|	1.08
20.833	0.00	0.03	0.329	O	|	|	|	|	

1.08

20.917	0.00	0.03	0.329	O	|	|	|	|	1.08
21.000	0.00	0.03	0.328	O	|	|	|	|	1.08
21.083	0.00	0.03	0.328	O	|	|	|	|	1.08
21.167	0.00	0.03	0.328	O	|	|	|	|	1.08
21.250	0.00	0.03	0.328	O	|	|	|	|	1.08
21.333	0.00	0.03	0.327	O	|	|	|	|	1.08
21.417	0.00	0.03	0.327	O	|	|	|	|	1.08
21.500	0.00	0.03	0.327	O	|	|	|	|	1.08
21.583	0.00	0.03	0.327	O	|	|	|	|	1.08
21.667	0.00	0.03	0.327	O	|	|	|	|	1.07
21.750	0.00	0.03	0.326	O	|	|	|	|	1.07
21.833	0.00	0.03	0.326	O	|	|	|	|	1.07
21.917	0.00	0.03	0.326	O	|	|	|	|	1.07
22.000	0.00	0.03	0.326	O	|	|	|	|	1.07
22.083	0.00	0.03	0.326	O	|	|	|	|	1.07
22.167	0.00	0.03	0.325	O	|	|	|	|	1.07
22.250	0.00	0.03	0.325	O	|	|	|	|	1.07
22.333	0.00	0.03	0.325	O	|	|	|	|	1.07
22.417	0.00	0.03	0.325	O	|	|	|	|	1.07
22.500	0.00	0.03	0.325	O	|	|	|	|	1.07
22.583	0.00	0.03	0.324	O	|	|	|	|	1.07
22.667	0.00	0.03	0.324	O	|	|	|	|	1.07
22.750	0.00	0.03	0.324	O	|	|	|	|	1.07
22.833	0.00	0.03	0.324	O	|	|	|	|	1.07
22.917	0.00	0.03	0.324	O	|	|	|	|	1.07
23.000	0.00	0.03	0.323	O	|	|	|	|	1.07
23.083	0.00	0.03	0.323	O	|	|	|	|	1.07
23.167	0.00	0.03	0.323	O	|	|	|	|	1.07

23.250	0.00	0.03	0.323	O	|	|	|	|	1.07
23.333	0.00	0.03	0.323	O	|	|	|	|	1.07
23.417	0.00	0.03	0.323	O	|	|	|	|	1.07
23.500	0.00	0.03	0.322	O	|	|	|	|	1.07
23.583	0.00	0.03	0.322	O	|	|	|	|	1.06
23.667	0.00	0.03	0.322	O	|	|	|	|	1.06
23.750	0.00	0.03	0.322	O	|	|	|	|	1.06
23.833	0.00	0.03	0.322	O	|	|	|	|	1.06
23.917	0.00	0.03	0.322	O	|	|	|	|	1.06
24.000	0.00	0.03	0.321	O	|	|	|	|	1.06
24.083	0.00	0.02	0.321	O	|	|	|	|	1.06
24.167	0.00	0.02	0.321	O	|	|	|	|	1.06
24.250	0.00	0.02	0.321	O	|	|	|	|	1.06
24.333	0.00	0.02	0.321	O	|	|	|	|	1.06
24.417	0.00	0.02	0.320	O	|	|	|	|	1.06
24.500	0.00	0.02	0.320	O	|	|	|	|	1.06
24.583	0.00	0.02	0.320	O	|	|	|	|	1.06
24.667	0.00	0.02	0.320	O	|	|	|	|	1.06
24.750	0.00	0.02	0.320	O	|	|	|	|	1.06
24.833	0.00	0.02	0.320	O	|	|	|	|	1.06
24.917	0.00	0.02	0.320	O	|	|	|	|	1.06
25.000	0.00	0.02	0.319	O	|	|	|	|	1.06
25.083	0.00	0.02	0.319	O	|	|	|	|	1.06
25.167	0.00	0.02	0.319	O	|	|	|	|	1.06
25.250	0.00	0.02	0.319	O	|	|	|	|	1.06
25.333	0.00	0.02	0.319	O	|	|	|	|	1.06
25.417	0.00	0.02	0.319	O	|	|	|	|	1.06
25.500	0.00	0.02	0.318	O	|	|	|	|	1.06
25.583	0.00	0.02	0.318	O	|	|	|	|	

1.06

25.667	0.00	0.02	0.318	O	|	|	|	|	1.06
25.750	0.00	0.02	0.318	O	|	|	|	|	1.05
25.833	0.00	0.02	0.318	O	|	|	|	|	1.05
25.917	0.00	0.02	0.318	O	|	|	|	|	1.05
26.000	0.00	0.02	0.317	O	|	|	|	|	1.05
26.083	0.00	0.02	0.317	O	|	|	|	|	1.05
26.167	0.00	0.02	0.317	O	|	|	|	|	1.05
26.250	0.00	0.02	0.317	O	|	|	|	|	1.05
26.333	0.00	0.02	0.317	O	|	|	|	|	1.05
26.417	0.00	0.02	0.317	O	|	|	|	|	1.05
26.500	0.00	0.02	0.317	O	|	|	|	|	1.05
26.583	0.00	0.02	0.316	O	|	|	|	|	1.05
26.667	0.00	0.02	0.316	O	|	|	|	|	1.05
26.750	0.00	0.02	0.316	O	|	|	|	|	1.05
26.833	0.00	0.02	0.316	O	|	|	|	|	1.05
26.917	0.00	0.02	0.316	O	|	|	|	|	1.05
27.000	0.00	0.02	0.316	O	|	|	|	|	1.05
27.083	0.00	0.02	0.316	O	|	|	|	|	1.05
27.167	0.00	0.02	0.315	O	|	|	|	|	1.05
27.250	0.00	0.02	0.315	O	|	|	|	|	1.05
27.333	0.00	0.02	0.315	O	|	|	|	|	1.05
27.417	0.00	0.02	0.315	O	|	|	|	|	1.05
27.500	0.00	0.02	0.315	O	|	|	|	|	1.05
27.583	0.00	0.02	0.315	O	|	|	|	|	1.05
27.667	0.00	0.02	0.315	O	|	|	|	|	1.05
27.750	0.00	0.02	0.315	O	|	|	|	|	1.05
27.833	0.00	0.02	0.314	O	|	|	|	|	1.05
27.917	0.00	0.02	0.314	O	|	|	|	|	1.05

28.000	0.00	0.02	0.314	O	|	|	|	|	1.05
28.083	0.00	0.02	0.314	O	|	|	|	|	1.05
28.167	0.00	0.02	0.314	O	|	|	|	|	1.05
28.250	0.00	0.02	0.314	O	|	|	|	|	1.05
28.333	0.00	0.02	0.314	O	|	|	|	|	1.05
28.417	0.00	0.02	0.314	O	|	|	|	|	1.04
28.500	0.00	0.02	0.313	O	|	|	|	|	1.04
28.583	0.00	0.02	0.313	O	|	|	|	|	1.04
28.667	0.00	0.02	0.313	O	|	|	|	|	1.04
28.750	0.00	0.02	0.313	O	|	|	|	|	1.04
28.833	0.00	0.02	0.313	O	|	|	|	|	1.04
28.917	0.00	0.02	0.313	O	|	|	|	|	1.04
29.000	0.00	0.02	0.313	O	|	|	|	|	1.04
29.083	0.00	0.02	0.313	O	|	|	|	|	1.04
29.167	0.00	0.02	0.312	O	|	|	|	|	1.04
29.250	0.00	0.02	0.312	O	|	|	|	|	1.04
29.333	0.00	0.02	0.312	O	|	|	|	|	1.04
29.417	0.00	0.02	0.312	O	|	|	|	|	1.04
29.500	0.00	0.02	0.312	O	|	|	|	|	1.04
29.583	0.00	0.02	0.312	O	|	|	|	|	1.04
29.667	0.00	0.02	0.312	O	|	|	|	|	1.04
29.750	0.00	0.02	0.312	O	|	|	|	|	1.04
29.833	0.00	0.02	0.311	O	|	|	|	|	1.04
29.917	0.00	0.02	0.311	O	|	|	|	|	1.04
30.000	0.00	0.02	0.311	O	|	|	|	|	1.04
30.083	0.00	0.02	0.311	O	|	|	|	|	1.04
30.167	0.00	0.02	0.311	O	|	|	|	|	1.04
30.250	0.00	0.02	0.311	O	|	|	|	|	1.04
30.333	0.00	0.02	0.311	O	|	|	|	|	

1.04

30.417	0.00	0.02	0.311	O	|	|	|	|	1.04
30.500	0.00	0.02	0.311	O	|	|	|	|	1.04
30.583	0.00	0.02	0.311	O	|	|	|	|	1.04
30.667	0.00	0.02	0.310	O	|	|	|	|	1.04
30.750	0.00	0.02	0.310	O	|	|	|	|	1.04
30.833	0.00	0.02	0.310	O	|	|	|	|	1.04
30.917	0.00	0.02	0.310	O	|	|	|	|	1.04
31.000	0.00	0.02	0.310	O	|	|	|	|	1.04
31.083	0.00	0.01	0.310	O	|	|	|	|	1.04
31.167	0.00	0.01	0.310	O	|	|	|	|	1.04
31.250	0.00	0.01	0.310	O	|	|	|	|	1.04
31.333	0.00	0.01	0.310	O	|	|	|	|	1.04
31.417	0.00	0.01	0.309	O	|	|	|	|	1.04
31.500	0.00	0.01	0.309	O	|	|	|	|	1.04
31.583	0.00	0.01	0.309	O	|	|	|	|	1.04
31.667	0.00	0.01	0.309	O	|	|	|	|	1.03
31.750	0.00	0.01	0.309	O	|	|	|	|	1.03
31.833	0.00	0.01	0.309	O	|	|	|	|	1.03
31.917	0.00	0.01	0.309	O	|	|	|	|	1.03
32.000	0.00	0.01	0.309	O	|	|	|	|	1.03
32.083	0.00	0.01	0.309	O	|	|	|	|	1.03
32.167	0.00	0.01	0.309	O	|	|	|	|	1.03
32.250	0.00	0.01	0.308	O	|	|	|	|	1.03
32.333	0.00	0.01	0.308	O	|	|	|	|	1.03
32.417	0.00	0.01	0.308	O	|	|	|	|	1.03
32.500	0.00	0.01	0.308	O	|	|	|	|	1.03
32.583	0.00	0.01	0.308	O	|	|	|	|	1.03
32.667	0.00	0.01	0.308	O	|	|	|	|	1.03

32.750	0.00	0.01	0.308	O	|	|	|	|	1.03
32.833	0.00	0.01	0.308	O	|	|	|	|	1.03
32.917	0.00	0.01	0.308	O	|	|	|	|	1.03
33.000	0.00	0.01	0.308	O	|	|	|	|	1.03
33.083	0.00	0.01	0.308	O	|	|	|	|	1.03
33.167	0.00	0.01	0.307	O	|	|	|	|	1.03
33.250	0.00	0.01	0.307	O	|	|	|	|	1.03
33.333	0.00	0.01	0.307	O	|	|	|	|	1.03
33.417	0.00	0.01	0.307	O	|	|	|	|	1.03
33.500	0.00	0.01	0.307	O	|	|	|	|	1.03
33.583	0.00	0.01	0.307	O	|	|	|	|	1.03
33.667	0.00	0.01	0.307	O	|	|	|	|	1.03
33.750	0.00	0.01	0.307	O	|	|	|	|	1.03
33.833	0.00	0.01	0.307	O	|	|	|	|	1.03
33.917	0.00	0.01	0.307	O	|	|	|	|	1.03
34.000	0.00	0.01	0.307	O	|	|	|	|	1.03
34.083	0.00	0.01	0.307	O	|	|	|	|	1.03
34.167	0.00	0.01	0.306	O	|	|	|	|	1.03
34.250	0.00	0.01	0.306	O	|	|	|	|	1.03
34.333	0.00	0.01	0.306	O	|	|	|	|	1.03
34.417	0.00	0.01	0.306	O	|	|	|	|	1.03
34.500	0.00	0.01	0.306	O	|	|	|	|	1.03
34.583	0.00	0.01	0.306	O	|	|	|	|	1.03
34.667	0.00	0.01	0.306	O	|	|	|	|	1.03
34.750	0.00	0.01	0.306	O	|	|	|	|	1.03
34.833	0.00	0.01	0.306	O	|	|	|	|	1.03
34.917	0.00	0.01	0.306	O	|	|	|	|	1.03
35.000	0.00	0.01	0.306	O	|	|	|	|	1.03
35.083	0.00	0.01	0.306	O	|	|	|	|	

1.03

35.167	0.00	0.01	0.305	O	|	|	|	1.03
35.250	0.00	0.01	0.305	O	|	|	|	1.03
35.333	0.00	0.01	0.305	O	|	|	|	1.03
35.417	0.00	0.01	0.305	O	|	|	|	1.03
35.500	0.00	0.01	0.305	O	|	|	|	1.03
35.583	0.00	0.01	0.305	O	|	|	|	1.03
35.667	0.00	0.01	0.305	O	|	|	|	1.03
35.750	0.00	0.01	0.305	O	|	|	|	1.03
35.833	0.00	0.01	0.305	O	|	|	|	1.02
35.917	0.00	0.01	0.305	O	|	|	|	1.02
36.000	0.00	0.01	0.305	O	|	|	|	1.02
36.083	0.00	0.01	0.305	O	|	|	|	1.02
36.167	0.00	0.01	0.305	O	|	|	|	1.02
36.250	0.00	0.01	0.305	O	|	|	|	1.02
36.333	0.00	0.01	0.304	O	|	|	|	1.02
36.417	0.00	0.01	0.304	O	|	|	|	1.02
36.500	0.00	0.01	0.304	O	|	|	|	1.02
36.583	0.00	0.01	0.304	O	|	|	|	1.02
36.667	0.00	0.01	0.304	O	|	|	|	1.02
36.750	0.00	0.01	0.304	O	|	|	|	1.02
36.833	0.00	0.01	0.304	O	|	|	|	1.02
36.917	0.00	0.01	0.304	O	|	|	|	1.02
37.000	0.00	0.01	0.304	O	|	|	|	1.02
37.083	0.00	0.01	0.304	O	|	|	|	1.02
37.167	0.00	0.01	0.304	O	|	|	|	1.02
37.250	0.00	0.01	0.304	O	|	|	|	1.02
37.333	0.00	0.01	0.304	O	|	|	|	1.02
37.417	0.00	0.01	0.304	O	|	|	|	1.02

37.500	0.00	0.01	0.304	O	|	|	|	|	1.02
37.583	0.00	0.01	0.303	O	|	|	|	|	1.02
37.667	0.00	0.01	0.303	O	|	|	|	|	1.02
37.750	0.00	0.01	0.303	O	|	|	|	|	1.02
37.833	0.00	0.01	0.303	O	|	|	|	|	1.02
37.917	0.00	0.01	0.303	O	|	|	|	|	1.02
38.000	0.00	0.01	0.303	O	|	|	|	|	1.02
38.083	0.00	0.01	0.303	O	|	|	|	|	1.02
38.167	0.00	0.01	0.303	O	|	|	|	|	1.02
38.250	0.00	0.01	0.303	O	|	|	|	|	1.02
38.333	0.00	0.01	0.303	O	|	|	|	|	1.02
38.417	0.00	0.01	0.303	O	|	|	|	|	1.02
38.500	0.00	0.01	0.303	O	|	|	|	|	1.02
38.583	0.00	0.01	0.303	O	|	|	|	|	1.02
38.667	0.00	0.01	0.303	O	|	|	|	|	1.02
38.750	0.00	0.01	0.303	O	|	|	|	|	1.02
38.833	0.00	0.01	0.303	O	|	|	|	|	1.02
38.917	0.00	0.01	0.302	O	|	|	|	|	1.02
39.000	0.00	0.01	0.302	O	|	|	|	|	1.02
39.083	0.00	0.01	0.302	O	|	|	|	|	1.02
39.167	0.00	0.01	0.302	O	|	|	|	|	1.02
39.250	0.00	0.01	0.302	O	|	|	|	|	1.02
39.333	0.00	0.01	0.302	O	|	|	|	|	1.02
39.417	0.00	0.01	0.302	O	|	|	|	|	1.02
39.500	0.00	0.01	0.302	O	|	|	|	|	1.02
39.583	0.00	0.01	0.302	O	|	|	|	|	1.02
39.667	0.00	0.01	0.302	O	|	|	|	|	1.02
39.750	0.00	0.01	0.302	O	|	|	|	|	1.02
39.833	0.00	0.01	0.302	O	|	|	|	|	

1.02

39.917	0.00	0.01	0.302	O	|	|	|	1.02
40.000	0.00	0.01	0.302	O	|	|	|	1.02
40.083	0.00	0.01	0.302	O	|	|	|	1.02
40.167	0.00	0.01	0.302	O	|	|	|	1.02
40.250	0.00	0.01	0.302	O	|	|	|	1.02
40.333	0.00	0.01	0.302	O	|	|	|	1.02
40.417	0.00	0.01	0.301	O	|	|	|	1.02
40.500	0.00	0.01	0.301	O	|	|	|	1.02
40.583	0.00	0.01	0.301	O	|	|	|	1.02
40.667	0.00	0.01	0.301	O	|	|	|	1.02
40.750	0.00	0.01	0.301	O	|	|	|	1.02
40.833	0.00	0.01	0.301	O	|	|	|	1.02
40.917	0.00	0.01	0.301	O	|	|	|	1.02
41.000	0.00	0.01	0.301	O	|	|	|	1.02
41.083	0.00	0.01	0.301	O	|	|	|	1.02
41.167	0.00	0.01	0.301	O	|	|	|	1.02
41.250	0.00	0.01	0.301	O	|	|	|	1.02
41.333	0.00	0.01	0.301	O	|	|	|	1.02
41.417	0.00	0.01	0.301	O	|	|	|	1.02
41.500	0.00	0.01	0.301	O	|	|	|	1.02
41.583	0.00	0.01	0.301	O	|	|	|	1.02
41.667	0.00	0.01	0.301	O	|	|	|	1.02
41.750	0.00	0.01	0.301	O	|	|	|	1.02
41.833	0.00	0.01	0.301	O	|	|	|	1.02
41.917	0.00	0.01	0.301	O	|	|	|	1.02
42.000	0.00	0.01	0.301	O	|	|	|	1.02
42.083	0.00	0.01	0.301	O	|	|	|	1.01
42.167	0.00	0.01	0.300	O	|	|	|	1.01

42.250	0.00	0.01	0.300	O	|	|	|	|	1.01
42.333	0.00	0.01	0.300	O	|	|	|	|	1.01
42.417	0.00	0.01	0.300	O	|	|	|	|	1.01
42.500	0.00	0.01	0.300	O	|	|	|	|	1.01
42.583	0.00	0.01	0.300	O	|	|	|	|	1.01
42.667	0.00	0.01	0.300	O	|	|	|	|	1.01
42.750	0.00	0.01	0.300	O	|	|	|	|	1.01
42.833	0.00	0.01	0.300	O	|	|	|	|	1.01
42.917	0.00	0.01	0.300	O	|	|	|	|	1.01
43.000	0.00	0.01	0.300	O	|	|	|	|	1.01
43.083	0.00	0.01	0.300	O	|	|	|	|	1.01
43.167	0.00	0.01	0.300	O	|	|	|	|	1.01
43.250	0.00	0.01	0.300	O	|	|	|	|	1.01
43.333	0.00	0.01	0.300	O	|	|	|	|	1.01
43.417	0.00	0.01	0.300	O	|	|	|	|	1.01
43.500	0.00	0.01	0.300	O	|	|	|	|	1.01
43.583	0.00	0.01	0.300	O	|	|	|	|	1.01
43.667	0.00	0.01	0.300	O	|	|	|	|	1.01
43.750	0.00	0.01	0.300	O	|	|	|	|	1.01
43.833	0.00	0.01	0.300	O	|	|	|	|	1.01
43.917	0.00	0.01	0.300	O	|	|	|	|	1.01
44.000	0.00	0.01	0.300	O	|	|	|	|	1.01
44.083	0.00	0.01	0.299	O	|	|	|	|	1.01
44.167	0.00	0.01	0.299	O	|	|	|	|	1.01
44.250	0.00	0.01	0.299	O	|	|	|	|	1.01
44.333	0.00	0.01	0.299	O	|	|	|	|	1.01
44.417	0.00	0.01	0.299	O	|	|	|	|	1.01
44.500	0.00	0.01	0.299	O	|	|	|	|	1.01
44.583	0.00	0.01	0.299	O	|	|	|	|	

1.01

44.667	0.00	0.01	0.299	O	|	|	|	|	1.01
44.750	0.00	0.01	0.299	O	|	|	|	|	1.01
44.833	0.00	0.01	0.299	O	|	|	|	|	1.01
44.917	0.00	0.01	0.299	O	|	|	|	|	1.01
45.000	0.00	0.01	0.299	O	|	|	|	|	1.01
45.083	0.00	0.01	0.299	O	|	|	|	|	1.01
45.167	0.00	0.01	0.299	O	|	|	|	|	1.01
45.250	0.00	0.01	0.299	O	|	|	|	|	1.01
45.333	0.00	0.01	0.299	O	|	|	|	|	1.01
45.417	0.00	0.01	0.299	O	|	|	|	|	1.01
45.500	0.00	0.01	0.299	O	|	|	|	|	1.01
45.583	0.00	0.01	0.299	O	|	|	|	|	1.01
45.667	0.00	0.01	0.299	O	|	|	|	|	1.01
45.750	0.00	0.01	0.299	O	|	|	|	|	1.01
45.833	0.00	0.01	0.299	O	|	|	|	|	1.01
45.917	0.00	0.01	0.299	O	|	|	|	|	1.01
46.000	0.00	0.01	0.299	O	|	|	|	|	1.01
46.083	0.00	0.01	0.299	O	|	|	|	|	1.01
46.167	0.00	0.00	0.299	O	|	|	|	|	1.01
46.250	0.00	0.00	0.299	O	|	|	|	|	1.01
46.333	0.00	0.00	0.298	O	|	|	|	|	1.01
46.417	0.00	0.00	0.298	O	|	|	|	|	1.01
46.500	0.00	0.00	0.298	O	|	|	|	|	1.01
46.583	0.00	0.00	0.298	O	|	|	|	|	1.01
46.667	0.00	0.00	0.298	O	|	|	|	|	1.01
46.750	0.00	0.00	0.298	O	|	|	|	|	1.01
46.833	0.00	0.00	0.298	O	|	|	|	|	1.01
46.917	0.00	0.00	0.298	O	|	|	|	|	1.01

47.000	0.00	0.00	0.298	O	|	|	|	|	1.01
47.083	0.00	0.00	0.298	O	|	|	|	|	1.01
47.167	0.00	0.00	0.298	O	|	|	|	|	1.01
47.250	0.00	0.00	0.298	O	|	|	|	|	1.01
47.333	0.00	0.00	0.298	O	|	|	|	|	1.01
47.417	0.00	0.00	0.298	O	|	|	|	|	1.01
47.500	0.00	0.00	0.298	O	|	|	|	|	1.01
47.583	0.00	0.00	0.298	O	|	|	|	|	1.01
47.667	0.00	0.00	0.298	O	|	|	|	|	1.01
47.750	0.00	0.00	0.298	O	|	|	|	|	1.01
47.833	0.00	0.00	0.298	O	|	|	|	|	1.01
47.917	0.00	0.00	0.298	O	|	|	|	|	1.01
48.000	0.00	0.00	0.298	O	|	|	|	|	1.01
48.083	0.00	0.00	0.298	O	|	|	|	|	1.01
48.167	0.00	0.00	0.298	O	|	|	|	|	1.01
48.250	0.00	0.00	0.298	O	|	|	|	|	1.01
48.333	0.00	0.00	0.298	O	|	|	|	|	1.01
48.417	0.00	0.00	0.298	O	|	|	|	|	1.01
48.500	0.00	0.00	0.298	O	|	|	|	|	1.01
48.583	0.00	0.00	0.298	O	|	|	|	|	1.01
48.667	0.00	0.00	0.298	O	|	|	|	|	1.01
48.750	0.00	0.00	0.298	O	|	|	|	|	1.01
48.833	0.00	0.00	0.298	O	|	|	|	|	1.01
48.917	0.00	0.00	0.298	O	|	|	|	|	1.01
49.000	0.00	0.00	0.297	O	|	|	|	|	1.01
49.083	0.00	0.00	0.297	O	|	|	|	|	1.01
49.167	0.00	0.00	0.297	O	|	|	|	|	1.01
49.250	0.00	0.00	0.297	O	|	|	|	|	1.01
49.333	0.00	0.00	0.297	O	|	|	|	|	

1.01

49.417	0.00	0.00	0.297	O	|	|	|	|	1.01
49.500	0.00	0.00	0.297	O	|	|	|	|	1.01
49.583	0.00	0.00	0.297	O	|	|	|	|	1.01
49.667	0.00	0.00	0.297	O	|	|	|	|	1.01
49.750	0.00	0.00	0.297	O	|	|	|	|	1.01
49.833	0.00	0.00	0.297	O	|	|	|	|	1.01
49.917	0.00	0.00	0.297	O	|	|	|	|	1.01
50.000	0.00	0.00	0.297	O	|	|	|	|	1.01
50.083	0.00	0.00	0.297	O	|	|	|	|	1.01
50.167	0.00	0.00	0.297	O	|	|	|	|	1.01
50.250	0.00	0.00	0.297	O	|	|	|	|	1.01
50.333	0.00	0.00	0.297	O	|	|	|	|	1.01
50.417	0.00	0.00	0.297	O	|	|	|	|	1.01
50.500	0.00	0.00	0.297	O	|	|	|	|	1.01
50.583	0.00	0.00	0.297	O	|	|	|	|	1.01
50.667	0.00	0.00	0.297	O	|	|	|	|	1.01
50.750	0.00	0.00	0.297	O	|	|	|	|	1.01
50.833	0.00	0.00	0.297	O	|	|	|	|	1.01
50.917	0.00	0.00	0.297	O	|	|	|	|	1.01
51.000	0.00	0.00	0.297	O	|	|	|	|	1.01
51.083	0.00	0.00	0.297	O	|	|	|	|	1.01
51.167	0.00	0.00	0.297	O	|	|	|	|	1.01
51.250	0.00	0.00	0.297	O	|	|	|	|	1.01
51.333	0.00	0.00	0.297	O	|	|	|	|	1.01
51.417	0.00	0.00	0.297	O	|	|	|	|	1.01
51.500	0.00	0.00	0.297	O	|	|	|	|	1.01
51.583	0.00	0.00	0.297	O	|	|	|	|	1.01
51.667	0.00	0.00	0.297	O	|	|	|	|	1.01

51.750	0.00	0.00	0.297	O	|	|	|	|	1.01
51.833	0.00	0.00	0.297	O	|	|	|	|	1.01
51.917	0.00	0.00	0.297	O	|	|	|	|	1.01
52.000	0.00	0.00	0.297	O	|	|	|	|	1.01
52.083	0.00	0.00	0.297	O	|	|	|	|	1.01
52.167	0.00	0.00	0.297	O	|	|	|	|	1.01
52.250	0.00	0.00	0.297	O	|	|	|	|	1.01
52.333	0.00	0.00	0.296	O	|	|	|	|	1.01
52.417	0.00	0.00	0.296	O	|	|	|	|	1.01
52.500	0.00	0.00	0.296	O	|	|	|	|	1.01
52.583	0.00	0.00	0.296	O	|	|	|	|	1.01
52.667	0.00	0.00	0.296	O	|	|	|	|	1.01
52.750	0.00	0.00	0.296	O	|	|	|	|	1.01
52.833	0.00	0.00	0.296	O	|	|	|	|	1.01
52.917	0.00	0.00	0.296	O	|	|	|	|	1.01
53.000	0.00	0.00	0.296	O	|	|	|	|	1.01
53.083	0.00	0.00	0.296	O	|	|	|	|	1.01
53.167	0.00	0.00	0.296	O	|	|	|	|	1.01
53.250	0.00	0.00	0.296	O	|	|	|	|	1.01
53.333	0.00	0.00	0.296	O	|	|	|	|	1.01
53.417	0.00	0.00	0.296	O	|	|	|	|	1.01
53.500	0.00	0.00	0.296	O	|	|	|	|	1.01
53.583	0.00	0.00	0.296	O	|	|	|	|	1.00
53.667	0.00	0.00	0.296	O	|	|	|	|	1.00
53.750	0.00	0.00	0.296	O	|	|	|	|	1.00
53.833	0.00	0.00	0.296	O	|	|	|	|	1.00
53.917	0.00	0.00	0.296	O	|	|	|	|	1.00
54.000	0.00	0.00	0.296	O	|	|	|	|	1.00
54.083	0.00	0.00	0.296	O	|	|	|	|	

1.00

54.167	0.00	0.00	0.296	O	|	|	|	1.00
54.250	0.00	0.00	0.296	O	|	|	|	1.00
54.333	0.00	0.00	0.296	O	|	|	|	1.00
54.417	0.00	0.00	0.296	O	|	|	|	1.00
54.500	0.00	0.00	0.296	O	|	|	|	1.00
54.583	0.00	0.00	0.296	O	|	|	|	1.00
54.667	0.00	0.00	0.296	O	|	|	|	1.00
54.750	0.00	0.00	0.296	O	|	|	|	1.00
54.833	0.00	0.00	0.296	O	|	|	|	1.00
54.917	0.00	0.00	0.296	O	|	|	|	1.00
55.000	0.00	0.00	0.296	O	|	|	|	1.00
55.083	0.00	0.00	0.296	O	|	|	|	1.00
55.167	0.00	0.00	0.296	O	|	|	|	1.00
55.250	0.00	0.00	0.296	O	|	|	|	1.00
55.333	0.00	0.00	0.296	O	|	|	|	1.00
55.417	0.00	0.00	0.296	O	|	|	|	1.00
55.500	0.00	0.00	0.296	O	|	|	|	1.00
55.583	0.00	0.00	0.296	O	|	|	|	1.00
55.667	0.00	0.00	0.296	O	|	|	|	1.00
55.750	0.00	0.00	0.296	O	|	|	|	1.00
55.833	0.00	0.00	0.296	O	|	|	|	1.00
55.917	0.00	0.00	0.296	O	|	|	|	1.00
56.000	0.00	0.00	0.296	O	|	|	|	1.00
56.083	0.00	0.00	0.296	O	|	|	|	1.00
56.167	0.00	0.00	0.296	O	|	|	|	1.00
56.250	0.00	0.00	0.296	O	|	|	|	1.00
56.333	0.00	0.00	0.296	O	|	|	|	1.00
56.417	0.00	0.00	0.296	O	|	|	|	1.00

56.500	0.00	0.00	0.296	O	|	|	|	|	1.00
56.583	0.00	0.00	0.296	O	|	|	|	|	1.00
56.667	0.00	0.00	0.296	O	|	|	|	|	1.00
56.750	0.00	0.00	0.295	O	|	|	|	|	1.00
56.833	0.00	0.00	0.295	O	|	|	|	|	1.00
56.917	0.00	0.00	0.295	O	|	|	|	|	1.00
57.000	0.00	0.00	0.295	O	|	|	|	|	1.00
57.083	0.00	0.00	0.295	O	|	|	|	|	1.00
57.167	0.00	0.00	0.295	O	|	|	|	|	1.00
57.250	0.00	0.00	0.295	O	|	|	|	|	1.00
57.333	0.00	0.00	0.295	O	|	|	|	|	1.00
57.417	0.00	0.00	0.295	O	|	|	|	|	1.00
57.500	0.00	0.00	0.295	O	|	|	|	|	1.00
57.583	0.00	0.00	0.295	O	|	|	|	|	1.00
57.667	0.00	0.00	0.295	O	|	|	|	|	1.00
57.750	0.00	0.00	0.295	O	|	|	|	|	1.00
57.833	0.00	0.00	0.295	O	|	|	|	|	1.00
57.917	0.00	0.00	0.295	O	|	|	|	|	1.00
58.000	0.00	0.00	0.295	O	|	|	|	|	1.00
58.083	0.00	0.00	0.295	O	|	|	|	|	1.00
58.167	0.00	0.00	0.295	O	|	|	|	|	1.00
58.250	0.00	0.00	0.295	O	|	|	|	|	1.00
58.333	0.00	0.00	0.295	O	|	|	|	|	1.00
58.417	0.00	0.00	0.295	O	|	|	|	|	1.00
58.500	0.00	0.00	0.295	O	|	|	|	|	1.00
58.583	0.00	0.00	0.295	O	|	|	|	|	1.00
58.667	0.00	0.00	0.295	O	|	|	|	|	1.00
58.750	0.00	0.00	0.295	O	|	|	|	|	1.00
58.833	0.00	0.00	0.295	O	|	|	|	|	

1.00

58.917	0.00	0.00	0.295	O	|	|	|	|	1.00
59.000	0.00	0.00	0.295	O	|	|	|	|	1.00
59.083	0.00	0.00	0.295	O	|	|	|	|	1.00
59.167	0.00	0.00	0.295	O	|	|	|	|	1.00
59.250	0.00	0.00	0.295	O	|	|	|	|	1.00
59.333	0.00	0.00	0.295	O	|	|	|	|	1.00
59.417	0.00	0.00	0.295	O	|	|	|	|	1.00
59.500	0.00	0.00	0.295	O	|	|	|	|	1.00
59.583	0.00	0.00	0.295	O	|	|	|	|	1.00
59.667	0.00	0.00	0.295	O	|	|	|	|	1.00
59.750	0.00	0.00	0.295	O	|	|	|	|	1.00
59.833	0.00	0.00	0.295	O	|	|	|	|	1.00
59.917	0.00	0.00	0.295	O	|	|	|	|	1.00
60.000	0.00	0.00	0.295	O	|	|	|	|	1.00
60.083	0.00	0.00	0.295	O	|	|	|	|	1.00
60.167	0.00	0.00	0.295	O	|	|	|	|	1.00
60.250	0.00	0.00	0.295	O	|	|	|	|	1.00
60.333	0.00	0.00	0.295	O	|	|	|	|	1.00
60.417	0.00	0.00	0.295	O	|	|	|	|	1.00
60.500	0.00	0.00	0.295	O	|	|	|	|	1.00
60.583	0.00	0.00	0.295	O	|	|	|	|	1.00
60.667	0.00	0.00	0.295	O	|	|	|	|	1.00
60.750	0.00	0.00	0.295	O	|	|	|	|	1.00
60.833	0.00	0.00	0.295	O	|	|	|	|	1.00
60.917	0.00	0.00	0.295	O	|	|	|	|	1.00
61.000	0.00	0.00	0.295	O	|	|	|	|	1.00
61.083	0.00	0.00	0.295	O	|	|	|	|	1.00
61.167	0.00	0.00	0.295	O	|	|	|	|	1.00

61.250	0.00	0.00	0.295	O	|	|	|	|	1.00
61.333	0.00	0.00	0.295	O	|	|	|	|	1.00
61.417	0.00	0.00	0.295	O	|	|	|	|	1.00
61.500	0.00	0.00	0.295	O	|	|	|	|	1.00
61.583	0.00	0.00	0.295	O	|	|	|	|	1.00
61.667	0.00	0.00	0.295	O	|	|	|	|	1.00
61.750	0.00	0.00	0.295	O	|	|	|	|	1.00
61.833	0.00	0.00	0.295	O	|	|	|	|	1.00
61.917	0.00	0.00	0.295	O	|	|	|	|	1.00
62.000	0.00	0.00	0.295	O	|	|	|	|	1.00
62.083	0.00	0.00	0.295	O	|	|	|	|	1.00
62.167	0.00	0.00	0.295	O	|	|	|	|	1.00
62.250	0.00	0.00	0.295	O	|	|	|	|	1.00
62.333	0.00	0.00	0.295	O	|	|	|	|	1.00
62.417	0.00	0.00	0.295	O	|	|	|	|	1.00
62.500	0.00	0.00	0.295	O	|	|	|	|	1.00
62.583	0.00	0.00	0.295	O	|	|	|	|	1.00
62.667	0.00	0.00	0.295	O	|	|	|	|	1.00
62.750	0.00	0.00	0.295	O	|	|	|	|	1.00
62.833	0.00	0.00	0.295	O	|	|	|	|	1.00
62.917	0.00	0.00	0.295	O	|	|	|	|	1.00
63.000	0.00	0.00	0.295	O	|	|	|	|	1.00
63.083	0.00	0.00	0.295	O	|	|	|	|	1.00
63.167	0.00	0.00	0.295	O	|	|	|	|	1.00
63.250	0.00	0.00	0.295	O	|	|	|	|	1.00
63.333	0.00	0.00	0.294	O	|	|	|	|	1.00
63.417	0.00	0.00	0.294	O	|	|	|	|	1.00
63.500	0.00	0.00	0.294	O	|	|	|	|	1.00
63.583	0.00	0.00	0.294	O	|	|	|	|	

1.00

63.667	0.00	0.00	0.294	O	|	|	|	1.00
63.750	0.00	0.00	0.294	O	|	|	|	1.00
63.833	0.00	0.00	0.294	O	|	|	|	1.00
63.917	0.00	0.00	0.294	O	|	|	|	1.00
64.000	0.00	0.00	0.294	O	|	|	|	1.00
64.083	0.00	0.00	0.294	O	|	|	|	1.00
64.167	0.00	0.00	0.294	O	|	|	|	1.00
64.250	0.00	0.00	0.294	O	|	|	|	1.00
64.333	0.00	0.00	0.294	O	|	|	|	1.00
64.417	0.00	0.00	0.294	O	|	|	|	1.00
64.500	0.00	0.00	0.294	O	|	|	|	1.00
64.583	0.00	0.00	0.294	O	|	|	|	1.00
64.667	0.00	0.00	0.294	O	|	|	|	1.00
64.750	0.00	0.00	0.294	O	|	|	|	1.00
64.833	0.00	0.00	0.294	O	|	|	|	1.00
64.917	0.00	0.00	0.294	O	|	|	|	1.00
65.000	0.00	0.00	0.294	O	|	|	|	1.00
65.083	0.00	0.00	0.294	O	|	|	|	1.00
65.167	0.00	0.00	0.294	O	|	|	|	1.00
65.250	0.00	0.00	0.294	O	|	|	|	1.00
65.333	0.00	0.00	0.294	O	|	|	|	1.00
65.417	0.00	0.00	0.294	O	|	|	|	1.00
65.500	0.00	0.00	0.294	O	|	|	|	1.00
65.583	0.00	0.00	0.294	O	|	|	|	1.00
65.667	0.00	0.00	0.294	O	|	|	|	1.00
65.750	0.00	0.00	0.294	O	|	|	|	1.00
65.833	0.00	0.00	0.294	O	|	|	|	1.00
65.917	0.00	0.00	0.294	O	|	|	|	1.00

66.000	0.00	0.00	0.294	O	|	|	|	|	1.00
66.083	0.00	0.00	0.294	O	|	|	|	|	1.00
66.167	0.00	0.00	0.294	O	|	|	|	|	1.00
66.250	0.00	0.00	0.294	O	|	|	|	|	1.00
66.333	0.00	0.00	0.294	O	|	|	|	|	1.00
66.417	0.00	0.00	0.294	O	|	|	|	|	1.00
66.500	0.00	0.00	0.294	O	|	|	|	|	1.00
66.583	0.00	0.00	0.294	O	|	|	|	|	1.00
66.667	0.00	0.00	0.294	O	|	|	|	|	1.00
66.750	0.00	0.00	0.294	O	|	|	|	|	1.00
66.833	0.00	0.00	0.294	O	|	|	|	|	1.00
66.917	0.00	0.00	0.294	O	|	|	|	|	1.00
67.000	0.00	0.00	0.294	O	|	|	|	|	1.00
67.083	0.00	0.00	0.294	O	|	|	|	|	1.00
67.167	0.00	0.00	0.294	O	|	|	|	|	1.00
67.250	0.00	0.00	0.294	O	|	|	|	|	1.00
67.333	0.00	0.00	0.294	O	|	|	|	|	1.00
67.417	0.00	0.00	0.294	O	|	|	|	|	1.00
67.500	0.00	0.00	0.294	O	|	|	|	|	1.00
67.583	0.00	0.00	0.294	O	|	|	|	|	1.00
67.667	0.00	0.00	0.294	O	|	|	|	|	1.00
67.750	0.00	0.00	0.294	O	|	|	|	|	1.00
67.833	0.00	0.00	0.294	O	|	|	|	|	1.00
67.917	0.00	0.00	0.294	O	|	|	|	|	1.00
68.000	0.00	0.00	0.294	O	|	|	|	|	1.00
68.083	0.00	0.00	0.294	O	|	|	|	|	1.00
68.167	0.00	0.00	0.294	O	|	|	|	|	1.00
68.250	0.00	0.00	0.294	O	|	|	|	|	1.00
68.333	0.00	0.00	0.294	O	|	|	|	|	

1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 820
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.104 (CFS)
Total volume = 0.132 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
2 YR - 6 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP62.rte
**********HYDROGRAPH DATA**********
Number of intervals = 74
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 4.525 (CFS)
Total volume = 0.602 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 74
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.1	2.26	3.39	4.52 (Ft.)	Depth
0.083	0.25	0.00	0.001	OI	|	|	|	|	0.00
0.167	0.46	0.00	0.003	O I	|	|	|	|	0.01
0.250	0.52	0.00	0.007	O I	|	|	|	|	0.02
0.333	0.52	0.00	0.010	O I	|	|	|	|	0.03
0.417	0.52	0.00	0.014	O I	|	|	|	|	0.05
0.500	0.57	0.00	0.018	O I	|	|	|	|	0.06
0.583	0.61	0.00	0.022	O I	|	|	|	|	0.07
0.667	0.61	0.00	0.026	O I	|	|	|	|	0.09
0.750	0.61	0.00	0.030	O I	|	|	|	|	0.10
0.833	0.61	0.00	0.034	O I	|	|	|	|	0.12
0.917	0.61	0.00	0.039	O I	|	|	|	|	0.13
1.000	0.66	0.00	0.043	O I	|	|	|	|	0.15
1.083	0.69	0.00	0.048	O I	|	|	|	|	0.16
1.167	0.70	0.00	0.052	O I	|	|	|	|	0.18
1.250	0.70	0.00	0.057	O I	|	|	|	|	0.19
1.333	0.70	0.00	0.062	O I	|	|	|	|	0.21

1.417	0.70	0.00	0.067	O	I	|	|	|	0.23
1.500	0.70	0.00	0.072	O	I	|	|	|	0.24
1.583	0.70	0.00	0.076	O	I	|	|	|	0.26
1.667	0.70	0.00	0.081	O	I	|	|	|	0.28
1.750	0.70	0.00	0.086	O	I	|	|	|	0.29
1.833	0.70	0.00	0.091	O	I	|	|	|	0.31
1.917	0.70	0.00	0.096	O	I	|	|	|	0.33
2.000	0.75	0.00	0.101	O	I	|	|	|	0.34
2.083	0.73	0.00	0.106	O	I	|	|	|	0.36
2.167	0.75	0.00	0.111	O	I	|	|	|	0.38
2.250	0.78	0.00	0.116	O	I	|	|	|	0.40
2.333	0.79	0.00	0.122	O	I	|	|	|	0.41
2.417	0.79	0.00	0.127	O	I	|	|	|	0.43
2.500	0.79	0.00	0.132	O	I	|	|	|	0.45
2.583	0.79	0.00	0.138	O	I	|	|	|	0.47
2.667	0.79	0.00	0.143	O	I	|	|	|	0.49
2.750	0.84	0.00	0.149	O	I	|	|	|	0.51
2.833	0.87	0.00	0.155	O	I	|	|	|	0.53
2.917	0.87	0.00	0.161	O	I	|	|	|	0.55
3.000	0.87	0.00	0.167	O	I	|	|	|	0.57
3.083	0.87	0.00	0.173	O	I	|	|	|	0.59
3.167	0.92	0.00	0.179	O	I	|	|	|	0.61
3.250	0.96	0.00	0.185	O	I	|	|	|	0.63
3.333	0.96	0.00	0.192	O	I	|	|	|	0.65
3.417	1.01	0.00	0.199	O	I	|	|	|	0.68
3.500	1.09	0.00	0.206	O	I	|	|	|	0.70
3.583	1.18	0.00	0.214	O	I	|	|	|	0.73
3.667	1.22	0.00	0.222	O	I	|	|	|	0.76
3.750	1.27	0.00	0.231	O	|	I	|	|	0.78
3.833	1.31	0.00	0.239	O	|	I	|	|	0.81
3.917	1.36	0.00	0.249	O	|	I	|	|	0.85
4.000	1.39	0.00	0.258	O	|	I	|	|	0.88

4.083	1.45	0.00	0.268	O	| I |				0.91
4.167	1.53	0.00	0.278	O	| I |				0.95
4.250	1.62	0.00	0.289	O	| I |				0.98
4.333	1.70	0.01	0.300	O	| I |				1.01
4.417	1.79	0.02	0.312	O	| I |				1.04
4.500	1.83	0.03	0.325	O	| I |				1.07
4.583	1.88	0.04	0.337	O	| I |				1.10
4.667	1.97	0.05	0.350	O	| I |				1.13
4.750	2.05	0.06	0.364	O	| I |				1.16
4.833	2.09	0.07	0.377	O	| I |				1.19
4.917	2.15	0.09	0.391	O	| I |				1.22
5.000	2.23	0.10	0.406	O	| I |				1.26
5.083	2.51	0.10	0.422	O	| I |				1.29
5.167	2.93	0.11	0.440	O	| I |				1.33
5.250	3.27	0.12	0.460	O	| I |				1.37
5.333	3.54	0.12	0.483	O	| I |				1.42
5.417	3.90	0.13	0.507	O	| I |				1.47
5.500	4.52	0.15	0.536	|O	| I |				1.53
5.583	3.02	0.16	0.560	|O	| I |				1.58
5.667	1.37	0.17	0.574	|O	| I |				1.61
5.750	0.69	0.18	0.580	|O I	| I |				1.62
5.833	0.49	0.18	0.583	|O I	| I |				1.63
5.917	0.34	0.18	0.585	|OI	| I |				1.63
6.000	0.22	0.18	0.585	|O	| I |				1.63
6.083	0.08	0.18	0.585	IO	| I |				1.63
6.167	0.01	0.18	0.584	IO	| I |				1.63
6.250	0.00	0.18	0.583	IO	| I |				1.63
6.333	0.00	0.18	0.582	IO	| I |				1.63
6.417	0.00	0.18	0.581	IO	| I |				1.62
6.500	0.00	0.18	0.579	IO	| I |				1.62
6.583	0.00	0.18	0.578	IO	| I |				1.62

6.667	0.00	0.18	0.577	IO	|	|	|	|	1.62
6.750	0.00	0.17	0.576	IO	|	|	|	|	1.61
6.833	0.00	0.17	0.575	IO	|	|	|	|	1.61
6.917	0.00	0.17	0.573	IO	|	|	|	|	1.61
7.000	0.00	0.17	0.572	IO	|	|	|	|	1.61
7.083	0.00	0.17	0.571	IO	|	|	|	|	1.60
7.167	0.00	0.17	0.570	IO	|	|	|	|	1.60
7.250	0.00	0.17	0.569	IO	|	|	|	|	1.60
7.333	0.00	0.17	0.568	IO	|	|	|	|	1.60
7.417	0.00	0.17	0.566	IO	|	|	|	|	1.59
7.500	0.00	0.17	0.565	IO	|	|	|	|	1.59
7.583	0.00	0.17	0.564	IO	|	|	|	|	1.59
7.667	0.00	0.17	0.563	IO	|	|	|	|	1.59
7.750	0.00	0.17	0.562	IO	|	|	|	|	1.58
7.833	0.00	0.16	0.561	IO	|	|	|	|	1.58
7.917	0.00	0.16	0.560	IO	|	|	|	|	1.58
8.000	0.00	0.16	0.558	IO	|	|	|	|	1.58
8.083	0.00	0.16	0.557	IO	|	|	|	|	1.58
8.167	0.00	0.16	0.556	IO	|	|	|	|	1.57
8.250	0.00	0.16	0.555	IO	|	|	|	|	1.57
8.333	0.00	0.16	0.554	IO	|	|	|	|	1.57
8.417	0.00	0.16	0.553	IO	|	|	|	|	1.57
8.500	0.00	0.16	0.552	IO	|	|	|	|	1.56
8.583	0.00	0.16	0.551	IO	|	|	|	|	1.56
8.667	0.00	0.16	0.550	IO	|	|	|	|	1.56
8.750	0.00	0.16	0.549	IO	|	|	|	|	1.56
8.833	0.00	0.16	0.547	IO	|	|	|	|	1.56
8.917	0.00	0.16	0.546	IO	|	|	|	|	1.55
9.000	0.00	0.15	0.545	IO	|	|	|	|	

1.55

9.083	0.00	0.15	0.544	IO	|	|	|	1.55
9.167	0.00	0.15	0.543	IO	|	|	|	1.55
9.250	0.00	0.15	0.542	IO	|	|	|	1.54
9.333	0.00	0.15	0.541	IO	|	|	|	1.54
9.417	0.00	0.15	0.540	IO	|	|	|	1.54
9.500	0.00	0.15	0.539	IO	|	|	|	1.54
9.583	0.00	0.15	0.538	IO	|	|	|	1.54
9.667	0.00	0.15	0.537	IO	|	|	|	1.53
9.750	0.00	0.15	0.536	IO	|	|	|	1.53
9.833	0.00	0.15	0.535	IO	|	|	|	1.53
9.917	0.00	0.15	0.534	IO	|	|	|	1.53
10.000	0.00	0.15	0.533	IO	|	|	|	1.53
10.083	0.00	0.15	0.532	IO	|	|	|	1.52
10.167	0.00	0.15	0.531	IO	|	|	|	1.52
10.250	0.00	0.14	0.530	IO	|	|	|	1.52
10.333	0.00	0.14	0.529	IO	|	|	|	1.52
10.417	0.00	0.14	0.528	IO	|	|	|	1.52
10.500	0.00	0.14	0.527	IO	|	|	|	1.51
10.583	0.00	0.14	0.526	IO	|	|	|	1.51
10.667	0.00	0.14	0.525	O	|	|	|	1.51
10.750	0.00	0.14	0.524	O	|	|	|	1.51
10.833	0.00	0.14	0.523	O	|	|	|	1.51
10.917	0.00	0.14	0.522	O	|	|	|	1.50
11.000	0.00	0.14	0.521	O	|	|	|	1.50
11.083	0.00	0.14	0.520	O	|	|	|	1.50
11.167	0.00	0.14	0.519	O	|	|	|	1.50
11.250	0.00	0.14	0.518	O	|	|	|	1.50
11.333	0.00	0.14	0.517	O	|	|	|	1.49

11.417	0.00	0.14	0.516	O	|	|	|	|	1.49
11.500	0.00	0.14	0.515	O	|	|	|	|	1.49
11.583	0.00	0.14	0.514	O	|	|	|	|	1.49
11.667	0.00	0.14	0.514	O	|	|	|	|	1.49
11.750	0.00	0.14	0.513	O	|	|	|	|	1.48
11.833	0.00	0.14	0.512	O	|	|	|	|	1.48
11.917	0.00	0.13	0.511	O	|	|	|	|	1.48
12.000	0.00	0.13	0.510	O	|	|	|	|	1.48
12.083	0.00	0.13	0.509	O	|	|	|	|	1.48
12.167	0.00	0.13	0.508	O	|	|	|	|	1.47
12.250	0.00	0.13	0.507	O	|	|	|	|	1.47
12.333	0.00	0.13	0.506	O	|	|	|	|	1.47
12.417	0.00	0.13	0.505	O	|	|	|	|	1.47
12.500	0.00	0.13	0.504	O	|	|	|	|	1.47
12.583	0.00	0.13	0.503	O	|	|	|	|	1.46
12.667	0.00	0.13	0.502	O	|	|	|	|	1.46
12.750	0.00	0.13	0.502	O	|	|	|	|	1.46
12.833	0.00	0.13	0.501	O	|	|	|	|	1.46
12.917	0.00	0.13	0.500	O	|	|	|	|	1.46
13.000	0.00	0.13	0.499	O	|	|	|	|	1.45
13.083	0.00	0.13	0.498	O	|	|	|	|	1.45
13.167	0.00	0.13	0.497	O	|	|	|	|	1.45
13.250	0.00	0.13	0.496	O	|	|	|	|	1.45
13.333	0.00	0.13	0.495	O	|	|	|	|	1.45
13.417	0.00	0.13	0.494	O	|	|	|	|	1.45
13.500	0.00	0.13	0.494	O	|	|	|	|	1.44
13.583	0.00	0.13	0.493	O	|	|	|	|	1.44
13.667	0.00	0.13	0.492	O	|	|	|	|	1.44
13.750	0.00	0.13	0.491	O	|	|	|	|	

1.44

13.833	0.00	0.13	0.490	O	|	|	|	|	1.44
13.917	0.00	0.13	0.489	O	|	|	|	|	1.43
14.000	0.00	0.13	0.488	O	|	|	|	|	1.43
14.083	0.00	0.13	0.487	O	|	|	|	|	1.43
14.167	0.00	0.13	0.486	O	|	|	|	|	1.43
14.250	0.00	0.13	0.486	O	|	|	|	|	1.43
14.333	0.00	0.13	0.485	O	|	|	|	|	1.42
14.417	0.00	0.13	0.484	O	|	|	|	|	1.42
14.500	0.00	0.13	0.483	O	|	|	|	|	1.42
14.583	0.00	0.12	0.482	O	|	|	|	|	1.42
14.667	0.00	0.12	0.481	O	|	|	|	|	1.42
14.750	0.00	0.12	0.480	O	|	|	|	|	1.42
14.833	0.00	0.12	0.480	O	|	|	|	|	1.41
14.917	0.00	0.12	0.479	O	|	|	|	|	1.41
15.000	0.00	0.12	0.478	O	|	|	|	|	1.41
15.083	0.00	0.12	0.477	O	|	|	|	|	1.41
15.167	0.00	0.12	0.476	O	|	|	|	|	1.41
15.250	0.00	0.12	0.475	O	|	|	|	|	1.40
15.333	0.00	0.12	0.475	O	|	|	|	|	1.40
15.417	0.00	0.12	0.474	O	|	|	|	|	1.40
15.500	0.00	0.12	0.473	O	|	|	|	|	1.40
15.583	0.00	0.12	0.472	O	|	|	|	|	1.40
15.667	0.00	0.12	0.471	O	|	|	|	|	1.40
15.750	0.00	0.12	0.470	O	|	|	|	|	1.39
15.833	0.00	0.12	0.470	O	|	|	|	|	1.39
15.917	0.00	0.12	0.469	O	|	|	|	|	1.39
16.000	0.00	0.12	0.468	O	|	|	|	|	1.39
16.083	0.00	0.12	0.467	O	|	|	|	|	1.39

16.167	0.00	0.12	0.466	O	|	|	|	|	1.39
16.250	0.00	0.12	0.465	O	|	|	|	|	1.38
16.333	0.00	0.12	0.465	O	|	|	|	|	1.38
16.417	0.00	0.12	0.464	O	|	|	|	|	1.38
16.500	0.00	0.12	0.463	O	|	|	|	|	1.38
16.583	0.00	0.12	0.462	O	|	|	|	|	1.38
16.667	0.00	0.12	0.461	O	|	|	|	|	1.37
16.750	0.00	0.12	0.461	O	|	|	|	|	1.37
16.833	0.00	0.12	0.460	O	|	|	|	|	1.37
16.917	0.00	0.12	0.459	O	|	|	|	|	1.37
17.000	0.00	0.12	0.458	O	|	|	|	|	1.37
17.083	0.00	0.12	0.457	O	|	|	|	|	1.37
17.167	0.00	0.12	0.457	O	|	|	|	|	1.36
17.250	0.00	0.12	0.456	O	|	|	|	|	1.36
17.333	0.00	0.12	0.455	O	|	|	|	|	1.36
17.417	0.00	0.11	0.454	O	|	|	|	|	1.36
17.500	0.00	0.11	0.453	O	|	|	|	|	1.36
17.583	0.00	0.11	0.453	O	|	|	|	|	1.36
17.667	0.00	0.11	0.452	O	|	|	|	|	1.35
17.750	0.00	0.11	0.451	O	|	|	|	|	1.35
17.833	0.00	0.11	0.450	O	|	|	|	|	1.35
17.917	0.00	0.11	0.449	O	|	|	|	|	1.35
18.000	0.00	0.11	0.449	O	|	|	|	|	1.35
18.083	0.00	0.11	0.448	O	|	|	|	|	1.35
18.167	0.00	0.11	0.447	O	|	|	|	|	1.34
18.250	0.00	0.11	0.446	O	|	|	|	|	1.34
18.333	0.00	0.11	0.446	O	|	|	|	|	1.34
18.417	0.00	0.11	0.445	O	|	|	|	|	1.34
18.500	0.00	0.11	0.444	O	|	|	|	|	

1.34

18.583	0.00	0.11	0.443	O	|	|	|	1.34
18.667	0.00	0.11	0.442	O	|	|	|	1.33
18.750	0.00	0.11	0.442	O	|	|	|	1.33
18.833	0.00	0.11	0.441	O	|	|	|	1.33
18.917	0.00	0.11	0.440	O	|	|	|	1.33
19.000	0.00	0.11	0.439	O	|	|	|	1.33
19.083	0.00	0.11	0.439	O	|	|	|	1.33
19.167	0.00	0.11	0.438	O	|	|	|	1.32
19.250	0.00	0.11	0.437	O	|	|	|	1.32
19.333	0.00	0.11	0.436	O	|	|	|	1.32
19.417	0.00	0.11	0.436	O	|	|	|	1.32
19.500	0.00	0.11	0.435	O	|	|	|	1.32
19.583	0.00	0.11	0.434	O	|	|	|	1.32
19.667	0.00	0.11	0.433	O	|	|	|	1.32
19.750	0.00	0.11	0.433	O	|	|	|	1.31
19.833	0.00	0.11	0.432	O	|	|	|	1.31
19.917	0.00	0.11	0.431	O	|	|	|	1.31
20.000	0.00	0.11	0.430	O	|	|	|	1.31
20.083	0.00	0.11	0.430	O	|	|	|	1.31
20.167	0.00	0.11	0.429	O	|	|	|	1.31
20.250	0.00	0.11	0.428	O	|	|	|	1.30
20.333	0.00	0.11	0.428	O	|	|	|	1.30
20.417	0.00	0.11	0.427	O	|	|	|	1.30
20.500	0.00	0.11	0.426	O	|	|	|	1.30
20.583	0.00	0.10	0.425	O	|	|	|	1.30
20.667	0.00	0.10	0.425	O	|	|	|	1.30
20.750	0.00	0.10	0.424	O	|	|	|	1.29
20.833	0.00	0.10	0.423	O	|	|	|	1.29

20.917	0.00	0.10	0.423	O	|	|	|	|	1.29
21.000	0.00	0.10	0.422	O	|	|	|	|	1.29
21.083	0.00	0.10	0.421	O	|	|	|	|	1.29
21.167	0.00	0.10	0.420	O	|	|	|	|	1.29
21.250	0.00	0.10	0.420	O	|	|	|	|	1.29
21.333	0.00	0.10	0.419	O	|	|	|	|	1.28
21.417	0.00	0.10	0.418	O	|	|	|	|	1.28
21.500	0.00	0.10	0.418	O	|	|	|	|	1.28
21.583	0.00	0.10	0.417	O	|	|	|	|	1.28
21.667	0.00	0.10	0.416	O	|	|	|	|	1.28
21.750	0.00	0.10	0.415	O	|	|	|	|	1.28
21.833	0.00	0.10	0.415	O	|	|	|	|	1.28
21.917	0.00	0.10	0.414	O	|	|	|	|	1.27
22.000	0.00	0.10	0.413	O	|	|	|	|	1.27
22.083	0.00	0.10	0.413	O	|	|	|	|	1.27
22.167	0.00	0.10	0.412	O	|	|	|	|	1.27
22.250	0.00	0.10	0.411	O	|	|	|	|	1.27
22.333	0.00	0.10	0.411	O	|	|	|	|	1.27
22.417	0.00	0.10	0.410	O	|	|	|	|	1.26
22.500	0.00	0.10	0.409	O	|	|	|	|	1.26
22.583	0.00	0.10	0.409	O	|	|	|	|	1.26
22.667	0.00	0.10	0.408	O	|	|	|	|	1.26
22.750	0.00	0.10	0.407	O	|	|	|	|	1.26
22.833	0.00	0.10	0.407	O	|	|	|	|	1.26
22.917	0.00	0.10	0.406	O	|	|	|	|	1.26
23.000	0.00	0.10	0.405	O	|	|	|	|	1.25
23.083	0.00	0.10	0.404	O	|	|	|	|	1.25
23.167	0.00	0.10	0.404	O	|	|	|	|	1.25
23.250	0.00	0.10	0.403	O	|	|	|	|	

1.25

23.333	0.00	0.10	0.402	O	|	|	|	1.25
23.417	0.00	0.10	0.402	O	|	|	|	1.25
23.500	0.00	0.10	0.401	O	|	|	|	1.25
23.583	0.00	0.09	0.401	O	|	|	|	1.24
23.667	0.00	0.09	0.400	O	|	|	|	1.24
23.750	0.00	0.09	0.399	O	|	|	|	1.24
23.833	0.00	0.09	0.399	O	|	|	|	1.24
23.917	0.00	0.09	0.398	O	|	|	|	1.24
24.000	0.00	0.09	0.397	O	|	|	|	1.24
24.083	0.00	0.09	0.397	O	|	|	|	1.24
24.167	0.00	0.09	0.396	O	|	|	|	1.23
24.250	0.00	0.09	0.395	O	|	|	|	1.23
24.333	0.00	0.09	0.395	O	|	|	|	1.23
24.417	0.00	0.09	0.394	O	|	|	|	1.23
24.500	0.00	0.09	0.394	O	|	|	|	1.23
24.583	0.00	0.09	0.393	O	|	|	|	1.23
24.667	0.00	0.09	0.392	O	|	|	|	1.23
24.750	0.00	0.09	0.392	O	|	|	|	1.22
24.833	0.00	0.09	0.391	O	|	|	|	1.22
24.917	0.00	0.09	0.391	O	|	|	|	1.22
25.000	0.00	0.09	0.390	O	|	|	|	1.22
25.083	0.00	0.09	0.389	O	|	|	|	1.22
25.167	0.00	0.08	0.389	O	|	|	|	1.22
25.250	0.00	0.08	0.388	O	|	|	|	1.22
25.333	0.00	0.08	0.388	O	|	|	|	1.21
25.417	0.00	0.08	0.387	O	|	|	|	1.21
25.500	0.00	0.08	0.386	O	|	|	|	1.21
25.583	0.00	0.08	0.386	O	|	|	|	1.21

25.667	0.00	0.08	0.385	O	|	|	|	|	1.21
25.750	0.00	0.08	0.385	O	|	|	|	|	1.21
25.833	0.00	0.08	0.384	O	|	|	|	|	1.21
25.917	0.00	0.08	0.384	O	|	|	|	|	1.21
26.000	0.00	0.08	0.383	O	|	|	|	|	1.20
26.083	0.00	0.08	0.383	O	|	|	|	|	1.20
26.167	0.00	0.08	0.382	O	|	|	|	|	1.20
26.250	0.00	0.08	0.382	O	|	|	|	|	1.20
26.333	0.00	0.08	0.381	O	|	|	|	|	1.20
26.417	0.00	0.08	0.380	O	|	|	|	|	1.20
26.500	0.00	0.08	0.380	O	|	|	|	|	1.20
26.583	0.00	0.08	0.379	O	|	|	|	|	1.20
26.667	0.00	0.08	0.379	O	|	|	|	|	1.19
26.750	0.00	0.08	0.378	O	|	|	|	|	1.19
26.833	0.00	0.07	0.378	O	|	|	|	|	1.19
26.917	0.00	0.07	0.377	O	|	|	|	|	1.19
27.000	0.00	0.07	0.377	O	|	|	|	|	1.19
27.083	0.00	0.07	0.376	O	|	|	|	|	1.19
27.167	0.00	0.07	0.376	O	|	|	|	|	1.19
27.250	0.00	0.07	0.375	O	|	|	|	|	1.19
27.333	0.00	0.07	0.375	O	|	|	|	|	1.19
27.417	0.00	0.07	0.374	O	|	|	|	|	1.18
27.500	0.00	0.07	0.374	O	|	|	|	|	1.18
27.583	0.00	0.07	0.373	O	|	|	|	|	1.18
27.667	0.00	0.07	0.373	O	|	|	|	|	1.18
27.750	0.00	0.07	0.372	O	|	|	|	|	1.18
27.833	0.00	0.07	0.372	O	|	|	|	|	1.18
27.917	0.00	0.07	0.371	O	|	|	|	|	1.18
28.000	0.00	0.07	0.371	O	|	|	|	|	

1.18

28.083	0.00	0.07	0.370	O	|	|	|	|	1.18
28.167	0.00	0.07	0.370	O	|	|	|	|	1.17
28.250	0.00	0.07	0.370	O	|	|	|	|	1.17
28.333	0.00	0.07	0.369	O	|	|	|	|	1.17
28.417	0.00	0.07	0.369	O	|	|	|	|	1.17
28.500	0.00	0.07	0.368	O	|	|	|	|	1.17
28.583	0.00	0.07	0.368	O	|	|	|	|	1.17
28.667	0.00	0.07	0.367	O	|	|	|	|	1.17
28.750	0.00	0.07	0.367	O	|	|	|	|	1.17
28.833	0.00	0.06	0.366	O	|	|	|	|	1.17
28.917	0.00	0.06	0.366	O	|	|	|	|	1.16
29.000	0.00	0.06	0.365	O	|	|	|	|	1.16
29.083	0.00	0.06	0.365	O	|	|	|	|	1.16
29.167	0.00	0.06	0.365	O	|	|	|	|	1.16
29.250	0.00	0.06	0.364	O	|	|	|	|	1.16
29.333	0.00	0.06	0.364	O	|	|	|	|	1.16
29.417	0.00	0.06	0.363	O	|	|	|	|	1.16
29.500	0.00	0.06	0.363	O	|	|	|	|	1.16
29.583	0.00	0.06	0.362	O	|	|	|	|	1.16
29.667	0.00	0.06	0.362	O	|	|	|	|	1.16
29.750	0.00	0.06	0.362	O	|	|	|	|	1.16
29.833	0.00	0.06	0.361	O	|	|	|	|	1.15
29.917	0.00	0.06	0.361	O	|	|	|	|	1.15
30.000	0.00	0.06	0.360	O	|	|	|	|	1.15
30.083	0.00	0.06	0.360	O	|	|	|	|	1.15
30.167	0.00	0.06	0.360	O	|	|	|	|	1.15
30.250	0.00	0.06	0.359	O	|	|	|	|	1.15
30.333	0.00	0.06	0.359	O	|	|	|	|	1.15

30.417	0.00	0.06	0.358	O	|	|	|	|	1.15
30.500	0.00	0.06	0.358	O	|	|	|	|	1.15
30.583	0.00	0.06	0.358	O	|	|	|	|	1.15
30.667	0.00	0.06	0.357	O	|	|	|	|	1.14
30.750	0.00	0.06	0.357	O	|	|	|	|	1.14
30.833	0.00	0.06	0.356	O	|	|	|	|	1.14
30.917	0.00	0.06	0.356	O	|	|	|	|	1.14
31.000	0.00	0.06	0.356	O	|	|	|	|	1.14
31.083	0.00	0.05	0.355	O	|	|	|	|	1.14
31.167	0.00	0.05	0.355	O	|	|	|	|	1.14
31.250	0.00	0.05	0.354	O	|	|	|	|	1.14
31.333	0.00	0.05	0.354	O	|	|	|	|	1.14
31.417	0.00	0.05	0.354	O	|	|	|	|	1.14
31.500	0.00	0.05	0.353	O	|	|	|	|	1.14
31.583	0.00	0.05	0.353	O	|	|	|	|	1.14
31.667	0.00	0.05	0.353	O	|	|	|	|	1.13
31.750	0.00	0.05	0.352	O	|	|	|	|	1.13
31.833	0.00	0.05	0.352	O	|	|	|	|	1.13
31.917	0.00	0.05	0.352	O	|	|	|	|	1.13
32.000	0.00	0.05	0.351	O	|	|	|	|	1.13
32.083	0.00	0.05	0.351	O	|	|	|	|	1.13
32.167	0.00	0.05	0.350	O	|	|	|	|	1.13
32.250	0.00	0.05	0.350	O	|	|	|	|	1.13
32.333	0.00	0.05	0.350	O	|	|	|	|	1.13
32.417	0.00	0.05	0.349	O	|	|	|	|	1.13
32.500	0.00	0.05	0.349	O	|	|	|	|	1.13
32.583	0.00	0.05	0.349	O	|	|	|	|	1.13
32.667	0.00	0.05	0.348	O	|	|	|	|	1.12
32.750	0.00	0.05	0.348	O	|	|	|	|	

1.12

32.833	0.00	0.05	0.348	O	|	|	|	1.12
32.917	0.00	0.05	0.347	O	|	|	|	1.12
33.000	0.00	0.05	0.347	O	|	|	|	1.12
33.083	0.00	0.05	0.347	O	|	|	|	1.12
33.167	0.00	0.05	0.346	O	|	|	|	1.12
33.250	0.00	0.05	0.346	O	|	|	|	1.12
33.333	0.00	0.05	0.346	O	|	|	|	1.12
33.417	0.00	0.05	0.345	O	|	|	|	1.12
33.500	0.00	0.05	0.345	O	|	|	|	1.12
33.583	0.00	0.05	0.345	O	|	|	|	1.12
33.667	0.00	0.05	0.345	O	|	|	|	1.12
33.750	0.00	0.05	0.344	O	|	|	|	1.12
33.833	0.00	0.04	0.344	O	|	|	|	1.11
33.917	0.00	0.04	0.344	O	|	|	|	1.11
34.000	0.00	0.04	0.343	O	|	|	|	1.11
34.083	0.00	0.04	0.343	O	|	|	|	1.11
34.167	0.00	0.04	0.343	O	|	|	|	1.11
34.250	0.00	0.04	0.342	O	|	|	|	1.11
34.333	0.00	0.04	0.342	O	|	|	|	1.11
34.417	0.00	0.04	0.342	O	|	|	|	1.11
34.500	0.00	0.04	0.341	O	|	|	|	1.11
34.583	0.00	0.04	0.341	O	|	|	|	1.11
34.667	0.00	0.04	0.341	O	|	|	|	1.11
34.750	0.00	0.04	0.341	O	|	|	|	1.11
34.833	0.00	0.04	0.340	O	|	|	|	1.11
34.917	0.00	0.04	0.340	O	|	|	|	1.11
35.000	0.00	0.04	0.340	O	|	|	|	1.10
35.083	0.00	0.04	0.339	O	|	|	|	1.10

35.167	0.00	0.04	0.339	O	|	|	|	|	1.10
35.250	0.00	0.04	0.339	O	|	|	|	|	1.10
35.333	0.00	0.04	0.339	O	|	|	|	|	1.10
35.417	0.00	0.04	0.338	O	|	|	|	|	1.10
35.500	0.00	0.04	0.338	O	|	|	|	|	1.10
35.583	0.00	0.04	0.338	O	|	|	|	|	1.10
35.667	0.00	0.04	0.338	O	|	|	|	|	1.10
35.750	0.00	0.04	0.337	O	|	|	|	|	1.10
35.833	0.00	0.04	0.337	O	|	|	|	|	1.10
35.917	0.00	0.04	0.337	O	|	|	|	|	1.10
36.000	0.00	0.04	0.336	O	|	|	|	|	1.10
36.083	0.00	0.04	0.336	O	|	|	|	|	1.10
36.167	0.00	0.04	0.336	O	|	|	|	|	1.10
36.250	0.00	0.04	0.336	O	|	|	|	|	1.10
36.333	0.00	0.04	0.335	O	|	|	|	|	1.09
36.417	0.00	0.04	0.335	O	|	|	|	|	1.09
36.500	0.00	0.04	0.335	O	|	|	|	|	1.09
36.583	0.00	0.04	0.335	O	|	|	|	|	1.09
36.667	0.00	0.04	0.334	O	|	|	|	|	1.09
36.750	0.00	0.04	0.334	O	|	|	|	|	1.09
36.833	0.00	0.04	0.334	O	|	|	|	|	1.09
36.917	0.00	0.04	0.334	O	|	|	|	|	1.09
37.000	0.00	0.04	0.333	O	|	|	|	|	1.09
37.083	0.00	0.04	0.333	O	|	|	|	|	1.09
37.167	0.00	0.04	0.333	O	|	|	|	|	1.09
37.250	0.00	0.04	0.333	O	|	|	|	|	1.09
37.333	0.00	0.03	0.332	O	|	|	|	|	1.09
37.417	0.00	0.03	0.332	O	|	|	|	|	1.09
37.500	0.00	0.03	0.332	O	|	|	|	|	

1.09

37.583	0.00	0.03	0.332	O	|	|	|	|	1.09
37.667	0.00	0.03	0.331	O	|	|	|	|	1.09
37.750	0.00	0.03	0.331	O	|	|	|	|	1.09
37.833	0.00	0.03	0.331	O	|	|	|	|	1.08
37.917	0.00	0.03	0.331	O	|	|	|	|	1.08
38.000	0.00	0.03	0.331	O	|	|	|	|	1.08
38.083	0.00	0.03	0.330	O	|	|	|	|	1.08
38.167	0.00	0.03	0.330	O	|	|	|	|	1.08
38.250	0.00	0.03	0.330	O	|	|	|	|	1.08
38.333	0.00	0.03	0.330	O	|	|	|	|	1.08
38.417	0.00	0.03	0.329	O	|	|	|	|	1.08
38.500	0.00	0.03	0.329	O	|	|	|	|	1.08
38.583	0.00	0.03	0.329	O	|	|	|	|	1.08
38.667	0.00	0.03	0.329	O	|	|	|	|	1.08
38.750	0.00	0.03	0.329	O	|	|	|	|	1.08
38.833	0.00	0.03	0.328	O	|	|	|	|	1.08
38.917	0.00	0.03	0.328	O	|	|	|	|	1.08
39.000	0.00	0.03	0.328	O	|	|	|	|	1.08
39.083	0.00	0.03	0.328	O	|	|	|	|	1.08
39.167	0.00	0.03	0.327	O	|	|	|	|	1.08
39.250	0.00	0.03	0.327	O	|	|	|	|	1.08
39.333	0.00	0.03	0.327	O	|	|	|	|	1.08
39.417	0.00	0.03	0.327	O	|	|	|	|	1.08
39.500	0.00	0.03	0.327	O	|	|	|	|	1.07
39.583	0.00	0.03	0.326	O	|	|	|	|	1.07
39.667	0.00	0.03	0.326	O	|	|	|	|	1.07
39.750	0.00	0.03	0.326	O	|	|	|	|	1.07
39.833	0.00	0.03	0.326	O	|	|	|	|	1.07

39.917	0.00	0.03	0.326	O	|	|	|	|	1.07
40.000	0.00	0.03	0.325	O	|	|	|	|	1.07
40.083	0.00	0.03	0.325	O	|	|	|	|	1.07
40.167	0.00	0.03	0.325	O	|	|	|	|	1.07
40.250	0.00	0.03	0.325	O	|	|	|	|	1.07
40.333	0.00	0.03	0.325	O	|	|	|	|	1.07
40.417	0.00	0.03	0.324	O	|	|	|	|	1.07
40.500	0.00	0.03	0.324	O	|	|	|	|	1.07
40.583	0.00	0.03	0.324	O	|	|	|	|	1.07
40.667	0.00	0.03	0.324	O	|	|	|	|	1.07
40.750	0.00	0.03	0.324	O	|	|	|	|	1.07
40.833	0.00	0.03	0.324	O	|	|	|	|	1.07
40.917	0.00	0.03	0.323	O	|	|	|	|	1.07
41.000	0.00	0.03	0.323	O	|	|	|	|	1.07
41.083	0.00	0.03	0.323	O	|	|	|	|	1.07
41.167	0.00	0.03	0.323	O	|	|	|	|	1.07
41.250	0.00	0.03	0.323	O	|	|	|	|	1.07
41.333	0.00	0.03	0.322	O	|	|	|	|	1.07
41.417	0.00	0.03	0.322	O	|	|	|	|	1.06
41.500	0.00	0.03	0.322	O	|	|	|	|	1.06
41.583	0.00	0.03	0.322	O	|	|	|	|	1.06
41.667	0.00	0.03	0.322	O	|	|	|	|	1.06
41.750	0.00	0.03	0.322	O	|	|	|	|	1.06
41.833	0.00	0.03	0.321	O	|	|	|	|	1.06
41.917	0.00	0.02	0.321	O	|	|	|	|	1.06
42.000	0.00	0.02	0.321	O	|	|	|	|	1.06
42.083	0.00	0.02	0.321	O	|	|	|	|	1.06
42.167	0.00	0.02	0.321	O	|	|	|	|	1.06
42.250	0.00	0.02	0.321	O	|	|	|	|	

1.06

42.333	0.00	0.02	0.320	O	|	|	|	|	1.06
42.417	0.00	0.02	0.320	O	|	|	|	|	1.06
42.500	0.00	0.02	0.320	O	|	|	|	|	1.06
42.583	0.00	0.02	0.320	O	|	|	|	|	1.06
42.667	0.00	0.02	0.320	O	|	|	|	|	1.06
42.750	0.00	0.02	0.320	O	|	|	|	|	1.06
42.833	0.00	0.02	0.319	O	|	|	|	|	1.06
42.917	0.00	0.02	0.319	O	|	|	|	|	1.06
43.000	0.00	0.02	0.319	O	|	|	|	|	1.06
43.083	0.00	0.02	0.319	O	|	|	|	|	1.06
43.167	0.00	0.02	0.319	O	|	|	|	|	1.06
43.250	0.00	0.02	0.319	O	|	|	|	|	1.06
43.333	0.00	0.02	0.318	O	|	|	|	|	1.06
43.417	0.00	0.02	0.318	O	|	|	|	|	1.06
43.500	0.00	0.02	0.318	O	|	|	|	|	1.06
43.583	0.00	0.02	0.318	O	|	|	|	|	1.05
43.667	0.00	0.02	0.318	O	|	|	|	|	1.05
43.750	0.00	0.02	0.318	O	|	|	|	|	1.05
43.833	0.00	0.02	0.318	O	|	|	|	|	1.05
43.917	0.00	0.02	0.317	O	|	|	|	|	1.05
44.000	0.00	0.02	0.317	O	|	|	|	|	1.05
44.083	0.00	0.02	0.317	O	|	|	|	|	1.05
44.167	0.00	0.02	0.317	O	|	|	|	|	1.05
44.250	0.00	0.02	0.317	O	|	|	|	|	1.05
44.333	0.00	0.02	0.317	O	|	|	|	|	1.05
44.417	0.00	0.02	0.316	O	|	|	|	|	1.05
44.500	0.00	0.02	0.316	O	|	|	|	|	1.05
44.583	0.00	0.02	0.316	O	|	|	|	|	1.05

44.667	0.00	0.02	0.316	O	|	|	|	|	1.05
44.750	0.00	0.02	0.316	O	|	|	|	|	1.05
44.833	0.00	0.02	0.316	O	|	|	|	|	1.05
44.917	0.00	0.02	0.316	O	|	|	|	|	1.05
45.000	0.00	0.02	0.316	O	|	|	|	|	1.05
45.083	0.00	0.02	0.315	O	|	|	|	|	1.05
45.167	0.00	0.02	0.315	O	|	|	|	|	1.05
45.250	0.00	0.02	0.315	O	|	|	|	|	1.05
45.333	0.00	0.02	0.315	O	|	|	|	|	1.05
45.417	0.00	0.02	0.315	O	|	|	|	|	1.05
45.500	0.00	0.02	0.315	O	|	|	|	|	1.05
45.583	0.00	0.02	0.315	O	|	|	|	|	1.05
45.667	0.00	0.02	0.314	O	|	|	|	|	1.05
45.750	0.00	0.02	0.314	O	|	|	|	|	1.05
45.833	0.00	0.02	0.314	O	|	|	|	|	1.05
45.917	0.00	0.02	0.314	O	|	|	|	|	1.05
46.000	0.00	0.02	0.314	O	|	|	|	|	1.05
46.083	0.00	0.02	0.314	O	|	|	|	|	1.05
46.167	0.00	0.02	0.314	O	|	|	|	|	1.05
46.250	0.00	0.02	0.314	O	|	|	|	|	1.04
46.333	0.00	0.02	0.313	O	|	|	|	|	1.04
46.417	0.00	0.02	0.313	O	|	|	|	|	1.04
46.500	0.00	0.02	0.313	O	|	|	|	|	1.04
46.583	0.00	0.02	0.313	O	|	|	|	|	1.04
46.667	0.00	0.02	0.313	O	|	|	|	|	1.04
46.750	0.00	0.02	0.313	O	|	|	|	|	1.04
46.833	0.00	0.02	0.313	O	|	|	|	|	1.04
46.917	0.00	0.02	0.313	O	|	|	|	|	1.04
47.000	0.00	0.02	0.312	O	|	|	|	|	

1.04

47.083	0.00	0.02	0.312	O	|	|	|	|	1.04
47.167	0.00	0.02	0.312	O	|	|	|	|	1.04
47.250	0.00	0.02	0.312	O	|	|	|	|	1.04
47.333	0.00	0.02	0.312	O	|	|	|	|	1.04
47.417	0.00	0.02	0.312	O	|	|	|	|	1.04
47.500	0.00	0.02	0.312	O	|	|	|	|	1.04
47.583	0.00	0.02	0.312	O	|	|	|	|	1.04
47.667	0.00	0.02	0.312	O	|	|	|	|	1.04
47.750	0.00	0.02	0.311	O	|	|	|	|	1.04
47.833	0.00	0.02	0.311	O	|	|	|	|	1.04
47.917	0.00	0.02	0.311	O	|	|	|	|	1.04
48.000	0.00	0.02	0.311	O	|	|	|	|	1.04
48.083	0.00	0.02	0.311	O	|	|	|	|	1.04
48.167	0.00	0.02	0.311	O	|	|	|	|	1.04
48.250	0.00	0.02	0.311	O	|	|	|	|	1.04
48.333	0.00	0.02	0.311	O	|	|	|	|	1.04
48.417	0.00	0.02	0.311	O	|	|	|	|	1.04
48.500	0.00	0.02	0.310	O	|	|	|	|	1.04
48.583	0.00	0.02	0.310	O	|	|	|	|	1.04
48.667	0.00	0.02	0.310	O	|	|	|	|	1.04
48.750	0.00	0.02	0.310	O	|	|	|	|	1.04
48.833	0.00	0.02	0.310	O	|	|	|	|	1.04
48.917	0.00	0.01	0.310	O	|	|	|	|	1.04
49.000	0.00	0.01	0.310	O	|	|	|	|	1.04
49.083	0.00	0.01	0.310	O	|	|	|	|	1.04
49.167	0.00	0.01	0.310	O	|	|	|	|	1.04
49.250	0.00	0.01	0.309	O	|	|	|	|	1.04
49.333	0.00	0.01	0.309	O	|	|	|	|	1.04

49.417	0.00	0.01	0.309	O	|	|	|	|	1.04
49.500	0.00	0.01	0.309	O	|	|	|	|	1.03
49.583	0.00	0.01	0.309	O	|	|	|	|	1.03
49.667	0.00	0.01	0.309	O	|	|	|	|	1.03
49.750	0.00	0.01	0.309	O	|	|	|	|	1.03
49.833	0.00	0.01	0.309	O	|	|	|	|	1.03
49.917	0.00	0.01	0.309	O	|	|	|	|	1.03
50.000	0.00	0.01	0.309	O	|	|	|	|	1.03
50.083	0.00	0.01	0.309	O	|	|	|	|	1.03
50.167	0.00	0.01	0.308	O	|	|	|	|	1.03
50.250	0.00	0.01	0.308	O	|	|	|	|	1.03
50.333	0.00	0.01	0.308	O	|	|	|	|	1.03
50.417	0.00	0.01	0.308	O	|	|	|	|	1.03
50.500	0.00	0.01	0.308	O	|	|	|	|	1.03
50.583	0.00	0.01	0.308	O	|	|	|	|	1.03
50.667	0.00	0.01	0.308	O	|	|	|	|	1.03
50.750	0.00	0.01	0.308	O	|	|	|	|	1.03
50.833	0.00	0.01	0.308	O	|	|	|	|	1.03
50.917	0.00	0.01	0.308	O	|	|	|	|	1.03
51.000	0.00	0.01	0.307	O	|	|	|	|	1.03
51.083	0.00	0.01	0.307	O	|	|	|	|	1.03
51.167	0.00	0.01	0.307	O	|	|	|	|	1.03
51.250	0.00	0.01	0.307	O	|	|	|	|	1.03
51.333	0.00	0.01	0.307	O	|	|	|	|	1.03
51.417	0.00	0.01	0.307	O	|	|	|	|	1.03
51.500	0.00	0.01	0.307	O	|	|	|	|	1.03
51.583	0.00	0.01	0.307	O	|	|	|	|	1.03
51.667	0.00	0.01	0.307	O	|	|	|	|	1.03
51.750	0.00	0.01	0.307	O	|	|	|	|	

1.03

51.833	0.00	0.01	0.307	O	|	|	|	|	1.03
51.917	0.00	0.01	0.307	O	|	|	|	|	1.03
52.000	0.00	0.01	0.306	O	|	|	|	|	1.03
52.083	0.00	0.01	0.306	O	|	|	|	|	1.03
52.167	0.00	0.01	0.306	O	|	|	|	|	1.03
52.250	0.00	0.01	0.306	O	|	|	|	|	1.03
52.333	0.00	0.01	0.306	O	|	|	|	|	1.03
52.417	0.00	0.01	0.306	O	|	|	|	|	1.03
52.500	0.00	0.01	0.306	O	|	|	|	|	1.03
52.583	0.00	0.01	0.306	O	|	|	|	|	1.03
52.667	0.00	0.01	0.306	O	|	|	|	|	1.03
52.750	0.00	0.01	0.306	O	|	|	|	|	1.03
52.833	0.00	0.01	0.306	O	|	|	|	|	1.03
52.917	0.00	0.01	0.306	O	|	|	|	|	1.03
53.000	0.00	0.01	0.306	O	|	|	|	|	1.03
53.083	0.00	0.01	0.305	O	|	|	|	|	1.03
53.167	0.00	0.01	0.305	O	|	|	|	|	1.03
53.250	0.00	0.01	0.305	O	|	|	|	|	1.03
53.333	0.00	0.01	0.305	O	|	|	|	|	1.03
53.417	0.00	0.01	0.305	O	|	|	|	|	1.03
53.500	0.00	0.01	0.305	O	|	|	|	|	1.03
53.583	0.00	0.01	0.305	O	|	|	|	|	1.03
53.667	0.00	0.01	0.305	O	|	|	|	|	1.03
53.750	0.00	0.01	0.305	O	|	|	|	|	1.02
53.833	0.00	0.01	0.305	O	|	|	|	|	1.02
53.917	0.00	0.01	0.305	O	|	|	|	|	1.02
54.000	0.00	0.01	0.305	O	|	|	|	|	1.02
54.083	0.00	0.01	0.305	O	|	|	|	|	1.02

54.167	0.00	0.01	0.304	O	|	|	|	|	1.02
54.250	0.00	0.01	0.304	O	|	|	|	|	1.02
54.333	0.00	0.01	0.304	O	|	|	|	|	1.02
54.417	0.00	0.01	0.304	O	|	|	|	|	1.02
54.500	0.00	0.01	0.304	O	|	|	|	|	1.02
54.583	0.00	0.01	0.304	O	|	|	|	|	1.02
54.667	0.00	0.01	0.304	O	|	|	|	|	1.02
54.750	0.00	0.01	0.304	O	|	|	|	|	1.02
54.833	0.00	0.01	0.304	O	|	|	|	|	1.02
54.917	0.00	0.01	0.304	O	|	|	|	|	1.02
55.000	0.00	0.01	0.304	O	|	|	|	|	1.02
55.083	0.00	0.01	0.304	O	|	|	|	|	1.02
55.167	0.00	0.01	0.304	O	|	|	|	|	1.02
55.250	0.00	0.01	0.304	O	|	|	|	|	1.02
55.333	0.00	0.01	0.304	O	|	|	|	|	1.02
55.417	0.00	0.01	0.303	O	|	|	|	|	1.02
55.500	0.00	0.01	0.303	O	|	|	|	|	1.02
55.583	0.00	0.01	0.303	O	|	|	|	|	1.02
55.667	0.00	0.01	0.303	O	|	|	|	|	1.02
55.750	0.00	0.01	0.303	O	|	|	|	|	1.02
55.833	0.00	0.01	0.303	O	|	|	|	|	1.02
55.917	0.00	0.01	0.303	O	|	|	|	|	1.02
56.000	0.00	0.01	0.303	O	|	|	|	|	1.02
56.083	0.00	0.01	0.303	O	|	|	|	|	1.02
56.167	0.00	0.01	0.303	O	|	|	|	|	1.02
56.250	0.00	0.01	0.303	O	|	|	|	|	1.02
56.333	0.00	0.01	0.303	O	|	|	|	|	1.02
56.417	0.00	0.01	0.303	O	|	|	|	|	1.02
56.500	0.00	0.01	0.303	O	|	|	|	|	

1.02

56.583	0.00	0.01	0.303	O	|	|	|	|	1.02
56.667	0.00	0.01	0.303	O	|	|	|	|	1.02
56.750	0.00	0.01	0.302	O	|	|	|	|	1.02
56.833	0.00	0.01	0.302	O	|	|	|	|	1.02
56.917	0.00	0.01	0.302	O	|	|	|	|	1.02
57.000	0.00	0.01	0.302	O	|	|	|	|	1.02
57.083	0.00	0.01	0.302	O	|	|	|	|	1.02
57.167	0.00	0.01	0.302	O	|	|	|	|	1.02
57.250	0.00	0.01	0.302	O	|	|	|	|	1.02
57.333	0.00	0.01	0.302	O	|	|	|	|	1.02
57.417	0.00	0.01	0.302	O	|	|	|	|	1.02
57.500	0.00	0.01	0.302	O	|	|	|	|	1.02
57.583	0.00	0.01	0.302	O	|	|	|	|	1.02
57.667	0.00	0.01	0.302	O	|	|	|	|	1.02
57.750	0.00	0.01	0.302	O	|	|	|	|	1.02
57.833	0.00	0.01	0.302	O	|	|	|	|	1.02
57.917	0.00	0.01	0.302	O	|	|	|	|	1.02
58.000	0.00	0.01	0.302	O	|	|	|	|	1.02
58.083	0.00	0.01	0.302	O	|	|	|	|	1.02
58.167	0.00	0.01	0.302	O	|	|	|	|	1.02
58.250	0.00	0.01	0.301	O	|	|	|	|	1.02
58.333	0.00	0.01	0.301	O	|	|	|	|	1.02
58.417	0.00	0.01	0.301	O	|	|	|	|	1.02
58.500	0.00	0.01	0.301	O	|	|	|	|	1.02
58.583	0.00	0.01	0.301	O	|	|	|	|	1.02
58.667	0.00	0.01	0.301	O	|	|	|	|	1.02
58.750	0.00	0.01	0.301	O	|	|	|	|	1.02
58.833	0.00	0.01	0.301	O	|	|	|	|	1.02

58.917	0.00	0.01	0.301	O	|	|	|	|	1.02
59.000	0.00	0.01	0.301	O	|	|	|	|	1.02
59.083	0.00	0.01	0.301	O	|	|	|	|	1.02
59.167	0.00	0.01	0.301	O	|	|	|	|	1.02
59.250	0.00	0.01	0.301	O	|	|	|	|	1.02
59.333	0.00	0.01	0.301	O	|	|	|	|	1.02
59.417	0.00	0.01	0.301	O	|	|	|	|	1.02
59.500	0.00	0.01	0.301	O	|	|	|	|	1.02
59.583	0.00	0.01	0.301	O	|	|	|	|	1.02
59.667	0.00	0.01	0.301	O	|	|	|	|	1.02
59.750	0.00	0.01	0.301	O	|	|	|	|	1.02
59.833	0.00	0.01	0.301	O	|	|	|	|	1.02
59.917	0.00	0.01	0.301	O	|	|	|	|	1.01
60.000	0.00	0.01	0.300	O	|	|	|	|	1.01
60.083	0.00	0.01	0.300	O	|	|	|	|	1.01
60.167	0.00	0.01	0.300	O	|	|	|	|	1.01
60.250	0.00	0.01	0.300	O	|	|	|	|	1.01
60.333	0.00	0.01	0.300	O	|	|	|	|	1.01
60.417	0.00	0.01	0.300	O	|	|	|	|	1.01
60.500	0.00	0.01	0.300	O	|	|	|	|	1.01
60.583	0.00	0.01	0.300	O	|	|	|	|	1.01
60.667	0.00	0.01	0.300	O	|	|	|	|	1.01
60.750	0.00	0.01	0.300	O	|	|	|	|	1.01
60.833	0.00	0.01	0.300	O	|	|	|	|	1.01
60.917	0.00	0.01	0.300	O	|	|	|	|	1.01
61.000	0.00	0.01	0.300	O	|	|	|	|	1.01
61.083	0.00	0.01	0.300	O	|	|	|	|	1.01
61.167	0.00	0.01	0.300	O	|	|	|	|	1.01
61.250	0.00	0.01	0.300	O	|	|	|	|	

1.01

61.333	0.00	0.01	0.300	O	|	|	|	|	1.01
61.417	0.00	0.01	0.300	O	|	|	|	|	1.01
61.500	0.00	0.01	0.300	O	|	|	|	|	1.01
61.583	0.00	0.01	0.300	O	|	|	|	|	1.01
61.667	0.00	0.01	0.300	O	|	|	|	|	1.01
61.750	0.00	0.01	0.300	O	|	|	|	|	1.01
61.833	0.00	0.01	0.300	O	|	|	|	|	1.01
61.917	0.00	0.01	0.299	O	|	|	|	|	1.01
62.000	0.00	0.01	0.299	O	|	|	|	|	1.01
62.083	0.00	0.01	0.299	O	|	|	|	|	1.01
62.167	0.00	0.01	0.299	O	|	|	|	|	1.01
62.250	0.00	0.01	0.299	O	|	|	|	|	1.01
62.333	0.00	0.01	0.299	O	|	|	|	|	1.01
62.417	0.00	0.01	0.299	O	|	|	|	|	1.01
62.500	0.00	0.01	0.299	O	|	|	|	|	1.01
62.583	0.00	0.01	0.299	O	|	|	|	|	1.01
62.667	0.00	0.01	0.299	O	|	|	|	|	1.01
62.750	0.00	0.01	0.299	O	|	|	|	|	1.01
62.833	0.00	0.01	0.299	O	|	|	|	|	1.01
62.917	0.00	0.01	0.299	O	|	|	|	|	1.01
63.000	0.00	0.01	0.299	O	|	|	|	|	1.01
63.083	0.00	0.01	0.299	O	|	|	|	|	1.01
63.167	0.00	0.01	0.299	O	|	|	|	|	1.01
63.250	0.00	0.01	0.299	O	|	|	|	|	1.01
63.333	0.00	0.01	0.299	O	|	|	|	|	1.01
63.417	0.00	0.01	0.299	O	|	|	|	|	1.01
63.500	0.00	0.01	0.299	O	|	|	|	|	1.01
63.583	0.00	0.01	0.299	O	|	|	|	|	1.01

63.667	0.00	0.01	0.299	O	|	|	|	|	1.01
63.750	0.00	0.01	0.299	O	|	|	|	|	1.01
63.833	0.00	0.01	0.299	O	|	|	|	|	1.01
63.917	0.00	0.01	0.299	O	|	|	|	|	1.01
64.000	0.00	0.01	0.299	O	|	|	|	|	1.01
64.083	0.00	0.00	0.299	O	|	|	|	|	1.01
64.167	0.00	0.00	0.298	O	|	|	|	|	1.01
64.250	0.00	0.00	0.298	O	|	|	|	|	1.01
64.333	0.00	0.00	0.298	O	|	|	|	|	1.01
64.417	0.00	0.00	0.298	O	|	|	|	|	1.01
64.500	0.00	0.00	0.298	O	|	|	|	|	1.01
64.583	0.00	0.00	0.298	O	|	|	|	|	1.01
64.667	0.00	0.00	0.298	O	|	|	|	|	1.01
64.750	0.00	0.00	0.298	O	|	|	|	|	1.01
64.833	0.00	0.00	0.298	O	|	|	|	|	1.01
64.917	0.00	0.00	0.298	O	|	|	|	|	1.01
65.000	0.00	0.00	0.298	O	|	|	|	|	1.01
65.083	0.00	0.00	0.298	O	|	|	|	|	1.01
65.167	0.00	0.00	0.298	O	|	|	|	|	1.01
65.250	0.00	0.00	0.298	O	|	|	|	|	1.01
65.333	0.00	0.00	0.298	O	|	|	|	|	1.01
65.417	0.00	0.00	0.298	O	|	|	|	|	1.01
65.500	0.00	0.00	0.298	O	|	|	|	|	1.01
65.583	0.00	0.00	0.298	O	|	|	|	|	1.01
65.667	0.00	0.00	0.298	O	|	|	|	|	1.01
65.750	0.00	0.00	0.298	O	|	|	|	|	1.01
65.833	0.00	0.00	0.298	O	|	|	|	|	1.01
65.917	0.00	0.00	0.298	O	|	|	|	|	1.01
66.000	0.00	0.00	0.298	O	|	|	|	|	

1.01

66.083	0.00	0.00	0.298	O	|	|	|	|	1.01
66.167	0.00	0.00	0.298	O	|	|	|	|	1.01
66.250	0.00	0.00	0.298	O	|	|	|	|	1.01
66.333	0.00	0.00	0.298	O	|	|	|	|	1.01
66.417	0.00	0.00	0.298	O	|	|	|	|	1.01
66.500	0.00	0.00	0.298	O	|	|	|	|	1.01
66.583	0.00	0.00	0.298	O	|	|	|	|	1.01
66.667	0.00	0.00	0.298	O	|	|	|	|	1.01
66.750	0.00	0.00	0.298	O	|	|	|	|	1.01
66.833	0.00	0.00	0.297	O	|	|	|	|	1.01
66.917	0.00	0.00	0.297	O	|	|	|	|	1.01
67.000	0.00	0.00	0.297	O	|	|	|	|	1.01
67.083	0.00	0.00	0.297	O	|	|	|	|	1.01
67.167	0.00	0.00	0.297	O	|	|	|	|	1.01
67.250	0.00	0.00	0.297	O	|	|	|	|	1.01
67.333	0.00	0.00	0.297	O	|	|	|	|	1.01
67.417	0.00	0.00	0.297	O	|	|	|	|	1.01
67.500	0.00	0.00	0.297	O	|	|	|	|	1.01
67.583	0.00	0.00	0.297	O	|	|	|	|	1.01
67.667	0.00	0.00	0.297	O	|	|	|	|	1.01
67.750	0.00	0.00	0.297	O	|	|	|	|	1.01
67.833	0.00	0.00	0.297	O	|	|	|	|	1.01
67.917	0.00	0.00	0.297	O	|	|	|	|	1.01
68.000	0.00	0.00	0.297	O	|	|	|	|	1.01
68.083	0.00	0.00	0.297	O	|	|	|	|	1.01
68.167	0.00	0.00	0.297	O	|	|	|	|	1.01
68.250	0.00	0.00	0.297	O	|	|	|	|	1.01
68.333	0.00	0.00	0.297	O	|	|	|	|	1.01

68.417	0.00	0.00	0.297	O	|	|	|	|	1.01
68.500	0.00	0.00	0.297	O	|	|	|	|	1.01
68.583	0.00	0.00	0.297	O	|	|	|	|	1.01
68.667	0.00	0.00	0.297	O	|	|	|	|	1.01
68.750	0.00	0.00	0.297	O	|	|	|	|	1.01
68.833	0.00	0.00	0.297	O	|	|	|	|	1.01
68.917	0.00	0.00	0.297	O	|	|	|	|	1.01
69.000	0.00	0.00	0.297	O	|	|	|	|	1.01
69.083	0.00	0.00	0.297	O	|	|	|	|	1.01
69.167	0.00	0.00	0.297	O	|	|	|	|	1.01
69.250	0.00	0.00	0.297	O	|	|	|	|	1.01
69.333	0.00	0.00	0.297	O	|	|	|	|	1.01
69.417	0.00	0.00	0.297	O	|	|	|	|	1.01
69.500	0.00	0.00	0.297	O	|	|	|	|	1.01
69.583	0.00	0.00	0.297	O	|	|	|	|	1.01
69.667	0.00	0.00	0.297	O	|	|	|	|	1.01
69.750	0.00	0.00	0.297	O	|	|	|	|	1.01
69.833	0.00	0.00	0.297	O	|	|	|	|	1.01
69.917	0.00	0.00	0.297	O	|	|	|	|	1.01
70.000	0.00	0.00	0.297	O	|	|	|	|	1.01
70.083	0.00	0.00	0.297	O	|	|	|	|	1.01
70.167	0.00	0.00	0.296	O	|	|	|	|	1.01
70.250	0.00	0.00	0.296	O	|	|	|	|	1.01
70.333	0.00	0.00	0.296	O	|	|	|	|	1.01
70.417	0.00	0.00	0.296	O	|	|	|	|	1.01
70.500	0.00	0.00	0.296	O	|	|	|	|	1.01
70.583	0.00	0.00	0.296	O	|	|	|	|	1.01
70.667	0.00	0.00	0.296	O	|	|	|	|	1.01
70.750	0.00	0.00	0.296	O	|	|	|	|	

1.01

70.833	0.00	0.00	0.296	O	|	|	|	|	1.01
70.917	0.00	0.00	0.296	O	|	|	|	|	1.01
71.000	0.00	0.00	0.296	O	|	|	|	|	1.01
71.083	0.00	0.00	0.296	O	|	|	|	|	1.01
71.167	0.00	0.00	0.296	O	|	|	|	|	1.01
71.250	0.00	0.00	0.296	O	|	|	|	|	1.01
71.333	0.00	0.00	0.296	O	|	|	|	|	1.01
71.417	0.00	0.00	0.296	O	|	|	|	|	1.00
71.500	0.00	0.00	0.296	O	|	|	|	|	1.00
71.583	0.00	0.00	0.296	O	|	|	|	|	1.00
71.667	0.00	0.00	0.296	O	|	|	|	|	1.00
71.750	0.00	0.00	0.296	O	|	|	|	|	1.00
71.833	0.00	0.00	0.296	O	|	|	|	|	1.00
71.917	0.00	0.00	0.296	O	|	|	|	|	1.00
72.000	0.00	0.00	0.296	O	|	|	|	|	1.00
72.083	0.00	0.00	0.296	O	|	|	|	|	1.00
72.167	0.00	0.00	0.296	O	|	|	|	|	1.00
72.250	0.00	0.00	0.296	O	|	|	|	|	1.00
72.333	0.00	0.00	0.296	O	|	|	|	|	1.00
72.417	0.00	0.00	0.296	O	|	|	|	|	1.00
72.500	0.00	0.00	0.296	O	|	|	|	|	1.00
72.583	0.00	0.00	0.296	O	|	|	|	|	1.00
72.667	0.00	0.00	0.296	O	|	|	|	|	1.00
72.750	0.00	0.00	0.296	O	|	|	|	|	1.00
72.833	0.00	0.00	0.296	O	|	|	|	|	1.00
72.917	0.00	0.00	0.296	O	|	|	|	|	1.00
73.000	0.00	0.00	0.296	O	|	|	|	|	1.00
73.083	0.00	0.00	0.296	O	|	|	|	|	1.00

73.167	0.00	0.00	0.296	O	|	|	|	|	1.00
73.250	0.00	0.00	0.296	O	|	|	|	|	1.00
73.333	0.00	0.00	0.296	O	|	|	|	|	1.00
73.417	0.00	0.00	0.296	O	|	|	|	|	1.00
73.500	0.00	0.00	0.296	O	|	|	|	|	1.00
73.583	0.00	0.00	0.296	O	|	|	|	|	1.00
73.667	0.00	0.00	0.296	O	|	|	|	|	1.00
73.750	0.00	0.00	0.296	O	|	|	|	|	1.00
73.833	0.00	0.00	0.296	O	|	|	|	|	1.00
73.917	0.00	0.00	0.296	O	|	|	|	|	1.00
74.000	0.00	0.00	0.296	O	|	|	|	|	1.00
74.083	0.00	0.00	0.296	O	|	|	|	|	1.00
74.167	0.00	0.00	0.296	O	|	|	|	|	1.00
74.250	0.00	0.00	0.296	O	|	|	|	|	1.00
74.333	0.00	0.00	0.296	O	|	|	|	|	1.00
74.417	0.00	0.00	0.296	O	|	|	|	|	1.00
74.500	0.00	0.00	0.296	O	|	|	|	|	1.00
74.583	0.00	0.00	0.295	O	|	|	|	|	1.00
74.667	0.00	0.00	0.295	O	|	|	|	|	1.00
74.750	0.00	0.00	0.295	O	|	|	|	|	1.00
74.833	0.00	0.00	0.295	O	|	|	|	|	1.00
74.917	0.00	0.00	0.295	O	|	|	|	|	1.00
75.000	0.00	0.00	0.295	O	|	|	|	|	1.00
75.083	0.00	0.00	0.295	O	|	|	|	|	1.00
75.167	0.00	0.00	0.295	O	|	|	|	|	1.00
75.250	0.00	0.00	0.295	O	|	|	|	|	1.00
75.333	0.00	0.00	0.295	O	|	|	|	|	1.00
75.417	0.00	0.00	0.295	O	|	|	|	|	1.00
75.500	0.00	0.00	0.295	O	|	|	|	|	

1.00

75.583	0.00	0.00	0.295	O	|	|	|	1.00
75.667	0.00	0.00	0.295	O	|	|	|	1.00
75.750	0.00	0.00	0.295	O	|	|	|	1.00
75.833	0.00	0.00	0.295	O	|	|	|	1.00
75.917	0.00	0.00	0.295	O	|	|	|	1.00
76.000	0.00	0.00	0.295	O	|	|	|	1.00
76.083	0.00	0.00	0.295	O	|	|	|	1.00
76.167	0.00	0.00	0.295	O	|	|	|	1.00
76.250	0.00	0.00	0.295	O	|	|	|	1.00
76.333	0.00	0.00	0.295	O	|	|	|	1.00
76.417	0.00	0.00	0.295	O	|	|	|	1.00
76.500	0.00	0.00	0.295	O	|	|	|	1.00
76.583	0.00	0.00	0.295	O	|	|	|	1.00
76.667	0.00	0.00	0.295	O	|	|	|	1.00
76.750	0.00	0.00	0.295	O	|	|	|	1.00
76.833	0.00	0.00	0.295	O	|	|	|	1.00
76.917	0.00	0.00	0.295	O	|	|	|	1.00
77.000	0.00	0.00	0.295	O	|	|	|	1.00
77.083	0.00	0.00	0.295	O	|	|	|	1.00
77.167	0.00	0.00	0.295	O	|	|	|	1.00
77.250	0.00	0.00	0.295	O	|	|	|	1.00
77.333	0.00	0.00	0.295	O	|	|	|	1.00
77.417	0.00	0.00	0.295	O	|	|	|	1.00
77.500	0.00	0.00	0.295	O	|	|	|	1.00
77.583	0.00	0.00	0.295	O	|	|	|	1.00
77.667	0.00	0.00	0.295	O	|	|	|	1.00
77.750	0.00	0.00	0.295	O	|	|	|	1.00
77.833	0.00	0.00	0.295	O	|	|	|	1.00

77.917	0.00	0.00	0.295	O	|	|	|	|	1.00
78.000	0.00	0.00	0.295	O	|	|	|	|	1.00
78.083	0.00	0.00	0.295	O	|	|	|	|	1.00
78.167	0.00	0.00	0.295	O	|	|	|	|	1.00
78.250	0.00	0.00	0.295	O	|	|	|	|	1.00
78.333	0.00	0.00	0.295	O	|	|	|	|	1.00
78.417	0.00	0.00	0.295	O	|	|	|	|	1.00
78.500	0.00	0.00	0.295	O	|	|	|	|	1.00
78.583	0.00	0.00	0.295	O	|	|	|	|	1.00
78.667	0.00	0.00	0.295	O	|	|	|	|	1.00
78.750	0.00	0.00	0.295	O	|	|	|	|	1.00
78.833	0.00	0.00	0.295	O	|	|	|	|	1.00
78.917	0.00	0.00	0.295	O	|	|	|	|	1.00
79.000	0.00	0.00	0.295	O	|	|	|	|	1.00
79.083	0.00	0.00	0.295	O	|	|	|	|	1.00
79.167	0.00	0.00	0.295	O	|	|	|	|	1.00
79.250	0.00	0.00	0.295	O	|	|	|	|	1.00
79.333	0.00	0.00	0.295	O	|	|	|	|	1.00
79.417	0.00	0.00	0.295	O	|	|	|	|	1.00
79.500	0.00	0.00	0.295	O	|	|	|	|	1.00
79.583	0.00	0.00	0.295	O	|	|	|	|	1.00
79.667	0.00	0.00	0.295	O	|	|	|	|	1.00
79.750	0.00	0.00	0.295	O	|	|	|	|	1.00
79.833	0.00	0.00	0.295	O	|	|	|	|	1.00
79.917	0.00	0.00	0.295	O	|	|	|	|	1.00
80.000	0.00	0.00	0.295	O	|	|	|	|	1.00
80.083	0.00	0.00	0.295	O	|	|	|	|	1.00
80.167	0.00	0.00	0.295	O	|	|	|	|	1.00
80.250	0.00	0.00	0.295	O	|	|	|	|	

1.00

80.333	0.00	0.00	0.295	O	|	|	|	1.00
80.417	0.00	0.00	0.295	O	|	|	|	1.00
80.500	0.00	0.00	0.295	O	|	|	|	1.00
80.583	0.00	0.00	0.295	O	|	|	|	1.00
80.667	0.00	0.00	0.295	O	|	|	|	1.00
80.750	0.00	0.00	0.295	O	|	|	|	1.00
80.833	0.00	0.00	0.295	O	|	|	|	1.00
80.917	0.00	0.00	0.295	O	|	|	|	1.00
81.000	0.00	0.00	0.295	O	|	|	|	1.00
81.083	0.00	0.00	0.295	O	|	|	|	1.00
81.167	0.00	0.00	0.294	O	|	|	|	1.00
81.250	0.00	0.00	0.294	O	|	|	|	1.00
81.333	0.00	0.00	0.294	O	|	|	|	1.00
81.417	0.00	0.00	0.294	O	|	|	|	1.00
81.500	0.00	0.00	0.294	O	|	|	|	1.00
81.583	0.00	0.00	0.294	O	|	|	|	1.00
81.667	0.00	0.00	0.294	O	|	|	|	1.00
81.750	0.00	0.00	0.294	O	|	|	|	1.00
81.833	0.00	0.00	0.294	O	|	|	|	1.00
81.917	0.00	0.00	0.294	O	|	|	|	1.00
82.000	0.00	0.00	0.294	O	|	|	|	1.00
82.083	0.00	0.00	0.294	O	|	|	|	1.00
82.167	0.00	0.00	0.294	O	|	|	|	1.00
82.250	0.00	0.00	0.294	O	|	|	|	1.00
82.333	0.00	0.00	0.294	O	|	|	|	1.00
82.417	0.00	0.00	0.294	O	|	|	|	1.00
82.500	0.00	0.00	0.294	O	|	|	|	1.00
82.583	0.00	0.00	0.294	O	|	|	|	1.00

82.667	0.00	0.00	0.294	O	|	|	|	|	1.00
82.750	0.00	0.00	0.294	O	|	|	|	|	1.00
82.833	0.00	0.00	0.294	O	|	|	|	|	1.00
82.917	0.00	0.00	0.294	O	|	|	|	|	1.00
83.000	0.00	0.00	0.294	O	|	|	|	|	1.00
83.083	0.00	0.00	0.294	O	|	|	|	|	1.00
83.167	0.00	0.00	0.294	O	|	|	|	|	1.00
83.250	0.00	0.00	0.294	O	|	|	|	|	1.00
83.333	0.00	0.00	0.294	O	|	|	|	|	1.00
83.417	0.00	0.00	0.294	O	|	|	|	|	1.00
83.500	0.00	0.00	0.294	O	|	|	|	|	1.00
83.583	0.00	0.00	0.294	O	|	|	|	|	1.00
83.667	0.00	0.00	0.294	O	|	|	|	|	1.00
83.750	0.00	0.00	0.294	O	|	|	|	|	1.00
83.833	0.00	0.00	0.294	O	|	|	|	|	1.00
83.917	0.00	0.00	0.294	O	|	|	|	|	1.00
84.000	0.00	0.00	0.294	O	|	|	|	|	1.00
84.083	0.00	0.00	0.294	O	|	|	|	|	1.00
84.167	0.00	0.00	0.294	O	|	|	|	|	1.00
84.250	0.00	0.00	0.294	O	|	|	|	|	1.00
84.333	0.00	0.00	0.294	O	|	|	|	|	1.00
84.417	0.00	0.00	0.294	O	|	|	|	|	1.00
84.500	0.00	0.00	0.294	O	|	|	|	|	1.00
84.583	0.00	0.00	0.294	O	|	|	|	|	1.00
84.667	0.00	0.00	0.294	O	|	|	|	|	1.00
84.750	0.00	0.00	0.294	O	|	|	|	|	1.00
84.833	0.00	0.00	0.294	O	|	|	|	|	1.00
84.917	0.00	0.00	0.294	O	|	|	|	|	1.00
85.000	0.00	0.00	0.294	O	|	|	|	|	

1.00

85.083	0.00	0.00	0.294	O	|	|	|	1.00
85.167	0.00	0.00	0.294	O	|	|	|	1.00
85.250	0.00	0.00	0.294	O	|	|	|	1.00
85.333	0.00	0.00	0.294	O	|	|	|	1.00
85.417	0.00	0.00	0.294	O	|	|	|	1.00
85.500	0.00	0.00	0.294	O	|	|	|	1.00
85.583	0.00	0.00	0.294	O	|	|	|	1.00
85.667	0.00	0.00	0.294	O	|	|	|	1.00
85.750	0.00	0.00	0.294	O	|	|	|	1.00
85.833	0.00	0.00	0.294	O	|	|	|	1.00
85.917	0.00	0.00	0.294	O	|	|	|	1.00
86.000	0.00	0.00	0.294	O	|	|	|	1.00
86.083	0.00	0.00	0.294	O	|	|	|	1.00
86.167	0.00	0.00	0.294	O	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1034
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.181 (CFS)
Total volume = 0.308 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
2 YR - 24 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP242.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 1.651 (CFS)
Total volume = 1.003 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.4	0.83	1.24	Depth 1.65 (Ft.)
0.083	0.05	0.00	0.000	OI	|	|	|	0.00
0.167	0.09	0.00	0.001	OI	|	|	|	0.00
0.250	0.10	0.00	0.001	OI	|	|	|	0.00
0.333	0.12	0.00	0.002	O I	|	|	|	0.01
0.417	0.14	0.00	0.003	O I	|	|	|	0.01
0.500	0.15	0.00	0.004	O I	|	|	|	0.01
0.583	0.15	0.00	0.005	O I	|	|	|	0.02
0.667	0.15	0.00	0.006	O I	|	|	|	0.02
0.750	0.15	0.00	0.007	O I	|	|	|	0.02
0.833	0.17	0.00	0.008	O I	|	|	|	0.03
0.917	0.19	0.00	0.009	O I	|	|	|	0.03
1.000	0.19	0.00	0.011	O I	|	|	|	0.04
1.083	0.17	0.00	0.012	O I	|	|	|	0.04
1.167	0.15	0.00	0.013	O I	|	|	|	0.04
1.250	0.15	0.00	0.014	O I	|	|	|	0.05
1.333	0.15	0.00	0.015	O I	|	|	|	0.05
1.417	0.15	0.00	0.016	O I	|	|	|	0.05
1.500	0.15	0.00	0.017	O I	|	|	|	0.06
1.583	0.15	0.00	0.018	O I	|	|	|	0.06
1.667	0.15	0.00	0.019	O I	|	|	|	0.06
1.750	0.15	0.00	0.020	O I	|	|	|	0.07
1.833	0.17	0.00	0.021	O I	|	|	|	0.07
1.917	0.19	0.00	0.022	O I	|	|	|	0.08

2.000	0.19	0.00	0.024	O	I	|	|	|	0.08
2.083	0.19	0.00	0.025	O	I	|	|	|	0.09
2.167	0.19	0.00	0.026	O	I	|	|	|	0.09
2.250	0.19	0.00	0.028	O	I	|	|	|	0.09
2.333	0.19	0.00	0.029	O	I	|	|	|	0.10
2.417	0.19	0.00	0.030	O	I	|	|	|	0.10
2.500	0.19	0.00	0.032	O	I	|	|	|	0.11
2.583	0.22	0.00	0.033	O	I	|	|	|	0.11
2.667	0.24	0.00	0.035	O	I	|	|	|	0.12
2.750	0.24	0.00	0.036	O	I	|	|	|	0.12
2.833	0.24	0.00	0.038	O	I	|	|	|	0.13
2.917	0.24	0.00	0.040	O	I	|	|	|	0.14
3.000	0.24	0.00	0.041	O	I	|	|	|	0.14
3.083	0.24	0.00	0.043	O	I	|	|	|	0.15
3.167	0.24	0.00	0.045	O	I	|	|	|	0.15
3.250	0.24	0.00	0.046	O	I	|	|	|	0.16
3.333	0.24	0.00	0.048	O	I	|	|	|	0.16
3.417	0.24	0.00	0.050	O	I	|	|	|	0.17
3.500	0.24	0.00	0.051	O	I	|	|	|	0.18
3.583	0.24	0.00	0.053	O	I	|	|	|	0.18
3.667	0.24	0.00	0.055	O	I	|	|	|	0.19
3.750	0.24	0.00	0.056	O	I	|	|	|	0.19
3.833	0.27	0.00	0.058	O	I	|	|	|	0.20
3.917	0.29	0.00	0.060	O	I	|	|	|	0.20
4.000	0.29	0.00	0.062	O	I	|	|	|	0.21
4.083	0.29	0.00	0.064	O	I	|	|	|	0.22
4.167	0.29	0.00	0.066	O	I	|	|	|	0.23
4.250	0.29	0.00	0.068	O	I	|	|	|	0.23
4.333	0.32	0.00	0.070	O	I	|	|	|	0.24

4.417	0.34	0.00	0.073	O	I |	|	|	|	0.25
4.500	0.34	0.00	0.075	O	I |	|	|	|	0.25
4.583	0.34	0.00	0.077	O	I |	|	|	|	0.26
4.667	0.34	0.00	0.080	O	I |	|	|	|	0.27
4.750	0.34	0.00	0.082	O	I |	|	|	|	0.28
4.833	0.37	0.00	0.084	O	I|	|	|	|	0.29
4.917	0.39	0.00	0.087	O	I|	|	|	|	0.30
5.000	0.39	0.00	0.090	O	I|	|	|	|	0.30
5.083	0.33	0.00	0.092	O	I |	|	|	|	0.31
5.167	0.30	0.00	0.094	O	I |	|	|	|	0.32
5.250	0.29	0.00	0.096	O	I |	|	|	|	0.33
5.333	0.32	0.00	0.098	O	I |	|	|	|	0.33
5.417	0.34	0.00	0.101	O	I |	|	|	|	0.34
5.500	0.34	0.00	0.103	O	I |	|	|	|	0.35
5.583	0.37	0.00	0.105	O	I|	|	|	|	0.36
5.667	0.39	0.00	0.108	O	I|	|	|	|	0.37
5.750	0.39	0.00	0.111	O	I|	|	|	|	0.38
5.833	0.39	0.00	0.113	O	I|	|	|	|	0.39
5.917	0.39	0.00	0.116	O	I|	|	|	|	0.39
6.000	0.39	0.00	0.119	O	I|	|	|	|	0.40
6.083	0.42	0.00	0.121	O	I	|	|	|	0.41
6.167	0.43	0.00	0.124	O	I	|	|	|	0.42
6.250	0.44	0.00	0.127	O	I	|	|	|	0.43
6.333	0.44	0.00	0.130	O	I	|	|	|	0.44
6.417	0.44	0.00	0.133	O	I	|	|	|	0.45
6.500	0.44	0.00	0.136	O	I	|	|	|	0.46
6.583	0.46	0.00	0.139	O	|I	|	|	|	0.47
6.667	0.48	0.00	0.143	O	|I	|	|	|	0.49
6.750	0.49	0.00	0.146	O	|I	|	|	|	0.50
6.833	0.49	0.00	0.149	O	|I	|	|	|	0.51
6.917	0.49	0.00	0.153	O	|I	|	|	|	0.52
7.000	0.49	0.00	0.156	O	|I	|	|	|	0.53
7.083	0.49	0.00	0.159	O	|I	|	|	|	0.54

7.167	0.49	0.00	0.163	O	I				0.55
7.250	0.49	0.00	0.166	O	I				0.56
7.333	0.51	0.00	0.170	O	I				0.58
7.417	0.53	0.00	0.173	O	I				0.59
7.500	0.53	0.00	0.177	O	I				0.60
7.583	0.56	0.00	0.181	O	I				0.61
7.667	0.58	0.00	0.184	O	I				0.63
7.750	0.58	0.00	0.188	O	I				0.64
7.833	0.61	0.00	0.193	O	I				0.65
7.917	0.63	0.00	0.197	O	I				0.67
8.000	0.63	0.00	0.201	O	I				0.68
8.083	0.69	0.00	0.206	O	I				0.70
8.167	0.72	0.00	0.211	O	I				0.72
8.250	0.73	0.00	0.216	O	I				0.73
8.333	0.73	0.00	0.221	O	I				0.75
8.417	0.73	0.00	0.226	O	I				0.77
8.500	0.73	0.00	0.231	O	I				0.78
8.583	0.76	0.00	0.236	O	I				0.80
8.667	0.77	0.00	0.241	O	I				0.82
8.750	0.78	0.00	0.246	O	I				0.84
8.833	0.80	0.00	0.252	O	I				0.86
8.917	0.82	0.00	0.257	O	I				0.88
9.000	0.83	0.00	0.263	O	I				0.89
9.083	0.88	0.00	0.269	O	I				0.91
9.167	0.92	0.00	0.275	O	I				0.94
9.250	0.92	0.00	0.281	O	I				0.96
9.333	0.95	0.00	0.288	O	I				0.98
9.417	0.97	0.00	0.294	O	I				1.00
9.500	0.97	0.01	0.301	O	I				1.02
9.583	1.00	0.01	0.308	O	I				1.03
9.667	1.02	0.02	0.315	O	I				1.05
9.750	1.02	0.03	0.321	O	I				1.06
9.833	1.05	0.03	0.328	O	I				1.08
9.917	1.07	0.04	0.335	O	I				1.09
10.000	1.07	0.04	0.342	O	I				

1.11

10.083	0.88	0.05	0.349	O	|	I	|	1.13
10.167	0.75	0.05	0.354	|O	|	I |	|	1.14
10.250	0.73	0.06	0.359	|O	|	I |	|	1.15
10.333	0.73	0.06	0.363	|O	|	I |	|	1.16
10.417	0.73	0.07	0.368	|O	|	I |	|	1.17
10.500	0.73	0.07	0.372	|O	|	I |	|	1.18
10.583	0.87	0.07	0.377	|O	|	I	|	1.19
10.667	0.96	0.08	0.383	|O	|	| I	|	1.20
10.750	0.97	0.08	0.389	|O	|	| I	|	1.22
10.833	0.97	0.09	0.395	|O	|	| I	|	1.23
10.917	0.97	0.10	0.401	|O	|	| I	|	1.25
11.000	0.97	0.10	0.407	|O	|	| I	|	1.26
11.083	0.94	0.10	0.413	|O	|	| I	|	1.27
11.167	0.93	0.10	0.419	|O	|	|I	|	1.28
11.250	0.92	0.10	0.425	| O	|	|I	|	1.30
11.333	0.92	0.11	0.430	| O	|	|I	|	1.31
11.417	0.92	0.11	0.436	| O	|	|I	|	1.32
11.500	0.92	0.11	0.442	| O	|	|I	|	1.33
11.583	0.87	0.11	0.447	| O	|	I	|	1.34
11.667	0.83	0.11	0.452	| O	|	I	|	1.35
11.750	0.83	0.12	0.457	| O	|	I	|	1.37
11.833	0.85	0.12	0.462	| O	|	I	|	1.38
11.917	0.87	0.12	0.467	| O	|	I	|	1.39
12.000	0.87	0.12	0.472	| O	|	I	|	1.40
12.083	1.07	0.12	0.478	| O	|	| I	|	1.41
12.167	1.19	0.13	0.485	| O	|	| I|	|	1.43
12.250	1.21	0.13	0.492	| O	|	| I|	|	1.44
12.333	1.24	0.13	0.500	| O	|	| I	|	1.46
12.417	1.26	0.13	0.508	| O	|	| I	|	1.47
12.500	1.26	0.14	0.515	| O	|	| I	|	1.49
12.583	1.32	0.14	0.523	| O	|	| |I	|	1.51
12.667	1.35	0.15	0.532	| O	|	| | I	|	1.52
12.750	1.36	0.15	0.540	| O	|	| | I	|	1.54
12.833	1.39	0.16	0.548	| O	|	| | I	|	1.56
12.917	1.41	0.16	0.557	| O	|	| | I	|	1.57
13.000	1.41	0.17	0.565	| O	|	| | I	|	1.59
13.083	1.55	0.17	0.574	| O	|	| | I	|	1.61
13.167	1.64	0.18	0.584	| O	|	| | I|		1.63
13.250	1.65	0.19	0.594	| O	|	| | I		1.65
13.333	1.65	0.19	0.604	| O	|	| | I		1.67
13.417	1.65	0.20	0.614	| O	|	| | I		1.69
13.500	1.65	0.21	0.624	| O	|	| | I		1.71
13.583	1.35	0.21	0.633	| O	|	| | I	|	1.73
13.667	1.15	0.22	0.640	| O	|	| I |	|	1.74
13.750	1.12	0.22	0.647	| O	|	| I |	|	

1.76

13.833	1.12	0.22	0.653	O		I		1.77
13.917	1.12	0.22	0.659	O		I		1.78
14.000	1.12	0.23	0.665	O		I		1.79
14.083	1.23	0.23	0.672	O		I		1.81
14.167	1.30	0.23	0.679	O		I		1.82
14.250	1.31	0.23	0.686	O		I		1.83
14.333	1.28	0.24	0.693	O		I		1.85
14.417	1.27	0.24	0.700	O		I		1.86
14.500	1.26	0.24	0.708	O		I		1.88
14.583	1.26	0.24	0.715	O		I		1.89
14.667	1.26	0.25	0.722	O		I		1.90
14.750	1.26	0.25	0.729	O		I		1.92
14.833	1.23	0.25	0.735	O		I		1.93
14.917	1.22	0.25	0.742	O		I		1.95
15.000	1.21	0.26	0.749	O		I		1.96
15.083	1.19	0.26	0.755	O		I		1.97
15.167	1.17	0.26	0.762	O		I		1.98
15.250	1.17	0.26	0.768	O		I		2.00
15.333	1.14	0.27	0.774	O		I		2.01
15.417	1.12	0.27	0.780	O		I		2.02
15.500	1.12	0.27	0.786	O		I		2.03
15.583	1.01	0.27	0.791	O		I		2.04
15.667	0.93	0.27	0.796	O		I		2.05
15.750	0.92	0.27	0.800	O	I			2.06
15.833	0.92	0.27	0.805	O	I			2.07
15.917	0.92	0.28	0.809	O	I			2.08
16.000	0.92	0.28	0.814	O	I			2.08
16.083	0.51	0.28	0.817	O	I			2.09
16.167	0.24	0.28	0.818	IO				2.09
16.250	0.19	0.28	0.817	I O				2.09
16.333	0.19	0.28	0.817	I O				2.09
16.417	0.19	0.28	0.816	I O				2.09

16.500	0.19	0.28	0.815	I O				2.09
16.583	0.17	0.28	0.815	I O				2.09
16.667	0.15	0.28	0.814	I O				2.08
16.750	0.15	0.28	0.813	I O				2.08
16.833	0.15	0.28	0.812	I O				2.08
16.917	0.15	0.28	0.811	I O				2.08
17.000	0.15	0.28	0.810	I O				2.08
17.083	0.20	0.28	0.810	I O				2.08
17.167	0.24	0.28	0.809	IO				2.08
17.250	0.24	0.28	0.809	IO				2.07
17.333	0.24	0.28	0.809	IO				2.07
17.417	0.24	0.28	0.809	IO				2.07
17.500	0.24	0.28	0.808	IO				2.07
17.583	0.24	0.28	0.808	IO				2.07
17.667	0.24	0.28	0.808	IO				2.07
17.750	0.24	0.28	0.808	IO				2.07
17.833	0.22	0.27	0.807	IO				2.07
17.917	0.20	0.27	0.807	I O				2.07
18.000	0.19	0.27	0.806	I O				2.07
18.083	0.19	0.27	0.806	I O				2.07
18.167	0.19	0.27	0.805	I O				2.07
18.250	0.19	0.27	0.805	I O				2.07
18.333	0.19	0.27	0.804	I O				2.07
18.417	0.19	0.27	0.804	I O				2.06
18.500	0.19	0.27	0.803	I O				2.06
18.583	0.17	0.27	0.802	I O				2.06
18.667	0.15	0.27	0.802	I O				2.06
18.750	0.15	0.27	0.801	I O				2.06
18.833	0.12	0.27	0.800	I O				2.06
18.917	0.10	0.27	0.799	I O				2.06
19.000	0.10	0.27	0.797	I O				2.05
19.083	0.12	0.27	0.796	I O				2.05
19.167	0.14	0.27	0.795	I O				2.05
19.250	0.15	0.27	0.794	I O				2.05
19.333	0.17	0.27	0.794	I O				2.05
19.417	0.19	0.27	0.793	I O				2.04
19.500	0.19	0.27	0.793	I O				2.04
19.583	0.17	0.27	0.792	I O				2.04
19.667	0.15	0.27	0.791	I O				2.04
19.750	0.15	0.27	0.790	I O				2.04
19.833	0.12	0.27	0.789	I O				2.04
19.917	0.10	0.27	0.788	I O				2.04
20.000	0.10	0.27	0.787	I O				2.03
20.083	0.12	0.27	0.786	I O				2.03

20.167	0.14	0.27	0.785	| I O |	|	|	|	2.03
20.250	0.15	0.27	0.784	| I O |	|	|	|	2.03
20.333	0.15	0.27	0.783	| I O |	|	|	|	2.03
20.417	0.15	0.27	0.783	| I O |	|	|	|	2.02
20.500	0.15	0.27	0.782	| I O |	|	|	|	2.02
20.583	0.15	0.27	0.781	| I O |	|	|	|	2.02
20.667	0.15	0.27	0.780	| I O |	|	|	|	2.02
20.750	0.15	0.27	0.779	| I O |	|	|	|	2.02
20.833	0.12	0.27	0.778	| I O |	|	|	|	2.02
20.917	0.10	0.27	0.777	|I O |	|	|	|	2.01
21.000	0.10	0.27	0.776	|I O |	|	|	|	2.01
21.083	0.12	0.27	0.775	| I O |	|	|	|	2.01
21.167	0.14	0.27	0.774	| I O |	|	|	|	2.01
21.250	0.15	0.26	0.773	| I O |	|	|	|	2.01
21.333	0.12	0.26	0.772	| I O |	|	|	|	2.00
21.417	0.10	0.26	0.771	|I O |	|	|	|	2.00
21.500	0.10	0.26	0.770	|I O |	|	|	|	2.00
21.583	0.12	0.26	0.769	| I O |	|	|	|	2.00
21.667	0.14	0.26	0.768	| I O |	|	|	|	2.00
21.750	0.15	0.26	0.767	| I O |	|	|	|	1.99
21.833	0.12	0.26	0.766	| I O |	|	|	|	1.99
21.917	0.10	0.26	0.765	|I O |	|	|	|	1.99
22.000	0.10	0.26	0.764	|I O |	|	|	|	1.99
22.083	0.12	0.26	0.763	| I O |	|	|	|	1.99
22.167	0.14	0.26	0.762	| I O |	|	|	|	1.98
22.250	0.15	0.26	0.762	| I O |	|	|	|	1.98
22.333	0.12	0.26	0.761	| I O |	|	|	|	1.98
22.417	0.10	0.26	0.760	|I O |	|	|	|	1.98
22.500	0.10	0.26	0.758	|I O |	|	|	|	1.98
22.583	0.10	0.26	0.757	|I O |	|	|	|	1.98
22.667	0.10	0.26	0.756	|I O |	|	|	|	1.97
22.750	0.10	0.26	0.755	|I O |	|	|	|	1.97
22.833	0.10	0.26	0.754	|I O |	|	|	|	1.97
22.917	0.10	0.26	0.753	|I O |	|	|	|	1.97
23.000	0.10	0.26	0.752	|I O |	|	|	|	1.96
23.083	0.10	0.26	0.751	|I O |	|	|	|	1.96
23.167	0.10	0.26	0.750	|I O |	|	|	|	1.96
23.250	0.10	0.26	0.749	|I O |	|	|	|	1.96
23.333	0.10	0.26	0.747	|I O |	|	|	|	1.96

23.417	0.10	0.26	0.746	I	O				1.95
23.500	0.10	0.26	0.745	I	O				1.95
23.583	0.10	0.25	0.744	I	O				1.95
23.667	0.10	0.25	0.743	I	O				1.95
23.750	0.10	0.25	0.742	I	O				1.94
23.833	0.10	0.25	0.741	I	O				1.94
23.917	0.10	0.25	0.740	I	O				1.94
24.000	0.10	0.25	0.739	I	O				1.94
24.083	0.04	0.25	0.738	I	O				1.94
24.167	0.01	0.25	0.736	I	O				1.93
24.250	0.00	0.25	0.734	I	O				1.93
24.333	0.00	0.25	0.733	I	O				1.93
24.417	0.00	0.25	0.731	I	O				1.92
24.500	0.00	0.25	0.729	I	O				1.92
24.583	0.00	0.25	0.727	I	O				1.92
24.667	0.00	0.25	0.726	I	O				1.91
24.750	0.00	0.25	0.724	I	O				1.91
24.833	0.00	0.25	0.722	I	O				1.91
24.917	0.00	0.25	0.721	I	O				1.90
25.000	0.00	0.25	0.719	I	O				1.90
25.083	0.00	0.24	0.717	I	O				1.90
25.167	0.00	0.24	0.715	I	O				1.89
25.250	0.00	0.24	0.714	I	O				1.89
25.333	0.00	0.24	0.712	I	O				1.89
25.417	0.00	0.24	0.710	I	O				1.88
25.500	0.00	0.24	0.709	I	O				1.88
25.583	0.00	0.24	0.707	I	O				1.88
25.667	0.00	0.24	0.705	I	O				1.87
25.750	0.00	0.24	0.704	I	O				

1.87

25.833	0.00	0.24	0.702	I	O	|	|	|	|	1.87
25.917	0.00	0.24	0.700	I	O	|	|	|	|	1.86
26.000	0.00	0.24	0.699	I	O	|	|	|	|	1.86
26.083	0.00	0.24	0.697	I	O	|	|	|	|	1.86
26.167	0.00	0.24	0.696	I	O	|	|	|	|	1.85
26.250	0.00	0.24	0.694	I	O	|	|	|	|	1.85
26.333	0.00	0.24	0.692	I	O	|	|	|	|	1.85
26.417	0.00	0.24	0.691	I	O	|	|	|	|	1.84
26.500	0.00	0.23	0.689	I	O	|	|	|	|	1.84
26.583	0.00	0.23	0.687	I	O	|	|	|	|	1.84
26.667	0.00	0.23	0.686	I	O	|	|	|	|	1.83
26.750	0.00	0.23	0.684	I	O	|	|	|	|	1.83
26.833	0.00	0.23	0.683	I	O	|	|	|	|	1.83
26.917	0.00	0.23	0.681	I	O	|	|	|	|	1.82
27.000	0.00	0.23	0.679	I	O	|	|	|	|	1.82
27.083	0.00	0.23	0.678	I	O	|	|	|	|	1.82
27.167	0.00	0.23	0.676	I	O	|	|	|	|	1.82
27.250	0.00	0.23	0.675	I	O	|	|	|	|	1.81
27.333	0.00	0.23	0.673	I	O	|	|	|	|	1.81
27.417	0.00	0.23	0.672	I	O	|	|	|	|	1.81
27.500	0.00	0.23	0.670	I	O	|	|	|	|	1.80
27.583	0.00	0.23	0.668	I	O	|	|	|	|	1.80
27.667	0.00	0.23	0.667	I	O	|	|	|	|	1.80
27.750	0.00	0.23	0.665	I	O	|	|	|	|	1.79
27.833	0.00	0.23	0.664	I	O	|	|	|	|	1.79
27.917	0.00	0.22	0.662	I	O	|	|	|	|	1.79
28.000	0.00	0.22	0.661	I	O	|	|	|	|	1.78
28.083	0.00	0.22	0.659	I	O	|	|	|	|	1.78

28.167	0.00	0.22	0.658	I	O	|	|	|	|	1.78
28.250	0.00	0.22	0.656	I	O	|	|	|	|	1.78
28.333	0.00	0.22	0.654	I	O	|	|	|	|	1.77
28.417	0.00	0.22	0.653	I	O	|	|	|	|	1.77
28.500	0.00	0.22	0.651	I	O	|	|	|	|	1.77
28.583	0.00	0.22	0.650	I	O	|	|	|	|	1.76
28.667	0.00	0.22	0.648	I	O	|	|	|	|	1.76
28.750	0.00	0.22	0.647	I	O	|	|	|	|	1.76
28.833	0.00	0.22	0.645	I	O	|	|	|	|	1.75
28.917	0.00	0.22	0.644	I	O	|	|	|	|	1.75
29.000	0.00	0.22	0.642	I	O	|	|	|	|	1.75
29.083	0.00	0.22	0.641	I	O	|	|	|	|	1.75
29.167	0.00	0.22	0.639	I	O	|	|	|	|	1.74
29.250	0.00	0.21	0.638	I	O	|	|	|	|	1.74
29.333	0.00	0.21	0.636	I	O	|	|	|	|	1.74
29.417	0.00	0.21	0.635	I	O	|	|	|	|	1.73
29.500	0.00	0.21	0.633	I	O	|	|	|	|	1.73
29.583	0.00	0.21	0.632	I	O	|	|	|	|	1.73
29.667	0.00	0.21	0.631	I	O	|	|	|	|	1.72
29.750	0.00	0.21	0.629	I	O	|	|	|	|	1.72
29.833	0.00	0.21	0.628	I	O	|	|	|	|	1.72
29.917	0.00	0.21	0.626	I	O	|	|	|	|	1.72
30.000	0.00	0.21	0.625	I	O	|	|	|	|	1.71
30.083	0.00	0.21	0.623	I	O	|	|	|	|	1.71
30.167	0.00	0.20	0.622	I	O	|	|	|	|	1.71
30.250	0.00	0.20	0.621	I	O	|	|	|	|	1.70
30.333	0.00	0.20	0.619	I	O	|	|	|	|	1.70
30.417	0.00	0.20	0.618	I	O	|	|	|	|	1.70
30.500	0.00	0.20	0.616	I	O	|	|	|	|	

1.70

30.583	0.00	0.20	0.615	I	O	|	|	|	|	1.69
30.667	0.00	0.20	0.614	I	O	|	|	|	|	1.69
30.750	0.00	0.20	0.612	I	O	|	|	|	|	1.69
30.833	0.00	0.20	0.611	I	O	|	|	|	|	1.68
30.917	0.00	0.20	0.610	I	O	|	|	|	|	1.68
31.000	0.00	0.20	0.608	I	O	|	|	|	|	1.68
31.083	0.00	0.19	0.607	I	O	|	|	|	|	1.68
31.167	0.00	0.19	0.606	I	O	|	|	|	|	1.67
31.250	0.00	0.19	0.604	I	O	|	|	|	|	1.67
31.333	0.00	0.19	0.603	I	O	|	|	|	|	1.67
31.417	0.00	0.19	0.602	I	O	|	|	|	|	1.67
31.500	0.00	0.19	0.600	I	O	|	|	|	|	1.66
31.583	0.00	0.19	0.599	I	O	|	|	|	|	1.66
31.667	0.00	0.19	0.598	I	O	|	|	|	|	1.66
31.750	0.00	0.19	0.596	I	O	|	|	|	|	1.66
31.833	0.00	0.19	0.595	I	O	|	|	|	|	1.65
31.917	0.00	0.19	0.594	I	O	|	|	|	|	1.65
32.000	0.00	0.19	0.593	I	O	|	|	|	|	1.65
32.083	0.00	0.18	0.591	I	O	|	|	|	|	1.64
32.167	0.00	0.18	0.590	I	O	|	|	|	|	1.64
32.250	0.00	0.18	0.589	I	O	|	|	|	|	1.64
32.333	0.00	0.18	0.587	I	O	|	|	|	|	1.64
32.417	0.00	0.18	0.586	I	O	|	|	|	|	1.63
32.500	0.00	0.18	0.585	I	O	|	|	|	|	1.63
32.583	0.00	0.18	0.584	I	O	|	|	|	|	1.63
32.667	0.00	0.18	0.583	I	O	|	|	|	|	1.63
32.750	0.00	0.18	0.581	I	O	|	|	|	|	1.62
32.833	0.00	0.18	0.580	I	O	|	|	|	|	1.62

32.917	0.00	0.18	0.579	I	O	|	|	|	|	1.62
33.000	0.00	0.18	0.578	I	O	|	|	|	|	1.62
33.083	0.00	0.17	0.576	I	O	|	|	|	|	1.61
33.167	0.00	0.17	0.575	I	O	|	|	|	|	1.61
33.250	0.00	0.17	0.574	I	O	|	|	|	|	1.61
33.333	0.00	0.17	0.573	I	O	|	|	|	|	1.61
33.417	0.00	0.17	0.572	I	O	|	|	|	|	1.61
33.500	0.00	0.17	0.570	I	O	|	|	|	|	1.60
33.583	0.00	0.17	0.569	I	O	|	|	|	|	1.60
33.667	0.00	0.17	0.568	I	O	|	|	|	|	1.60
33.750	0.00	0.17	0.567	I	O	|	|	|	|	1.60
33.833	0.00	0.17	0.566	I	O	|	|	|	|	1.59
33.917	0.00	0.17	0.565	I	O	|	|	|	|	1.59
34.000	0.00	0.17	0.564	I	O	|	|	|	|	1.59
34.083	0.00	0.17	0.562	I	O	|	|	|	|	1.59
34.167	0.00	0.16	0.561	I	O	|	|	|	|	1.58
34.250	0.00	0.16	0.560	I	O	|	|	|	|	1.58
34.333	0.00	0.16	0.559	I	O	|	|	|	|	1.58
34.417	0.00	0.16	0.558	I	O	|	|	|	|	1.58
34.500	0.00	0.16	0.557	I	O	|	|	|	|	1.57
34.583	0.00	0.16	0.556	I	O	|	|	|	|	1.57
34.667	0.00	0.16	0.555	I	O	|	|	|	|	1.57
34.750	0.00	0.16	0.553	I	O	|	|	|	|	1.57
34.833	0.00	0.16	0.552	I	O	|	|	|	|	1.57
34.917	0.00	0.16	0.551	I	O	|	|	|	|	1.56
35.000	0.00	0.16	0.550	I	O	|	|	|	|	1.56
35.083	0.00	0.16	0.549	I	O	|	|	|	|	1.56
35.167	0.00	0.16	0.548	I	O	|	|	|	|	1.56
35.250	0.00	0.16	0.547	I	O	|	|	|	|	

1.55

35.333	0.00	0.15	0.546	I O	|	|	|	1.55
35.417	0.00	0.15	0.545	I O	|	|	|	1.55
35.500	0.00	0.15	0.544	I O	|	|	|	1.55
35.583	0.00	0.15	0.543	I O	|	|	|	1.55
35.667	0.00	0.15	0.542	I O	|	|	|	1.54
35.750	0.00	0.15	0.541	I O	|	|	|	1.54
35.833	0.00	0.15	0.540	I O	|	|	|	1.54
35.917	0.00	0.15	0.538	I O	|	|	|	1.54
36.000	0.00	0.15	0.537	I O	|	|	|	1.54
36.083	0.00	0.15	0.536	I O	|	|	|	1.53
36.167	0.00	0.15	0.535	I O	|	|	|	1.53
36.250	0.00	0.15	0.534	I O	|	|	|	1.53
36.333	0.00	0.15	0.533	I O	|	|	|	1.53
36.417	0.00	0.15	0.532	I O	|	|	|	1.53
36.500	0.00	0.15	0.531	I O	|	|	|	1.52
36.583	0.00	0.14	0.530	I O	|	|	|	1.52
36.667	0.00	0.14	0.529	I O	|	|	|	1.52
36.750	0.00	0.14	0.528	I O	|	|	|	1.52
36.833	0.00	0.14	0.527	I O	|	|	|	1.52
36.917	0.00	0.14	0.526	I O	|	|	|	1.51
37.000	0.00	0.14	0.525	I O	|	|	|	1.51
37.083	0.00	0.14	0.524	I O	|	|	|	1.51
37.167	0.00	0.14	0.524	I O	|	|	|	1.51
37.250	0.00	0.14	0.523	I O	|	|	|	1.51
37.333	0.00	0.14	0.522	I O	|	|	|	1.50
37.417	0.00	0.14	0.521	I O	|	|	|	1.50
37.500	0.00	0.14	0.520	I O	|	|	|	1.50
37.583	0.00	0.14	0.519	I O	|	|	|	1.50
37.667	0.00	0.14	0.518	I O	|	|	|	1.50
37.750	0.00	0.14	0.517	I O	|	|	|	1.49
37.833	0.00	0.14	0.516	I O	|	|	|	1.49
37.917	0.00	0.14	0.515	I O	|	|	|	1.49
38.000	0.00	0.14	0.514	I O	|	|	|	1.49
38.083	0.00	0.14	0.513	I O	|	|	|	1.49
38.167	0.00	0.14	0.512	I O	|	|	|	1.48
38.250	0.00	0.13	0.511	I O	|	|	|	1.48
38.333	0.00	0.13	0.510	I O	|	|	|	1.48
38.417	0.00	0.13	0.509	I O	|	|	|	1.48
38.500	0.00	0.13	0.508	I O	|	|	|	1.48
38.583	0.00	0.13	0.508	I O	|	|	|	1.47
38.667	0.00	0.13	0.507	I O	|	|	|	1.47
38.750	0.00	0.13	0.506	I O	|	|	|	1.47
38.833	0.00	0.13	0.505	I O	|	|	|	1.47
38.917	0.00	0.13	0.504	I O	|	|	|	1.47
39.000	0.00	0.13	0.503	I O	|	|	|	1.46
39.083	0.00	0.13	0.502	I O	|	|	|	1.46
39.167	0.00	0.13	0.501	I O	|	|	|	1.46
39.250	0.00	0.13	0.500	I O	|	|	|	1.46
39.333	0.00	0.13	0.499	I O	|	|	|	1.46
39.417	0.00	0.13	0.498	I O	|	|	|	1.45
39.500	0.00	0.13	0.498	I O	|	|	|	1.45
39.583	0.00	0.13	0.497	I O	|	|	|	1.45
39.667	0.00	0.13	0.496	I O	|	|	|	1.45
39.750	0.00	0.13	0.495	I O	|	|	|	1.45
39.833	0.00	0.13	0.494	I O	|	|	|	1.44

39.917	0.00	0.13	0.493	I	O	|	|	|	1.44
40.000	0.00	0.13	0.492	I	O	|	|	|	1.44
40.083	0.00	0.13	0.491	I	O	|	|	|	1.44
40.167	0.00	0.13	0.490	I	O	|	|	|	1.44
40.250	0.00	0.13	0.490	I	O	|	|	|	1.43
40.333	0.00	0.13	0.489	I	O	|	|	|	1.43
40.417	0.00	0.13	0.488	I	O	|	|	|	1.43
40.500	0.00	0.13	0.487	I	O	|	|	|	1.43
40.583	0.00	0.13	0.486	I	O	|	|	|	1.43
40.667	0.00	0.13	0.485	I	O	|	|	|	1.43
40.750	0.00	0.13	0.484	I	O	|	|	|	1.42
40.833	0.00	0.13	0.483	I	O	|	|	|	1.42
40.917	0.00	0.12	0.483	I	O	|	|	|	1.42
41.000	0.00	0.12	0.482	I	O	|	|	|	1.42
41.083	0.00	0.12	0.481	I	O	|	|	|	1.42
41.167	0.00	0.12	0.480	I	O	|	|	|	1.41
41.250	0.00	0.12	0.479	I	O	|	|	|	1.41
41.333	0.00	0.12	0.478	I	O	|	|	|	1.41
41.417	0.00	0.12	0.477	I	O	|	|	|	1.41
41.500	0.00	0.12	0.477	I	O	|	|	|	1.41
41.583	0.00	0.12	0.476	I	O	|	|	|	1.41
41.667	0.00	0.12	0.475	I	O	|	|	|	1.40
41.750	0.00	0.12	0.474	I	O	|	|	|	1.40
41.833	0.00	0.12	0.473	I	O	|	|	|	1.40
41.917	0.00	0.12	0.472	I	O	|	|	|	1.40
42.000	0.00	0.12	0.472	I	O	|	|	|	1.40
42.083	0.00	0.12	0.471	I	O	|	|	|	1.39
42.167	0.00	0.12	0.470	I	O	|	|	|	1.39
42.250	0.00	0.12	0.469	I	O	|	|	|	1.39
42.333	0.00	0.12	0.468	I	O	|	|	|	1.39
42.417	0.00	0.12	0.467	I	O	|	|	|	1.39
42.500	0.00	0.12	0.467	I	O	|	|	|	1.39
42.583	0.00	0.12	0.466	I	O	|	|	|	1.38
42.667	0.00	0.12	0.465	I	O	|	|	|	1.38
42.750	0.00	0.12	0.464	I	O	|	|	|	1.38
42.833	0.00	0.12	0.463	I	O	|	|	|	1.38
42.917	0.00	0.12	0.463	I	O	|	|	|	1.38
43.000	0.00	0.12	0.462	I	O	|	|	|	1.38
43.083	0.00	0.12	0.461	I	O	|	|	|	1.37
43.167	0.00	0.12	0.460	I	O	|	|	|	1.37
43.250	0.00	0.12	0.459	I	O	|	|	|	1.37
43.333	0.00	0.12	0.459	I	O	|	|	|	1.37
43.417	0.00	0.12	0.458	I	O	|	|	|	1.37
43.500	0.00	0.12	0.457	I	O	|	|	|	1.37
43.583	0.00	0.12	0.456	I	O	|	|	|	1.36
43.667	0.00	0.12	0.455	I	O	|	|	|	1.36
43.750	0.00	0.12	0.455	I	O	|	|	|	1.36
43.833	0.00	0.11	0.454	I	O	|	|	|	1.36
43.917	0.00	0.11	0.453	I	O	|	|	|	1.36
44.000	0.00	0.11	0.452	I	O	|	|	|	1.36
44.083	0.00	0.11	0.451	I	O	|	|	|	1.35
44.167	0.00	0.11	0.451	I	O	|	|	|	1.35
44.250	0.00	0.11	0.450	I	O	|	|	|	1.35
44.333	0.00	0.11	0.449	I	O	|	|	|	1.35
44.417	0.00	0.11	0.448	I	O	|	|	|	1.35
44.500	0.00	0.11	0.447	I	O	|	|	|	1.35
44.583	0.00	0.11	0.447	I	O	|	|	|	1.34

44.667	0.00	0.11	0.446	I	O	|	|	|	| 1.34
44.750	0.00	0.11	0.445	I	O	|	|	|	| 1.34
44.833	0.00	0.11	0.444	I	O	|	|	|	| 1.34
44.917	0.00	0.11	0.444	I	O	|	|	|	| 1.34
45.000	0.00	0.11	0.443	I	O	|	|	|	| 1.34
45.083	0.00	0.11	0.442	I	O	|	|	|	| 1.33
45.167	0.00	0.11	0.441	I	O	|	|	|	| 1.33
45.250	0.00	0.11	0.441	I	O	|	|	|	| 1.33
45.333	0.00	0.11	0.440	I	O	|	|	|	| 1.33
45.417	0.00	0.11	0.439	I	O	|	|	|	| 1.33
45.500	0.00	0.11	0.438	I	O	|	|	|	| 1.33
45.583	0.00	0.11	0.438	I	O	|	|	|	| 1.32
45.667	0.00	0.11	0.437	I	O	|	|	|	| 1.32
45.750	0.00	0.11	0.436	I	O	|	|	|	| 1.32
45.833	0.00	0.11	0.435	I	O	|	|	|	| 1.32
45.917	0.00	0.11	0.435	I	O	|	|	|	| 1.32
46.000	0.00	0.11	0.434	I	O	|	|	|	| 1.32
46.083	0.00	0.11	0.433	I	O	|	|	|	| 1.31
46.167	0.00	0.11	0.432	I	O	|	|	|	| 1.31
46.250	0.00	0.11	0.432	I	O	|	|	|	| 1.31
46.333	0.00	0.11	0.431	I	O	|	|	|	| 1.31
46.417	0.00	0.11	0.430	I	O	|	|	|	| 1.31
46.500	0.00	0.11	0.429	I	O	|	|	|	| 1.31
46.583	0.00	0.11	0.429	I	O	|	|	|	| 1.30
46.667	0.00	0.11	0.428	I	O	|	|	|	| 1.30
46.750	0.00	0.11	0.427	I	O	|	|	|	| 1.30
46.833	0.00	0.11	0.426	I	O	|	|	|	| 1.30
46.917	0.00	0.10	0.426	I	O	|	|	|	| 1.30
47.000	0.00	0.10	0.425	I	O	|	|	|	| 1.30
47.083	0.00	0.10	0.424	I	O	|	|	|	| 1.30
47.167	0.00	0.10	0.424	I	O	|	|	|	| 1.29
47.250	0.00	0.10	0.423	I	O	|	|	|	| 1.29
47.333	0.00	0.10	0.422	I	O	|	|	|	| 1.29
47.417	0.00	0.10	0.421	I	O	|	|	|	| 1.29
47.500	0.00	0.10	0.421	I	O	|	|	|	| 1.29
47.583	0.00	0.10	0.420	IO		|	|	|	| 1.29
47.667	0.00	0.10	0.419	IO		|	|	|	| 1.28
47.750	0.00	0.10	0.419	IO		|	|	|	| 1.28
47.833	0.00	0.10	0.418	IO		|	|	|	| 1.28
47.917	0.00	0.10	0.417	IO		|	|	|	| 1.28
48.000	0.00	0.10	0.416	IO		|	|	|	| 1.28
48.083	0.00	0.10	0.416	IO		|	|	|	| 1.28
48.167	0.00	0.10	0.415	IO		|	|	|	| 1.28
48.250	0.00	0.10	0.414	IO		|	|	|	| 1.27
48.333	0.00	0.10	0.414	IO		|	|	|	| 1.27
48.417	0.00	0.10	0.413	IO		|	|	|	| 1.27

48.500	0.00	0.10	0.412	IO	|	|	|	1.27
48.583	0.00	0.10	0.412	IO	|	|	|	1.27
48.667	0.00	0.10	0.411	IO	|	|	|	1.27
48.750	0.00	0.10	0.410	IO	|	|	|	1.27
48.833	0.00	0.10	0.410	IO	|	|	|	1.26
48.917	0.00	0.10	0.409	IO	|	|	|	1.26
49.000	0.00	0.10	0.408	IO	|	|	|	1.26
49.083	0.00	0.10	0.408	IO	|	|	|	1.26
49.167	0.00	0.10	0.407	IO	|	|	|	1.26
49.250	0.00	0.10	0.406	IO	|	|	|	1.26
49.333	0.00	0.10	0.406	IO	|	|	|	1.26
49.417	0.00	0.10	0.405	IO	|	|	|	1.25
49.500	0.00	0.10	0.404	IO	|	|	|	1.25
49.583	0.00	0.10	0.403	IO	|	|	|	1.25
49.667	0.00	0.10	0.403	IO	|	|	|	1.25
49.750	0.00	0.10	0.402	IO	|	|	|	1.25
49.833	0.00	0.10	0.401	IO	|	|	|	1.25
49.917	0.00	0.10	0.401	IO	|	|	|	1.25
50.000	0.00	0.09	0.400	IO	|	|	|	1.24
50.083	0.00	0.09	0.400	IO	|	|	|	1.24
50.167	0.00	0.09	0.399	IO	|	|	|	1.24
50.250	0.00	0.09	0.398	IO	|	|	|	1.24
50.333	0.00	0.09	0.398	IO	|	|	|	1.24
50.417	0.00	0.09	0.397	IO	|	|	|	1.24
50.500	0.00	0.09	0.396	IO	|	|	|	1.23
50.583	0.00	0.09	0.396	IO	|	|	|	1.23
50.667	0.00	0.09	0.395	IO	|	|	|	1.23
50.750	0.00	0.09	0.394	IO	|	|	|	1.23
50.833	0.00	0.09	0.394	IO	|	|	|	

1.23

50.917	0.00	0.09	0.393	IO	|	|	|	1.23
51.000	0.00	0.09	0.393	IO	|	|	|	1.23
51.083	0.00	0.09	0.392	IO	|	|	|	1.22
51.167	0.00	0.09	0.391	IO	|	|	|	1.22
51.250	0.00	0.09	0.391	IO	|	|	|	1.22
51.333	0.00	0.09	0.390	IO	|	|	|	1.22
51.417	0.00	0.09	0.390	IO	|	|	|	1.22
51.500	0.00	0.08	0.389	IO	|	|	|	1.22
51.583	0.00	0.08	0.389	IO	|	|	|	1.22
51.667	0.00	0.08	0.388	IO	|	|	|	1.22
51.750	0.00	0.08	0.387	IO	|	|	|	1.21
51.833	0.00	0.08	0.387	IO	|	|	|	1.21
51.917	0.00	0.08	0.386	IO	|	|	|	1.21
52.000	0.00	0.08	0.386	IO	|	|	|	1.21
52.083	0.00	0.08	0.385	IO	|	|	|	1.21
52.167	0.00	0.08	0.385	IO	|	|	|	1.21
52.250	0.00	0.08	0.384	IO	|	|	|	1.21
52.333	0.00	0.08	0.383	IO	|	|	|	1.21
52.417	0.00	0.08	0.383	IO	|	|	|	1.20
52.500	0.00	0.08	0.382	IO	|	|	|	1.20
52.583	0.00	0.08	0.382	IO	|	|	|	1.20
52.667	0.00	0.08	0.381	IO	|	|	|	1.20
52.750	0.00	0.08	0.381	IO	|	|	|	1.20
52.833	0.00	0.08	0.380	IO	|	|	|	1.20
52.917	0.00	0.08	0.380	IO	|	|	|	1.20
53.000	0.00	0.08	0.379	IO	|	|	|	1.20
53.083	0.00	0.08	0.379	IO	|	|	|	1.19
53.167	0.00	0.08	0.378	IO	|	|	|	1.19

53.250	0.00	0.07	0.378	IO	|	|	|	1.19
53.333	0.00	0.07	0.377	IO	|	|	|	1.19
53.417	0.00	0.07	0.377	IO	|	|	|	1.19
53.500	0.00	0.07	0.376	IO	|	|	|	1.19
53.583	0.00	0.07	0.376	IO	|	|	|	1.19
53.667	0.00	0.07	0.375	IO	|	|	|	1.19
53.750	0.00	0.07	0.375	IO	|	|	|	1.18
53.833	0.00	0.07	0.374	IO	|	|	|	1.18
53.917	0.00	0.07	0.374	IO	|	|	|	1.18
54.000	0.00	0.07	0.373	IO	|	|	|	1.18
54.083	0.00	0.07	0.373	IO	|	|	|	1.18
54.167	0.00	0.07	0.372	IO	|	|	|	1.18
54.250	0.00	0.07	0.372	IO	|	|	|	1.18
54.333	0.00	0.07	0.371	IO	|	|	|	1.18
54.417	0.00	0.07	0.371	IO	|	|	|	1.18
54.500	0.00	0.07	0.370	IO	|	|	|	1.17
54.583	0.00	0.07	0.370	IO	|	|	|	1.17
54.667	0.00	0.07	0.369	IO	|	|	|	1.17
54.750	0.00	0.07	0.369	IO	|	|	|	1.17
54.833	0.00	0.07	0.368	IO	|	|	|	1.17
54.917	0.00	0.07	0.368	IO	|	|	|	1.17
55.000	0.00	0.07	0.367	IO	|	|	|	1.17
55.083	0.00	0.07	0.367	IO	|	|	|	1.17
55.167	0.00	0.06	0.367	IO	|	|	|	1.17
55.250	0.00	0.06	0.366	IO	|	|	|	1.17
55.333	0.00	0.06	0.366	IO	|	|	|	1.16
55.417	0.00	0.06	0.365	IO	|	|	|	1.16
55.500	0.00	0.06	0.365	IO	|	|	|	1.16
55.583	0.00	0.06	0.364	IO	|	|	|	

1.16

55.667	0.00	0.06	0.364	IO	|	|	|	1.16
55.750	0.00	0.06	0.363	IO	|	|	|	1.16
55.833	0.00	0.06	0.363	IO	|	|	|	1.16
55.917	0.00	0.06	0.363	IO	|	|	|	1.16
56.000	0.00	0.06	0.362	IO	|	|	|	1.16
56.083	0.00	0.06	0.362	IO	|	|	|	1.16
56.167	0.00	0.06	0.361	IO	|	|	|	1.15
56.250	0.00	0.06	0.361	IO	|	|	|	1.15
56.333	0.00	0.06	0.361	IO	|	|	|	1.15
56.417	0.00	0.06	0.360	IO	|	|	|	1.15
56.500	0.00	0.06	0.360	IO	|	|	|	1.15
56.583	0.00	0.06	0.359	IO	|	|	|	1.15
56.667	0.00	0.06	0.359	IO	|	|	|	1.15
56.750	0.00	0.06	0.359	IO	|	|	|	1.15
56.833	0.00	0.06	0.358	IO	|	|	|	1.15
56.917	0.00	0.06	0.358	IO	|	|	|	1.15
57.000	0.00	0.06	0.357	IO	|	|	|	1.15
57.083	0.00	0.06	0.357	IO	|	|	|	1.14
57.167	0.00	0.06	0.357	IO	|	|	|	1.14
57.250	0.00	0.06	0.356	IO	|	|	|	1.14
57.333	0.00	0.06	0.356	IO	|	|	|	1.14
57.417	0.00	0.06	0.355	IO	|	|	|	1.14
57.500	0.00	0.05	0.355	IO	|	|	|	1.14
57.583	0.00	0.05	0.355	IO	|	|	|	1.14
57.667	0.00	0.05	0.354	IO	|	|	|	1.14
57.750	0.00	0.05	0.354	IO	|	|	|	1.14
57.833	0.00	0.05	0.354	IO	|	|	|	1.14
57.917	0.00	0.05	0.353	IO	|	|	|	1.14

58.000	0.00	0.05	0.353	IO					1.13
58.083	0.00	0.05	0.352	IO					1.13
58.167	0.00	0.05	0.352	IO					1.13
58.250	0.00	0.05	0.352	IO					1.13
58.333	0.00	0.05	0.351	O					1.13
58.417	0.00	0.05	0.351	O					1.13
58.500	0.00	0.05	0.351	O					1.13
58.583	0.00	0.05	0.350	O					1.13
58.667	0.00	0.05	0.350	O					1.13
58.750	0.00	0.05	0.350	O					1.13
58.833	0.00	0.05	0.349	O					1.13
58.917	0.00	0.05	0.349	O					1.13
59.000	0.00	0.05	0.349	O					1.13
59.083	0.00	0.05	0.348	O					1.12
59.167	0.00	0.05	0.348	O					1.12
59.250	0.00	0.05	0.348	O					1.12
59.333	0.00	0.05	0.347	O					1.12
59.417	0.00	0.05	0.347	O					1.12
59.500	0.00	0.05	0.347	O					1.12
59.583	0.00	0.05	0.346	O					1.12
59.667	0.00	0.05	0.346	O					1.12
59.750	0.00	0.05	0.346	O					1.12
59.833	0.00	0.05	0.345	O					1.12
59.917	0.00	0.05	0.345	O					1.12
60.000	0.00	0.05	0.345	O					1.12
60.083	0.00	0.05	0.344	O					1.12
60.167	0.00	0.05	0.344	O					1.11
60.250	0.00	0.04	0.344	O					1.11
60.333	0.00	0.04	0.343	O					

1.11

60.417	0.00	0.04	0.343	O	|	|	|	|	1.11
60.500	0.00	0.04	0.343	O	|	|	|	|	1.11
60.583	0.00	0.04	0.343	O	|	|	|	|	1.11
60.667	0.00	0.04	0.342	O	|	|	|	|	1.11
60.750	0.00	0.04	0.342	O	|	|	|	|	1.11
60.833	0.00	0.04	0.342	O	|	|	|	|	1.11
60.917	0.00	0.04	0.341	O	|	|	|	|	1.11
61.000	0.00	0.04	0.341	O	|	|	|	|	1.11
61.083	0.00	0.04	0.341	O	|	|	|	|	1.11
61.167	0.00	0.04	0.340	O	|	|	|	|	1.11
61.250	0.00	0.04	0.340	O	|	|	|	|	1.11
61.333	0.00	0.04	0.340	O	|	|	|	|	1.11
61.417	0.00	0.04	0.340	O	|	|	|	|	1.10
61.500	0.00	0.04	0.339	O	|	|	|	|	1.10
61.583	0.00	0.04	0.339	O	|	|	|	|	1.10
61.667	0.00	0.04	0.339	O	|	|	|	|	1.10
61.750	0.00	0.04	0.338	O	|	|	|	|	1.10
61.833	0.00	0.04	0.338	O	|	|	|	|	1.10
61.917	0.00	0.04	0.338	O	|	|	|	|	1.10
62.000	0.00	0.04	0.338	O	|	|	|	|	1.10
62.083	0.00	0.04	0.337	O	|	|	|	|	1.10
62.167	0.00	0.04	0.337	O	|	|	|	|	1.10
62.250	0.00	0.04	0.337	O	|	|	|	|	1.10
62.333	0.00	0.04	0.337	O	|	|	|	|	1.10
62.417	0.00	0.04	0.336	O	|	|	|	|	1.10
62.500	0.00	0.04	0.336	O	|	|	|	|	1.10
62.583	0.00	0.04	0.336	O	|	|	|	|	1.10
62.667	0.00	0.04	0.336	O	|	|	|	|	1.10

62.750	0.00	0.04	0.335	O	|	|	|	|	1.09
62.833	0.00	0.04	0.335	O	|	|	|	|	1.09
62.917	0.00	0.04	0.335	O	|	|	|	|	1.09
63.000	0.00	0.04	0.335	O	|	|	|	|	1.09
63.083	0.00	0.04	0.334	O	|	|	|	|	1.09
63.167	0.00	0.04	0.334	O	|	|	|	|	1.09
63.250	0.00	0.04	0.334	O	|	|	|	|	1.09
63.333	0.00	0.04	0.334	O	|	|	|	|	1.09
63.417	0.00	0.04	0.333	O	|	|	|	|	1.09
63.500	0.00	0.04	0.333	O	|	|	|	|	1.09
63.583	0.00	0.04	0.333	O	|	|	|	|	1.09
63.667	0.00	0.03	0.333	O	|	|	|	|	1.09
63.750	0.00	0.03	0.332	O	|	|	|	|	1.09
63.833	0.00	0.03	0.332	O	|	|	|	|	1.09
63.917	0.00	0.03	0.332	O	|	|	|	|	1.09
64.000	0.00	0.03	0.332	O	|	|	|	|	1.09
64.083	0.00	0.03	0.331	O	|	|	|	|	1.09
64.167	0.00	0.03	0.331	O	|	|	|	|	1.09
64.250	0.00	0.03	0.331	O	|	|	|	|	1.08
64.333	0.00	0.03	0.331	O	|	|	|	|	1.08
64.417	0.00	0.03	0.330	O	|	|	|	|	1.08
64.500	0.00	0.03	0.330	O	|	|	|	|	1.08
64.583	0.00	0.03	0.330	O	|	|	|	|	1.08
64.667	0.00	0.03	0.330	O	|	|	|	|	1.08
64.750	0.00	0.03	0.330	O	|	|	|	|	1.08
64.833	0.00	0.03	0.329	O	|	|	|	|	1.08
64.917	0.00	0.03	0.329	O	|	|	|	|	1.08
65.000	0.00	0.03	0.329	O	|	|	|	|	1.08
65.083	0.00	0.03	0.329	O	|	|	|	|	

1.08

65.167	0.00	0.03	0.328	O	|	|	|	1.08
65.250	0.00	0.03	0.328	O	|	|	|	1.08
65.333	0.00	0.03	0.328	O	|	|	|	1.08
65.417	0.00	0.03	0.328	O	|	|	|	1.08
65.500	0.00	0.03	0.328	O	|	|	|	1.08
65.583	0.00	0.03	0.327	O	|	|	|	1.08
65.667	0.00	0.03	0.327	O	|	|	|	1.08
65.750	0.00	0.03	0.327	O	|	|	|	1.08
65.833	0.00	0.03	0.327	O	|	|	|	1.08
65.917	0.00	0.03	0.327	O	|	|	|	1.07
66.000	0.00	0.03	0.326	O	|	|	|	1.07
66.083	0.00	0.03	0.326	O	|	|	|	1.07
66.167	0.00	0.03	0.326	O	|	|	|	1.07
66.250	0.00	0.03	0.326	O	|	|	|	1.07
66.333	0.00	0.03	0.326	O	|	|	|	1.07
66.417	0.00	0.03	0.325	O	|	|	|	1.07
66.500	0.00	0.03	0.325	O	|	|	|	1.07
66.583	0.00	0.03	0.325	O	|	|	|	1.07
66.667	0.00	0.03	0.325	O	|	|	|	1.07
66.750	0.00	0.03	0.325	O	|	|	|	1.07
66.833	0.00	0.03	0.324	O	|	|	|	1.07
66.917	0.00	0.03	0.324	O	|	|	|	1.07
67.000	0.00	0.03	0.324	O	|	|	|	1.07
67.083	0.00	0.03	0.324	O	|	|	|	1.07
67.167	0.00	0.03	0.324	O	|	|	|	1.07
67.250	0.00	0.03	0.323	O	|	|	|	1.07
67.333	0.00	0.03	0.323	O	|	|	|	1.07
67.417	0.00	0.03	0.323	O	|	|	|	1.07

67.500	0.00	0.03	0.323	O	|	|	|	|	1.07
67.583	0.00	0.03	0.323	O	|	|	|	|	1.07
67.667	0.00	0.03	0.323	O	|	|	|	|	1.07
67.750	0.00	0.03	0.322	O	|	|	|	|	1.07
67.833	0.00	0.03	0.322	O	|	|	|	|	1.06
67.917	0.00	0.03	0.322	O	|	|	|	|	1.06
68.000	0.00	0.03	0.322	O	|	|	|	|	1.06
68.083	0.00	0.03	0.322	O	|	|	|	|	1.06
68.167	0.00	0.03	0.321	O	|	|	|	|	1.06
68.250	0.00	0.03	0.321	O	|	|	|	|	1.06
68.333	0.00	0.02	0.321	O	|	|	|	|	1.06
68.417	0.00	0.02	0.321	O	|	|	|	|	1.06
68.500	0.00	0.02	0.321	O	|	|	|	|	1.06
68.583	0.00	0.02	0.321	O	|	|	|	|	1.06
68.667	0.00	0.02	0.320	O	|	|	|	|	1.06
68.750	0.00	0.02	0.320	O	|	|	|	|	1.06
68.833	0.00	0.02	0.320	O	|	|	|	|	1.06
68.917	0.00	0.02	0.320	O	|	|	|	|	1.06
69.000	0.00	0.02	0.320	O	|	|	|	|	1.06
69.083	0.00	0.02	0.320	O	|	|	|	|	1.06
69.167	0.00	0.02	0.319	O	|	|	|	|	1.06
69.250	0.00	0.02	0.319	O	|	|	|	|	1.06
69.333	0.00	0.02	0.319	O	|	|	|	|	1.06
69.417	0.00	0.02	0.319	O	|	|	|	|	1.06
69.500	0.00	0.02	0.319	O	|	|	|	|	1.06
69.583	0.00	0.02	0.319	O	|	|	|	|	1.06
69.667	0.00	0.02	0.319	O	|	|	|	|	1.06
69.750	0.00	0.02	0.318	O	|	|	|	|	1.06
69.833	0.00	0.02	0.318	O	|	|	|	|	

1.06

69.917	0.00	0.02	0.318	O	|	|	|	|	1.06
70.000	0.00	0.02	0.318	O	|	|	|	|	1.05
70.083	0.00	0.02	0.318	O	|	|	|	|	1.05
70.167	0.00	0.02	0.318	O	|	|	|	|	1.05
70.250	0.00	0.02	0.317	O	|	|	|	|	1.05
70.333	0.00	0.02	0.317	O	|	|	|	|	1.05
70.417	0.00	0.02	0.317	O	|	|	|	|	1.05
70.500	0.00	0.02	0.317	O	|	|	|	|	1.05
70.583	0.00	0.02	0.317	O	|	|	|	|	1.05
70.667	0.00	0.02	0.317	O	|	|	|	|	1.05
70.750	0.00	0.02	0.317	O	|	|	|	|	1.05
70.833	0.00	0.02	0.316	O	|	|	|	|	1.05
70.917	0.00	0.02	0.316	O	|	|	|	|	1.05
71.000	0.00	0.02	0.316	O	|	|	|	|	1.05
71.083	0.00	0.02	0.316	O	|	|	|	|	1.05
71.167	0.00	0.02	0.316	O	|	|	|	|	1.05
71.250	0.00	0.02	0.316	O	|	|	|	|	1.05
71.333	0.00	0.02	0.316	O	|	|	|	|	1.05
71.417	0.00	0.02	0.315	O	|	|	|	|	1.05
71.500	0.00	0.02	0.315	O	|	|	|	|	1.05
71.583	0.00	0.02	0.315	O	|	|	|	|	1.05
71.667	0.00	0.02	0.315	O	|	|	|	|	1.05
71.750	0.00	0.02	0.315	O	|	|	|	|	1.05
71.833	0.00	0.02	0.315	O	|	|	|	|	1.05
71.917	0.00	0.02	0.315	O	|	|	|	|	1.05
72.000	0.00	0.02	0.315	O	|	|	|	|	1.05
72.083	0.00	0.02	0.314	O	|	|	|	|	1.05
72.167	0.00	0.02	0.314	O	|	|	|	|	1.05

72.250	0.00	0.02	0.314	O	|	|	|	|	1.05
72.333	0.00	0.02	0.314	O	|	|	|	|	1.05
72.417	0.00	0.02	0.314	O	|	|	|	|	1.05
72.500	0.00	0.02	0.314	O	|	|	|	|	1.05
72.583	0.00	0.02	0.314	O	|	|	|	|	1.04
72.667	0.00	0.02	0.313	O	|	|	|	|	1.04
72.750	0.00	0.02	0.313	O	|	|	|	|	1.04
72.833	0.00	0.02	0.313	O	|	|	|	|	1.04
72.917	0.00	0.02	0.313	O	|	|	|	|	1.04
73.000	0.00	0.02	0.313	O	|	|	|	|	1.04
73.083	0.00	0.02	0.313	O	|	|	|	|	1.04
73.167	0.00	0.02	0.313	O	|	|	|	|	1.04
73.250	0.00	0.02	0.313	O	|	|	|	|	1.04
73.333	0.00	0.02	0.313	O	|	|	|	|	1.04
73.417	0.00	0.02	0.312	O	|	|	|	|	1.04
73.500	0.00	0.02	0.312	O	|	|	|	|	1.04
73.583	0.00	0.02	0.312	O	|	|	|	|	1.04
73.667	0.00	0.02	0.312	O	|	|	|	|	1.04
73.750	0.00	0.02	0.312	O	|	|	|	|	1.04
73.833	0.00	0.02	0.312	O	|	|	|	|	1.04
73.917	0.00	0.02	0.312	O	|	|	|	|	1.04
74.000	0.00	0.02	0.312	O	|	|	|	|	1.04
74.083	0.00	0.02	0.311	O	|	|	|	|	1.04
74.167	0.00	0.02	0.311	O	|	|	|	|	1.04
74.250	0.00	0.02	0.311	O	|	|	|	|	1.04
74.333	0.00	0.02	0.311	O	|	|	|	|	1.04
74.417	0.00	0.02	0.311	O	|	|	|	|	1.04
74.500	0.00	0.02	0.311	O	|	|	|	|	1.04
74.583	0.00	0.02	0.311	O	|	|	|	|	

1.04

74.667	0.00	0.02	0.311	O	|	|	|	|	1.04
74.750	0.00	0.02	0.311	O	|	|	|	|	1.04
74.833	0.00	0.02	0.310	O	|	|	|	|	1.04
74.917	0.00	0.02	0.310	O	|	|	|	|	1.04
75.000	0.00	0.02	0.310	O	|	|	|	|	1.04
75.083	0.00	0.02	0.310	O	|	|	|	|	1.04
75.167	0.00	0.02	0.310	O	|	|	|	|	1.04
75.250	0.00	0.02	0.310	O	|	|	|	|	1.04
75.333	0.00	0.01	0.310	O	|	|	|	|	1.04
75.417	0.00	0.01	0.310	O	|	|	|	|	1.04
75.500	0.00	0.01	0.310	O	|	|	|	|	1.04
75.583	0.00	0.01	0.310	O	|	|	|	|	1.04
75.667	0.00	0.01	0.309	O	|	|	|	|	1.04
75.750	0.00	0.01	0.309	O	|	|	|	|	1.04
75.833	0.00	0.01	0.309	O	|	|	|	|	1.03
75.917	0.00	0.01	0.309	O	|	|	|	|	1.03
76.000	0.00	0.01	0.309	O	|	|	|	|	1.03
76.083	0.00	0.01	0.309	O	|	|	|	|	1.03
76.167	0.00	0.01	0.309	O	|	|	|	|	1.03
76.250	0.00	0.01	0.309	O	|	|	|	|	1.03
76.333	0.00	0.01	0.309	O	|	|	|	|	1.03
76.417	0.00	0.01	0.309	O	|	|	|	|	1.03
76.500	0.00	0.01	0.308	O	|	|	|	|	1.03
76.583	0.00	0.01	0.308	O	|	|	|	|	1.03
76.667	0.00	0.01	0.308	O	|	|	|	|	1.03
76.750	0.00	0.01	0.308	O	|	|	|	|	1.03
76.833	0.00	0.01	0.308	O	|	|	|	|	1.03
76.917	0.00	0.01	0.308	O	|	|	|	|	1.03

77.000	0.00	0.01	0.308	O	|	|	|	|	1.03
77.083	0.00	0.01	0.308	O	|	|	|	|	1.03
77.167	0.00	0.01	0.308	O	|	|	|	|	1.03
77.250	0.00	0.01	0.308	O	|	|	|	|	1.03
77.333	0.00	0.01	0.308	O	|	|	|	|	1.03
77.417	0.00	0.01	0.307	O	|	|	|	|	1.03
77.500	0.00	0.01	0.307	O	|	|	|	|	1.03
77.583	0.00	0.01	0.307	O	|	|	|	|	1.03
77.667	0.00	0.01	0.307	O	|	|	|	|	1.03
77.750	0.00	0.01	0.307	O	|	|	|	|	1.03
77.833	0.00	0.01	0.307	O	|	|	|	|	1.03
77.917	0.00	0.01	0.307	O	|	|	|	|	1.03
78.000	0.00	0.01	0.307	O	|	|	|	|	1.03
78.083	0.00	0.01	0.307	O	|	|	|	|	1.03
78.167	0.00	0.01	0.307	O	|	|	|	|	1.03
78.250	0.00	0.01	0.307	O	|	|	|	|	1.03
78.333	0.00	0.01	0.307	O	|	|	|	|	1.03
78.417	0.00	0.01	0.306	O	|	|	|	|	1.03
78.500	0.00	0.01	0.306	O	|	|	|	|	1.03
78.583	0.00	0.01	0.306	O	|	|	|	|	1.03
78.667	0.00	0.01	0.306	O	|	|	|	|	1.03
78.750	0.00	0.01	0.306	O	|	|	|	|	1.03
78.833	0.00	0.01	0.306	O	|	|	|	|	1.03
78.917	0.00	0.01	0.306	O	|	|	|	|	1.03
79.000	0.00	0.01	0.306	O	|	|	|	|	1.03
79.083	0.00	0.01	0.306	O	|	|	|	|	1.03
79.167	0.00	0.01	0.306	O	|	|	|	|	1.03
79.250	0.00	0.01	0.306	O	|	|	|	|	1.03
79.333	0.00	0.01	0.306	O	|	|	|	|	

1.03

79.417	0.00	0.01	0.305	O	|	|	|	1.03
79.500	0.00	0.01	0.305	O	|	|	|	1.03
79.583	0.00	0.01	0.305	O	|	|	|	1.03
79.667	0.00	0.01	0.305	O	|	|	|	1.03
79.750	0.00	0.01	0.305	O	|	|	|	1.03
79.833	0.00	0.01	0.305	O	|	|	|	1.03
79.917	0.00	0.01	0.305	O	|	|	|	1.03
80.000	0.00	0.01	0.305	O	|	|	|	1.03
80.083	0.00	0.01	0.305	O	|	|	|	1.02
80.167	0.00	0.01	0.305	O	|	|	|	1.02
80.250	0.00	0.01	0.305	O	|	|	|	1.02
80.333	0.00	0.01	0.305	O	|	|	|	1.02
80.417	0.00	0.01	0.305	O	|	|	|	1.02
80.500	0.00	0.01	0.305	O	|	|	|	1.02
80.583	0.00	0.01	0.304	O	|	|	|	1.02
80.667	0.00	0.01	0.304	O	|	|	|	1.02
80.750	0.00	0.01	0.304	O	|	|	|	1.02
80.833	0.00	0.01	0.304	O	|	|	|	1.02
80.917	0.00	0.01	0.304	O	|	|	|	1.02
81.000	0.00	0.01	0.304	O	|	|	|	1.02
81.083	0.00	0.01	0.304	O	|	|	|	1.02
81.167	0.00	0.01	0.304	O	|	|	|	1.02
81.250	0.00	0.01	0.304	O	|	|	|	1.02
81.333	0.00	0.01	0.304	O	|	|	|	1.02
81.417	0.00	0.01	0.304	O	|	|	|	1.02
81.500	0.00	0.01	0.304	O	|	|	|	1.02
81.583	0.00	0.01	0.304	O	|	|	|	1.02
81.667	0.00	0.01	0.304	O	|	|	|	1.02

81.750	0.00	0.01	0.304	O	|	|	|	|	1.02
81.833	0.00	0.01	0.303	O	|	|	|	|	1.02
81.917	0.00	0.01	0.303	O	|	|	|	|	1.02
82.000	0.00	0.01	0.303	O	|	|	|	|	1.02
82.083	0.00	0.01	0.303	O	|	|	|	|	1.02
82.167	0.00	0.01	0.303	O	|	|	|	|	1.02
82.250	0.00	0.01	0.303	O	|	|	|	|	1.02
82.333	0.00	0.01	0.303	O	|	|	|	|	1.02
82.417	0.00	0.01	0.303	O	|	|	|	|	1.02
82.500	0.00	0.01	0.303	O	|	|	|	|	1.02
82.583	0.00	0.01	0.303	O	|	|	|	|	1.02
82.667	0.00	0.01	0.303	O	|	|	|	|	1.02
82.750	0.00	0.01	0.303	O	|	|	|	|	1.02
82.833	0.00	0.01	0.303	O	|	|	|	|	1.02
82.917	0.00	0.01	0.303	O	|	|	|	|	1.02
83.000	0.00	0.01	0.303	O	|	|	|	|	1.02
83.083	0.00	0.01	0.303	O	|	|	|	|	1.02
83.167	0.00	0.01	0.302	O	|	|	|	|	1.02
83.250	0.00	0.01	0.302	O	|	|	|	|	1.02
83.333	0.00	0.01	0.302	O	|	|	|	|	1.02
83.417	0.00	0.01	0.302	O	|	|	|	|	1.02
83.500	0.00	0.01	0.302	O	|	|	|	|	1.02
83.583	0.00	0.01	0.302	O	|	|	|	|	1.02
83.667	0.00	0.01	0.302	O	|	|	|	|	1.02
83.750	0.00	0.01	0.302	O	|	|	|	|	1.02
83.833	0.00	0.01	0.302	O	|	|	|	|	1.02
83.917	0.00	0.01	0.302	O	|	|	|	|	1.02
84.000	0.00	0.01	0.302	O	|	|	|	|	1.02
84.083	0.00	0.01	0.302	O	|	|	|	|	

1.02

84.167	0.00	0.01	0.302	O	|	|	|	|	1.02
84.250	0.00	0.01	0.302	O	|	|	|	|	1.02
84.333	0.00	0.01	0.302	O	|	|	|	|	1.02
84.417	0.00	0.01	0.302	O	|	|	|	|	1.02
84.500	0.00	0.01	0.302	O	|	|	|	|	1.02
84.583	0.00	0.01	0.302	O	|	|	|	|	1.02
84.667	0.00	0.01	0.301	O	|	|	|	|	1.02
84.750	0.00	0.01	0.301	O	|	|	|	|	1.02
84.833	0.00	0.01	0.301	O	|	|	|	|	1.02
84.917	0.00	0.01	0.301	O	|	|	|	|	1.02
85.000	0.00	0.01	0.301	O	|	|	|	|	1.02
85.083	0.00	0.01	0.301	O	|	|	|	|	1.02
85.167	0.00	0.01	0.301	O	|	|	|	|	1.02
85.250	0.00	0.01	0.301	O	|	|	|	|	1.02
85.333	0.00	0.01	0.301	O	|	|	|	|	1.02
85.417	0.00	0.01	0.301	O	|	|	|	|	1.02
85.500	0.00	0.01	0.301	O	|	|	|	|	1.02
85.583	0.00	0.01	0.301	O	|	|	|	|	1.02
85.667	0.00	0.01	0.301	O	|	|	|	|	1.02
85.750	0.00	0.01	0.301	O	|	|	|	|	1.02
85.833	0.00	0.01	0.301	O	|	|	|	|	1.02
85.917	0.00	0.01	0.301	O	|	|	|	|	1.02
86.000	0.00	0.01	0.301	O	|	|	|	|	1.02
86.083	0.00	0.01	0.301	O	|	|	|	|	1.02
86.167	0.00	0.01	0.301	O	|	|	|	|	1.02
86.250	0.00	0.01	0.301	O	|	|	|	|	1.01
86.333	0.00	0.01	0.300	O	|	|	|	|	1.01
86.417	0.00	0.01	0.300	O	|	|	|	|	1.01

86.500	0.00	0.01	0.300	O	|	|	|	|	1.01
86.583	0.00	0.01	0.300	O	|	|	|	|	1.01
86.667	0.00	0.01	0.300	O	|	|	|	|	1.01
86.750	0.00	0.01	0.300	O	|	|	|	|	1.01
86.833	0.00	0.01	0.300	O	|	|	|	|	1.01
86.917	0.00	0.01	0.300	O	|	|	|	|	1.01
87.000	0.00	0.01	0.300	O	|	|	|	|	1.01
87.083	0.00	0.01	0.300	O	|	|	|	|	1.01
87.167	0.00	0.01	0.300	O	|	|	|	|	1.01
87.250	0.00	0.01	0.300	O	|	|	|	|	1.01
87.333	0.00	0.01	0.300	O	|	|	|	|	1.01
87.417	0.00	0.01	0.300	O	|	|	|	|	1.01
87.500	0.00	0.01	0.300	O	|	|	|	|	1.01
87.583	0.00	0.01	0.300	O	|	|	|	|	1.01
87.667	0.00	0.01	0.300	O	|	|	|	|	1.01
87.750	0.00	0.01	0.300	O	|	|	|	|	1.01
87.833	0.00	0.01	0.300	O	|	|	|	|	1.01
87.917	0.00	0.01	0.300	O	|	|	|	|	1.01
88.000	0.00	0.01	0.300	O	|	|	|	|	1.01
88.083	0.00	0.01	0.300	O	|	|	|	|	1.01
88.167	0.00	0.01	0.300	O	|	|	|	|	1.01
88.250	0.00	0.01	0.299	O	|	|	|	|	1.01
88.333	0.00	0.01	0.299	O	|	|	|	|	1.01
88.417	0.00	0.01	0.299	O	|	|	|	|	1.01
88.500	0.00	0.01	0.299	O	|	|	|	|	1.01
88.583	0.00	0.01	0.299	O	|	|	|	|	1.01
88.667	0.00	0.01	0.299	O	|	|	|	|	1.01
88.750	0.00	0.01	0.299	O	|	|	|	|	1.01
88.833	0.00	0.01	0.299	O	|	|	|	|	

1.01

88.917	0.00	0.01	0.299	O	|	|	|	|	1.01
89.000	0.00	0.01	0.299	O	|	|	|	|	1.01
89.083	0.00	0.01	0.299	O	|	|	|	|	1.01
89.167	0.00	0.01	0.299	O	|	|	|	|	1.01
89.250	0.00	0.01	0.299	O	|	|	|	|	1.01
89.333	0.00	0.01	0.299	O	|	|	|	|	1.01
89.417	0.00	0.01	0.299	O	|	|	|	|	1.01
89.500	0.00	0.01	0.299	O	|	|	|	|	1.01
89.583	0.00	0.01	0.299	O	|	|	|	|	1.01
89.667	0.00	0.01	0.299	O	|	|	|	|	1.01
89.750	0.00	0.01	0.299	O	|	|	|	|	1.01
89.833	0.00	0.01	0.299	O	|	|	|	|	1.01
89.917	0.00	0.01	0.299	O	|	|	|	|	1.01
90.000	0.00	0.01	0.299	O	|	|	|	|	1.01
90.083	0.00	0.01	0.299	O	|	|	|	|	1.01
90.167	0.00	0.01	0.299	O	|	|	|	|	1.01
90.250	0.00	0.01	0.299	O	|	|	|	|	1.01
90.333	0.00	0.01	0.299	O	|	|	|	|	1.01
90.417	0.00	0.00	0.299	O	|	|	|	|	1.01
90.500	0.00	0.00	0.298	O	|	|	|	|	1.01
90.583	0.00	0.00	0.298	O	|	|	|	|	1.01
90.667	0.00	0.00	0.298	O	|	|	|	|	1.01
90.750	0.00	0.00	0.298	O	|	|	|	|	1.01
90.833	0.00	0.00	0.298	O	|	|	|	|	1.01
90.917	0.00	0.00	0.298	O	|	|	|	|	1.01
91.000	0.00	0.00	0.298	O	|	|	|	|	1.01
91.083	0.00	0.00	0.298	O	|	|	|	|	1.01
91.167	0.00	0.00	0.298	O	|	|	|	|	1.01

91.250	0.00	0.00	0.298	O	|	|	|	|	1.01
91.333	0.00	0.00	0.298	O	|	|	|	|	1.01
91.417	0.00	0.00	0.298	O	|	|	|	|	1.01
91.500	0.00	0.00	0.298	O	|	|	|	|	1.01
91.583	0.00	0.00	0.298	O	|	|	|	|	1.01
91.667	0.00	0.00	0.298	O	|	|	|	|	1.01
91.750	0.00	0.00	0.298	O	|	|	|	|	1.01
91.833	0.00	0.00	0.298	O	|	|	|	|	1.01
91.917	0.00	0.00	0.298	O	|	|	|	|	1.01
92.000	0.00	0.00	0.298	O	|	|	|	|	1.01
92.083	0.00	0.00	0.298	O	|	|	|	|	1.01
92.167	0.00	0.00	0.298	O	|	|	|	|	1.01
92.250	0.00	0.00	0.298	O	|	|	|	|	1.01
92.333	0.00	0.00	0.298	O	|	|	|	|	1.01
92.417	0.00	0.00	0.298	O	|	|	|	|	1.01
92.500	0.00	0.00	0.298	O	|	|	|	|	1.01
92.583	0.00	0.00	0.298	O	|	|	|	|	1.01
92.667	0.00	0.00	0.298	O	|	|	|	|	1.01
92.750	0.00	0.00	0.298	O	|	|	|	|	1.01
92.833	0.00	0.00	0.298	O	|	|	|	|	1.01
92.917	0.00	0.00	0.298	O	|	|	|	|	1.01
93.000	0.00	0.00	0.298	O	|	|	|	|	1.01
93.083	0.00	0.00	0.298	O	|	|	|	|	1.01
93.167	0.00	0.00	0.298	O	|	|	|	|	1.01
93.250	0.00	0.00	0.297	O	|	|	|	|	1.01
93.333	0.00	0.00	0.297	O	|	|	|	|	1.01
93.417	0.00	0.00	0.297	O	|	|	|	|	1.01
93.500	0.00	0.00	0.297	O	|	|	|	|	1.01
93.583	0.00	0.00	0.297	O	|	|	|	|	

1.01

93.667	0.00	0.00	0.297	O	|	|	|	|	1.01
93.750	0.00	0.00	0.297	O	|	|	|	|	1.01
93.833	0.00	0.00	0.297	O	|	|	|	|	1.01
93.917	0.00	0.00	0.297	O	|	|	|	|	1.01
94.000	0.00	0.00	0.297	O	|	|	|	|	1.01
94.083	0.00	0.00	0.297	O	|	|	|	|	1.01
94.167	0.00	0.00	0.297	O	|	|	|	|	1.01
94.250	0.00	0.00	0.297	O	|	|	|	|	1.01
94.333	0.00	0.00	0.297	O	|	|	|	|	1.01
94.417	0.00	0.00	0.297	O	|	|	|	|	1.01
94.500	0.00	0.00	0.297	O	|	|	|	|	1.01
94.583	0.00	0.00	0.297	O	|	|	|	|	1.01
94.667	0.00	0.00	0.297	O	|	|	|	|	1.01
94.750	0.00	0.00	0.297	O	|	|	|	|	1.01
94.833	0.00	0.00	0.297	O	|	|	|	|	1.01
94.917	0.00	0.00	0.297	O	|	|	|	|	1.01
95.000	0.00	0.00	0.297	O	|	|	|	|	1.01
95.083	0.00	0.00	0.297	O	|	|	|	|	1.01
95.167	0.00	0.00	0.297	O	|	|	|	|	1.01
95.250	0.00	0.00	0.297	O	|	|	|	|	1.01
95.333	0.00	0.00	0.297	O	|	|	|	|	1.01
95.417	0.00	0.00	0.297	O	|	|	|	|	1.01
95.500	0.00	0.00	0.297	O	|	|	|	|	1.01
95.583	0.00	0.00	0.297	O	|	|	|	|	1.01
95.667	0.00	0.00	0.297	O	|	|	|	|	1.01
95.750	0.00	0.00	0.297	O	|	|	|	|	1.01
95.833	0.00	0.00	0.297	O	|	|	|	|	1.01
95.917	0.00	0.00	0.297	O	|	|	|	|	1.01

96.000	0.00	0.00	0.297	O	|	|	|	|	1.01
96.083	0.00	0.00	0.297	O	|	|	|	|	1.01
96.167	0.00	0.00	0.297	O	|	|	|	|	1.01
96.250	0.00	0.00	0.297	O	|	|	|	|	1.01
96.333	0.00	0.00	0.297	O	|	|	|	|	1.01
96.417	0.00	0.00	0.297	O	|	|	|	|	1.01
96.500	0.00	0.00	0.297	O	|	|	|	|	1.01
96.583	0.00	0.00	0.296	O	|	|	|	|	1.01
96.667	0.00	0.00	0.296	O	|	|	|	|	1.01
96.750	0.00	0.00	0.296	O	|	|	|	|	1.01
96.833	0.00	0.00	0.296	O	|	|	|	|	1.01
96.917	0.00	0.00	0.296	O	|	|	|	|	1.01
97.000	0.00	0.00	0.296	O	|	|	|	|	1.01
97.083	0.00	0.00	0.296	O	|	|	|	|	1.01
97.167	0.00	0.00	0.296	O	|	|	|	|	1.01
97.250	0.00	0.00	0.296	O	|	|	|	|	1.01
97.333	0.00	0.00	0.296	O	|	|	|	|	1.01
97.417	0.00	0.00	0.296	O	|	|	|	|	1.01
97.500	0.00	0.00	0.296	O	|	|	|	|	1.01
97.583	0.00	0.00	0.296	O	|	|	|	|	1.01
97.667	0.00	0.00	0.296	O	|	|	|	|	1.01
97.750	0.00	0.00	0.296	O	|	|	|	|	1.01
97.833	0.00	0.00	0.296	O	|	|	|	|	1.00
97.917	0.00	0.00	0.296	O	|	|	|	|	1.00
98.000	0.00	0.00	0.296	O	|	|	|	|	1.00
98.083	0.00	0.00	0.296	O	|	|	|	|	1.00
98.167	0.00	0.00	0.296	O	|	|	|	|	1.00
98.250	0.00	0.00	0.296	O	|	|	|	|	1.00
98.333	0.00	0.00	0.296	O	|	|	|	|	

1.00

98.417	0.00	0.00	0.296	O	|	|	|	1.00
98.500	0.00	0.00	0.296	O	|	|	|	1.00
98.583	0.00	0.00	0.296	O	|	|	|	1.00
98.667	0.00	0.00	0.296	O	|	|	|	1.00
98.750	0.00	0.00	0.296	O	|	|	|	1.00
98.833	0.00	0.00	0.296	O	|	|	|	1.00
98.917	0.00	0.00	0.296	O	|	|	|	1.00
99.000	0.00	0.00	0.296	O	|	|	|	1.00
99.083	0.00	0.00	0.296	O	|	|	|	1.00
99.167	0.00	0.00	0.296	O	|	|	|	1.00
99.250	0.00	0.00	0.296	O	|	|	|	1.00
99.333	0.00	0.00	0.296	O	|	|	|	1.00
99.417	0.00	0.00	0.296	O	|	|	|	1.00
99.500	0.00	0.00	0.296	O	|	|	|	1.00
99.583	0.00	0.00	0.296	O	|	|	|	1.00
99.667	0.00	0.00	0.296	O	|	|	|	1.00
99.750	0.00	0.00	0.296	O	|	|	|	1.00
99.833	0.00	0.00	0.296	O	|	|	|	1.00
99.917	0.00	0.00	0.296	O	|	|	|	1.00
100.000	0.00	0.00	0.296	O	|	|	|	1.00
100.083	0.00	0.00	0.296	O	|	|	|	1.00
100.167	0.00	0.00	0.296	O	|	|	|	1.00
100.250	0.00	0.00	0.296	O	|	|	|	1.00
100.333	0.00	0.00	0.296	O	|	|	|	1.00
100.417	0.00	0.00	0.296	O	|	|	|	1.00
100.500	0.00	0.00	0.296	O	|	|	|	1.00
100.583	0.00	0.00	0.296	O	|	|	|	1.00
100.667	0.00	0.00	0.296	O	|	|	|	1.00

100.750	0.00	0.00	0.296	O	|	|	|	|	1.00
100.833	0.00	0.00	0.296	O	|	|	|	|	1.00
100.917	0.00	0.00	0.296	O	|	|	|	|	1.00
101.000	0.00	0.00	0.295	O	|	|	|	|	1.00
101.083	0.00	0.00	0.295	O	|	|	|	|	1.00
101.167	0.00	0.00	0.295	O	|	|	|	|	1.00
101.250	0.00	0.00	0.295	O	|	|	|	|	1.00
101.333	0.00	0.00	0.295	O	|	|	|	|	1.00
101.417	0.00	0.00	0.295	O	|	|	|	|	1.00
101.500	0.00	0.00	0.295	O	|	|	|	|	1.00
101.583	0.00	0.00	0.295	O	|	|	|	|	1.00
101.667	0.00	0.00	0.295	O	|	|	|	|	1.00
101.750	0.00	0.00	0.295	O	|	|	|	|	1.00
101.833	0.00	0.00	0.295	O	|	|	|	|	1.00
101.917	0.00	0.00	0.295	O	|	|	|	|	1.00
102.000	0.00	0.00	0.295	O	|	|	|	|	1.00
102.083	0.00	0.00	0.295	O	|	|	|	|	1.00
102.167	0.00	0.00	0.295	O	|	|	|	|	1.00
102.250	0.00	0.00	0.295	O	|	|	|	|	1.00
102.333	0.00	0.00	0.295	O	|	|	|	|	1.00
102.417	0.00	0.00	0.295	O	|	|	|	|	1.00
102.500	0.00	0.00	0.295	O	|	|	|	|	1.00
102.583	0.00	0.00	0.295	O	|	|	|	|	1.00
102.667	0.00	0.00	0.295	O	|	|	|	|	1.00
102.750	0.00	0.00	0.295	O	|	|	|	|	1.00
102.833	0.00	0.00	0.295	O	|	|	|	|	1.00
102.917	0.00	0.00	0.295	O	|	|	|	|	1.00
103.000	0.00	0.00	0.295	O	|	|	|	|	1.00
103.083	0.00	0.00	0.295	O	|	|	|	|	

1.00

103.167	0.00	0.00	0.295	O	|	|	|	|	1.00
103.250	0.00	0.00	0.295	O	|	|	|	|	1.00
103.333	0.00	0.00	0.295	O	|	|	|	|	1.00
103.417	0.00	0.00	0.295	O	|	|	|	|	1.00
103.500	0.00	0.00	0.295	O	|	|	|	|	1.00
103.583	0.00	0.00	0.295	O	|	|	|	|	1.00
103.667	0.00	0.00	0.295	O	|	|	|	|	1.00
103.750	0.00	0.00	0.295	O	|	|	|	|	1.00
103.833	0.00	0.00	0.295	O	|	|	|	|	1.00
103.917	0.00	0.00	0.295	O	|	|	|	|	1.00
104.000	0.00	0.00	0.295	O	|	|	|	|	1.00
104.083	0.00	0.00	0.295	O	|	|	|	|	1.00
104.167	0.00	0.00	0.295	O	|	|	|	|	1.00
104.250	0.00	0.00	0.295	O	|	|	|	|	1.00
104.333	0.00	0.00	0.295	O	|	|	|	|	1.00
104.417	0.00	0.00	0.295	O	|	|	|	|	1.00
104.500	0.00	0.00	0.295	O	|	|	|	|	1.00
104.583	0.00	0.00	0.295	O	|	|	|	|	1.00
104.667	0.00	0.00	0.295	O	|	|	|	|	1.00
104.750	0.00	0.00	0.295	O	|	|	|	|	1.00
104.833	0.00	0.00	0.295	O	|	|	|	|	1.00
104.917	0.00	0.00	0.295	O	|	|	|	|	1.00
105.000	0.00	0.00	0.295	O	|	|	|	|	1.00
105.083	0.00	0.00	0.295	O	|	|	|	|	1.00
105.167	0.00	0.00	0.295	O	|	|	|	|	1.00
105.250	0.00	0.00	0.295	O	|	|	|	|	1.00
105.333	0.00	0.00	0.295	O	|	|	|	|	1.00
105.417	0.00	0.00	0.295	O	|	|	|	|	1.00

105.500	0.00	0.00	0.295	O	|	|	|	|	1.00
105.583	0.00	0.00	0.295	O	|	|	|	|	1.00
105.667	0.00	0.00	0.295	O	|	|	|	|	1.00
105.750	0.00	0.00	0.295	O	|	|	|	|	1.00
105.833	0.00	0.00	0.295	O	|	|	|	|	1.00
105.917	0.00	0.00	0.295	O	|	|	|	|	1.00
106.000	0.00	0.00	0.295	O	|	|	|	|	1.00
106.083	0.00	0.00	0.295	O	|	|	|	|	1.00
106.167	0.00	0.00	0.295	O	|	|	|	|	1.00
106.250	0.00	0.00	0.295	O	|	|	|	|	1.00
106.333	0.00	0.00	0.295	O	|	|	|	|	1.00
106.417	0.00	0.00	0.295	O	|	|	|	|	1.00
106.500	0.00	0.00	0.295	O	|	|	|	|	1.00
106.583	0.00	0.00	0.295	O	|	|	|	|	1.00
106.667	0.00	0.00	0.295	O	|	|	|	|	1.00
106.750	0.00	0.00	0.295	O	|	|	|	|	1.00
106.833	0.00	0.00	0.295	O	|	|	|	|	1.00
106.917	0.00	0.00	0.295	O	|	|	|	|	1.00
107.000	0.00	0.00	0.295	O	|	|	|	|	1.00
107.083	0.00	0.00	0.295	O	|	|	|	|	1.00
107.167	0.00	0.00	0.295	O	|	|	|	|	1.00
107.250	0.00	0.00	0.295	O	|	|	|	|	1.00
107.333	0.00	0.00	0.295	O	|	|	|	|	1.00
107.417	0.00	0.00	0.295	O	|	|	|	|	1.00
107.500	0.00	0.00	0.294	O	|	|	|	|	1.00
107.583	0.00	0.00	0.294	O	|	|	|	|	1.00
107.667	0.00	0.00	0.294	O	|	|	|	|	1.00
107.750	0.00	0.00	0.294	O	|	|	|	|	1.00
107.833	0.00	0.00	0.294	O	|	|	|	|	

1.00

107.917	0.00	0.00	0.294	O	|	|	|	|	1.00
108.000	0.00	0.00	0.294	O	|	|	|	|	1.00
108.083	0.00	0.00	0.294	O	|	|	|	|	1.00
108.167	0.00	0.00	0.294	O	|	|	|	|	1.00
108.250	0.00	0.00	0.294	O	|	|	|	|	1.00
108.333	0.00	0.00	0.294	O	|	|	|	|	1.00
108.417	0.00	0.00	0.294	O	|	|	|	|	1.00
108.500	0.00	0.00	0.294	O	|	|	|	|	1.00
108.583	0.00	0.00	0.294	O	|	|	|	|	1.00
108.667	0.00	0.00	0.294	O	|	|	|	|	1.00
108.750	0.00	0.00	0.294	O	|	|	|	|	1.00
108.833	0.00	0.00	0.294	O	|	|	|	|	1.00
108.917	0.00	0.00	0.294	O	|	|	|	|	1.00
109.000	0.00	0.00	0.294	O	|	|	|	|	1.00
109.083	0.00	0.00	0.294	O	|	|	|	|	1.00
109.167	0.00	0.00	0.294	O	|	|	|	|	1.00
109.250	0.00	0.00	0.294	O	|	|	|	|	1.00
109.333	0.00	0.00	0.294	O	|	|	|	|	1.00
109.417	0.00	0.00	0.294	O	|	|	|	|	1.00
109.500	0.00	0.00	0.294	O	|	|	|	|	1.00
109.583	0.00	0.00	0.294	O	|	|	|	|	1.00
109.667	0.00	0.00	0.294	O	|	|	|	|	1.00
109.750	0.00	0.00	0.294	O	|	|	|	|	1.00
109.833	0.00	0.00	0.294	O	|	|	|	|	1.00
109.917	0.00	0.00	0.294	O	|	|	|	|	1.00
110.000	0.00	0.00	0.294	O	|	|	|	|	1.00
110.083	0.00	0.00	0.294	O	|	|	|	|	1.00
110.167	0.00	0.00	0.294	O	|	|	|	|	1.00

110.250	0.00	0.00	0.294	O	|	|	|	|	1.00
110.333	0.00	0.00	0.294	O	|	|	|	|	1.00
110.417	0.00	0.00	0.294	O	|	|	|	|	1.00
110.500	0.00	0.00	0.294	O	|	|	|	|	1.00
110.583	0.00	0.00	0.294	O	|	|	|	|	1.00
110.667	0.00	0.00	0.294	O	|	|	|	|	1.00
110.750	0.00	0.00	0.294	O	|	|	|	|	1.00
110.833	0.00	0.00	0.294	O	|	|	|	|	1.00
110.917	0.00	0.00	0.294	O	|	|	|	|	1.00
111.000	0.00	0.00	0.294	O	|	|	|	|	1.00
111.083	0.00	0.00	0.294	O	|	|	|	|	1.00
111.167	0.00	0.00	0.294	O	|	|	|	|	1.00
111.250	0.00	0.00	0.294	O	|	|	|	|	1.00
111.333	0.00	0.00	0.294	O	|	|	|	|	1.00
111.417	0.00	0.00	0.294	O	|	|	|	|	1.00
111.500	0.00	0.00	0.294	O	|	|	|	|	1.00
111.583	0.00	0.00	0.294	O	|	|	|	|	1.00
111.667	0.00	0.00	0.294	O	|	|	|	|	1.00
111.750	0.00	0.00	0.294	O	|	|	|	|	1.00
111.833	0.00	0.00	0.294	O	|	|	|	|	1.00
111.917	0.00	0.00	0.294	O	|	|	|	|	1.00
112.000	0.00	0.00	0.294	O	|	|	|	|	1.00
112.083	0.00	0.00	0.294	O	|	|	|	|	1.00
112.167	0.00	0.00	0.294	O	|	|	|	|	1.00
112.250	0.00	0.00	0.294	O	|	|	|	|	1.00
112.333	0.00	0.00	0.294	O	|	|	|	|	1.00
112.417	0.00	0.00	0.294	O	|	|	|	|	1.00
112.500	0.00	0.00	0.294	O	|	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1350
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.278 (CFS)
Total volume = 0.709 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
5 YR - 1 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP15.rte
**********HYDROGRAPH DATA**********
Number of intervals = 14
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 11.843 (CFS)
Total volume = 0.358 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 14
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 3.0 5.92 8.88 11.84	Depth (Ft.)
0.083	1.19	0.00	0.004	O I | | | |	0.01
0.167	2.00	0.00	0.015	O I | | | |	0.05
0.250	2.35	0.00	0.030	O I | | | |	0.10
0.333	2.48	0.00	0.047	O I | | | |	0.16
0.417	2.73	0.00	0.065	O I| | | |	0.22
0.500	3.08	0.00	0.085	O I | | |	0.29
0.583	3.49	0.00	0.107	O |I | | |	0.36
0.667	4.02	0.00	0.133	O | I | | |	0.45
0.750	5.38	0.00	0.165	O | I | | |	0.56
0.833	11.84	0.00	0.225	O | | | I	0.76
0.917	8.40	0.00	0.294	O | | I | |	1.00
1.000	3.70	0.04	0.336	O | I | | |	1.10
1.083	1.14	0.05	0.352	O I | | | |	1.13
1.167	0.16	0.06	0.356	O | | | |	1.14
1.250	0.00	0.06	0.357	O | | | |	1.14
1.333	0.00	0.06	0.356	O | | | |	1.14
1.417	0.00	0.06	0.356	O | | | |	1.14
1.500	0.00	0.06	0.355	O | | | |	1.14
1.583	0.00	0.05	0.355	O | | | |	1.14

1.667	0.00	0.05	0.355	O	|	|	|	|	1.14
1.750	0.00	0.05	0.354	O	|	|	|	|	1.14
1.833	0.00	0.05	0.354	O	|	|	|	|	1.14
1.917	0.00	0.05	0.354	O	|	|	|	|	1.14
2.000	0.00	0.05	0.353	O	|	|	|	|	1.14
2.083	0.00	0.05	0.353	O	|	|	|	|	1.13
2.167	0.00	0.05	0.352	O	|	|	|	|	1.13
2.250	0.00	0.05	0.352	O	|	|	|	|	1.13
2.333	0.00	0.05	0.352	O	|	|	|	|	1.13
2.417	0.00	0.05	0.351	O	|	|	|	|	1.13
2.500	0.00	0.05	0.351	O	|	|	|	|	1.13
2.583	0.00	0.05	0.351	O	|	|	|	|	1.13
2.667	0.00	0.05	0.350	O	|	|	|	|	1.13
2.750	0.00	0.05	0.350	O	|	|	|	|	1.13
2.833	0.00	0.05	0.350	O	|	|	|	|	1.13
2.917	0.00	0.05	0.349	O	|	|	|	|	1.13
3.000	0.00	0.05	0.349	O	|	|	|	|	1.13
3.083	0.00	0.05	0.349	O	|	|	|	|	1.13
3.167	0.00	0.05	0.348	O	|	|	|	|	1.12
3.250	0.00	0.05	0.348	O	|	|	|	|	1.12
3.333	0.00	0.05	0.348	O	|	|	|	|	1.12
3.417	0.00	0.05	0.347	O	|	|	|	|	1.12
3.500	0.00	0.05	0.347	O	|	|	|	|	1.12
3.583	0.00	0.05	0.347	O	|	|	|	|	1.12
3.667	0.00	0.05	0.346	O	|	|	|	|	1.12
3.750	0.00	0.05	0.346	O	|	|	|	|	1.12
3.833	0.00	0.05	0.346	O	|	|	|	|	1.12
3.917	0.00	0.05	0.345	O	|	|	|	|	1.12
4.000	0.00	0.05	0.345	O	|	|	|	|	

1.12

4.083	0.00	0.05	0.345	O	|	|	|	1.12
4.167	0.00	0.05	0.344	O	|	|	|	1.12
4.250	0.00	0.05	0.344	O	|	|	|	1.11
4.333	0.00	0.04	0.344	O	|	|	|	1.11
4.417	0.00	0.04	0.343	O	|	|	|	1.11
4.500	0.00	0.04	0.343	O	|	|	|	1.11
4.583	0.00	0.04	0.343	O	|	|	|	1.11
4.667	0.00	0.04	0.343	O	|	|	|	1.11
4.750	0.00	0.04	0.342	O	|	|	|	1.11
4.833	0.00	0.04	0.342	O	|	|	|	1.11
4.917	0.00	0.04	0.342	O	|	|	|	1.11
5.000	0.00	0.04	0.341	O	|	|	|	1.11
5.083	0.00	0.04	0.341	O	|	|	|	1.11
5.167	0.00	0.04	0.341	O	|	|	|	1.11
5.250	0.00	0.04	0.340	O	|	|	|	1.11
5.333	0.00	0.04	0.340	O	|	|	|	1.11
5.417	0.00	0.04	0.340	O	|	|	|	1.11
5.500	0.00	0.04	0.340	O	|	|	|	1.10
5.583	0.00	0.04	0.339	O	|	|	|	1.10
5.667	0.00	0.04	0.339	O	|	|	|	1.10
5.750	0.00	0.04	0.339	O	|	|	|	1.10
5.833	0.00	0.04	0.338	O	|	|	|	1.10
5.917	0.00	0.04	0.338	O	|	|	|	1.10
6.000	0.00	0.04	0.338	O	|	|	|	1.10
6.083	0.00	0.04	0.338	O	|	|	|	1.10
6.167	0.00	0.04	0.337	O	|	|	|	1.10
6.250	0.00	0.04	0.337	O	|	|	|	1.10
6.333	0.00	0.04	0.337	O	|	|	|	1.10

6.417	0.00	0.04	0.337	O	|	|	|	|	1.10
6.500	0.00	0.04	0.336	O	|	|	|	|	1.10
6.583	0.00	0.04	0.336	O	|	|	|	|	1.10
6.667	0.00	0.04	0.336	O	|	|	|	|	1.10
6.750	0.00	0.04	0.336	O	|	|	|	|	1.10
6.833	0.00	0.04	0.335	O	|	|	|	|	1.09
6.917	0.00	0.04	0.335	O	|	|	|	|	1.09
7.000	0.00	0.04	0.335	O	|	|	|	|	1.09
7.083	0.00	0.04	0.335	O	|	|	|	|	1.09
7.167	0.00	0.04	0.334	O	|	|	|	|	1.09
7.250	0.00	0.04	0.334	O	|	|	|	|	1.09
7.333	0.00	0.04	0.334	O	|	|	|	|	1.09
7.417	0.00	0.04	0.334	O	|	|	|	|	1.09
7.500	0.00	0.04	0.333	O	|	|	|	|	1.09
7.583	0.00	0.04	0.333	O	|	|	|	|	1.09
7.667	0.00	0.04	0.333	O	|	|	|	|	1.09
7.750	0.00	0.03	0.333	O	|	|	|	|	1.09
7.833	0.00	0.03	0.332	O	|	|	|	|	1.09
7.917	0.00	0.03	0.332	O	|	|	|	|	1.09
8.000	0.00	0.03	0.332	O	|	|	|	|	1.09
8.083	0.00	0.03	0.332	O	|	|	|	|	1.09
8.167	0.00	0.03	0.331	O	|	|	|	|	1.09
8.250	0.00	0.03	0.331	O	|	|	|	|	1.09
8.333	0.00	0.03	0.331	O	|	|	|	|	1.08
8.417	0.00	0.03	0.331	O	|	|	|	|	1.08
8.500	0.00	0.03	0.330	O	|	|	|	|	1.08
8.583	0.00	0.03	0.330	O	|	|	|	|	1.08
8.667	0.00	0.03	0.330	O	|	|	|	|	1.08
8.750	0.00	0.03	0.330	O	|	|	|	|	

1.08

8.833	0.00	0.03	0.330	O	|	|	|	1.08
8.917	0.00	0.03	0.329	O	|	|	|	1.08
9.000	0.00	0.03	0.329	O	|	|	|	1.08
9.083	0.00	0.03	0.329	O	|	|	|	1.08
9.167	0.00	0.03	0.329	O	|	|	|	1.08
9.250	0.00	0.03	0.328	O	|	|	|	1.08
9.333	0.00	0.03	0.328	O	|	|	|	1.08
9.417	0.00	0.03	0.328	O	|	|	|	1.08
9.500	0.00	0.03	0.328	O	|	|	|	1.08
9.583	0.00	0.03	0.328	O	|	|	|	1.08
9.667	0.00	0.03	0.327	O	|	|	|	1.08
9.750	0.00	0.03	0.327	O	|	|	|	1.08
9.833	0.00	0.03	0.327	O	|	|	|	1.08
9.917	0.00	0.03	0.327	O	|	|	|	1.08
10.000	0.00	0.03	0.327	O	|	|	|	1.07
10.083	0.00	0.03	0.326	O	|	|	|	1.07
10.167	0.00	0.03	0.326	O	|	|	|	1.07
10.250	0.00	0.03	0.326	O	|	|	|	1.07
10.333	0.00	0.03	0.326	O	|	|	|	1.07
10.417	0.00	0.03	0.326	O	|	|	|	1.07
10.500	0.00	0.03	0.325	O	|	|	|	1.07
10.583	0.00	0.03	0.325	O	|	|	|	1.07
10.667	0.00	0.03	0.325	O	|	|	|	1.07
10.750	0.00	0.03	0.325	O	|	|	|	1.07
10.833	0.00	0.03	0.325	O	|	|	|	1.07
10.917	0.00	0.03	0.324	O	|	|	|	1.07
11.000	0.00	0.03	0.324	O	|	|	|	1.07
11.083	0.00	0.03	0.324	O	|	|	|	1.07

11.167	0.00	0.03	0.324	O	|	|	|	|	1.07
11.250	0.00	0.03	0.324	O	|	|	|	|	1.07
11.333	0.00	0.03	0.323	O	|	|	|	|	1.07
11.417	0.00	0.03	0.323	O	|	|	|	|	1.07
11.500	0.00	0.03	0.323	O	|	|	|	|	1.07
11.583	0.00	0.03	0.323	O	|	|	|	|	1.07
11.667	0.00	0.03	0.323	O	|	|	|	|	1.07
11.750	0.00	0.03	0.323	O	|	|	|	|	1.07
11.833	0.00	0.03	0.322	O	|	|	|	|	1.07
11.917	0.00	0.03	0.322	O	|	|	|	|	1.06
12.000	0.00	0.03	0.322	O	|	|	|	|	1.06
12.083	0.00	0.03	0.322	O	|	|	|	|	1.06
12.167	0.00	0.03	0.322	O	|	|	|	|	1.06
12.250	0.00	0.03	0.321	O	|	|	|	|	1.06
12.333	0.00	0.03	0.321	O	|	|	|	|	1.06
12.417	0.00	0.02	0.321	O	|	|	|	|	1.06
12.500	0.00	0.02	0.321	O	|	|	|	|	1.06
12.583	0.00	0.02	0.321	O	|	|	|	|	1.06
12.667	0.00	0.02	0.321	O	|	|	|	|	1.06
12.750	0.00	0.02	0.320	O	|	|	|	|	1.06
12.833	0.00	0.02	0.320	O	|	|	|	|	1.06
12.917	0.00	0.02	0.320	O	|	|	|	|	1.06
13.000	0.00	0.02	0.320	O	|	|	|	|	1.06
13.083	0.00	0.02	0.320	O	|	|	|	|	1.06
13.167	0.00	0.02	0.320	O	|	|	|	|	1.06
13.250	0.00	0.02	0.319	O	|	|	|	|	1.06
13.333	0.00	0.02	0.319	O	|	|	|	|	1.06
13.417	0.00	0.02	0.319	O	|	|	|	|	1.06
13.500	0.00	0.02	0.319	O	|	|	|	|	

1.06

13.583	0.00	0.02	0.319	O	|	|	|	1.06
13.667	0.00	0.02	0.319	O	|	|	|	1.06
13.750	0.00	0.02	0.319	O	|	|	|	1.06
13.833	0.00	0.02	0.318	O	|	|	|	1.06
13.917	0.00	0.02	0.318	O	|	|	|	1.06
14.000	0.00	0.02	0.318	O	|	|	|	1.06
14.083	0.00	0.02	0.318	O	|	|	|	1.05
14.167	0.00	0.02	0.318	O	|	|	|	1.05
14.250	0.00	0.02	0.318	O	|	|	|	1.05
14.333	0.00	0.02	0.317	O	|	|	|	1.05
14.417	0.00	0.02	0.317	O	|	|	|	1.05
14.500	0.00	0.02	0.317	O	|	|	|	1.05
14.583	0.00	0.02	0.317	O	|	|	|	1.05
14.667	0.00	0.02	0.317	O	|	|	|	1.05
14.750	0.00	0.02	0.317	O	|	|	|	1.05
14.833	0.00	0.02	0.317	O	|	|	|	1.05
14.917	0.00	0.02	0.316	O	|	|	|	1.05
15.000	0.00	0.02	0.316	O	|	|	|	1.05
15.083	0.00	0.02	0.316	O	|	|	|	1.05
15.167	0.00	0.02	0.316	O	|	|	|	1.05
15.250	0.00	0.02	0.316	O	|	|	|	1.05
15.333	0.00	0.02	0.316	O	|	|	|	1.05
15.417	0.00	0.02	0.316	O	|	|	|	1.05
15.500	0.00	0.02	0.315	O	|	|	|	1.05
15.583	0.00	0.02	0.315	O	|	|	|	1.05
15.667	0.00	0.02	0.315	O	|	|	|	1.05
15.750	0.00	0.02	0.315	O	|	|	|	1.05
15.833	0.00	0.02	0.315	O	|	|	|	1.05

15.917	0.00	0.02	0.315	O	|	|	|	|	1.05
16.000	0.00	0.02	0.315	O	|	|	|	|	1.05
16.083	0.00	0.02	0.315	O	|	|	|	|	1.05
16.167	0.00	0.02	0.314	O	|	|	|	|	1.05
16.250	0.00	0.02	0.314	O	|	|	|	|	1.05
16.333	0.00	0.02	0.314	O	|	|	|	|	1.05
16.417	0.00	0.02	0.314	O	|	|	|	|	1.05
16.500	0.00	0.02	0.314	O	|	|	|	|	1.05
16.583	0.00	0.02	0.314	O	|	|	|	|	1.05
16.667	0.00	0.02	0.314	O	|	|	|	|	1.04
16.750	0.00	0.02	0.313	O	|	|	|	|	1.04
16.833	0.00	0.02	0.313	O	|	|	|	|	1.04
16.917	0.00	0.02	0.313	O	|	|	|	|	1.04
17.000	0.00	0.02	0.313	O	|	|	|	|	1.04
17.083	0.00	0.02	0.313	O	|	|	|	|	1.04
17.167	0.00	0.02	0.313	O	|	|	|	|	1.04
17.250	0.00	0.02	0.313	O	|	|	|	|	1.04
17.333	0.00	0.02	0.313	O	|	|	|	|	1.04
17.417	0.00	0.02	0.313	O	|	|	|	|	1.04
17.500	0.00	0.02	0.312	O	|	|	|	|	1.04
17.583	0.00	0.02	0.312	O	|	|	|	|	1.04
17.667	0.00	0.02	0.312	O	|	|	|	|	1.04
17.750	0.00	0.02	0.312	O	|	|	|	|	1.04
17.833	0.00	0.02	0.312	O	|	|	|	|	1.04
17.917	0.00	0.02	0.312	O	|	|	|	|	1.04
18.000	0.00	0.02	0.312	O	|	|	|	|	1.04
18.083	0.00	0.02	0.312	O	|	|	|	|	1.04
18.167	0.00	0.02	0.311	O	|	|	|	|	1.04
18.250	0.00	0.02	0.311	O	|	|	|	|	

1.04

18.333	0.00	0.02	0.311	O	|	|	|	|	1.04
18.417	0.00	0.02	0.311	O	|	|	|	|	1.04
18.500	0.00	0.02	0.311	O	|	|	|	|	1.04
18.583	0.00	0.02	0.311	O	|	|	|	|	1.04
18.667	0.00	0.02	0.311	O	|	|	|	|	1.04
18.750	0.00	0.02	0.311	O	|	|	|	|	1.04
18.833	0.00	0.02	0.311	O	|	|	|	|	1.04
18.917	0.00	0.02	0.310	O	|	|	|	|	1.04
19.000	0.00	0.02	0.310	O	|	|	|	|	1.04
19.083	0.00	0.02	0.310	O	|	|	|	|	1.04
19.167	0.00	0.02	0.310	O	|	|	|	|	1.04
19.250	0.00	0.02	0.310	O	|	|	|	|	1.04
19.333	0.00	0.02	0.310	O	|	|	|	|	1.04
19.417	0.00	0.01	0.310	O	|	|	|	|	1.04
19.500	0.00	0.01	0.310	O	|	|	|	|	1.04
19.583	0.00	0.01	0.310	O	|	|	|	|	1.04
19.667	0.00	0.01	0.310	O	|	|	|	|	1.04
19.750	0.00	0.01	0.309	O	|	|	|	|	1.04
19.833	0.00	0.01	0.309	O	|	|	|	|	1.04
19.917	0.00	0.01	0.309	O	|	|	|	|	1.03
20.000	0.00	0.01	0.309	O	|	|	|	|	1.03
20.083	0.00	0.01	0.309	O	|	|	|	|	1.03
20.167	0.00	0.01	0.309	O	|	|	|	|	1.03
20.250	0.00	0.01	0.309	O	|	|	|	|	1.03
20.333	0.00	0.01	0.309	O	|	|	|	|	1.03
20.417	0.00	0.01	0.309	O	|	|	|	|	1.03
20.500	0.00	0.01	0.309	O	|	|	|	|	1.03
20.583	0.00	0.01	0.308	O	|	|	|	|	1.03

20.667	0.00	0.01	0.308	O	|	|	|	|	1.03
20.750	0.00	0.01	0.308	O	|	|	|	|	1.03
20.833	0.00	0.01	0.308	O	|	|	|	|	1.03
20.917	0.00	0.01	0.308	O	|	|	|	|	1.03
21.000	0.00	0.01	0.308	O	|	|	|	|	1.03
21.083	0.00	0.01	0.308	O	|	|	|	|	1.03
21.167	0.00	0.01	0.308	O	|	|	|	|	1.03
21.250	0.00	0.01	0.308	O	|	|	|	|	1.03
21.333	0.00	0.01	0.308	O	|	|	|	|	1.03
21.417	0.00	0.01	0.308	O	|	|	|	|	1.03
21.500	0.00	0.01	0.307	O	|	|	|	|	1.03
21.583	0.00	0.01	0.307	O	|	|	|	|	1.03
21.667	0.00	0.01	0.307	O	|	|	|	|	1.03
21.750	0.00	0.01	0.307	O	|	|	|	|	1.03
21.833	0.00	0.01	0.307	O	|	|	|	|	1.03
21.917	0.00	0.01	0.307	O	|	|	|	|	1.03
22.000	0.00	0.01	0.307	O	|	|	|	|	1.03
22.083	0.00	0.01	0.307	O	|	|	|	|	1.03
22.167	0.00	0.01	0.307	O	|	|	|	|	1.03
22.250	0.00	0.01	0.307	O	|	|	|	|	1.03
22.333	0.00	0.01	0.307	O	|	|	|	|	1.03
22.417	0.00	0.01	0.307	O	|	|	|	|	1.03
22.500	0.00	0.01	0.306	O	|	|	|	|	1.03
22.583	0.00	0.01	0.306	O	|	|	|	|	1.03
22.667	0.00	0.01	0.306	O	|	|	|	|	1.03
22.750	0.00	0.01	0.306	O	|	|	|	|	1.03
22.833	0.00	0.01	0.306	O	|	|	|	|	1.03
22.917	0.00	0.01	0.306	O	|	|	|	|	1.03
23.000	0.00	0.01	0.306	O	|	|	|	|	

1.03

23.083	0.00	0.01	0.306	O	|	|	|	|	1.03
23.167	0.00	0.01	0.306	O	|	|	|	|	1.03
23.250	0.00	0.01	0.306	O	|	|	|	|	1.03
23.333	0.00	0.01	0.306	O	|	|	|	|	1.03
23.417	0.00	0.01	0.306	O	|	|	|	|	1.03
23.500	0.00	0.01	0.305	O	|	|	|	|	1.03
23.583	0.00	0.01	0.305	O	|	|	|	|	1.03
23.667	0.00	0.01	0.305	O	|	|	|	|	1.03
23.750	0.00	0.01	0.305	O	|	|	|	|	1.03
23.833	0.00	0.01	0.305	O	|	|	|	|	1.03
23.917	0.00	0.01	0.305	O	|	|	|	|	1.03
24.000	0.00	0.01	0.305	O	|	|	|	|	1.03
24.083	0.00	0.01	0.305	O	|	|	|	|	1.03
24.167	0.00	0.01	0.305	O	|	|	|	|	1.02
24.250	0.00	0.01	0.305	O	|	|	|	|	1.02
24.333	0.00	0.01	0.305	O	|	|	|	|	1.02
24.417	0.00	0.01	0.305	O	|	|	|	|	1.02
24.500	0.00	0.01	0.305	O	|	|	|	|	1.02
24.583	0.00	0.01	0.305	O	|	|	|	|	1.02
24.667	0.00	0.01	0.304	O	|	|	|	|	1.02
24.750	0.00	0.01	0.304	O	|	|	|	|	1.02
24.833	0.00	0.01	0.304	O	|	|	|	|	1.02
24.917	0.00	0.01	0.304	O	|	|	|	|	1.02
25.000	0.00	0.01	0.304	O	|	|	|	|	1.02
25.083	0.00	0.01	0.304	O	|	|	|	|	1.02
25.167	0.00	0.01	0.304	O	|	|	|	|	1.02
25.250	0.00	0.01	0.304	O	|	|	|	|	1.02
25.333	0.00	0.01	0.304	O	|	|	|	|	1.02

25.417	0.00	0.01	0.304	O	|	|	|	|	1.02
25.500	0.00	0.01	0.304	O	|	|	|	|	1.02
25.583	0.00	0.01	0.304	O	|	|	|	|	1.02
25.667	0.00	0.01	0.304	O	|	|	|	|	1.02
25.750	0.00	0.01	0.304	O	|	|	|	|	1.02
25.833	0.00	0.01	0.304	O	|	|	|	|	1.02
25.917	0.00	0.01	0.303	O	|	|	|	|	1.02
26.000	0.00	0.01	0.303	O	|	|	|	|	1.02
26.083	0.00	0.01	0.303	O	|	|	|	|	1.02
26.167	0.00	0.01	0.303	O	|	|	|	|	1.02
26.250	0.00	0.01	0.303	O	|	|	|	|	1.02
26.333	0.00	0.01	0.303	O	|	|	|	|	1.02
26.417	0.00	0.01	0.303	O	|	|	|	|	1.02
26.500	0.00	0.01	0.303	O	|	|	|	|	1.02
26.583	0.00	0.01	0.303	O	|	|	|	|	1.02
26.667	0.00	0.01	0.303	O	|	|	|	|	1.02
26.750	0.00	0.01	0.303	O	|	|	|	|	1.02
26.833	0.00	0.01	0.303	O	|	|	|	|	1.02
26.917	0.00	0.01	0.303	O	|	|	|	|	1.02
27.000	0.00	0.01	0.303	O	|	|	|	|	1.02
27.083	0.00	0.01	0.303	O	|	|	|	|	1.02
27.167	0.00	0.01	0.303	O	|	|	|	|	1.02
27.250	0.00	0.01	0.302	O	|	|	|	|	1.02
27.333	0.00	0.01	0.302	O	|	|	|	|	1.02
27.417	0.00	0.01	0.302	O	|	|	|	|	1.02
27.500	0.00	0.01	0.302	O	|	|	|	|	1.02
27.583	0.00	0.01	0.302	O	|	|	|	|	1.02
27.667	0.00	0.01	0.302	O	|	|	|	|	1.02
27.750	0.00	0.01	0.302	O	|	|	|	|	

1.02

27.833	0.00	0.01	0.302	O	|	|	|	|	1.02
27.917	0.00	0.01	0.302	O	|	|	|	|	1.02
28.000	0.00	0.01	0.302	O	|	|	|	|	1.02
28.083	0.00	0.01	0.302	O	|	|	|	|	1.02
28.167	0.00	0.01	0.302	O	|	|	|	|	1.02
28.250	0.00	0.01	0.302	O	|	|	|	|	1.02
28.333	0.00	0.01	0.302	O	|	|	|	|	1.02
28.417	0.00	0.01	0.302	O	|	|	|	|	1.02
28.500	0.00	0.01	0.302	O	|	|	|	|	1.02
28.583	0.00	0.01	0.302	O	|	|	|	|	1.02
28.667	0.00	0.01	0.302	O	|	|	|	|	1.02
28.750	0.00	0.01	0.301	O	|	|	|	|	1.02
28.833	0.00	0.01	0.301	O	|	|	|	|	1.02
28.917	0.00	0.01	0.301	O	|	|	|	|	1.02
29.000	0.00	0.01	0.301	O	|	|	|	|	1.02
29.083	0.00	0.01	0.301	O	|	|	|	|	1.02
29.167	0.00	0.01	0.301	O	|	|	|	|	1.02
29.250	0.00	0.01	0.301	O	|	|	|	|	1.02
29.333	0.00	0.01	0.301	O	|	|	|	|	1.02
29.417	0.00	0.01	0.301	O	|	|	|	|	1.02
29.500	0.00	0.01	0.301	O	|	|	|	|	1.02
29.583	0.00	0.01	0.301	O	|	|	|	|	1.02
29.667	0.00	0.01	0.301	O	|	|	|	|	1.02
29.750	0.00	0.01	0.301	O	|	|	|	|	1.02
29.833	0.00	0.01	0.301	O	|	|	|	|	1.02
29.917	0.00	0.01	0.301	O	|	|	|	|	1.02
30.000	0.00	0.01	0.301	O	|	|	|	|	1.02
30.083	0.00	0.01	0.301	O	|	|	|	|	1.02

30.167	0.00	0.01	0.301	O	|	|	|	|	1.02
30.250	0.00	0.01	0.301	O	|	|	|	|	1.02
30.333	0.00	0.01	0.301	O	|	|	|	|	1.01
30.417	0.00	0.01	0.300	O	|	|	|	|	1.01
30.500	0.00	0.01	0.300	O	|	|	|	|	1.01
30.583	0.00	0.01	0.300	O	|	|	|	|	1.01
30.667	0.00	0.01	0.300	O	|	|	|	|	1.01
30.750	0.00	0.01	0.300	O	|	|	|	|	1.01
30.833	0.00	0.01	0.300	O	|	|	|	|	1.01
30.917	0.00	0.01	0.300	O	|	|	|	|	1.01
31.000	0.00	0.01	0.300	O	|	|	|	|	1.01
31.083	0.00	0.01	0.300	O	|	|	|	|	1.01
31.167	0.00	0.01	0.300	O	|	|	|	|	1.01
31.250	0.00	0.01	0.300	O	|	|	|	|	1.01
31.333	0.00	0.01	0.300	O	|	|	|	|	1.01
31.417	0.00	0.01	0.300	O	|	|	|	|	1.01
31.500	0.00	0.01	0.300	O	|	|	|	|	1.01
31.583	0.00	0.01	0.300	O	|	|	|	|	1.01
31.667	0.00	0.01	0.300	O	|	|	|	|	1.01
31.750	0.00	0.01	0.300	O	|	|	|	|	1.01
31.833	0.00	0.01	0.300	O	|	|	|	|	1.01
31.917	0.00	0.01	0.300	O	|	|	|	|	1.01
32.000	0.00	0.01	0.300	O	|	|	|	|	1.01
32.083	0.00	0.01	0.300	O	|	|	|	|	1.01
32.167	0.00	0.01	0.300	O	|	|	|	|	1.01
32.250	0.00	0.01	0.300	O	|	|	|	|	1.01
32.333	0.00	0.01	0.299	O	|	|	|	|	1.01
32.417	0.00	0.01	0.299	O	|	|	|	|	1.01
32.500	0.00	0.01	0.299	O	|	|	|	|	

1.01

32.583	0.00	0.01	0.299	O	|	|	|	|	1.01
32.667	0.00	0.01	0.299	O	|	|	|	|	1.01
32.750	0.00	0.01	0.299	O	|	|	|	|	1.01
32.833	0.00	0.01	0.299	O	|	|	|	|	1.01
32.917	0.00	0.01	0.299	O	|	|	|	|	1.01
33.000	0.00	0.01	0.299	O	|	|	|	|	1.01
33.083	0.00	0.01	0.299	O	|	|	|	|	1.01
33.167	0.00	0.01	0.299	O	|	|	|	|	1.01
33.250	0.00	0.01	0.299	O	|	|	|	|	1.01
33.333	0.00	0.01	0.299	O	|	|	|	|	1.01
33.417	0.00	0.01	0.299	O	|	|	|	|	1.01
33.500	0.00	0.01	0.299	O	|	|	|	|	1.01
33.583	0.00	0.01	0.299	O	|	|	|	|	1.01
33.667	0.00	0.01	0.299	O	|	|	|	|	1.01
33.750	0.00	0.01	0.299	O	|	|	|	|	1.01
33.833	0.00	0.01	0.299	O	|	|	|	|	1.01
33.917	0.00	0.01	0.299	O	|	|	|	|	1.01
34.000	0.00	0.01	0.299	O	|	|	|	|	1.01
34.083	0.00	0.01	0.299	O	|	|	|	|	1.01
34.167	0.00	0.01	0.299	O	|	|	|	|	1.01
34.250	0.00	0.01	0.299	O	|	|	|	|	1.01
34.333	0.00	0.01	0.299	O	|	|	|	|	1.01
34.417	0.00	0.01	0.299	O	|	|	|	|	1.01
34.500	0.00	0.00	0.299	O	|	|	|	|	1.01
34.583	0.00	0.00	0.298	O	|	|	|	|	1.01
34.667	0.00	0.00	0.298	O	|	|	|	|	1.01
34.750	0.00	0.00	0.298	O	|	|	|	|	1.01
34.833	0.00	0.00	0.298	O	|	|	|	|	1.01

34.917	0.00	0.00	0.298	O	|	|	|	|	1.01
35.000	0.00	0.00	0.298	O	|	|	|	|	1.01
35.083	0.00	0.00	0.298	O	|	|	|	|	1.01
35.167	0.00	0.00	0.298	O	|	|	|	|	1.01
35.250	0.00	0.00	0.298	O	|	|	|	|	1.01
35.333	0.00	0.00	0.298	O	|	|	|	|	1.01
35.417	0.00	0.00	0.298	O	|	|	|	|	1.01
35.500	0.00	0.00	0.298	O	|	|	|	|	1.01
35.583	0.00	0.00	0.298	O	|	|	|	|	1.01
35.667	0.00	0.00	0.298	O	|	|	|	|	1.01
35.750	0.00	0.00	0.298	O	|	|	|	|	1.01
35.833	0.00	0.00	0.298	O	|	|	|	|	1.01
35.917	0.00	0.00	0.298	O	|	|	|	|	1.01
36.000	0.00	0.00	0.298	O	|	|	|	|	1.01
36.083	0.00	0.00	0.298	O	|	|	|	|	1.01
36.167	0.00	0.00	0.298	O	|	|	|	|	1.01
36.250	0.00	0.00	0.298	O	|	|	|	|	1.01
36.333	0.00	0.00	0.298	O	|	|	|	|	1.01
36.417	0.00	0.00	0.298	O	|	|	|	|	1.01
36.500	0.00	0.00	0.298	O	|	|	|	|	1.01
36.583	0.00	0.00	0.298	O	|	|	|	|	1.01
36.667	0.00	0.00	0.298	O	|	|	|	|	1.01
36.750	0.00	0.00	0.298	O	|	|	|	|	1.01
36.833	0.00	0.00	0.298	O	|	|	|	|	1.01
36.917	0.00	0.00	0.298	O	|	|	|	|	1.01
37.000	0.00	0.00	0.298	O	|	|	|	|	1.01
37.083	0.00	0.00	0.298	O	|	|	|	|	1.01
37.167	0.00	0.00	0.298	O	|	|	|	|	1.01
37.250	0.00	0.00	0.298	O	|	|	|	|	

1.01

37.333	0.00	0.00	0.297	O	|	|	|	|	1.01
37.417	0.00	0.00	0.297	O	|	|	|	|	1.01
37.500	0.00	0.00	0.297	O	|	|	|	|	1.01
37.583	0.00	0.00	0.297	O	|	|	|	|	1.01
37.667	0.00	0.00	0.297	O	|	|	|	|	1.01
37.750	0.00	0.00	0.297	O	|	|	|	|	1.01
37.833	0.00	0.00	0.297	O	|	|	|	|	1.01
37.917	0.00	0.00	0.297	O	|	|	|	|	1.01
38.000	0.00	0.00	0.297	O	|	|	|	|	1.01
38.083	0.00	0.00	0.297	O	|	|	|	|	1.01
38.167	0.00	0.00	0.297	O	|	|	|	|	1.01
38.250	0.00	0.00	0.297	O	|	|	|	|	1.01
38.333	0.00	0.00	0.297	O	|	|	|	|	1.01
38.417	0.00	0.00	0.297	O	|	|	|	|	1.01
38.500	0.00	0.00	0.297	O	|	|	|	|	1.01
38.583	0.00	0.00	0.297	O	|	|	|	|	1.01
38.667	0.00	0.00	0.297	O	|	|	|	|	1.01
38.750	0.00	0.00	0.297	O	|	|	|	|	1.01
38.833	0.00	0.00	0.297	O	|	|	|	|	1.01
38.917	0.00	0.00	0.297	O	|	|	|	|	1.01
39.000	0.00	0.00	0.297	O	|	|	|	|	1.01
39.083	0.00	0.00	0.297	O	|	|	|	|	1.01
39.167	0.00	0.00	0.297	O	|	|	|	|	1.01
39.250	0.00	0.00	0.297	O	|	|	|	|	1.01
39.333	0.00	0.00	0.297	O	|	|	|	|	1.01
39.417	0.00	0.00	0.297	O	|	|	|	|	1.01
39.500	0.00	0.00	0.297	O	|	|	|	|	1.01
39.583	0.00	0.00	0.297	O	|	|	|	|	1.01

39.667	0.00	0.00	0.297	O	|	|	|	|	1.01
39.750	0.00	0.00	0.297	O	|	|	|	|	1.01
39.833	0.00	0.00	0.297	O	|	|	|	|	1.01
39.917	0.00	0.00	0.297	O	|	|	|	|	1.01
40.000	0.00	0.00	0.297	O	|	|	|	|	1.01
40.083	0.00	0.00	0.297	O	|	|	|	|	1.01
40.167	0.00	0.00	0.297	O	|	|	|	|	1.01
40.250	0.00	0.00	0.297	O	|	|	|	|	1.01
40.333	0.00	0.00	0.297	O	|	|	|	|	1.01
40.417	0.00	0.00	0.297	O	|	|	|	|	1.01
40.500	0.00	0.00	0.297	O	|	|	|	|	1.01
40.583	0.00	0.00	0.297	O	|	|	|	|	1.01
40.667	0.00	0.00	0.296	O	|	|	|	|	1.01
40.750	0.00	0.00	0.296	O	|	|	|	|	1.01
40.833	0.00	0.00	0.296	O	|	|	|	|	1.01
40.917	0.00	0.00	0.296	O	|	|	|	|	1.01
41.000	0.00	0.00	0.296	O	|	|	|	|	1.01
41.083	0.00	0.00	0.296	O	|	|	|	|	1.01
41.167	0.00	0.00	0.296	O	|	|	|	|	1.01
41.250	0.00	0.00	0.296	O	|	|	|	|	1.01
41.333	0.00	0.00	0.296	O	|	|	|	|	1.01
41.417	0.00	0.00	0.296	O	|	|	|	|	1.01
41.500	0.00	0.00	0.296	O	|	|	|	|	1.01
41.583	0.00	0.00	0.296	O	|	|	|	|	1.01
41.667	0.00	0.00	0.296	O	|	|	|	|	1.01
41.750	0.00	0.00	0.296	O	|	|	|	|	1.01
41.833	0.00	0.00	0.296	O	|	|	|	|	1.01
41.917	0.00	0.00	0.296	O	|	|	|	|	1.00
42.000	0.00	0.00	0.296	O	|	|	|	|	

1.00

42.083	0.00	0.00	0.296	O	|	|	|	|	1.00
42.167	0.00	0.00	0.296	O	|	|	|	|	1.00
42.250	0.00	0.00	0.296	O	|	|	|	|	1.00
42.333	0.00	0.00	0.296	O	|	|	|	|	1.00
42.417	0.00	0.00	0.296	O	|	|	|	|	1.00
42.500	0.00	0.00	0.296	O	|	|	|	|	1.00
42.583	0.00	0.00	0.296	O	|	|	|	|	1.00
42.667	0.00	0.00	0.296	O	|	|	|	|	1.00
42.750	0.00	0.00	0.296	O	|	|	|	|	1.00
42.833	0.00	0.00	0.296	O	|	|	|	|	1.00
42.917	0.00	0.00	0.296	O	|	|	|	|	1.00
43.000	0.00	0.00	0.296	O	|	|	|	|	1.00
43.083	0.00	0.00	0.296	O	|	|	|	|	1.00
43.167	0.00	0.00	0.296	O	|	|	|	|	1.00
43.250	0.00	0.00	0.296	O	|	|	|	|	1.00
43.333	0.00	0.00	0.296	O	|	|	|	|	1.00
43.417	0.00	0.00	0.296	O	|	|	|	|	1.00
43.500	0.00	0.00	0.296	O	|	|	|	|	1.00
43.583	0.00	0.00	0.296	O	|	|	|	|	1.00
43.667	0.00	0.00	0.296	O	|	|	|	|	1.00
43.750	0.00	0.00	0.296	O	|	|	|	|	1.00
43.833	0.00	0.00	0.296	O	|	|	|	|	1.00
43.917	0.00	0.00	0.296	O	|	|	|	|	1.00
44.000	0.00	0.00	0.296	O	|	|	|	|	1.00
44.083	0.00	0.00	0.296	O	|	|	|	|	1.00
44.167	0.00	0.00	0.296	O	|	|	|	|	1.00
44.250	0.00	0.00	0.296	O	|	|	|	|	1.00
44.333	0.00	0.00	0.296	O	|	|	|	|	1.00

44.417	0.00	0.00	0.296	O	|	|	|	|	1.00
44.500	0.00	0.00	0.296	O	|	|	|	|	1.00
44.583	0.00	0.00	0.296	O	|	|	|	|	1.00
44.667	0.00	0.00	0.296	O	|	|	|	|	1.00
44.750	0.00	0.00	0.296	O	|	|	|	|	1.00
44.833	0.00	0.00	0.296	O	|	|	|	|	1.00
44.917	0.00	0.00	0.296	O	|	|	|	|	1.00
45.000	0.00	0.00	0.296	O	|	|	|	|	1.00
45.083	0.00	0.00	0.295	O	|	|	|	|	1.00
45.167	0.00	0.00	0.295	O	|	|	|	|	1.00
45.250	0.00	0.00	0.295	O	|	|	|	|	1.00
45.333	0.00	0.00	0.295	O	|	|	|	|	1.00
45.417	0.00	0.00	0.295	O	|	|	|	|	1.00
45.500	0.00	0.00	0.295	O	|	|	|	|	1.00
45.583	0.00	0.00	0.295	O	|	|	|	|	1.00
45.667	0.00	0.00	0.295	O	|	|	|	|	1.00
45.750	0.00	0.00	0.295	O	|	|	|	|	1.00
45.833	0.00	0.00	0.295	O	|	|	|	|	1.00
45.917	0.00	0.00	0.295	O	|	|	|	|	1.00
46.000	0.00	0.00	0.295	O	|	|	|	|	1.00
46.083	0.00	0.00	0.295	O	|	|	|	|	1.00
46.167	0.00	0.00	0.295	O	|	|	|	|	1.00
46.250	0.00	0.00	0.295	O	|	|	|	|	1.00
46.333	0.00	0.00	0.295	O	|	|	|	|	1.00
46.417	0.00	0.00	0.295	O	|	|	|	|	1.00
46.500	0.00	0.00	0.295	O	|	|	|	|	1.00
46.583	0.00	0.00	0.295	O	|	|	|	|	1.00
46.667	0.00	0.00	0.295	O	|	|	|	|	1.00
46.750	0.00	0.00	0.295	O	|	|	|	|	

1.00

46.833	0.00	0.00	0.295	O	|	|	|	|	1.00
46.917	0.00	0.00	0.295	O	|	|	|	|	1.00
47.000	0.00	0.00	0.295	O	|	|	|	|	1.00
47.083	0.00	0.00	0.295	O	|	|	|	|	1.00
47.167	0.00	0.00	0.295	O	|	|	|	|	1.00
47.250	0.00	0.00	0.295	O	|	|	|	|	1.00
47.333	0.00	0.00	0.295	O	|	|	|	|	1.00
47.417	0.00	0.00	0.295	O	|	|	|	|	1.00
47.500	0.00	0.00	0.295	O	|	|	|	|	1.00
47.583	0.00	0.00	0.295	O	|	|	|	|	1.00
47.667	0.00	0.00	0.295	O	|	|	|	|	1.00
47.750	0.00	0.00	0.295	O	|	|	|	|	1.00
47.833	0.00	0.00	0.295	O	|	|	|	|	1.00
47.917	0.00	0.00	0.295	O	|	|	|	|	1.00
48.000	0.00	0.00	0.295	O	|	|	|	|	1.00
48.083	0.00	0.00	0.295	O	|	|	|	|	1.00
48.167	0.00	0.00	0.295	O	|	|	|	|	1.00
48.250	0.00	0.00	0.295	O	|	|	|	|	1.00
48.333	0.00	0.00	0.295	O	|	|	|	|	1.00
48.417	0.00	0.00	0.295	O	|	|	|	|	1.00
48.500	0.00	0.00	0.295	O	|	|	|	|	1.00
48.583	0.00	0.00	0.295	O	|	|	|	|	1.00
48.667	0.00	0.00	0.295	O	|	|	|	|	1.00
48.750	0.00	0.00	0.295	O	|	|	|	|	1.00
48.833	0.00	0.00	0.295	O	|	|	|	|	1.00
48.917	0.00	0.00	0.295	O	|	|	|	|	1.00
49.000	0.00	0.00	0.295	O	|	|	|	|	1.00
49.083	0.00	0.00	0.295	O	|	|	|	|	1.00

49.167	0.00	0.00	0.295	O	|	|	|	|	1.00
49.250	0.00	0.00	0.295	O	|	|	|	|	1.00
49.333	0.00	0.00	0.295	O	|	|	|	|	1.00
49.417	0.00	0.00	0.295	O	|	|	|	|	1.00
49.500	0.00	0.00	0.295	O	|	|	|	|	1.00
49.583	0.00	0.00	0.295	O	|	|	|	|	1.00
49.667	0.00	0.00	0.295	O	|	|	|	|	1.00
49.750	0.00	0.00	0.295	O	|	|	|	|	1.00
49.833	0.00	0.00	0.295	O	|	|	|	|	1.00
49.917	0.00	0.00	0.295	O	|	|	|	|	1.00
50.000	0.00	0.00	0.295	O	|	|	|	|	1.00
50.083	0.00	0.00	0.295	O	|	|	|	|	1.00
50.167	0.00	0.00	0.295	O	|	|	|	|	1.00
50.250	0.00	0.00	0.295	O	|	|	|	|	1.00
50.333	0.00	0.00	0.295	O	|	|	|	|	1.00
50.417	0.00	0.00	0.295	O	|	|	|	|	1.00
50.500	0.00	0.00	0.295	O	|	|	|	|	1.00
50.583	0.00	0.00	0.295	O	|	|	|	|	1.00
50.667	0.00	0.00	0.295	O	|	|	|	|	1.00
50.750	0.00	0.00	0.295	O	|	|	|	|	1.00
50.833	0.00	0.00	0.295	O	|	|	|	|	1.00
50.917	0.00	0.00	0.295	O	|	|	|	|	1.00
51.000	0.00	0.00	0.295	O	|	|	|	|	1.00
51.083	0.00	0.00	0.295	O	|	|	|	|	1.00
51.167	0.00	0.00	0.295	O	|	|	|	|	1.00
51.250	0.00	0.00	0.295	O	|	|	|	|	1.00
51.333	0.00	0.00	0.295	O	|	|	|	|	1.00
51.417	0.00	0.00	0.295	O	|	|	|	|	1.00
51.500	0.00	0.00	0.295	O	|	|	|	|	

1.00

51.583	0.00	0.00	0.294	O	|	|	|	1.00
51.667	0.00	0.00	0.294	O	|	|	|	1.00
51.750	0.00	0.00	0.294	O	|	|	|	1.00
51.833	0.00	0.00	0.294	O	|	|	|	1.00
51.917	0.00	0.00	0.294	O	|	|	|	1.00
52.000	0.00	0.00	0.294	O	|	|	|	1.00
52.083	0.00	0.00	0.294	O	|	|	|	1.00
52.167	0.00	0.00	0.294	O	|	|	|	1.00
52.250	0.00	0.00	0.294	O	|	|	|	1.00
52.333	0.00	0.00	0.294	O	|	|	|	1.00
52.417	0.00	0.00	0.294	O	|	|	|	1.00
52.500	0.00	0.00	0.294	O	|	|	|	1.00
52.583	0.00	0.00	0.294	O	|	|	|	1.00
52.667	0.00	0.00	0.294	O	|	|	|	1.00
52.750	0.00	0.00	0.294	O	|	|	|	1.00
52.833	0.00	0.00	0.294	O	|	|	|	1.00
52.917	0.00	0.00	0.294	O	|	|	|	1.00
53.000	0.00	0.00	0.294	O	|	|	|	1.00
53.083	0.00	0.00	0.294	O	|	|	|	1.00
53.167	0.00	0.00	0.294	O	|	|	|	1.00
53.250	0.00	0.00	0.294	O	|	|	|	1.00
53.333	0.00	0.00	0.294	O	|	|	|	1.00
53.417	0.00	0.00	0.294	O	|	|	|	1.00
53.500	0.00	0.00	0.294	O	|	|	|	1.00
53.583	0.00	0.00	0.294	O	|	|	|	1.00
53.667	0.00	0.00	0.294	O	|	|	|	1.00
53.750	0.00	0.00	0.294	O	|	|	|	1.00
53.833	0.00	0.00	0.294	O	|	|	|	1.00

53.917	0.00	0.00	0.294	O	|	|	|	|	1.00
54.000	0.00	0.00	0.294	O	|	|	|	|	1.00
54.083	0.00	0.00	0.294	O	|	|	|	|	1.00
54.167	0.00	0.00	0.294	O	|	|	|	|	1.00
54.250	0.00	0.00	0.294	O	|	|	|	|	1.00
54.333	0.00	0.00	0.294	O	|	|	|	|	1.00
54.417	0.00	0.00	0.294	O	|	|	|	|	1.00
54.500	0.00	0.00	0.294	O	|	|	|	|	1.00
54.583	0.00	0.00	0.294	O	|	|	|	|	1.00
54.667	0.00	0.00	0.294	O	|	|	|	|	1.00
54.750	0.00	0.00	0.294	O	|	|	|	|	1.00
54.833	0.00	0.00	0.294	O	|	|	|	|	1.00
54.917	0.00	0.00	0.294	O	|	|	|	|	1.00
55.000	0.00	0.00	0.294	O	|	|	|	|	1.00
55.083	0.00	0.00	0.294	O	|	|	|	|	1.00
55.167	0.00	0.00	0.294	O	|	|	|	|	1.00
55.250	0.00	0.00	0.294	O	|	|	|	|	1.00
55.333	0.00	0.00	0.294	O	|	|	|	|	1.00
55.417	0.00	0.00	0.294	O	|	|	|	|	1.00
55.500	0.00	0.00	0.294	O	|	|	|	|	1.00
55.583	0.00	0.00	0.294	O	|	|	|	|	1.00
55.667	0.00	0.00	0.294	O	|	|	|	|	1.00
55.750	0.00	0.00	0.294	O	|	|	|	|	1.00
55.833	0.00	0.00	0.294	O	|	|	|	|	1.00
55.917	0.00	0.00	0.294	O	|	|	|	|	1.00
56.000	0.00	0.00	0.294	O	|	|	|	|	1.00
56.083	0.00	0.00	0.294	O	|	|	|	|	1.00
56.167	0.00	0.00	0.294	O	|	|	|	|	1.00
56.250	0.00	0.00	0.294	O	|	|	|	|	

1.00

56.333	0.00	0.00	0.294	O	|	|	|	1.00
56.417	0.00	0.00	0.294	O	|	|	|	1.00
56.500	0.00	0.00	0.294	O	|	|	|	1.00
56.583	0.00	0.00	0.294	O	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 679
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.056 (CFS)
Total volume = 0.064 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
5 YR - 3 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP35.rte
**********HYDROGRAPH DATA**********
Number of intervals = 38
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 6.497 (CFS)
Total volume = 0.564 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 38
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 1.6 3.25 4.87 6.50 (Ft.)	Depth
0.083	0.60	0.00	0.002	O I | | | |	0.01
0.167	0.99	0.00	0.008	O I | | | |	0.03
0.250	0.97	0.00	0.014	O I | | | |	0.05
0.333	1.09	0.00	0.021	O I | | | |	0.07
0.417	1.20	0.00	0.029	O I | | | |	0.10
0.500	1.36	0.00	0.038	O I | | | |	0.13
0.583	1.31	0.00	0.047	O I | | | |	0.16
0.667	1.38	0.00	0.057	O I | | | |	0.19
0.750	1.45	0.00	0.066	O I| | | |	0.23
0.833	1.33	0.00	0.076	O I | | | |	0.26
0.917	1.28	0.00	0.085	O I | | | |	0.29
1.000	1.39	0.00	0.094	O I | | | |	0.32
1.083	1.64	0.00	0.105	O I | | | |	0.36
1.167	1.77	0.00	0.116	O I | | | |	0.40
1.250	1.79	0.00	0.129	O I | | | |	0.44
1.333	1.70	0.00	0.141	O I | | | |	0.48
1.417	1.92	0.00	0.153	O |I | | |	0.52
1.500	2.14	0.00	0.167	O | I | | |	0.57
1.583	2.06	0.00	0.181	O | I | | |	0.62
1.667	2.11	0.00	0.196	O | I | | |	0.67
1.750	2.46	0.00	0.212	O | I | | |	0.72

1.833	2.57	0.00	0.229	O	|	I |	|	|	0.78
1.917	2.45	0.00	0.246	O	|	I |	|	|	0.84
2.000	2.42	0.00	0.263	O	| I	|	|	|	0.89
2.083	2.49	0.00	0.280	O	|	I |	|	|	0.95
2.167	3.03	0.01	0.299	O	|	I |	|	|	1.01
2.250	3.74	0.03	0.322	O	|	| I	|	|	1.06
2.333	3.34	0.05	0.346	O	|	I |	|	|	1.12
2.417	4.45	0.07	0.372	O	|	| I	|	|	1.18
2.500	5.65	0.10	0.407	O	|	|	| I	|	1.26
2.583	6.50	0.11	0.448	O	|	|	|	I	1.35
2.667	5.67	0.13	0.489	O	|	|	| I	|	1.43
2.750	3.14	0.14	0.518	O	|	I |	|	|	1.50
2.833	1.74	0.15	0.534	O	I	|	|	|	1.53
2.917	1.48	0.15	0.544	O	I |	|	|	|	1.55
3.000	0.91	0.16	0.551	O	I |	|	|	|	1.56
3.083	0.27	0.16	0.554	OI	|	|	|	|	1.57
3.167	0.03	0.16	0.554	O	|	|	|	|	1.57
3.250	0.00	0.16	0.553	O	|	|	|	|	1.57
3.333	0.00	0.16	0.552	O	|	|	|	|	1.57
3.417	0.00	0.16	0.551	O	|	|	|	|	1.56
3.500	0.00	0.16	0.550	O	|	|	|	|	1.56
3.583	0.00	0.16	0.549	O	|	|	|	|	1.56
3.667	0.00	0.16	0.548	O	|	|	|	|	1.56
3.750	0.00	0.16	0.547	O	|	|	|	|	1.55
3.833	0.00	0.15	0.546	O	|	|	|	|	1.55
3.917	0.00	0.15	0.545	O	|	|	|	|	1.55
4.000	0.00	0.15	0.544	O	|	|	|	|	1.55
4.083	0.00	0.15	0.543	O	|	|	|	|	1.55
4.167	0.00	0.15	0.541	O	|	|	|	|	1.54
4.250	0.00	0.15	0.540	O	|	|	|	|	

1.54

4.333	0.00	0.15	0.539	O	|	|	|	|	1.54
4.417	0.00	0.15	0.538	O	|	|	|	|	1.54
4.500	0.00	0.15	0.537	O	|	|	|	|	1.54
4.583	0.00	0.15	0.536	O	|	|	|	|	1.53
4.667	0.00	0.15	0.535	O	|	|	|	|	1.53
4.750	0.00	0.15	0.534	O	|	|	|	|	1.53
4.833	0.00	0.15	0.533	O	|	|	|	|	1.53
4.917	0.00	0.15	0.532	O	|	|	|	|	1.52
5.000	0.00	0.15	0.531	O	|	|	|	|	1.52
5.083	0.00	0.14	0.530	O	|	|	|	|	1.52
5.167	0.00	0.14	0.529	O	|	|	|	|	1.52
5.250	0.00	0.14	0.528	O	|	|	|	|	1.52
5.333	0.00	0.14	0.527	O	|	|	|	|	1.51
5.417	0.00	0.14	0.526	O	|	|	|	|	1.51
5.500	0.00	0.14	0.525	O	|	|	|	|	1.51
5.583	0.00	0.14	0.524	O	|	|	|	|	1.51
5.667	0.00	0.14	0.523	O	|	|	|	|	1.51
5.750	0.00	0.14	0.522	O	|	|	|	|	1.50
5.833	0.00	0.14	0.521	O	|	|	|	|	1.50
5.917	0.00	0.14	0.520	O	|	|	|	|	1.50
6.000	0.00	0.14	0.520	O	|	|	|	|	1.50
6.083	0.00	0.14	0.519	O	|	|	|	|	1.50
6.167	0.00	0.14	0.518	O	|	|	|	|	1.49
6.250	0.00	0.14	0.517	O	|	|	|	|	1.49
6.333	0.00	0.14	0.516	O	|	|	|	|	1.49
6.417	0.00	0.14	0.515	O	|	|	|	|	1.49
6.500	0.00	0.14	0.514	O	|	|	|	|	1.49
6.583	0.00	0.14	0.513	O	|	|	|	|	1.48

6.667	0.00	0.14	0.512	O	|	|	|	|	1.48
6.750	0.00	0.13	0.511	O	|	|	|	|	1.48
6.833	0.00	0.13	0.510	O	|	|	|	|	1.48
6.917	0.00	0.13	0.509	O	|	|	|	|	1.48
7.000	0.00	0.13	0.508	O	|	|	|	|	1.48
7.083	0.00	0.13	0.507	O	|	|	|	|	1.47
7.167	0.00	0.13	0.506	O	|	|	|	|	1.47
7.250	0.00	0.13	0.506	O	|	|	|	|	1.47
7.333	0.00	0.13	0.505	O	|	|	|	|	1.47
7.417	0.00	0.13	0.504	O	|	|	|	|	1.47
7.500	0.00	0.13	0.503	O	|	|	|	|	1.46
7.583	0.00	0.13	0.502	O	|	|	|	|	1.46
7.667	0.00	0.13	0.501	O	|	|	|	|	1.46
7.750	0.00	0.13	0.500	O	|	|	|	|	1.46
7.833	0.00	0.13	0.499	O	|	|	|	|	1.46
7.917	0.00	0.13	0.498	O	|	|	|	|	1.45
8.000	0.00	0.13	0.497	O	|	|	|	|	1.45
8.083	0.00	0.13	0.497	O	|	|	|	|	1.45
8.167	0.00	0.13	0.496	O	|	|	|	|	1.45
8.250	0.00	0.13	0.495	O	|	|	|	|	1.45
8.333	0.00	0.13	0.494	O	|	|	|	|	1.44
8.417	0.00	0.13	0.493	O	|	|	|	|	1.44
8.500	0.00	0.13	0.492	O	|	|	|	|	1.44
8.583	0.00	0.13	0.491	O	|	|	|	|	1.44
8.667	0.00	0.13	0.490	O	|	|	|	|	1.44
8.750	0.00	0.13	0.489	O	|	|	|	|	1.43
8.833	0.00	0.13	0.489	O	|	|	|	|	1.43
8.917	0.00	0.13	0.488	O	|	|	|	|	1.43
9.000	0.00	0.13	0.487	O	|	|	|	|	

1.43

9.083	0.00	0.13	0.486	O	|	|	|	1.43
9.167	0.00	0.13	0.485	O	|	|	|	1.43
9.250	0.00	0.13	0.484	O	|	|	|	1.42
9.333	0.00	0.13	0.483	O	|	|	|	1.42
9.417	0.00	0.12	0.482	O	|	|	|	1.42
9.500	0.00	0.12	0.482	O	|	|	|	1.42
9.583	0.00	0.12	0.481	O	|	|	|	1.42
9.667	0.00	0.12	0.480	O	|	|	|	1.41
9.750	0.00	0.12	0.479	O	|	|	|	1.41
9.833	0.00	0.12	0.478	O	|	|	|	1.41
9.917	0.00	0.12	0.477	O	|	|	|	1.41
10.000	0.00	0.12	0.477	O	|	|	|	1.41
10.083	0.00	0.12	0.476	O	|	|	|	1.41
10.167	0.00	0.12	0.475	O	|	|	|	1.40
10.250	0.00	0.12	0.474	O	|	|	|	1.40
10.333	0.00	0.12	0.473	O	|	|	|	1.40
10.417	0.00	0.12	0.472	O	|	|	|	1.40
10.500	0.00	0.12	0.471	O	|	|	|	1.40
10.583	0.00	0.12	0.471	O	|	|	|	1.39
10.667	0.00	0.12	0.470	O	|	|	|	1.39
10.750	0.00	0.12	0.469	O	|	|	|	1.39
10.833	0.00	0.12	0.468	O	|	|	|	1.39
10.917	0.00	0.12	0.467	O	|	|	|	1.39
11.000	0.00	0.12	0.467	O	|	|	|	1.39
11.083	0.00	0.12	0.466	O	|	|	|	1.38
11.167	0.00	0.12	0.465	O	|	|	|	1.38
11.250	0.00	0.12	0.464	O	|	|	|	1.38
11.333	0.00	0.12	0.463	O	|	|	|	1.38

11.417	0.00	0.12	0.462	O	|	|	|	|	1.38
11.500	0.00	0.12	0.462	O	|	|	|	|	1.38
11.583	0.00	0.12	0.461	O	|	|	|	|	1.37
11.667	0.00	0.12	0.460	O	|	|	|	|	1.37
11.750	0.00	0.12	0.459	O	|	|	|	|	1.37
11.833	0.00	0.12	0.458	O	|	|	|	|	1.37
11.917	0.00	0.12	0.458	O	|	|	|	|	1.37
12.000	0.00	0.12	0.457	O	|	|	|	|	1.36
12.083	0.00	0.12	0.456	O	|	|	|	|	1.36
12.167	0.00	0.12	0.455	O	|	|	|	|	1.36
12.250	0.00	0.12	0.454	O	|	|	|	|	1.36
12.333	0.00	0.11	0.454	O	|	|	|	|	1.36
12.417	0.00	0.11	0.453	O	|	|	|	|	1.36
12.500	0.00	0.11	0.452	O	|	|	|	|	1.35
12.583	0.00	0.11	0.451	O	|	|	|	|	1.35
12.667	0.00	0.11	0.450	O	|	|	|	|	1.35
12.750	0.00	0.11	0.450	O	|	|	|	|	1.35
12.833	0.00	0.11	0.449	O	|	|	|	|	1.35
12.917	0.00	0.11	0.448	O	|	|	|	|	1.35
13.000	0.00	0.11	0.447	O	|	|	|	|	1.34
13.083	0.00	0.11	0.447	O	|	|	|	|	1.34
13.167	0.00	0.11	0.446	O	|	|	|	|	1.34
13.250	0.00	0.11	0.445	O	|	|	|	|	1.34
13.333	0.00	0.11	0.444	O	|	|	|	|	1.34
13.417	0.00	0.11	0.444	O	|	|	|	|	1.34
13.500	0.00	0.11	0.443	O	|	|	|	|	1.33
13.583	0.00	0.11	0.442	O	|	|	|	|	1.33
13.667	0.00	0.11	0.441	O	|	|	|	|	1.33
13.750	0.00	0.11	0.440	O	|	|	|	|	

1.33

13.833	0.00	0.11	0.440	O	|	|	|	1.33
13.917	0.00	0.11	0.439	O	|	|	|	1.33
14.000	0.00	0.11	0.438	O	|	|	|	1.33
14.083	0.00	0.11	0.437	O	|	|	|	1.32
14.167	0.00	0.11	0.437	O	|	|	|	1.32
14.250	0.00	0.11	0.436	O	|	|	|	1.32
14.333	0.00	0.11	0.435	O	|	|	|	1.32
14.417	0.00	0.11	0.434	O	|	|	|	1.32
14.500	0.00	0.11	0.434	O	|	|	|	1.32
14.583	0.00	0.11	0.433	O	|	|	|	1.31
14.667	0.00	0.11	0.432	O	|	|	|	1.31
14.750	0.00	0.11	0.431	O	|	|	|	1.31
14.833	0.00	0.11	0.431	O	|	|	|	1.31
14.917	0.00	0.11	0.430	O	|	|	|	1.31
15.000	0.00	0.11	0.429	O	|	|	|	1.31
15.083	0.00	0.11	0.429	O	|	|	|	1.30
15.167	0.00	0.11	0.428	O	|	|	|	1.30
15.250	0.00	0.11	0.427	O	|	|	|	1.30
15.333	0.00	0.11	0.426	O	|	|	|	1.30
15.417	0.00	0.10	0.426	O	|	|	|	1.30
15.500	0.00	0.10	0.425	O	|	|	|	1.30
15.583	0.00	0.10	0.424	O	|	|	|	1.30
15.667	0.00	0.10	0.423	O	|	|	|	1.29
15.750	0.00	0.10	0.423	O	|	|	|	1.29
15.833	0.00	0.10	0.422	O	|	|	|	1.29
15.917	0.00	0.10	0.421	O	|	|	|	1.29
16.000	0.00	0.10	0.421	O	|	|	|	1.29
16.083	0.00	0.10	0.420	O	|	|	|	1.29

16.167	0.00	0.10	0.419	O	|	|	|	|	1.28
16.250	0.00	0.10	0.419	O	|	|	|	|	1.28
16.333	0.00	0.10	0.418	O	|	|	|	|	1.28
16.417	0.00	0.10	0.417	O	|	|	|	|	1.28
16.500	0.00	0.10	0.416	O	|	|	|	|	1.28
16.583	0.00	0.10	0.416	O	|	|	|	|	1.28
16.667	0.00	0.10	0.415	O	|	|	|	|	1.28
16.750	0.00	0.10	0.414	O	|	|	|	|	1.27
16.833	0.00	0.10	0.414	O	|	|	|	|	1.27
16.917	0.00	0.10	0.413	O	|	|	|	|	1.27
17.000	0.00	0.10	0.412	O	|	|	|	|	1.27
17.083	0.00	0.10	0.412	O	|	|	|	|	1.27
17.167	0.00	0.10	0.411	O	|	|	|	|	1.27
17.250	0.00	0.10	0.410	O	|	|	|	|	1.27
17.333	0.00	0.10	0.409	O	|	|	|	|	1.26
17.417	0.00	0.10	0.409	O	|	|	|	|	1.26
17.500	0.00	0.10	0.408	O	|	|	|	|	1.26
17.583	0.00	0.10	0.407	O	|	|	|	|	1.26
17.667	0.00	0.10	0.407	O	|	|	|	|	1.26
17.750	0.00	0.10	0.406	O	|	|	|	|	1.26
17.833	0.00	0.10	0.405	O	|	|	|	|	1.26
17.917	0.00	0.10	0.405	O	|	|	|	|	1.25
18.000	0.00	0.10	0.404	O	|	|	|	|	1.25
18.083	0.00	0.10	0.403	O	|	|	|	|	1.25
18.167	0.00	0.10	0.403	O	|	|	|	|	1.25
18.250	0.00	0.10	0.402	O	|	|	|	|	1.25
18.333	0.00	0.10	0.401	O	|	|	|	|	1.25
18.417	0.00	0.10	0.401	O	|	|	|	|	1.24
18.500	0.00	0.09	0.400	O	|	|	|	|	

1.24

18.583	0.00	0.09	0.399	O	|	|	|	1.24
18.667	0.00	0.09	0.399	O	|	|	|	1.24
18.750	0.00	0.09	0.398	O	|	|	|	1.24
18.833	0.00	0.09	0.398	O	|	|	|	1.24
18.917	0.00	0.09	0.397	O	|	|	|	1.24
19.000	0.00	0.09	0.396	O	|	|	|	1.23
19.083	0.00	0.09	0.396	O	|	|	|	1.23
19.167	0.00	0.09	0.395	O	|	|	|	1.23
19.250	0.00	0.09	0.394	O	|	|	|	1.23
19.333	0.00	0.09	0.394	O	|	|	|	1.23
19.417	0.00	0.09	0.393	O	|	|	|	1.23
19.500	0.00	0.09	0.393	O	|	|	|	1.23
19.583	0.00	0.09	0.392	O	|	|	|	1.22
19.667	0.00	0.09	0.391	O	|	|	|	1.22
19.750	0.00	0.09	0.391	O	|	|	|	1.22
19.833	0.00	0.09	0.390	O	|	|	|	1.22
19.917	0.00	0.09	0.390	O	|	|	|	1.22
20.000	0.00	0.08	0.389	O	|	|	|	1.22
20.083	0.00	0.08	0.388	O	|	|	|	1.22
20.167	0.00	0.08	0.388	O	|	|	|	1.22
20.250	0.00	0.08	0.387	O	|	|	|	1.21
20.333	0.00	0.08	0.387	O	|	|	|	1.21
20.417	0.00	0.08	0.386	O	|	|	|	1.21
20.500	0.00	0.08	0.386	O	|	|	|	1.21
20.583	0.00	0.08	0.385	O	|	|	|	1.21
20.667	0.00	0.08	0.384	O	|	|	|	1.21
20.750	0.00	0.08	0.384	O	|	|	|	1.21
20.833	0.00	0.08	0.383	O	|	|	|	1.20

20.917	0.00	0.08	0.383	O	|	|	|	|	1.20
21.000	0.00	0.08	0.382	O	|	|	|	|	1.20
21.083	0.00	0.08	0.382	O	|	|	|	|	1.20
21.167	0.00	0.08	0.381	O	|	|	|	|	1.20
21.250	0.00	0.08	0.381	O	|	|	|	|	1.20
21.333	0.00	0.08	0.380	O	|	|	|	|	1.20
21.417	0.00	0.08	0.380	O	|	|	|	|	1.20
21.500	0.00	0.08	0.379	O	|	|	|	|	1.20
21.583	0.00	0.08	0.379	O	|	|	|	|	1.19
21.667	0.00	0.08	0.378	O	|	|	|	|	1.19
21.750	0.00	0.07	0.378	O	|	|	|	|	1.19
21.833	0.00	0.07	0.377	O	|	|	|	|	1.19
21.917	0.00	0.07	0.376	O	|	|	|	|	1.19
22.000	0.00	0.07	0.376	O	|	|	|	|	1.19
22.083	0.00	0.07	0.375	O	|	|	|	|	1.19
22.167	0.00	0.07	0.375	O	|	|	|	|	1.19
22.250	0.00	0.07	0.374	O	|	|	|	|	1.18
22.333	0.00	0.07	0.374	O	|	|	|	|	1.18
22.417	0.00	0.07	0.373	O	|	|	|	|	1.18
22.500	0.00	0.07	0.373	O	|	|	|	|	1.18
22.583	0.00	0.07	0.373	O	|	|	|	|	1.18
22.667	0.00	0.07	0.372	O	|	|	|	|	1.18
22.750	0.00	0.07	0.372	O	|	|	|	|	1.18
22.833	0.00	0.07	0.371	O	|	|	|	|	1.18
22.917	0.00	0.07	0.371	O	|	|	|	|	1.18
23.000	0.00	0.07	0.370	O	|	|	|	|	1.17
23.083	0.00	0.07	0.370	O	|	|	|	|	1.17
23.167	0.00	0.07	0.369	O	|	|	|	|	1.17
23.250	0.00	0.07	0.369	O	|	|	|	|	

1.17

23.333	0.00	0.07	0.368	O	|	|	|	1.17
23.417	0.00	0.07	0.368	O	|	|	|	1.17
23.500	0.00	0.07	0.367	O	|	|	|	1.17
23.583	0.00	0.07	0.367	O	|	|	|	1.17
23.667	0.00	0.06	0.366	O	|	|	|	1.17
23.750	0.00	0.06	0.366	O	|	|	|	1.17
23.833	0.00	0.06	0.366	O	|	|	|	1.16
23.917	0.00	0.06	0.365	O	|	|	|	1.16
24.000	0.00	0.06	0.365	O	|	|	|	1.16
24.083	0.00	0.06	0.364	O	|	|	|	1.16
24.167	0.00	0.06	0.364	O	|	|	|	1.16
24.250	0.00	0.06	0.363	O	|	|	|	1.16
24.333	0.00	0.06	0.363	O	|	|	|	1.16
24.417	0.00	0.06	0.363	O	|	|	|	1.16
24.500	0.00	0.06	0.362	O	|	|	|	1.16
24.583	0.00	0.06	0.362	O	|	|	|	1.16
24.667	0.00	0.06	0.361	O	|	|	|	1.15
24.750	0.00	0.06	0.361	O	|	|	|	1.15
24.833	0.00	0.06	0.360	O	|	|	|	1.15
24.917	0.00	0.06	0.360	O	|	|	|	1.15
25.000	0.00	0.06	0.360	O	|	|	|	1.15
25.083	0.00	0.06	0.359	O	|	|	|	1.15
25.167	0.00	0.06	0.359	O	|	|	|	1.15
25.250	0.00	0.06	0.358	O	|	|	|	1.15
25.333	0.00	0.06	0.358	O	|	|	|	1.15
25.417	0.00	0.06	0.358	O	|	|	|	1.15
25.500	0.00	0.06	0.357	O	|	|	|	1.15
25.583	0.00	0.06	0.357	O	|	|	|	1.14

25.667	0.00	0.06	0.357	O	|	|	|	|	1.14
25.750	0.00	0.06	0.356	O	|	|	|	|	1.14
25.833	0.00	0.06	0.356	O	|	|	|	|	1.14
25.917	0.00	0.06	0.355	O	|	|	|	|	1.14
26.000	0.00	0.05	0.355	O	|	|	|	|	1.14
26.083	0.00	0.05	0.355	O	|	|	|	|	1.14
26.167	0.00	0.05	0.354	O	|	|	|	|	1.14
26.250	0.00	0.05	0.354	O	|	|	|	|	1.14
26.333	0.00	0.05	0.353	O	|	|	|	|	1.14
26.417	0.00	0.05	0.353	O	|	|	|	|	1.14
26.500	0.00	0.05	0.353	O	|	|	|	|	1.13
26.583	0.00	0.05	0.352	O	|	|	|	|	1.13
26.667	0.00	0.05	0.352	O	|	|	|	|	1.13
26.750	0.00	0.05	0.352	O	|	|	|	|	1.13
26.833	0.00	0.05	0.351	O	|	|	|	|	1.13
26.917	0.00	0.05	0.351	O	|	|	|	|	1.13
27.000	0.00	0.05	0.351	O	|	|	|	|	1.13
27.083	0.00	0.05	0.350	O	|	|	|	|	1.13
27.167	0.00	0.05	0.350	O	|	|	|	|	1.13
27.250	0.00	0.05	0.350	O	|	|	|	|	1.13
27.333	0.00	0.05	0.349	O	|	|	|	|	1.13
27.417	0.00	0.05	0.349	O	|	|	|	|	1.13
27.500	0.00	0.05	0.349	O	|	|	|	|	1.13
27.583	0.00	0.05	0.348	O	|	|	|	|	1.12
27.667	0.00	0.05	0.348	O	|	|	|	|	1.12
27.750	0.00	0.05	0.348	O	|	|	|	|	1.12
27.833	0.00	0.05	0.347	O	|	|	|	|	1.12
27.917	0.00	0.05	0.347	O	|	|	|	|	1.12
28.000	0.00	0.05	0.347	O	|	|	|	|	

1.12

28.083	0.00	0.05	0.346	O	|	|	|	|	1.12
28.167	0.00	0.05	0.346	O	|	|	|	|	1.12
28.250	0.00	0.05	0.346	O	|	|	|	|	1.12
28.333	0.00	0.05	0.345	O	|	|	|	|	1.12
28.417	0.00	0.05	0.345	O	|	|	|	|	1.12
28.500	0.00	0.05	0.345	O	|	|	|	|	1.12
28.583	0.00	0.05	0.344	O	|	|	|	|	1.12
28.667	0.00	0.05	0.344	O	|	|	|	|	1.11
28.750	0.00	0.04	0.344	O	|	|	|	|	1.11
28.833	0.00	0.04	0.343	O	|	|	|	|	1.11
28.917	0.00	0.04	0.343	O	|	|	|	|	1.11
29.000	0.00	0.04	0.343	O	|	|	|	|	1.11
29.083	0.00	0.04	0.342	O	|	|	|	|	1.11
29.167	0.00	0.04	0.342	O	|	|	|	|	1.11
29.250	0.00	0.04	0.342	O	|	|	|	|	1.11
29.333	0.00	0.04	0.342	O	|	|	|	|	1.11
29.417	0.00	0.04	0.341	O	|	|	|	|	1.11
29.500	0.00	0.04	0.341	O	|	|	|	|	1.11
29.583	0.00	0.04	0.341	O	|	|	|	|	1.11
29.667	0.00	0.04	0.340	O	|	|	|	|	1.11
29.750	0.00	0.04	0.340	O	|	|	|	|	1.11
29.833	0.00	0.04	0.340	O	|	|	|	|	1.11
29.917	0.00	0.04	0.340	O	|	|	|	|	1.10
30.000	0.00	0.04	0.339	O	|	|	|	|	1.10
30.083	0.00	0.04	0.339	O	|	|	|	|	1.10
30.167	0.00	0.04	0.339	O	|	|	|	|	1.10
30.250	0.00	0.04	0.338	O	|	|	|	|	1.10
30.333	0.00	0.04	0.338	O	|	|	|	|	1.10

30.417	0.00	0.04	0.338	O	|	|	|	|	1.10
30.500	0.00	0.04	0.338	O	|	|	|	|	1.10
30.583	0.00	0.04	0.337	O	|	|	|	|	1.10
30.667	0.00	0.04	0.337	O	|	|	|	|	1.10
30.750	0.00	0.04	0.337	O	|	|	|	|	1.10
30.833	0.00	0.04	0.337	O	|	|	|	|	1.10
30.917	0.00	0.04	0.336	O	|	|	|	|	1.10
31.000	0.00	0.04	0.336	O	|	|	|	|	1.10
31.083	0.00	0.04	0.336	O	|	|	|	|	1.10
31.167	0.00	0.04	0.336	O	|	|	|	|	1.10
31.250	0.00	0.04	0.335	O	|	|	|	|	1.09
31.333	0.00	0.04	0.335	O	|	|	|	|	1.09
31.417	0.00	0.04	0.335	O	|	|	|	|	1.09
31.500	0.00	0.04	0.334	O	|	|	|	|	1.09
31.583	0.00	0.04	0.334	O	|	|	|	|	1.09
31.667	0.00	0.04	0.334	O	|	|	|	|	1.09
31.750	0.00	0.04	0.334	O	|	|	|	|	1.09
31.833	0.00	0.04	0.333	O	|	|	|	|	1.09
31.917	0.00	0.04	0.333	O	|	|	|	|	1.09
32.000	0.00	0.04	0.333	O	|	|	|	|	1.09
32.083	0.00	0.04	0.333	O	|	|	|	|	1.09
32.167	0.00	0.03	0.333	O	|	|	|	|	1.09
32.250	0.00	0.03	0.332	O	|	|	|	|	1.09
32.333	0.00	0.03	0.332	O	|	|	|	|	1.09
32.417	0.00	0.03	0.332	O	|	|	|	|	1.09
32.500	0.00	0.03	0.332	O	|	|	|	|	1.09
32.583	0.00	0.03	0.331	O	|	|	|	|	1.09
32.667	0.00	0.03	0.331	O	|	|	|	|	1.09
32.750	0.00	0.03	0.331	O	|	|	|	|	

1.08

32.833	0.00	0.03	0.331	O	|	|	|	|	1.08
32.917	0.00	0.03	0.330	O	|	|	|	|	1.08
33.000	0.00	0.03	0.330	O	|	|	|	|	1.08
33.083	0.00	0.03	0.330	O	|	|	|	|	1.08
33.167	0.00	0.03	0.330	O	|	|	|	|	1.08
33.250	0.00	0.03	0.330	O	|	|	|	|	1.08
33.333	0.00	0.03	0.329	O	|	|	|	|	1.08
33.417	0.00	0.03	0.329	O	|	|	|	|	1.08
33.500	0.00	0.03	0.329	O	|	|	|	|	1.08
33.583	0.00	0.03	0.329	O	|	|	|	|	1.08
33.667	0.00	0.03	0.328	O	|	|	|	|	1.08
33.750	0.00	0.03	0.328	O	|	|	|	|	1.08
33.833	0.00	0.03	0.328	O	|	|	|	|	1.08
33.917	0.00	0.03	0.328	O	|	|	|	|	1.08
34.000	0.00	0.03	0.328	O	|	|	|	|	1.08
34.083	0.00	0.03	0.327	O	|	|	|	|	1.08
34.167	0.00	0.03	0.327	O	|	|	|	|	1.08
34.250	0.00	0.03	0.327	O	|	|	|	|	1.08
34.333	0.00	0.03	0.327	O	|	|	|	|	1.08
34.417	0.00	0.03	0.327	O	|	|	|	|	1.07
34.500	0.00	0.03	0.326	O	|	|	|	|	1.07
34.583	0.00	0.03	0.326	O	|	|	|	|	1.07
34.667	0.00	0.03	0.326	O	|	|	|	|	1.07
34.750	0.00	0.03	0.326	O	|	|	|	|	1.07
34.833	0.00	0.03	0.326	O	|	|	|	|	1.07
34.917	0.00	0.03	0.325	O	|	|	|	|	1.07
35.000	0.00	0.03	0.325	O	|	|	|	|	1.07
35.083	0.00	0.03	0.325	O	|	|	|	|	1.07

35.167	0.00	0.03	0.325	O	|	|	|	|	1.07
35.250	0.00	0.03	0.325	O	|	|	|	|	1.07
35.333	0.00	0.03	0.324	O	|	|	|	|	1.07
35.417	0.00	0.03	0.324	O	|	|	|	|	1.07
35.500	0.00	0.03	0.324	O	|	|	|	|	1.07
35.583	0.00	0.03	0.324	O	|	|	|	|	1.07
35.667	0.00	0.03	0.324	O	|	|	|	|	1.07
35.750	0.00	0.03	0.323	O	|	|	|	|	1.07
35.833	0.00	0.03	0.323	O	|	|	|	|	1.07
35.917	0.00	0.03	0.323	O	|	|	|	|	1.07
36.000	0.00	0.03	0.323	O	|	|	|	|	1.07
36.083	0.00	0.03	0.323	O	|	|	|	|	1.07
36.167	0.00	0.03	0.323	O	|	|	|	|	1.07
36.250	0.00	0.03	0.322	O	|	|	|	|	1.06
36.333	0.00	0.03	0.322	O	|	|	|	|	1.06
36.417	0.00	0.03	0.322	O	|	|	|	|	1.06
36.500	0.00	0.03	0.322	O	|	|	|	|	1.06
36.583	0.00	0.03	0.322	O	|	|	|	|	1.06
36.667	0.00	0.03	0.321	O	|	|	|	|	1.06
36.750	0.00	0.03	0.321	O	|	|	|	|	1.06
36.833	0.00	0.02	0.321	O	|	|	|	|	1.06
36.917	0.00	0.02	0.321	O	|	|	|	|	1.06
37.000	0.00	0.02	0.321	O	|	|	|	|	1.06
37.083	0.00	0.02	0.321	O	|	|	|	|	1.06
37.167	0.00	0.02	0.320	O	|	|	|	|	1.06
37.250	0.00	0.02	0.320	O	|	|	|	|	1.06
37.333	0.00	0.02	0.320	O	|	|	|	|	1.06
37.417	0.00	0.02	0.320	O	|	|	|	|	1.06
37.500	0.00	0.02	0.320	O	|	|	|	|	

1.06

37.583	0.00	0.02	0.320	O	|	|	|	1.06
37.667	0.00	0.02	0.319	O	|	|	|	1.06
37.750	0.00	0.02	0.319	O	|	|	|	1.06
37.833	0.00	0.02	0.319	O	|	|	|	1.06
37.917	0.00	0.02	0.319	O	|	|	|	1.06
38.000	0.00	0.02	0.319	O	|	|	|	1.06
38.083	0.00	0.02	0.319	O	|	|	|	1.06
38.167	0.00	0.02	0.318	O	|	|	|	1.06
38.250	0.00	0.02	0.318	O	|	|	|	1.06
38.333	0.00	0.02	0.318	O	|	|	|	1.06
38.417	0.00	0.02	0.318	O	|	|	|	1.06
38.500	0.00	0.02	0.318	O	|	|	|	1.05
38.583	0.00	0.02	0.318	O	|	|	|	1.05
38.667	0.00	0.02	0.318	O	|	|	|	1.05
38.750	0.00	0.02	0.317	O	|	|	|	1.05
38.833	0.00	0.02	0.317	O	|	|	|	1.05
38.917	0.00	0.02	0.317	O	|	|	|	1.05
39.000	0.00	0.02	0.317	O	|	|	|	1.05
39.083	0.00	0.02	0.317	O	|	|	|	1.05
39.167	0.00	0.02	0.317	O	|	|	|	1.05
39.250	0.00	0.02	0.317	O	|	|	|	1.05
39.333	0.00	0.02	0.316	O	|	|	|	1.05
39.417	0.00	0.02	0.316	O	|	|	|	1.05
39.500	0.00	0.02	0.316	O	|	|	|	1.05
39.583	0.00	0.02	0.316	O	|	|	|	1.05
39.667	0.00	0.02	0.316	O	|	|	|	1.05
39.750	0.00	0.02	0.316	O	|	|	|	1.05
39.833	0.00	0.02	0.316	O	|	|	|	1.05

39.917	0.00	0.02	0.315	O	|	|	|	|	1.05
40.000	0.00	0.02	0.315	O	|	|	|	|	1.05
40.083	0.00	0.02	0.315	O	|	|	|	|	1.05
40.167	0.00	0.02	0.315	O	|	|	|	|	1.05
40.250	0.00	0.02	0.315	O	|	|	|	|	1.05
40.333	0.00	0.02	0.315	O	|	|	|	|	1.05
40.417	0.00	0.02	0.315	O	|	|	|	|	1.05
40.500	0.00	0.02	0.314	O	|	|	|	|	1.05
40.583	0.00	0.02	0.314	O	|	|	|	|	1.05
40.667	0.00	0.02	0.314	O	|	|	|	|	1.05
40.750	0.00	0.02	0.314	O	|	|	|	|	1.05
40.833	0.00	0.02	0.314	O	|	|	|	|	1.05
40.917	0.00	0.02	0.314	O	|	|	|	|	1.05
41.000	0.00	0.02	0.314	O	|	|	|	|	1.05
41.083	0.00	0.02	0.314	O	|	|	|	|	1.04
41.167	0.00	0.02	0.313	O	|	|	|	|	1.04
41.250	0.00	0.02	0.313	O	|	|	|	|	1.04
41.333	0.00	0.02	0.313	O	|	|	|	|	1.04
41.417	0.00	0.02	0.313	O	|	|	|	|	1.04
41.500	0.00	0.02	0.313	O	|	|	|	|	1.04
41.583	0.00	0.02	0.313	O	|	|	|	|	1.04
41.667	0.00	0.02	0.313	O	|	|	|	|	1.04
41.750	0.00	0.02	0.313	O	|	|	|	|	1.04
41.833	0.00	0.02	0.312	O	|	|	|	|	1.04
41.917	0.00	0.02	0.312	O	|	|	|	|	1.04
42.000	0.00	0.02	0.312	O	|	|	|	|	1.04
42.083	0.00	0.02	0.312	O	|	|	|	|	1.04
42.167	0.00	0.02	0.312	O	|	|	|	|	1.04
42.250	0.00	0.02	0.312	O	|	|	|	|	

1.04

42.333	0.00	0.02	0.312	O	|	|	|	|	1.04
42.417	0.00	0.02	0.312	O	|	|	|	|	1.04
42.500	0.00	0.02	0.312	O	|	|	|	|	1.04
42.583	0.00	0.02	0.311	O	|	|	|	|	1.04
42.667	0.00	0.02	0.311	O	|	|	|	|	1.04
42.750	0.00	0.02	0.311	O	|	|	|	|	1.04
42.833	0.00	0.02	0.311	O	|	|	|	|	1.04
42.917	0.00	0.02	0.311	O	|	|	|	|	1.04
43.000	0.00	0.02	0.311	O	|	|	|	|	1.04
43.083	0.00	0.02	0.311	O	|	|	|	|	1.04
43.167	0.00	0.02	0.311	O	|	|	|	|	1.04
43.250	0.00	0.02	0.311	O	|	|	|	|	1.04
43.333	0.00	0.02	0.310	O	|	|	|	|	1.04
43.417	0.00	0.02	0.310	O	|	|	|	|	1.04
43.500	0.00	0.02	0.310	O	|	|	|	|	1.04
43.583	0.00	0.02	0.310	O	|	|	|	|	1.04
43.667	0.00	0.02	0.310	O	|	|	|	|	1.04
43.750	0.00	0.02	0.310	O	|	|	|	|	1.04
43.833	0.00	0.01	0.310	O	|	|	|	|	1.04
43.917	0.00	0.01	0.310	O	|	|	|	|	1.04
44.000	0.00	0.01	0.310	O	|	|	|	|	1.04
44.083	0.00	0.01	0.310	O	|	|	|	|	1.04
44.167	0.00	0.01	0.309	O	|	|	|	|	1.04
44.250	0.00	0.01	0.309	O	|	|	|	|	1.04
44.333	0.00	0.01	0.309	O	|	|	|	|	1.03
44.417	0.00	0.01	0.309	O	|	|	|	|	1.03
44.500	0.00	0.01	0.309	O	|	|	|	|	1.03
44.583	0.00	0.01	0.309	O	|	|	|	|	1.03

44.667	0.00	0.01	0.309	O	|	|	|	|	1.03
44.750	0.00	0.01	0.309	O	|	|	|	|	1.03
44.833	0.00	0.01	0.309	O	|	|	|	|	1.03
44.917	0.00	0.01	0.309	O	|	|	|	|	1.03
45.000	0.00	0.01	0.308	O	|	|	|	|	1.03
45.083	0.00	0.01	0.308	O	|	|	|	|	1.03
45.167	0.00	0.01	0.308	O	|	|	|	|	1.03
45.250	0.00	0.01	0.308	O	|	|	|	|	1.03
45.333	0.00	0.01	0.308	O	|	|	|	|	1.03
45.417	0.00	0.01	0.308	O	|	|	|	|	1.03
45.500	0.00	0.01	0.308	O	|	|	|	|	1.03
45.583	0.00	0.01	0.308	O	|	|	|	|	1.03
45.667	0.00	0.01	0.308	O	|	|	|	|	1.03
45.750	0.00	0.01	0.308	O	|	|	|	|	1.03
45.833	0.00	0.01	0.308	O	|	|	|	|	1.03
45.917	0.00	0.01	0.307	O	|	|	|	|	1.03
46.000	0.00	0.01	0.307	O	|	|	|	|	1.03
46.083	0.00	0.01	0.307	O	|	|	|	|	1.03
46.167	0.00	0.01	0.307	O	|	|	|	|	1.03
46.250	0.00	0.01	0.307	O	|	|	|	|	1.03
46.333	0.00	0.01	0.307	O	|	|	|	|	1.03
46.417	0.00	0.01	0.307	O	|	|	|	|	1.03
46.500	0.00	0.01	0.307	O	|	|	|	|	1.03
46.583	0.00	0.01	0.307	O	|	|	|	|	1.03
46.667	0.00	0.01	0.307	O	|	|	|	|	1.03
46.750	0.00	0.01	0.307	O	|	|	|	|	1.03
46.833	0.00	0.01	0.307	O	|	|	|	|	1.03
46.917	0.00	0.01	0.306	O	|	|	|	|	1.03
47.000	0.00	0.01	0.306	O	|	|	|	|	

1.03

47.083	0.00	0.01	0.306	O	|	|	|	|	1.03
47.167	0.00	0.01	0.306	O	|	|	|	|	1.03
47.250	0.00	0.01	0.306	O	|	|	|	|	1.03
47.333	0.00	0.01	0.306	O	|	|	|	|	1.03
47.417	0.00	0.01	0.306	O	|	|	|	|	1.03
47.500	0.00	0.01	0.306	O	|	|	|	|	1.03
47.583	0.00	0.01	0.306	O	|	|	|	|	1.03
47.667	0.00	0.01	0.306	O	|	|	|	|	1.03
47.750	0.00	0.01	0.306	O	|	|	|	|	1.03
47.833	0.00	0.01	0.306	O	|	|	|	|	1.03
47.917	0.00	0.01	0.305	O	|	|	|	|	1.03
48.000	0.00	0.01	0.305	O	|	|	|	|	1.03
48.083	0.00	0.01	0.305	O	|	|	|	|	1.03
48.167	0.00	0.01	0.305	O	|	|	|	|	1.03
48.250	0.00	0.01	0.305	O	|	|	|	|	1.03
48.333	0.00	0.01	0.305	O	|	|	|	|	1.03
48.417	0.00	0.01	0.305	O	|	|	|	|	1.03
48.500	0.00	0.01	0.305	O	|	|	|	|	1.03
48.583	0.00	0.01	0.305	O	|	|	|	|	1.02
48.667	0.00	0.01	0.305	O	|	|	|	|	1.02
48.750	0.00	0.01	0.305	O	|	|	|	|	1.02
48.833	0.00	0.01	0.305	O	|	|	|	|	1.02
48.917	0.00	0.01	0.305	O	|	|	|	|	1.02
49.000	0.00	0.01	0.305	O	|	|	|	|	1.02
49.083	0.00	0.01	0.304	O	|	|	|	|	1.02
49.167	0.00	0.01	0.304	O	|	|	|	|	1.02
49.250	0.00	0.01	0.304	O	|	|	|	|	1.02
49.333	0.00	0.01	0.304	O	|	|	|	|	1.02

49.417	0.00	0.01	0.304	O	|	|	|	|	1.02
49.500	0.00	0.01	0.304	O	|	|	|	|	1.02
49.583	0.00	0.01	0.304	O	|	|	|	|	1.02
49.667	0.00	0.01	0.304	O	|	|	|	|	1.02
49.750	0.00	0.01	0.304	O	|	|	|	|	1.02
49.833	0.00	0.01	0.304	O	|	|	|	|	1.02
49.917	0.00	0.01	0.304	O	|	|	|	|	1.02
50.000	0.00	0.01	0.304	O	|	|	|	|	1.02
50.083	0.00	0.01	0.304	O	|	|	|	|	1.02
50.167	0.00	0.01	0.304	O	|	|	|	|	1.02
50.250	0.00	0.01	0.303	O	|	|	|	|	1.02
50.333	0.00	0.01	0.303	O	|	|	|	|	1.02
50.417	0.00	0.01	0.303	O	|	|	|	|	1.02
50.500	0.00	0.01	0.303	O	|	|	|	|	1.02
50.583	0.00	0.01	0.303	O	|	|	|	|	1.02
50.667	0.00	0.01	0.303	O	|	|	|	|	1.02
50.750	0.00	0.01	0.303	O	|	|	|	|	1.02
50.833	0.00	0.01	0.303	O	|	|	|	|	1.02
50.917	0.00	0.01	0.303	O	|	|	|	|	1.02
51.000	0.00	0.01	0.303	O	|	|	|	|	1.02
51.083	0.00	0.01	0.303	O	|	|	|	|	1.02
51.167	0.00	0.01	0.303	O	|	|	|	|	1.02
51.250	0.00	0.01	0.303	O	|	|	|	|	1.02
51.333	0.00	0.01	0.303	O	|	|	|	|	1.02
51.417	0.00	0.01	0.303	O	|	|	|	|	1.02
51.500	0.00	0.01	0.303	O	|	|	|	|	1.02
51.583	0.00	0.01	0.303	O	|	|	|	|	1.02
51.667	0.00	0.01	0.302	O	|	|	|	|	1.02
51.750	0.00	0.01	0.302	O	|	|	|	|	

1.02

51.833	0.00	0.01	0.302	O	|	|	|	|	1.02
51.917	0.00	0.01	0.302	O	|	|	|	|	1.02
52.000	0.00	0.01	0.302	O	|	|	|	|	1.02
52.083	0.00	0.01	0.302	O	|	|	|	|	1.02
52.167	0.00	0.01	0.302	O	|	|	|	|	1.02
52.250	0.00	0.01	0.302	O	|	|	|	|	1.02
52.333	0.00	0.01	0.302	O	|	|	|	|	1.02
52.417	0.00	0.01	0.302	O	|	|	|	|	1.02
52.500	0.00	0.01	0.302	O	|	|	|	|	1.02
52.583	0.00	0.01	0.302	O	|	|	|	|	1.02
52.667	0.00	0.01	0.302	O	|	|	|	|	1.02
52.750	0.00	0.01	0.302	O	|	|	|	|	1.02
52.833	0.00	0.01	0.302	O	|	|	|	|	1.02
52.917	0.00	0.01	0.302	O	|	|	|	|	1.02
53.000	0.00	0.01	0.302	O	|	|	|	|	1.02
53.083	0.00	0.01	0.302	O	|	|	|	|	1.02
53.167	0.00	0.01	0.301	O	|	|	|	|	1.02
53.250	0.00	0.01	0.301	O	|	|	|	|	1.02
53.333	0.00	0.01	0.301	O	|	|	|	|	1.02
53.417	0.00	0.01	0.301	O	|	|	|	|	1.02
53.500	0.00	0.01	0.301	O	|	|	|	|	1.02
53.583	0.00	0.01	0.301	O	|	|	|	|	1.02
53.667	0.00	0.01	0.301	O	|	|	|	|	1.02
53.750	0.00	0.01	0.301	O	|	|	|	|	1.02
53.833	0.00	0.01	0.301	O	|	|	|	|	1.02
53.917	0.00	0.01	0.301	O	|	|	|	|	1.02
54.000	0.00	0.01	0.301	O	|	|	|	|	1.02
54.083	0.00	0.01	0.301	O	|	|	|	|	1.02

54.167	0.00	0.01	0.301	O	|	|	|	|	1.02
54.250	0.00	0.01	0.301	O	|	|	|	|	1.02
54.333	0.00	0.01	0.301	O	|	|	|	|	1.02
54.417	0.00	0.01	0.301	O	|	|	|	|	1.02
54.500	0.00	0.01	0.301	O	|	|	|	|	1.02
54.583	0.00	0.01	0.301	O	|	|	|	|	1.02
54.667	0.00	0.01	0.301	O	|	|	|	|	1.02
54.750	0.00	0.01	0.301	O	|	|	|	|	1.01
54.833	0.00	0.01	0.300	O	|	|	|	|	1.01
54.917	0.00	0.01	0.300	O	|	|	|	|	1.01
55.000	0.00	0.01	0.300	O	|	|	|	|	1.01
55.083	0.00	0.01	0.300	O	|	|	|	|	1.01
55.167	0.00	0.01	0.300	O	|	|	|	|	1.01
55.250	0.00	0.01	0.300	O	|	|	|	|	1.01
55.333	0.00	0.01	0.300	O	|	|	|	|	1.01
55.417	0.00	0.01	0.300	O	|	|	|	|	1.01
55.500	0.00	0.01	0.300	O	|	|	|	|	1.01
55.583	0.00	0.01	0.300	O	|	|	|	|	1.01
55.667	0.00	0.01	0.300	O	|	|	|	|	1.01
55.750	0.00	0.01	0.300	O	|	|	|	|	1.01
55.833	0.00	0.01	0.300	O	|	|	|	|	1.01
55.917	0.00	0.01	0.300	O	|	|	|	|	1.01
56.000	0.00	0.01	0.300	O	|	|	|	|	1.01
56.083	0.00	0.01	0.300	O	|	|	|	|	1.01
56.167	0.00	0.01	0.300	O	|	|	|	|	1.01
56.250	0.00	0.01	0.300	O	|	|	|	|	1.01
56.333	0.00	0.01	0.300	O	|	|	|	|	1.01
56.417	0.00	0.01	0.300	O	|	|	|	|	1.01
56.500	0.00	0.01	0.300	O	|	|	|	|	

1.01

56.583	0.00	0.01	0.300	O	|	|	|	|	1.01
56.667	0.00	0.01	0.300	O	|	|	|	|	1.01
56.750	0.00	0.01	0.299	O	|	|	|	|	1.01
56.833	0.00	0.01	0.299	O	|	|	|	|	1.01
56.917	0.00	0.01	0.299	O	|	|	|	|	1.01
57.000	0.00	0.01	0.299	O	|	|	|	|	1.01
57.083	0.00	0.01	0.299	O	|	|	|	|	1.01
57.167	0.00	0.01	0.299	O	|	|	|	|	1.01
57.250	0.00	0.01	0.299	O	|	|	|	|	1.01
57.333	0.00	0.01	0.299	O	|	|	|	|	1.01
57.417	0.00	0.01	0.299	O	|	|	|	|	1.01
57.500	0.00	0.01	0.299	O	|	|	|	|	1.01
57.583	0.00	0.01	0.299	O	|	|	|	|	1.01
57.667	0.00	0.01	0.299	O	|	|	|	|	1.01
57.750	0.00	0.01	0.299	O	|	|	|	|	1.01
57.833	0.00	0.01	0.299	O	|	|	|	|	1.01
57.917	0.00	0.01	0.299	O	|	|	|	|	1.01
58.000	0.00	0.01	0.299	O	|	|	|	|	1.01
58.083	0.00	0.01	0.299	O	|	|	|	|	1.01
58.167	0.00	0.01	0.299	O	|	|	|	|	1.01
58.250	0.00	0.01	0.299	O	|	|	|	|	1.01
58.333	0.00	0.01	0.299	O	|	|	|	|	1.01
58.417	0.00	0.01	0.299	O	|	|	|	|	1.01
58.500	0.00	0.01	0.299	O	|	|	|	|	1.01
58.583	0.00	0.01	0.299	O	|	|	|	|	1.01
58.667	0.00	0.01	0.299	O	|	|	|	|	1.01
58.750	0.00	0.01	0.299	O	|	|	|	|	1.01
58.833	0.00	0.01	0.299	O	|	|	|	|	1.01

58.917	0.00	0.00	0.299	O	|	|	|	|	1.01
59.000	0.00	0.00	0.298	O	|	|	|	|	1.01
59.083	0.00	0.00	0.298	O	|	|	|	|	1.01
59.167	0.00	0.00	0.298	O	|	|	|	|	1.01
59.250	0.00	0.00	0.298	O	|	|	|	|	1.01
59.333	0.00	0.00	0.298	O	|	|	|	|	1.01
59.417	0.00	0.00	0.298	O	|	|	|	|	1.01
59.500	0.00	0.00	0.298	O	|	|	|	|	1.01
59.583	0.00	0.00	0.298	O	|	|	|	|	1.01
59.667	0.00	0.00	0.298	O	|	|	|	|	1.01
59.750	0.00	0.00	0.298	O	|	|	|	|	1.01
59.833	0.00	0.00	0.298	O	|	|	|	|	1.01
59.917	0.00	0.00	0.298	O	|	|	|	|	1.01
60.000	0.00	0.00	0.298	O	|	|	|	|	1.01
60.083	0.00	0.00	0.298	O	|	|	|	|	1.01
60.167	0.00	0.00	0.298	O	|	|	|	|	1.01
60.250	0.00	0.00	0.298	O	|	|	|	|	1.01
60.333	0.00	0.00	0.298	O	|	|	|	|	1.01
60.417	0.00	0.00	0.298	O	|	|	|	|	1.01
60.500	0.00	0.00	0.298	O	|	|	|	|	1.01
60.583	0.00	0.00	0.298	O	|	|	|	|	1.01
60.667	0.00	0.00	0.298	O	|	|	|	|	1.01
60.750	0.00	0.00	0.298	O	|	|	|	|	1.01
60.833	0.00	0.00	0.298	O	|	|	|	|	1.01
60.917	0.00	0.00	0.298	O	|	|	|	|	1.01
61.000	0.00	0.00	0.298	O	|	|	|	|	1.01
61.083	0.00	0.00	0.298	O	|	|	|	|	1.01
61.167	0.00	0.00	0.298	O	|	|	|	|	1.01
61.250	0.00	0.00	0.298	O	|	|	|	|	

1.01

61.333	0.00	0.00	0.298	O	|	|	|	|	1.01
61.417	0.00	0.00	0.298	O	|	|	|	|	1.01
61.500	0.00	0.00	0.298	O	|	|	|	|	1.01
61.583	0.00	0.00	0.298	O	|	|	|	|	1.01
61.667	0.00	0.00	0.297	O	|	|	|	|	1.01
61.750	0.00	0.00	0.297	O	|	|	|	|	1.01
61.833	0.00	0.00	0.297	O	|	|	|	|	1.01
61.917	0.00	0.00	0.297	O	|	|	|	|	1.01
62.000	0.00	0.00	0.297	O	|	|	|	|	1.01
62.083	0.00	0.00	0.297	O	|	|	|	|	1.01
62.167	0.00	0.00	0.297	O	|	|	|	|	1.01
62.250	0.00	0.00	0.297	O	|	|	|	|	1.01
62.333	0.00	0.00	0.297	O	|	|	|	|	1.01
62.417	0.00	0.00	0.297	O	|	|	|	|	1.01
62.500	0.00	0.00	0.297	O	|	|	|	|	1.01
62.583	0.00	0.00	0.297	O	|	|	|	|	1.01
62.667	0.00	0.00	0.297	O	|	|	|	|	1.01
62.750	0.00	0.00	0.297	O	|	|	|	|	1.01
62.833	0.00	0.00	0.297	O	|	|	|	|	1.01
62.917	0.00	0.00	0.297	O	|	|	|	|	1.01
63.000	0.00	0.00	0.297	O	|	|	|	|	1.01
63.083	0.00	0.00	0.297	O	|	|	|	|	1.01
63.167	0.00	0.00	0.297	O	|	|	|	|	1.01
63.250	0.00	0.00	0.297	O	|	|	|	|	1.01
63.333	0.00	0.00	0.297	O	|	|	|	|	1.01
63.417	0.00	0.00	0.297	O	|	|	|	|	1.01
63.500	0.00	0.00	0.297	O	|	|	|	|	1.01
63.583	0.00	0.00	0.297	O	|	|	|	|	1.01

63.667	0.00	0.00	0.297	O	|	|	|	|	1.01
63.750	0.00	0.00	0.297	O	|	|	|	|	1.01
63.833	0.00	0.00	0.297	O	|	|	|	|	1.01
63.917	0.00	0.00	0.297	O	|	|	|	|	1.01
64.000	0.00	0.00	0.297	O	|	|	|	|	1.01
64.083	0.00	0.00	0.297	O	|	|	|	|	1.01
64.167	0.00	0.00	0.297	O	|	|	|	|	1.01
64.250	0.00	0.00	0.297	O	|	|	|	|	1.01
64.333	0.00	0.00	0.297	O	|	|	|	|	1.01
64.417	0.00	0.00	0.297	O	|	|	|	|	1.01
64.500	0.00	0.00	0.297	O	|	|	|	|	1.01
64.583	0.00	0.00	0.297	O	|	|	|	|	1.01
64.667	0.00	0.00	0.297	O	|	|	|	|	1.01
64.750	0.00	0.00	0.297	O	|	|	|	|	1.01
64.833	0.00	0.00	0.297	O	|	|	|	|	1.01
64.917	0.00	0.00	0.297	O	|	|	|	|	1.01
65.000	0.00	0.00	0.296	O	|	|	|	|	1.01
65.083	0.00	0.00	0.296	O	|	|	|	|	1.01
65.167	0.00	0.00	0.296	O	|	|	|	|	1.01
65.250	0.00	0.00	0.296	O	|	|	|	|	1.01
65.333	0.00	0.00	0.296	O	|	|	|	|	1.01
65.417	0.00	0.00	0.296	O	|	|	|	|	1.01
65.500	0.00	0.00	0.296	O	|	|	|	|	1.01
65.583	0.00	0.00	0.296	O	|	|	|	|	1.01
65.667	0.00	0.00	0.296	O	|	|	|	|	1.01
65.750	0.00	0.00	0.296	O	|	|	|	|	1.01
65.833	0.00	0.00	0.296	O	|	|	|	|	1.01
65.917	0.00	0.00	0.296	O	|	|	|	|	1.01
66.000	0.00	0.00	0.296	O	|	|	|	|	

1.01

66.083	0.00	0.00	0.296	O	|	|	|	|	1.01
66.167	0.00	0.00	0.296	O	|	|	|	|	1.01
66.250	0.00	0.00	0.296	O	|	|	|	|	1.01
66.333	0.00	0.00	0.296	O	|	|	|	|	1.00
66.417	0.00	0.00	0.296	O	|	|	|	|	1.00
66.500	0.00	0.00	0.296	O	|	|	|	|	1.00
66.583	0.00	0.00	0.296	O	|	|	|	|	1.00
66.667	0.00	0.00	0.296	O	|	|	|	|	1.00
66.750	0.00	0.00	0.296	O	|	|	|	|	1.00
66.833	0.00	0.00	0.296	O	|	|	|	|	1.00
66.917	0.00	0.00	0.296	O	|	|	|	|	1.00
67.000	0.00	0.00	0.296	O	|	|	|	|	1.00
67.083	0.00	0.00	0.296	O	|	|	|	|	1.00
67.167	0.00	0.00	0.296	O	|	|	|	|	1.00
67.250	0.00	0.00	0.296	O	|	|	|	|	1.00
67.333	0.00	0.00	0.296	O	|	|	|	|	1.00
67.417	0.00	0.00	0.296	O	|	|	|	|	1.00
67.500	0.00	0.00	0.296	O	|	|	|	|	1.00
67.583	0.00	0.00	0.296	O	|	|	|	|	1.00
67.667	0.00	0.00	0.296	O	|	|	|	|	1.00
67.750	0.00	0.00	0.296	O	|	|	|	|	1.00
67.833	0.00	0.00	0.296	O	|	|	|	|	1.00
67.917	0.00	0.00	0.296	O	|	|	|	|	1.00
68.000	0.00	0.00	0.296	O	|	|	|	|	1.00
68.083	0.00	0.00	0.296	O	|	|	|	|	1.00
68.167	0.00	0.00	0.296	O	|	|	|	|	1.00
68.250	0.00	0.00	0.296	O	|	|	|	|	1.00
68.333	0.00	0.00	0.296	O	|	|	|	|	1.00

68.417	0.00	0.00	0.296	O	|	|	|	|	1.00
68.500	0.00	0.00	0.296	O	|	|	|	|	1.00
68.583	0.00	0.00	0.296	O	|	|	|	|	1.00
68.667	0.00	0.00	0.296	O	|	|	|	|	1.00
68.750	0.00	0.00	0.296	O	|	|	|	|	1.00
68.833	0.00	0.00	0.296	O	|	|	|	|	1.00
68.917	0.00	0.00	0.296	O	|	|	|	|	1.00
69.000	0.00	0.00	0.296	O	|	|	|	|	1.00
69.083	0.00	0.00	0.296	O	|	|	|	|	1.00
69.167	0.00	0.00	0.296	O	|	|	|	|	1.00
69.250	0.00	0.00	0.296	O	|	|	|	|	1.00
69.333	0.00	0.00	0.296	O	|	|	|	|	1.00
69.417	0.00	0.00	0.295	O	|	|	|	|	1.00
69.500	0.00	0.00	0.295	O	|	|	|	|	1.00
69.583	0.00	0.00	0.295	O	|	|	|	|	1.00
69.667	0.00	0.00	0.295	O	|	|	|	|	1.00
69.750	0.00	0.00	0.295	O	|	|	|	|	1.00
69.833	0.00	0.00	0.295	O	|	|	|	|	1.00
69.917	0.00	0.00	0.295	O	|	|	|	|	1.00
70.000	0.00	0.00	0.295	O	|	|	|	|	1.00
70.083	0.00	0.00	0.295	O	|	|	|	|	1.00
70.167	0.00	0.00	0.295	O	|	|	|	|	1.00
70.250	0.00	0.00	0.295	O	|	|	|	|	1.00
70.333	0.00	0.00	0.295	O	|	|	|	|	1.00
70.417	0.00	0.00	0.295	O	|	|	|	|	1.00
70.500	0.00	0.00	0.295	O	|	|	|	|	1.00
70.583	0.00	0.00	0.295	O	|	|	|	|	1.00
70.667	0.00	0.00	0.295	O	|	|	|	|	1.00
70.750	0.00	0.00	0.295	O	|	|	|	|	

1.00

70.833	0.00	0.00	0.295	O	|	|	|	1.00
70.917	0.00	0.00	0.295	O	|	|	|	1.00
71.000	0.00	0.00	0.295	O	|	|	|	1.00
71.083	0.00	0.00	0.295	O	|	|	|	1.00
71.167	0.00	0.00	0.295	O	|	|	|	1.00
71.250	0.00	0.00	0.295	O	|	|	|	1.00
71.333	0.00	0.00	0.295	O	|	|	|	1.00
71.417	0.00	0.00	0.295	O	|	|	|	1.00
71.500	0.00	0.00	0.295	O	|	|	|	1.00
71.583	0.00	0.00	0.295	O	|	|	|	1.00
71.667	0.00	0.00	0.295	O	|	|	|	1.00
71.750	0.00	0.00	0.295	O	|	|	|	1.00
71.833	0.00	0.00	0.295	O	|	|	|	1.00
71.917	0.00	0.00	0.295	O	|	|	|	1.00
72.000	0.00	0.00	0.295	O	|	|	|	1.00
72.083	0.00	0.00	0.295	O	|	|	|	1.00
72.167	0.00	0.00	0.295	O	|	|	|	1.00
72.250	0.00	0.00	0.295	O	|	|	|	1.00
72.333	0.00	0.00	0.295	O	|	|	|	1.00
72.417	0.00	0.00	0.295	O	|	|	|	1.00
72.500	0.00	0.00	0.295	O	|	|	|	1.00
72.583	0.00	0.00	0.295	O	|	|	|	1.00
72.667	0.00	0.00	0.295	O	|	|	|	1.00
72.750	0.00	0.00	0.295	O	|	|	|	1.00
72.833	0.00	0.00	0.295	O	|	|	|	1.00
72.917	0.00	0.00	0.295	O	|	|	|	1.00
73.000	0.00	0.00	0.295	O	|	|	|	1.00
73.083	0.00	0.00	0.295	O	|	|	|	1.00

73.167	0.00	0.00	0.295	O	|	|	|	|	1.00
73.250	0.00	0.00	0.295	O	|	|	|	|	1.00
73.333	0.00	0.00	0.295	O	|	|	|	|	1.00
73.417	0.00	0.00	0.295	O	|	|	|	|	1.00
73.500	0.00	0.00	0.295	O	|	|	|	|	1.00
73.583	0.00	0.00	0.295	O	|	|	|	|	1.00
73.667	0.00	0.00	0.295	O	|	|	|	|	1.00
73.750	0.00	0.00	0.295	O	|	|	|	|	1.00
73.833	0.00	0.00	0.295	O	|	|	|	|	1.00
73.917	0.00	0.00	0.295	O	|	|	|	|	1.00
74.000	0.00	0.00	0.295	O	|	|	|	|	1.00
74.083	0.00	0.00	0.295	O	|	|	|	|	1.00
74.167	0.00	0.00	0.295	O	|	|	|	|	1.00
74.250	0.00	0.00	0.295	O	|	|	|	|	1.00
74.333	0.00	0.00	0.295	O	|	|	|	|	1.00
74.417	0.00	0.00	0.295	O	|	|	|	|	1.00
74.500	0.00	0.00	0.295	O	|	|	|	|	1.00
74.583	0.00	0.00	0.295	O	|	|	|	|	1.00
74.667	0.00	0.00	0.295	O	|	|	|	|	1.00
74.750	0.00	0.00	0.295	O	|	|	|	|	1.00
74.833	0.00	0.00	0.295	O	|	|	|	|	1.00
74.917	0.00	0.00	0.295	O	|	|	|	|	1.00
75.000	0.00	0.00	0.295	O	|	|	|	|	1.00
75.083	0.00	0.00	0.295	O	|	|	|	|	1.00
75.167	0.00	0.00	0.295	O	|	|	|	|	1.00
75.250	0.00	0.00	0.295	O	|	|	|	|	1.00
75.333	0.00	0.00	0.295	O	|	|	|	|	1.00
75.417	0.00	0.00	0.295	O	|	|	|	|	1.00
75.500	0.00	0.00	0.295	O	|	|	|	|	

1.00

75.583	0.00	0.00	0.295	O	|	|	|	|	1.00
75.667	0.00	0.00	0.295	O	|	|	|	|	1.00
75.750	0.00	0.00	0.295	O	|	|	|	|	1.00
75.833	0.00	0.00	0.295	O	|	|	|	|	1.00
75.917	0.00	0.00	0.295	O	|	|	|	|	1.00
76.000	0.00	0.00	0.294	O	|	|	|	|	1.00
76.083	0.00	0.00	0.294	O	|	|	|	|	1.00
76.167	0.00	0.00	0.294	O	|	|	|	|	1.00
76.250	0.00	0.00	0.294	O	|	|	|	|	1.00
76.333	0.00	0.00	0.294	O	|	|	|	|	1.00
76.417	0.00	0.00	0.294	O	|	|	|	|	1.00
76.500	0.00	0.00	0.294	O	|	|	|	|	1.00
76.583	0.00	0.00	0.294	O	|	|	|	|	1.00
76.667	0.00	0.00	0.294	O	|	|	|	|	1.00
76.750	0.00	0.00	0.294	O	|	|	|	|	1.00
76.833	0.00	0.00	0.294	O	|	|	|	|	1.00
76.917	0.00	0.00	0.294	O	|	|	|	|	1.00
77.000	0.00	0.00	0.294	O	|	|	|	|	1.00
77.083	0.00	0.00	0.294	O	|	|	|	|	1.00
77.167	0.00	0.00	0.294	O	|	|	|	|	1.00
77.250	0.00	0.00	0.294	O	|	|	|	|	1.00
77.333	0.00	0.00	0.294	O	|	|	|	|	1.00
77.417	0.00	0.00	0.294	O	|	|	|	|	1.00
77.500	0.00	0.00	0.294	O	|	|	|	|	1.00
77.583	0.00	0.00	0.294	O	|	|	|	|	1.00
77.667	0.00	0.00	0.294	O	|	|	|	|	1.00
77.750	0.00	0.00	0.294	O	|	|	|	|	1.00
77.833	0.00	0.00	0.294	O	|	|	|	|	1.00

77.917	0.00	0.00	0.294	O	|	|	|	|	1.00
78.000	0.00	0.00	0.294	O	|	|	|	|	1.00
78.083	0.00	0.00	0.294	O	|	|	|	|	1.00
78.167	0.00	0.00	0.294	O	|	|	|	|	1.00
78.250	0.00	0.00	0.294	O	|	|	|	|	1.00
78.333	0.00	0.00	0.294	O	|	|	|	|	1.00
78.417	0.00	0.00	0.294	O	|	|	|	|	1.00
78.500	0.00	0.00	0.294	O	|	|	|	|	1.00
78.583	0.00	0.00	0.294	O	|	|	|	|	1.00
78.667	0.00	0.00	0.294	O	|	|	|	|	1.00
78.750	0.00	0.00	0.294	O	|	|	|	|	1.00
78.833	0.00	0.00	0.294	O	|	|	|	|	1.00
78.917	0.00	0.00	0.294	O	|	|	|	|	1.00
79.000	0.00	0.00	0.294	O	|	|	|	|	1.00
79.083	0.00	0.00	0.294	O	|	|	|	|	1.00
79.167	0.00	0.00	0.294	O	|	|	|	|	1.00
79.250	0.00	0.00	0.294	O	|	|	|	|	1.00
79.333	0.00	0.00	0.294	O	|	|	|	|	1.00
79.417	0.00	0.00	0.294	O	|	|	|	|	1.00
79.500	0.00	0.00	0.294	O	|	|	|	|	1.00
79.583	0.00	0.00	0.294	O	|	|	|	|	1.00
79.667	0.00	0.00	0.294	O	|	|	|	|	1.00
79.750	0.00	0.00	0.294	O	|	|	|	|	1.00
79.833	0.00	0.00	0.294	O	|	|	|	|	1.00
79.917	0.00	0.00	0.294	O	|	|	|	|	1.00
80.000	0.00	0.00	0.294	O	|	|	|	|	1.00
80.083	0.00	0.00	0.294	O	|	|	|	|	1.00
80.167	0.00	0.00	0.294	O	|	|	|	|	1.00
80.250	0.00	0.00	0.294	O	|	|	|	|	

1.00

80.333	0.00	0.00	0.294	O	|	|	|	1.00
80.417	0.00	0.00	0.294	O	|	|	|	1.00
80.500	0.00	0.00	0.294	O	|	|	|	1.00
80.583	0.00	0.00	0.294	O	|	|	|	1.00
80.667	0.00	0.00	0.294	O	|	|	|	1.00
80.750	0.00	0.00	0.294	O	|	|	|	1.00
80.833	0.00	0.00	0.294	O	|	|	|	1.00
80.917	0.00	0.00	0.294	O	|	|	|	1.00
81.000	0.00	0.00	0.294	O	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 972
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.160 (CFS)
Total volume = 0.270 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
5 YR - 6 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP65.rte
**********HYDROGRAPH DATA**********
Number of intervals = 74
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 6.135 (CFS)
Total volume = 0.803 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 74
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.5	3.07	4.60	Depth 6.13 (Ft.)
0.083	0.33	0.00	0.001	OI	|	|	|	0.00
0.167	0.61	0.00	0.004	O I	|	|	|	0.01
0.250	0.69	0.00	0.009	O I	|	|	|	0.03
0.333	0.70	0.00	0.014	O I	|	|	|	0.05
0.417	0.70	0.00	0.018	O I	|	|	|	0.06
0.500	0.76	0.00	0.023	O I	|	|	|	0.08
0.583	0.81	0.00	0.029	O I	|	|	|	0.10
0.667	0.81	0.00	0.034	O I	|	|	|	0.12
0.750	0.81	0.00	0.040	O I	|	|	|	0.14
0.833	0.81	0.00	0.046	O I	|	|	|	0.16
0.917	0.81	0.00	0.051	O I	|	|	|	0.17
1.000	0.88	0.00	0.057	O I	|	|	|	0.19
1.083	0.92	0.00	0.063	O I	|	|	|	0.22
1.167	0.93	0.00	0.070	O I	|	|	|	0.24
1.250	0.93	0.00	0.076	O I	|	|	|	0.26
1.333	0.93	0.00	0.083	O I	|	|	|	0.28

1.417	0.93	0.00	0.089	O	I	|	|	|	0.30
1.500	0.93	0.00	0.095	O	I	|	|	|	0.32
1.583	0.93	0.00	0.102	O	I	|	|	|	0.35
1.667	0.93	0.00	0.108	O	I	|	|	|	0.37
1.750	0.93	0.00	0.115	O	I	|	|	|	0.39
1.833	0.93	0.00	0.121	O	I	|	|	|	0.41
1.917	0.93	0.00	0.127	O	I	|	|	|	0.43
2.000	1.00	0.00	0.134	O	I	|	|	|	0.46
2.083	0.97	0.00	0.141	O	I	|	|	|	0.48
2.167	1.00	0.00	0.148	O	I	|	|	|	0.50
2.250	1.04	0.00	0.155	O	I	|	|	|	0.53
2.333	1.05	0.00	0.162	O	I	|	|	|	0.55
2.417	1.05	0.00	0.169	O	I	|	|	|	0.58
2.500	1.05	0.00	0.176	O	I	|	|	|	0.60
2.583	1.05	0.00	0.184	O	I	|	|	|	0.62
2.667	1.05	0.00	0.191	O	I	|	|	|	0.65
2.750	1.11	0.00	0.198	O	I	|	|	|	0.67
2.833	1.16	0.00	0.206	O	I	|	|	|	0.70
2.917	1.16	0.00	0.214	O	I	|	|	|	0.73
3.000	1.16	0.00	0.222	O	I	|	|	|	0.76
3.083	1.16	0.00	0.230	O	I	|	|	|	0.78
3.167	1.23	0.00	0.238	O	I	|	|	|	0.81
3.250	1.27	0.00	0.247	O	I	|	|	|	0.84
3.333	1.28	0.00	0.256	O	I	|	|	|	0.87
3.417	1.35	0.00	0.265	O	I	|	|	|	0.90
3.500	1.46	0.00	0.274	O	I	|	|	|	0.93
3.583	1.57	0.00	0.285	O	I	|	|	|	0.97
3.667	1.62	0.00	0.296	O	I	|	|	|	1.00
3.750	1.70	0.01	0.307	O	I	|	|	|	1.03
3.833	1.74	0.02	0.319	O	|I	|	|	|	1.06
3.917	1.81	0.03	0.331	O	|I	|	|	|	1.08
4.000	1.86	0.04	0.343	O	|I	|	|	|	1.11

4.083	1.93	0.06	0.356	O	| I |				1.14
4.167	2.04	0.07	0.369	O	| I |				1.17
4.250	2.15	0.08	0.383	O	| I |				1.20
4.333	2.27	0.09	0.398	O	| I |				1.24
4.417	2.39	0.10	0.413	O	| I |				1.27
4.500	2.44	0.11	0.429	O	| I |				1.31
4.583	2.51	0.11	0.445	O	| I |				1.34
4.667	2.62	0.12	0.462	O	| I |				1.38
4.750	2.74	0.12	0.480	O	| I |				1.41
4.833	2.79	0.13	0.498	O	| I |				1.45
4.917	2.86	0.14	0.516	O	| I |				1.49
5.000	2.97	0.15	0.535	O	| I|				1.53
5.083	3.35	0.16	0.556	O	| |I |				1.57
5.167	3.90	0.18	0.580	O	| | I |				1.62
5.250	4.35	0.19	0.607	|O	| | I |				1.68
5.333	4.72	0.21	0.637	|O	| | I |				1.74
5.417	5.20	0.23	0.669	|O	| | | I |				1.80
5.500	6.13	0.24	0.707	|O	| | | I|				1.88
5.583	4.09	0.25	0.740	|O	| | I |				1.94
5.667	1.83	0.26	0.759	|O	|I |				1.98
5.750	0.92	0.26	0.767	|O I	| |				1.99
5.833	0.65	0.26	0.770	|O I	| |				2.00
5.917	0.46	0.26	0.772	|OI	| |				2.00
6.000	0.30	0.26	0.773	|O	| |				2.01
6.083	0.11	0.26	0.773	IO	| |				2.01
6.167	0.01	0.26	0.771	IO	| |				2.00
6.250	0.00	0.26	0.770	IO	| |				2.00
6.333	0.00	0.26	0.768	IO	| |				2.00
6.417	0.00	0.26	0.766	IO	| |				1.99
6.500	0.00	0.26	0.764	IO	| |				1.99
6.583	0.00	0.26	0.762	IO	| |				1.98
6.667	0.00	0.26	0.761	IO	| |				1.98

6.750	0.00	0.26	0.759	IO					1.98
6.833	0.00	0.26	0.757	IO					1.97
6.917	0.00	0.26	0.755	IO					1.97
7.000	0.00	0.26	0.753	IO					1.97
7.083	0.00	0.26	0.752	IO					1.96
7.167	0.00	0.26	0.750	IO					1.96
7.250	0.00	0.26	0.748	IO					1.96
7.333	0.00	0.26	0.746	IO					1.95
7.417	0.00	0.25	0.745	IO					1.95
7.500	0.00	0.25	0.743	IO					1.95
7.583	0.00	0.25	0.741	IO					1.94
7.667	0.00	0.25	0.739	IO					1.94
7.750	0.00	0.25	0.738	IO					1.94
7.833	0.00	0.25	0.736	IO					1.93
7.917	0.00	0.25	0.734	IO					1.93
8.000	0.00	0.25	0.732	IO					1.93
8.083	0.00	0.25	0.731	IO					1.92
8.167	0.00	0.25	0.729	IO					1.92
8.250	0.00	0.25	0.727	IO					1.92
8.333	0.00	0.25	0.726	IO					1.91
8.417	0.00	0.25	0.724	IO					1.91
8.500	0.00	0.25	0.722	IO					1.91
8.583	0.00	0.25	0.720	IO					1.90
8.667	0.00	0.25	0.719	IO					1.90
8.750	0.00	0.24	0.717	IO					1.90
8.833	0.00	0.24	0.715	IO					1.89
8.917	0.00	0.24	0.714	IO					1.89
9.000	0.00	0.24	0.712	IO					1.89
9.083	0.00	0.24	0.710	IO					

1.88

9.167	0.00	0.24	0.709	IO	|	|	|	1.88
9.250	0.00	0.24	0.707	IO	|	|	|	1.88
9.333	0.00	0.24	0.705	IO	|	|	|	1.87
9.417	0.00	0.24	0.704	IO	|	|	|	1.87
9.500	0.00	0.24	0.702	IO	|	|	|	1.87
9.583	0.00	0.24	0.700	IO	|	|	|	1.86
9.667	0.00	0.24	0.699	IO	|	|	|	1.86
9.750	0.00	0.24	0.697	IO	|	|	|	1.86
9.833	0.00	0.24	0.695	IO	|	|	|	1.85
9.917	0.00	0.24	0.694	IO	|	|	|	1.85
10.000	0.00	0.24	0.692	IO	|	|	|	1.85
10.083	0.00	0.24	0.691	IO	|	|	|	1.84
10.167	0.00	0.23	0.689	IO	|	|	|	1.84
10.250	0.00	0.23	0.687	IO	|	|	|	1.84
10.333	0.00	0.23	0.686	IO	|	|	|	1.83
10.417	0.00	0.23	0.684	IO	|	|	|	1.83
10.500	0.00	0.23	0.683	IO	|	|	|	1.83
10.583	0.00	0.23	0.681	IO	|	|	|	1.82
10.667	0.00	0.23	0.679	IO	|	|	|	1.82
10.750	0.00	0.23	0.678	IO	|	|	|	1.82
10.833	0.00	0.23	0.676	IO	|	|	|	1.82
10.917	0.00	0.23	0.675	IO	|	|	|	1.81
11.000	0.00	0.23	0.673	IO	|	|	|	1.81
11.083	0.00	0.23	0.671	IO	|	|	|	1.81
11.167	0.00	0.23	0.670	IO	|	|	|	1.80
11.250	0.00	0.23	0.668	IO	|	|	|	1.80
11.333	0.00	0.23	0.667	IO	|	|	|	1.80
11.417	0.00	0.23	0.665	IO	|	|	|	1.79

11.500	0.00	0.23	0.664	IO	|	|	|	1.79
11.583	0.00	0.22	0.662	IO	|	|	|	1.79
11.667	0.00	0.22	0.661	IO	|	|	|	1.78
11.750	0.00	0.22	0.659	IO	|	|	|	1.78
11.833	0.00	0.22	0.657	IO	|	|	|	1.78
11.917	0.00	0.22	0.656	IO	|	|	|	1.78
12.000	0.00	0.22	0.654	IO	|	|	|	1.77
12.083	0.00	0.22	0.653	IO	|	|	|	1.77
12.167	0.00	0.22	0.651	IO	|	|	|	1.77
12.250	0.00	0.22	0.650	IO	|	|	|	1.76
12.333	0.00	0.22	0.648	IO	|	|	|	1.76
12.417	0.00	0.22	0.647	IO	|	|	|	1.76
12.500	0.00	0.22	0.645	IO	|	|	|	1.75
12.583	0.00	0.22	0.644	IO	|	|	|	1.75
12.667	0.00	0.22	0.642	IO	|	|	|	1.75
12.750	0.00	0.22	0.641	IO	|	|	|	1.75
12.833	0.00	0.22	0.639	IO	|	|	|	1.74
12.917	0.00	0.21	0.638	IO	|	|	|	1.74
13.000	0.00	0.21	0.636	IO	|	|	|	1.74
13.083	0.00	0.21	0.635	IO	|	|	|	1.73
13.167	0.00	0.21	0.633	IO	|	|	|	1.73
13.250	0.00	0.21	0.632	IO	|	|	|	1.73
13.333	0.00	0.21	0.630	IO	|	|	|	1.72
13.417	0.00	0.21	0.629	IO	|	|	|	1.72
13.500	0.00	0.21	0.628	IO	|	|	|	1.72
13.583	0.00	0.21	0.626	IO	|	|	|	1.72
13.667	0.00	0.21	0.625	IO	|	|	|	1.71
13.750	0.00	0.21	0.623	IO	|	|	|	1.71
13.833	0.00	0.20	0.622	IO	|	|	|	

1.71

13.917	0.00	0.20	0.621	IO	|	|	|	|	1.70
14.000	0.00	0.20	0.619	IO	|	|	|	|	1.70
14.083	0.00	0.20	0.618	IO	|	|	|	|	1.70
14.167	0.00	0.20	0.616	IO	|	|	|	|	1.70
14.250	0.00	0.20	0.615	IO	|	|	|	|	1.69
14.333	0.00	0.20	0.614	IO	|	|	|	|	1.69
14.417	0.00	0.20	0.612	IO	|	|	|	|	1.69
14.500	0.00	0.20	0.611	IO	|	|	|	|	1.68
14.583	0.00	0.20	0.610	IO	|	|	|	|	1.68
14.667	0.00	0.20	0.608	IO	|	|	|	|	1.68
14.750	0.00	0.19	0.607	IO	|	|	|	|	1.68
14.833	0.00	0.19	0.605	IO	|	|	|	|	1.67
14.917	0.00	0.19	0.604	IO	|	|	|	|	1.67
15.000	0.00	0.19	0.603	IO	|	|	|	|	1.67
15.083	0.00	0.19	0.602	O	|	|	|	|	1.67
15.167	0.00	0.19	0.600	O	|	|	|	|	1.66
15.250	0.00	0.19	0.599	O	|	|	|	|	1.66
15.333	0.00	0.19	0.598	O	|	|	|	|	1.66
15.417	0.00	0.19	0.596	O	|	|	|	|	1.66
15.500	0.00	0.19	0.595	O	|	|	|	|	1.65
15.583	0.00	0.19	0.594	O	|	|	|	|	1.65
15.667	0.00	0.19	0.592	O	|	|	|	|	1.65
15.750	0.00	0.18	0.591	O	|	|	|	|	1.64
15.833	0.00	0.18	0.590	O	|	|	|	|	1.64
15.917	0.00	0.18	0.589	O	|	|	|	|	1.64
16.000	0.00	0.18	0.587	O	|	|	|	|	1.64
16.083	0.00	0.18	0.586	O	|	|	|	|	1.63
16.167	0.00	0.18	0.585	O	|	|	|	|	1.63

16.250	0.00	0.18	0.584	O	|	|	|	|	1.63
16.333	0.00	0.18	0.582	O	|	|	|	|	1.63
16.417	0.00	0.18	0.581	O	|	|	|	|	1.62
16.500	0.00	0.18	0.580	O	|	|	|	|	1.62
16.583	0.00	0.18	0.579	O	|	|	|	|	1.62
16.667	0.00	0.18	0.578	O	|	|	|	|	1.62
16.750	0.00	0.17	0.576	O	|	|	|	|	1.61
16.833	0.00	0.17	0.575	O	|	|	|	|	1.61
16.917	0.00	0.17	0.574	O	|	|	|	|	1.61
17.000	0.00	0.17	0.573	O	|	|	|	|	1.61
17.083	0.00	0.17	0.572	O	|	|	|	|	1.60
17.167	0.00	0.17	0.570	O	|	|	|	|	1.60
17.250	0.00	0.17	0.569	O	|	|	|	|	1.60
17.333	0.00	0.17	0.568	O	|	|	|	|	1.60
17.417	0.00	0.17	0.567	O	|	|	|	|	1.60
17.500	0.00	0.17	0.566	O	|	|	|	|	1.59
17.583	0.00	0.17	0.565	O	|	|	|	|	1.59
17.667	0.00	0.17	0.563	O	|	|	|	|	1.59
17.750	0.00	0.17	0.562	O	|	|	|	|	1.59
17.833	0.00	0.16	0.561	O	|	|	|	|	1.58
17.917	0.00	0.16	0.560	O	|	|	|	|	1.58
18.000	0.00	0.16	0.559	O	|	|	|	|	1.58
18.083	0.00	0.16	0.558	O	|	|	|	|	1.58
18.167	0.00	0.16	0.557	O	|	|	|	|	1.57
18.250	0.00	0.16	0.556	O	|	|	|	|	1.57
18.333	0.00	0.16	0.554	O	|	|	|	|	1.57
18.417	0.00	0.16	0.553	O	|	|	|	|	1.57
18.500	0.00	0.16	0.552	O	|	|	|	|	1.57
18.583	0.00	0.16	0.551	O	|	|	|	|	

1.56

18.667	0.00	0.16	0.550	O	|	|	|	1.56
18.750	0.00	0.16	0.549	O	|	|	|	1.56
18.833	0.00	0.16	0.548	O	|	|	|	1.56
18.917	0.00	0.16	0.547	O	|	|	|	1.55
19.000	0.00	0.15	0.546	O	|	|	|	1.55
19.083	0.00	0.15	0.545	O	|	|	|	1.55
19.167	0.00	0.15	0.544	O	|	|	|	1.55
19.250	0.00	0.15	0.543	O	|	|	|	1.55
19.333	0.00	0.15	0.542	O	|	|	|	1.54
19.417	0.00	0.15	0.540	O	|	|	|	1.54
19.500	0.00	0.15	0.539	O	|	|	|	1.54
19.583	0.00	0.15	0.538	O	|	|	|	1.54
19.667	0.00	0.15	0.537	O	|	|	|	1.54
19.750	0.00	0.15	0.536	O	|	|	|	1.53
19.833	0.00	0.15	0.535	O	|	|	|	1.53
19.917	0.00	0.15	0.534	O	|	|	|	1.53
20.000	0.00	0.15	0.533	O	|	|	|	1.53
20.083	0.00	0.15	0.532	O	|	|	|	1.52
20.167	0.00	0.15	0.531	O	|	|	|	1.52
20.250	0.00	0.14	0.530	O	|	|	|	1.52
20.333	0.00	0.14	0.529	O	|	|	|	1.52
20.417	0.00	0.14	0.528	O	|	|	|	1.52
20.500	0.00	0.14	0.527	O	|	|	|	1.51
20.583	0.00	0.14	0.526	O	|	|	|	1.51
20.667	0.00	0.14	0.525	O	|	|	|	1.51
20.750	0.00	0.14	0.524	O	|	|	|	1.51
20.833	0.00	0.14	0.523	O	|	|	|	1.51
20.917	0.00	0.14	0.522	O	|	|	|	1.51

21.000	0.00	0.14	0.522	O	|	|	|	|	1.50
21.083	0.00	0.14	0.521	O	|	|	|	|	1.50
21.167	0.00	0.14	0.520	O	|	|	|	|	1.50
21.250	0.00	0.14	0.519	O	|	|	|	|	1.50
21.333	0.00	0.14	0.518	O	|	|	|	|	1.50
21.417	0.00	0.14	0.517	O	|	|	|	|	1.49
21.500	0.00	0.14	0.516	O	|	|	|	|	1.49
21.583	0.00	0.14	0.515	O	|	|	|	|	1.49
21.667	0.00	0.14	0.514	O	|	|	|	|	1.49
21.750	0.00	0.14	0.513	O	|	|	|	|	1.49
21.833	0.00	0.14	0.512	O	|	|	|	|	1.48
21.917	0.00	0.13	0.511	O	|	|	|	|	1.48
22.000	0.00	0.13	0.510	O	|	|	|	|	1.48
22.083	0.00	0.13	0.509	O	|	|	|	|	1.48
22.167	0.00	0.13	0.508	O	|	|	|	|	1.48
22.250	0.00	0.13	0.507	O	|	|	|	|	1.47
22.333	0.00	0.13	0.507	O	|	|	|	|	1.47
22.417	0.00	0.13	0.506	O	|	|	|	|	1.47
22.500	0.00	0.13	0.505	O	|	|	|	|	1.47
22.583	0.00	0.13	0.504	O	|	|	|	|	1.47
22.667	0.00	0.13	0.503	O	|	|	|	|	1.46
22.750	0.00	0.13	0.502	O	|	|	|	|	1.46
22.833	0.00	0.13	0.501	O	|	|	|	|	1.46
22.917	0.00	0.13	0.500	O	|	|	|	|	1.46
23.000	0.00	0.13	0.499	O	|	|	|	|	1.46
23.083	0.00	0.13	0.498	O	|	|	|	|	1.45
23.167	0.00	0.13	0.497	O	|	|	|	|	1.45
23.250	0.00	0.13	0.497	O	|	|	|	|	1.45
23.333	0.00	0.13	0.496	O	|	|	|	|	

1.45

23.417	0.00	0.13	0.495	O	|	|	|	1.45
23.500	0.00	0.13	0.494	O	|	|	|	1.44
23.583	0.00	0.13	0.493	O	|	|	|	1.44
23.667	0.00	0.13	0.492	O	|	|	|	1.44
23.750	0.00	0.13	0.491	O	|	|	|	1.44
23.833	0.00	0.13	0.490	O	|	|	|	1.44
23.917	0.00	0.13	0.489	O	|	|	|	1.43
24.000	0.00	0.13	0.489	O	|	|	|	1.43
24.083	0.00	0.13	0.488	O	|	|	|	1.43
24.167	0.00	0.13	0.487	O	|	|	|	1.43
24.250	0.00	0.13	0.486	O	|	|	|	1.43
24.333	0.00	0.13	0.485	O	|	|	|	1.43
24.417	0.00	0.13	0.484	O	|	|	|	1.42
24.500	0.00	0.13	0.483	O	|	|	|	1.42
24.583	0.00	0.12	0.483	O	|	|	|	1.42
24.667	0.00	0.12	0.482	O	|	|	|	1.42
24.750	0.00	0.12	0.481	O	|	|	|	1.42
24.833	0.00	0.12	0.480	O	|	|	|	1.41
24.917	0.00	0.12	0.479	O	|	|	|	1.41
25.000	0.00	0.12	0.478	O	|	|	|	1.41
25.083	0.00	0.12	0.477	O	|	|	|	1.41
25.167	0.00	0.12	0.477	O	|	|	|	1.41
25.250	0.00	0.12	0.476	O	|	|	|	1.41
25.333	0.00	0.12	0.475	O	|	|	|	1.40
25.417	0.00	0.12	0.474	O	|	|	|	1.40
25.500	0.00	0.12	0.473	O	|	|	|	1.40
25.583	0.00	0.12	0.472	O	|	|	|	1.40
25.667	0.00	0.12	0.472	O	|	|	|	1.40

25.750	0.00	0.12	0.471	O	|	|	|	|	1.39
25.833	0.00	0.12	0.470	O	|	|	|	|	1.39
25.917	0.00	0.12	0.469	O	|	|	|	|	1.39
26.000	0.00	0.12	0.468	O	|	|	|	|	1.39
26.083	0.00	0.12	0.467	O	|	|	|	|	1.39
26.167	0.00	0.12	0.467	O	|	|	|	|	1.39
26.250	0.00	0.12	0.466	O	|	|	|	|	1.38
26.333	0.00	0.12	0.465	O	|	|	|	|	1.38
26.417	0.00	0.12	0.464	O	|	|	|	|	1.38
26.500	0.00	0.12	0.463	O	|	|	|	|	1.38
26.583	0.00	0.12	0.462	O	|	|	|	|	1.38
26.667	0.00	0.12	0.462	O	|	|	|	|	1.38
26.750	0.00	0.12	0.461	O	|	|	|	|	1.37
26.833	0.00	0.12	0.460	O	|	|	|	|	1.37
26.917	0.00	0.12	0.459	O	|	|	|	|	1.37
27.000	0.00	0.12	0.458	O	|	|	|	|	1.37
27.083	0.00	0.12	0.458	O	|	|	|	|	1.37
27.167	0.00	0.12	0.457	O	|	|	|	|	1.37
27.250	0.00	0.12	0.456	O	|	|	|	|	1.36
27.333	0.00	0.12	0.455	O	|	|	|	|	1.36
27.417	0.00	0.12	0.454	O	|	|	|	|	1.36
27.500	0.00	0.11	0.454	O	|	|	|	|	1.36
27.583	0.00	0.11	0.453	O	|	|	|	|	1.36
27.667	0.00	0.11	0.452	O	|	|	|	|	1.35
27.750	0.00	0.11	0.451	O	|	|	|	|	1.35
27.833	0.00	0.11	0.451	O	|	|	|	|	1.35
27.917	0.00	0.11	0.450	O	|	|	|	|	1.35
28.000	0.00	0.11	0.449	O	|	|	|	|	1.35
28.083	0.00	0.11	0.448	O	|	|	|	|	

1.35

28.167	0.00	0.11	0.447	O	|	|	|	1.34
28.250	0.00	0.11	0.447	O	|	|	|	1.34
28.333	0.00	0.11	0.446	O	|	|	|	1.34
28.417	0.00	0.11	0.445	O	|	|	|	1.34
28.500	0.00	0.11	0.444	O	|	|	|	1.34
28.583	0.00	0.11	0.444	O	|	|	|	1.34
28.667	0.00	0.11	0.443	O	|	|	|	1.34
28.750	0.00	0.11	0.442	O	|	|	|	1.33
28.833	0.00	0.11	0.441	O	|	|	|	1.33
28.917	0.00	0.11	0.441	O	|	|	|	1.33
29.000	0.00	0.11	0.440	O	|	|	|	1.33
29.083	0.00	0.11	0.439	O	|	|	|	1.33
29.167	0.00	0.11	0.438	O	|	|	|	1.33
29.250	0.00	0.11	0.437	O	|	|	|	1.32
29.333	0.00	0.11	0.437	O	|	|	|	1.32
29.417	0.00	0.11	0.436	O	|	|	|	1.32
29.500	0.00	0.11	0.435	O	|	|	|	1.32
29.583	0.00	0.11	0.434	O	|	|	|	1.32
29.667	0.00	0.11	0.434	O	|	|	|	1.32
29.750	0.00	0.11	0.433	O	|	|	|	1.31
29.833	0.00	0.11	0.432	O	|	|	|	1.31
29.917	0.00	0.11	0.432	O	|	|	|	1.31
30.000	0.00	0.11	0.431	O	|	|	|	1.31
30.083	0.00	0.11	0.430	O	|	|	|	1.31
30.167	0.00	0.11	0.429	O	|	|	|	1.31
30.250	0.00	0.11	0.429	O	|	|	|	1.30
30.333	0.00	0.11	0.428	O	|	|	|	1.30
30.417	0.00	0.11	0.427	O	|	|	|	1.30

30.500	0.00	0.11	0.426	O	|	|	|	|	1.30
30.583	0.00	0.10	0.426	O	|	|	|	|	1.30
30.667	0.00	0.10	0.425	O	|	|	|	|	1.30
30.750	0.00	0.10	0.424	O	|	|	|	|	1.30
30.833	0.00	0.10	0.424	O	|	|	|	|	1.29
30.917	0.00	0.10	0.423	O	|	|	|	|	1.29
31.000	0.00	0.10	0.422	O	|	|	|	|	1.29
31.083	0.00	0.10	0.421	O	|	|	|	|	1.29
31.167	0.00	0.10	0.421	O	|	|	|	|	1.29
31.250	0.00	0.10	0.420	O	|	|	|	|	1.29
31.333	0.00	0.10	0.419	O	|	|	|	|	1.28
31.417	0.00	0.10	0.419	O	|	|	|	|	1.28
31.500	0.00	0.10	0.418	O	|	|	|	|	1.28
31.583	0.00	0.10	0.417	O	|	|	|	|	1.28
31.667	0.00	0.10	0.416	O	|	|	|	|	1.28
31.750	0.00	0.10	0.416	O	|	|	|	|	1.28
31.833	0.00	0.10	0.415	O	|	|	|	|	1.28
31.917	0.00	0.10	0.414	O	|	|	|	|	1.27
32.000	0.00	0.10	0.414	O	|	|	|	|	1.27
32.083	0.00	0.10	0.413	O	|	|	|	|	1.27
32.167	0.00	0.10	0.412	O	|	|	|	|	1.27
32.250	0.00	0.10	0.412	O	|	|	|	|	1.27
32.333	0.00	0.10	0.411	O	|	|	|	|	1.27
32.417	0.00	0.10	0.410	O	|	|	|	|	1.27
32.500	0.00	0.10	0.410	O	|	|	|	|	1.26
32.583	0.00	0.10	0.409	O	|	|	|	|	1.26
32.667	0.00	0.10	0.408	O	|	|	|	|	1.26
32.750	0.00	0.10	0.407	O	|	|	|	|	1.26
32.833	0.00	0.10	0.407	O	|	|	|	|	

1.26

32.917	0.00	0.10	0.406	O	|	|	|	1.26
33.000	0.00	0.10	0.405	O	|	|	|	1.26
33.083	0.00	0.10	0.405	O	|	|	|	1.25
33.167	0.00	0.10	0.404	O	|	|	|	1.25
33.250	0.00	0.10	0.403	O	|	|	|	1.25
33.333	0.00	0.10	0.403	O	|	|	|	1.25
33.417	0.00	0.10	0.402	O	|	|	|	1.25
33.500	0.00	0.10	0.401	O	|	|	|	1.25
33.583	0.00	0.10	0.401	O	|	|	|	1.24
33.667	0.00	0.09	0.400	O	|	|	|	1.24
33.750	0.00	0.09	0.399	O	|	|	|	1.24
33.833	0.00	0.09	0.399	O	|	|	|	1.24
33.917	0.00	0.09	0.398	O	|	|	|	1.24
34.000	0.00	0.09	0.398	O	|	|	|	1.24
34.083	0.00	0.09	0.397	O	|	|	|	1.24
34.167	0.00	0.09	0.396	O	|	|	|	1.23
34.250	0.00	0.09	0.396	O	|	|	|	1.23
34.333	0.00	0.09	0.395	O	|	|	|	1.23
34.417	0.00	0.09	0.394	O	|	|	|	1.23
34.500	0.00	0.09	0.394	O	|	|	|	1.23
34.583	0.00	0.09	0.393	O	|	|	|	1.23
34.667	0.00	0.09	0.393	O	|	|	|	1.23
34.750	0.00	0.09	0.392	O	|	|	|	1.22
34.833	0.00	0.09	0.391	O	|	|	|	1.22
34.917	0.00	0.09	0.391	O	|	|	|	1.22
35.000	0.00	0.09	0.390	O	|	|	|	1.22
35.083	0.00	0.09	0.390	O	|	|	|	1.22
35.167	0.00	0.08	0.389	O	|	|	|	1.22

35.250	0.00	0.08	0.388	O	|	|	|	|	1.22
35.333	0.00	0.08	0.388	O	|	|	|	|	1.22
35.417	0.00	0.08	0.387	O	|	|	|	|	1.21
35.500	0.00	0.08	0.387	O	|	|	|	|	1.21
35.583	0.00	0.08	0.386	O	|	|	|	|	1.21
35.667	0.00	0.08	0.386	O	|	|	|	|	1.21
35.750	0.00	0.08	0.385	O	|	|	|	|	1.21
35.833	0.00	0.08	0.384	O	|	|	|	|	1.21
35.917	0.00	0.08	0.384	O	|	|	|	|	1.21
36.000	0.00	0.08	0.383	O	|	|	|	|	1.20
36.083	0.00	0.08	0.383	O	|	|	|	|	1.20
36.167	0.00	0.08	0.382	O	|	|	|	|	1.20
36.250	0.00	0.08	0.382	O	|	|	|	|	1.20
36.333	0.00	0.08	0.381	O	|	|	|	|	1.20
36.417	0.00	0.08	0.381	O	|	|	|	|	1.20
36.500	0.00	0.08	0.380	O	|	|	|	|	1.20
36.583	0.00	0.08	0.380	O	|	|	|	|	1.20
36.667	0.00	0.08	0.379	O	|	|	|	|	1.20
36.750	0.00	0.08	0.379	O	|	|	|	|	1.19
36.833	0.00	0.08	0.378	O	|	|	|	|	1.19
36.917	0.00	0.07	0.378	O	|	|	|	|	1.19
37.000	0.00	0.07	0.377	O	|	|	|	|	1.19
37.083	0.00	0.07	0.377	O	|	|	|	|	1.19
37.167	0.00	0.07	0.376	O	|	|	|	|	1.19
37.250	0.00	0.07	0.376	O	|	|	|	|	1.19
37.333	0.00	0.07	0.375	O	|	|	|	|	1.19
37.417	0.00	0.07	0.375	O	|	|	|	|	1.18
37.500	0.00	0.07	0.374	O	|	|	|	|	1.18
37.583	0.00	0.07	0.374	O	|	|	|	|	

1.18

37.667	0.00	0.07	0.373	O	|	|	|	1.18
37.750	0.00	0.07	0.373	O	|	|	|	1.18
37.833	0.00	0.07	0.372	O	|	|	|	1.18
37.917	0.00	0.07	0.372	O	|	|	|	1.18
38.000	0.00	0.07	0.371	O	|	|	|	1.18
38.083	0.00	0.07	0.371	O	|	|	|	1.18
38.167	0.00	0.07	0.370	O	|	|	|	1.17
38.250	0.00	0.07	0.370	O	|	|	|	1.17
38.333	0.00	0.07	0.369	O	|	|	|	1.17
38.417	0.00	0.07	0.369	O	|	|	|	1.17
38.500	0.00	0.07	0.368	O	|	|	|	1.17
38.583	0.00	0.07	0.368	O	|	|	|	1.17
38.667	0.00	0.07	0.367	O	|	|	|	1.17
38.750	0.00	0.07	0.367	O	|	|	|	1.17
38.833	0.00	0.06	0.367	O	|	|	|	1.17
38.917	0.00	0.06	0.366	O	|	|	|	1.17
39.000	0.00	0.06	0.366	O	|	|	|	1.16
39.083	0.00	0.06	0.365	O	|	|	|	1.16
39.167	0.00	0.06	0.365	O	|	|	|	1.16
39.250	0.00	0.06	0.364	O	|	|	|	1.16
39.333	0.00	0.06	0.364	O	|	|	|	1.16
39.417	0.00	0.06	0.363	O	|	|	|	1.16
39.500	0.00	0.06	0.363	O	|	|	|	1.16
39.583	0.00	0.06	0.363	O	|	|	|	1.16
39.667	0.00	0.06	0.362	O	|	|	|	1.16
39.750	0.00	0.06	0.362	O	|	|	|	1.16
39.833	0.00	0.06	0.361	O	|	|	|	1.15
39.917	0.00	0.06	0.361	O	|	|	|	1.15

40.000	0.00	0.06	0.361	O	|	|	|	|	1.15
40.083	0.00	0.06	0.360	O	|	|	|	|	1.15
40.167	0.00	0.06	0.360	O	|	|	|	|	1.15
40.250	0.00	0.06	0.359	O	|	|	|	|	1.15
40.333	0.00	0.06	0.359	O	|	|	|	|	1.15
40.417	0.00	0.06	0.358	O	|	|	|	|	1.15
40.500	0.00	0.06	0.358	O	|	|	|	|	1.15
40.583	0.00	0.06	0.358	O	|	|	|	|	1.15
40.667	0.00	0.06	0.357	O	|	|	|	|	1.15
40.750	0.00	0.06	0.357	O	|	|	|	|	1.14
40.833	0.00	0.06	0.357	O	|	|	|	|	1.14
40.917	0.00	0.06	0.356	O	|	|	|	|	1.14
41.000	0.00	0.06	0.356	O	|	|	|	|	1.14
41.083	0.00	0.06	0.355	O	|	|	|	|	1.14
41.167	0.00	0.05	0.355	O	|	|	|	|	1.14
41.250	0.00	0.05	0.355	O	|	|	|	|	1.14
41.333	0.00	0.05	0.354	O	|	|	|	|	1.14
41.417	0.00	0.05	0.354	O	|	|	|	|	1.14
41.500	0.00	0.05	0.354	O	|	|	|	|	1.14
41.583	0.00	0.05	0.353	O	|	|	|	|	1.14
41.667	0.00	0.05	0.353	O	|	|	|	|	1.13
41.750	0.00	0.05	0.352	O	|	|	|	|	1.13
41.833	0.00	0.05	0.352	O	|	|	|	|	1.13
41.917	0.00	0.05	0.352	O	|	|	|	|	1.13
42.000	0.00	0.05	0.351	O	|	|	|	|	1.13
42.083	0.00	0.05	0.351	O	|	|	|	|	1.13
42.167	0.00	0.05	0.351	O	|	|	|	|	1.13
42.250	0.00	0.05	0.350	O	|	|	|	|	1.13
42.333	0.00	0.05	0.350	O	|	|	|	|	

1.13

42.417	0.00	0.05	0.350	O	|	|	|	|	1.13
42.500	0.00	0.05	0.349	O	|	|	|	|	1.13
42.583	0.00	0.05	0.349	O	|	|	|	|	1.13
42.667	0.00	0.05	0.349	O	|	|	|	|	1.13
42.750	0.00	0.05	0.348	O	|	|	|	|	1.12
42.833	0.00	0.05	0.348	O	|	|	|	|	1.12
42.917	0.00	0.05	0.348	O	|	|	|	|	1.12
43.000	0.00	0.05	0.347	O	|	|	|	|	1.12
43.083	0.00	0.05	0.347	O	|	|	|	|	1.12
43.167	0.00	0.05	0.347	O	|	|	|	|	1.12
43.250	0.00	0.05	0.346	O	|	|	|	|	1.12
43.333	0.00	0.05	0.346	O	|	|	|	|	1.12
43.417	0.00	0.05	0.346	O	|	|	|	|	1.12
43.500	0.00	0.05	0.345	O	|	|	|	|	1.12
43.583	0.00	0.05	0.345	O	|	|	|	|	1.12
43.667	0.00	0.05	0.345	O	|	|	|	|	1.12
43.750	0.00	0.05	0.344	O	|	|	|	|	1.12
43.833	0.00	0.05	0.344	O	|	|	|	|	1.11
43.917	0.00	0.04	0.344	O	|	|	|	|	1.11
44.000	0.00	0.04	0.343	O	|	|	|	|	1.11
44.083	0.00	0.04	0.343	O	|	|	|	|	1.11
44.167	0.00	0.04	0.343	O	|	|	|	|	1.11
44.250	0.00	0.04	0.343	O	|	|	|	|	1.11
44.333	0.00	0.04	0.342	O	|	|	|	|	1.11
44.417	0.00	0.04	0.342	O	|	|	|	|	1.11
44.500	0.00	0.04	0.342	O	|	|	|	|	1.11
44.583	0.00	0.04	0.341	O	|	|	|	|	1.11
44.667	0.00	0.04	0.341	O	|	|	|	|	1.11

44.750	0.00	0.04	0.341	O	|	|	|	|	1.11
44.833	0.00	0.04	0.340	O	|	|	|	|	1.11
44.917	0.00	0.04	0.340	O	|	|	|	|	1.11
45.000	0.00	0.04	0.340	O	|	|	|	|	1.11
45.083	0.00	0.04	0.340	O	|	|	|	|	1.10
45.167	0.00	0.04	0.339	O	|	|	|	|	1.10
45.250	0.00	0.04	0.339	O	|	|	|	|	1.10
45.333	0.00	0.04	0.339	O	|	|	|	|	1.10
45.417	0.00	0.04	0.338	O	|	|	|	|	1.10
45.500	0.00	0.04	0.338	O	|	|	|	|	1.10
45.583	0.00	0.04	0.338	O	|	|	|	|	1.10
45.667	0.00	0.04	0.338	O	|	|	|	|	1.10
45.750	0.00	0.04	0.337	O	|	|	|	|	1.10
45.833	0.00	0.04	0.337	O	|	|	|	|	1.10
45.917	0.00	0.04	0.337	O	|	|	|	|	1.10
46.000	0.00	0.04	0.337	O	|	|	|	|	1.10
46.083	0.00	0.04	0.336	O	|	|	|	|	1.10
46.167	0.00	0.04	0.336	O	|	|	|	|	1.10
46.250	0.00	0.04	0.336	O	|	|	|	|	1.10
46.333	0.00	0.04	0.336	O	|	|	|	|	1.10
46.417	0.00	0.04	0.335	O	|	|	|	|	1.09
46.500	0.00	0.04	0.335	O	|	|	|	|	1.09
46.583	0.00	0.04	0.335	O	|	|	|	|	1.09
46.667	0.00	0.04	0.335	O	|	|	|	|	1.09
46.750	0.00	0.04	0.334	O	|	|	|	|	1.09
46.833	0.00	0.04	0.334	O	|	|	|	|	1.09
46.917	0.00	0.04	0.334	O	|	|	|	|	1.09
47.000	0.00	0.04	0.334	O	|	|	|	|	1.09
47.083	0.00	0.04	0.333	O	|	|	|	|	

1.09

47.167	0.00	0.04	0.333	O	|	|	|	1.09
47.250	0.00	0.04	0.333	O	|	|	|	1.09
47.333	0.00	0.03	0.333	O	|	|	|	1.09
47.417	0.00	0.03	0.332	O	|	|	|	1.09
47.500	0.00	0.03	0.332	O	|	|	|	1.09
47.583	0.00	0.03	0.332	O	|	|	|	1.09
47.667	0.00	0.03	0.332	O	|	|	|	1.09
47.750	0.00	0.03	0.331	O	|	|	|	1.09
47.833	0.00	0.03	0.331	O	|	|	|	1.09
47.917	0.00	0.03	0.331	O	|	|	|	1.08
48.000	0.00	0.03	0.331	O	|	|	|	1.08
48.083	0.00	0.03	0.330	O	|	|	|	1.08
48.167	0.00	0.03	0.330	O	|	|	|	1.08
48.250	0.00	0.03	0.330	O	|	|	|	1.08
48.333	0.00	0.03	0.330	O	|	|	|	1.08
48.417	0.00	0.03	0.330	O	|	|	|	1.08
48.500	0.00	0.03	0.329	O	|	|	|	1.08
48.583	0.00	0.03	0.329	O	|	|	|	1.08
48.667	0.00	0.03	0.329	O	|	|	|	1.08
48.750	0.00	0.03	0.329	O	|	|	|	1.08
48.833	0.00	0.03	0.328	O	|	|	|	1.08
48.917	0.00	0.03	0.328	O	|	|	|	1.08
49.000	0.00	0.03	0.328	O	|	|	|	1.08
49.083	0.00	0.03	0.328	O	|	|	|	1.08
49.167	0.00	0.03	0.328	O	|	|	|	1.08
49.250	0.00	0.03	0.327	O	|	|	|	1.08
49.333	0.00	0.03	0.327	O	|	|	|	1.08
49.417	0.00	0.03	0.327	O	|	|	|	1.08

49.500	0.00	0.03	0.327	O	|	|	|	|	1.08
49.583	0.00	0.03	0.327	O	|	|	|	|	1.07
49.667	0.00	0.03	0.326	O	|	|	|	|	1.07
49.750	0.00	0.03	0.326	O	|	|	|	|	1.07
49.833	0.00	0.03	0.326	O	|	|	|	|	1.07
49.917	0.00	0.03	0.326	O	|	|	|	|	1.07
50.000	0.00	0.03	0.326	O	|	|	|	|	1.07
50.083	0.00	0.03	0.325	O	|	|	|	|	1.07
50.167	0.00	0.03	0.325	O	|	|	|	|	1.07
50.250	0.00	0.03	0.325	O	|	|	|	|	1.07
50.333	0.00	0.03	0.325	O	|	|	|	|	1.07
50.417	0.00	0.03	0.325	O	|	|	|	|	1.07
50.500	0.00	0.03	0.324	O	|	|	|	|	1.07
50.583	0.00	0.03	0.324	O	|	|	|	|	1.07
50.667	0.00	0.03	0.324	O	|	|	|	|	1.07
50.750	0.00	0.03	0.324	O	|	|	|	|	1.07
50.833	0.00	0.03	0.324	O	|	|	|	|	1.07
50.917	0.00	0.03	0.323	O	|	|	|	|	1.07
51.000	0.00	0.03	0.323	O	|	|	|	|	1.07
51.083	0.00	0.03	0.323	O	|	|	|	|	1.07
51.167	0.00	0.03	0.323	O	|	|	|	|	1.07
51.250	0.00	0.03	0.323	O	|	|	|	|	1.07
51.333	0.00	0.03	0.323	O	|	|	|	|	1.07
51.417	0.00	0.03	0.322	O	|	|	|	|	1.06
51.500	0.00	0.03	0.322	O	|	|	|	|	1.06
51.583	0.00	0.03	0.322	O	|	|	|	|	1.06
51.667	0.00	0.03	0.322	O	|	|	|	|	1.06
51.750	0.00	0.03	0.322	O	|	|	|	|	1.06
51.833	0.00	0.03	0.321	O	|	|	|	|	

1.06

51.917	0.00	0.03	0.321	O	|	|	|	1.06
52.000	0.00	0.02	0.321	O	|	|	|	1.06
52.083	0.00	0.02	0.321	O	|	|	|	1.06
52.167	0.00	0.02	0.321	O	|	|	|	1.06
52.250	0.00	0.02	0.321	O	|	|	|	1.06
52.333	0.00	0.02	0.320	O	|	|	|	1.06
52.417	0.00	0.02	0.320	O	|	|	|	1.06
52.500	0.00	0.02	0.320	O	|	|	|	1.06
52.583	0.00	0.02	0.320	O	|	|	|	1.06
52.667	0.00	0.02	0.320	O	|	|	|	1.06
52.750	0.00	0.02	0.320	O	|	|	|	1.06
52.833	0.00	0.02	0.319	O	|	|	|	1.06
52.917	0.00	0.02	0.319	O	|	|	|	1.06
53.000	0.00	0.02	0.319	O	|	|	|	1.06
53.083	0.00	0.02	0.319	O	|	|	|	1.06
53.167	0.00	0.02	0.319	O	|	|	|	1.06
53.250	0.00	0.02	0.319	O	|	|	|	1.06
53.333	0.00	0.02	0.318	O	|	|	|	1.06
53.417	0.00	0.02	0.318	O	|	|	|	1.06
53.500	0.00	0.02	0.318	O	|	|	|	1.06
53.583	0.00	0.02	0.318	O	|	|	|	1.06
53.667	0.00	0.02	0.318	O	|	|	|	1.05
53.750	0.00	0.02	0.318	O	|	|	|	1.05
53.833	0.00	0.02	0.318	O	|	|	|	1.05
53.917	0.00	0.02	0.317	O	|	|	|	1.05
54.000	0.00	0.02	0.317	O	|	|	|	1.05
54.083	0.00	0.02	0.317	O	|	|	|	1.05
54.167	0.00	0.02	0.317	O	|	|	|	1.05

54.250	0.00	0.02	0.317	O	|	|	|	|	1.05
54.333	0.00	0.02	0.317	O	|	|	|	|	1.05
54.417	0.00	0.02	0.317	O	|	|	|	|	1.05
54.500	0.00	0.02	0.316	O	|	|	|	|	1.05
54.583	0.00	0.02	0.316	O	|	|	|	|	1.05
54.667	0.00	0.02	0.316	O	|	|	|	|	1.05
54.750	0.00	0.02	0.316	O	|	|	|	|	1.05
54.833	0.00	0.02	0.316	O	|	|	|	|	1.05
54.917	0.00	0.02	0.316	O	|	|	|	|	1.05
55.000	0.00	0.02	0.316	O	|	|	|	|	1.05
55.083	0.00	0.02	0.315	O	|	|	|	|	1.05
55.167	0.00	0.02	0.315	O	|	|	|	|	1.05
55.250	0.00	0.02	0.315	O	|	|	|	|	1.05
55.333	0.00	0.02	0.315	O	|	|	|	|	1.05
55.417	0.00	0.02	0.315	O	|	|	|	|	1.05
55.500	0.00	0.02	0.315	O	|	|	|	|	1.05
55.583	0.00	0.02	0.315	O	|	|	|	|	1.05
55.667	0.00	0.02	0.314	O	|	|	|	|	1.05
55.750	0.00	0.02	0.314	O	|	|	|	|	1.05
55.833	0.00	0.02	0.314	O	|	|	|	|	1.05
55.917	0.00	0.02	0.314	O	|	|	|	|	1.05
56.000	0.00	0.02	0.314	O	|	|	|	|	1.05
56.083	0.00	0.02	0.314	O	|	|	|	|	1.05
56.167	0.00	0.02	0.314	O	|	|	|	|	1.05
56.250	0.00	0.02	0.314	O	|	|	|	|	1.04
56.333	0.00	0.02	0.313	O	|	|	|	|	1.04
56.417	0.00	0.02	0.313	O	|	|	|	|	1.04
56.500	0.00	0.02	0.313	O	|	|	|	|	1.04
56.583	0.00	0.02	0.313	O	|	|	|	|	

1.04

56.667	0.00	0.02	0.313	O	|	|	|	|	1.04
56.750	0.00	0.02	0.313	O	|	|	|	|	1.04
56.833	0.00	0.02	0.313	O	|	|	|	|	1.04
56.917	0.00	0.02	0.313	O	|	|	|	|	1.04
57.000	0.00	0.02	0.312	O	|	|	|	|	1.04
57.083	0.00	0.02	0.312	O	|	|	|	|	1.04
57.167	0.00	0.02	0.312	O	|	|	|	|	1.04
57.250	0.00	0.02	0.312	O	|	|	|	|	1.04
57.333	0.00	0.02	0.312	O	|	|	|	|	1.04
57.417	0.00	0.02	0.312	O	|	|	|	|	1.04
57.500	0.00	0.02	0.312	O	|	|	|	|	1.04
57.583	0.00	0.02	0.312	O	|	|	|	|	1.04
57.667	0.00	0.02	0.312	O	|	|	|	|	1.04
57.750	0.00	0.02	0.311	O	|	|	|	|	1.04
57.833	0.00	0.02	0.311	O	|	|	|	|	1.04
57.917	0.00	0.02	0.311	O	|	|	|	|	1.04
58.000	0.00	0.02	0.311	O	|	|	|	|	1.04
58.083	0.00	0.02	0.311	O	|	|	|	|	1.04
58.167	0.00	0.02	0.311	O	|	|	|	|	1.04
58.250	0.00	0.02	0.311	O	|	|	|	|	1.04
58.333	0.00	0.02	0.311	O	|	|	|	|	1.04
58.417	0.00	0.02	0.311	O	|	|	|	|	1.04
58.500	0.00	0.02	0.310	O	|	|	|	|	1.04
58.583	0.00	0.02	0.310	O	|	|	|	|	1.04
58.667	0.00	0.02	0.310	O	|	|	|	|	1.04
58.750	0.00	0.02	0.310	O	|	|	|	|	1.04
58.833	0.00	0.02	0.310	O	|	|	|	|	1.04
58.917	0.00	0.02	0.310	O	|	|	|	|	1.04

59.000	0.00	0.01	0.310	O	|	|	|	|	1.04
59.083	0.00	0.01	0.310	O	|	|	|	|	1.04
59.167	0.00	0.01	0.310	O	|	|	|	|	1.04
59.250	0.00	0.01	0.310	O	|	|	|	|	1.04
59.333	0.00	0.01	0.309	O	|	|	|	|	1.04
59.417	0.00	0.01	0.309	O	|	|	|	|	1.04
59.500	0.00	0.01	0.309	O	|	|	|	|	1.03
59.583	0.00	0.01	0.309	O	|	|	|	|	1.03
59.667	0.00	0.01	0.309	O	|	|	|	|	1.03
59.750	0.00	0.01	0.309	O	|	|	|	|	1.03
59.833	0.00	0.01	0.309	O	|	|	|	|	1.03
59.917	0.00	0.01	0.309	O	|	|	|	|	1.03
60.000	0.00	0.01	0.309	O	|	|	|	|	1.03
60.083	0.00	0.01	0.309	O	|	|	|	|	1.03
60.167	0.00	0.01	0.308	O	|	|	|	|	1.03
60.250	0.00	0.01	0.308	O	|	|	|	|	1.03
60.333	0.00	0.01	0.308	O	|	|	|	|	1.03
60.417	0.00	0.01	0.308	O	|	|	|	|	1.03
60.500	0.00	0.01	0.308	O	|	|	|	|	1.03
60.583	0.00	0.01	0.308	O	|	|	|	|	1.03
60.667	0.00	0.01	0.308	O	|	|	|	|	1.03
60.750	0.00	0.01	0.308	O	|	|	|	|	1.03
60.833	0.00	0.01	0.308	O	|	|	|	|	1.03
60.917	0.00	0.01	0.308	O	|	|	|	|	1.03
61.000	0.00	0.01	0.308	O	|	|	|	|	1.03
61.083	0.00	0.01	0.307	O	|	|	|	|	1.03
61.167	0.00	0.01	0.307	O	|	|	|	|	1.03
61.250	0.00	0.01	0.307	O	|	|	|	|	1.03
61.333	0.00	0.01	0.307	O	|	|	|	|	

1.03

61.417	0.00	0.01	0.307	O	|	|	|	|	1.03
61.500	0.00	0.01	0.307	O	|	|	|	|	1.03
61.583	0.00	0.01	0.307	O	|	|	|	|	1.03
61.667	0.00	0.01	0.307	O	|	|	|	|	1.03
61.750	0.00	0.01	0.307	O	|	|	|	|	1.03
61.833	0.00	0.01	0.307	O	|	|	|	|	1.03
61.917	0.00	0.01	0.307	O	|	|	|	|	1.03
62.000	0.00	0.01	0.307	O	|	|	|	|	1.03
62.083	0.00	0.01	0.306	O	|	|	|	|	1.03
62.167	0.00	0.01	0.306	O	|	|	|	|	1.03
62.250	0.00	0.01	0.306	O	|	|	|	|	1.03
62.333	0.00	0.01	0.306	O	|	|	|	|	1.03
62.417	0.00	0.01	0.306	O	|	|	|	|	1.03
62.500	0.00	0.01	0.306	O	|	|	|	|	1.03
62.583	0.00	0.01	0.306	O	|	|	|	|	1.03
62.667	0.00	0.01	0.306	O	|	|	|	|	1.03
62.750	0.00	0.01	0.306	O	|	|	|	|	1.03
62.833	0.00	0.01	0.306	O	|	|	|	|	1.03
62.917	0.00	0.01	0.306	O	|	|	|	|	1.03
63.000	0.00	0.01	0.306	O	|	|	|	|	1.03
63.083	0.00	0.01	0.305	O	|	|	|	|	1.03
63.167	0.00	0.01	0.305	O	|	|	|	|	1.03
63.250	0.00	0.01	0.305	O	|	|	|	|	1.03
63.333	0.00	0.01	0.305	O	|	|	|	|	1.03
63.417	0.00	0.01	0.305	O	|	|	|	|	1.03
63.500	0.00	0.01	0.305	O	|	|	|	|	1.03
63.583	0.00	0.01	0.305	O	|	|	|	|	1.03
63.667	0.00	0.01	0.305	O	|	|	|	|	1.03

63.750	0.00	0.01	0.305	O	|	|	|	|	1.02
63.833	0.00	0.01	0.305	O	|	|	|	|	1.02
63.917	0.00	0.01	0.305	O	|	|	|	|	1.02
64.000	0.00	0.01	0.305	O	|	|	|	|	1.02
64.083	0.00	0.01	0.305	O	|	|	|	|	1.02
64.167	0.00	0.01	0.305	O	|	|	|	|	1.02
64.250	0.00	0.01	0.304	O	|	|	|	|	1.02
64.333	0.00	0.01	0.304	O	|	|	|	|	1.02
64.417	0.00	0.01	0.304	O	|	|	|	|	1.02
64.500	0.00	0.01	0.304	O	|	|	|	|	1.02
64.583	0.00	0.01	0.304	O	|	|	|	|	1.02
64.667	0.00	0.01	0.304	O	|	|	|	|	1.02
64.750	0.00	0.01	0.304	O	|	|	|	|	1.02
64.833	0.00	0.01	0.304	O	|	|	|	|	1.02
64.917	0.00	0.01	0.304	O	|	|	|	|	1.02
65.000	0.00	0.01	0.304	O	|	|	|	|	1.02
65.083	0.00	0.01	0.304	O	|	|	|	|	1.02
65.167	0.00	0.01	0.304	O	|	|	|	|	1.02
65.250	0.00	0.01	0.304	O	|	|	|	|	1.02
65.333	0.00	0.01	0.304	O	|	|	|	|	1.02
65.417	0.00	0.01	0.304	O	|	|	|	|	1.02
65.500	0.00	0.01	0.303	O	|	|	|	|	1.02
65.583	0.00	0.01	0.303	O	|	|	|	|	1.02
65.667	0.00	0.01	0.303	O	|	|	|	|	1.02
65.750	0.00	0.01	0.303	O	|	|	|	|	1.02
65.833	0.00	0.01	0.303	O	|	|	|	|	1.02
65.917	0.00	0.01	0.303	O	|	|	|	|	1.02
66.000	0.00	0.01	0.303	O	|	|	|	|	1.02
66.083	0.00	0.01	0.303	O	|	|	|	|	

1.02

66.167	0.00	0.01	0.303	O	|	|	|	|	1.02
66.250	0.00	0.01	0.303	O	|	|	|	|	1.02
66.333	0.00	0.01	0.303	O	|	|	|	|	1.02
66.417	0.00	0.01	0.303	O	|	|	|	|	1.02
66.500	0.00	0.01	0.303	O	|	|	|	|	1.02
66.583	0.00	0.01	0.303	O	|	|	|	|	1.02
66.667	0.00	0.01	0.303	O	|	|	|	|	1.02
66.750	0.00	0.01	0.303	O	|	|	|	|	1.02
66.833	0.00	0.01	0.302	O	|	|	|	|	1.02
66.917	0.00	0.01	0.302	O	|	|	|	|	1.02
67.000	0.00	0.01	0.302	O	|	|	|	|	1.02
67.083	0.00	0.01	0.302	O	|	|	|	|	1.02
67.167	0.00	0.01	0.302	O	|	|	|	|	1.02
67.250	0.00	0.01	0.302	O	|	|	|	|	1.02
67.333	0.00	0.01	0.302	O	|	|	|	|	1.02
67.417	0.00	0.01	0.302	O	|	|	|	|	1.02
67.500	0.00	0.01	0.302	O	|	|	|	|	1.02
67.583	0.00	0.01	0.302	O	|	|	|	|	1.02
67.667	0.00	0.01	0.302	O	|	|	|	|	1.02
67.750	0.00	0.01	0.302	O	|	|	|	|	1.02
67.833	0.00	0.01	0.302	O	|	|	|	|	1.02
67.917	0.00	0.01	0.302	O	|	|	|	|	1.02
68.000	0.00	0.01	0.302	O	|	|	|	|	1.02
68.083	0.00	0.01	0.302	O	|	|	|	|	1.02
68.167	0.00	0.01	0.302	O	|	|	|	|	1.02
68.250	0.00	0.01	0.302	O	|	|	|	|	1.02
68.333	0.00	0.01	0.301	O	|	|	|	|	1.02
68.417	0.00	0.01	0.301	O	|	|	|	|	1.02

68.500	0.00	0.01	0.301	O	|	|	|	|	1.02
68.583	0.00	0.01	0.301	O	|	|	|	|	1.02
68.667	0.00	0.01	0.301	O	|	|	|	|	1.02
68.750	0.00	0.01	0.301	O	|	|	|	|	1.02
68.833	0.00	0.01	0.301	O	|	|	|	|	1.02
68.917	0.00	0.01	0.301	O	|	|	|	|	1.02
69.000	0.00	0.01	0.301	O	|	|	|	|	1.02
69.083	0.00	0.01	0.301	O	|	|	|	|	1.02
69.167	0.00	0.01	0.301	O	|	|	|	|	1.02
69.250	0.00	0.01	0.301	O	|	|	|	|	1.02
69.333	0.00	0.01	0.301	O	|	|	|	|	1.02
69.417	0.00	0.01	0.301	O	|	|	|	|	1.02
69.500	0.00	0.01	0.301	O	|	|	|	|	1.02
69.583	0.00	0.01	0.301	O	|	|	|	|	1.02
69.667	0.00	0.01	0.301	O	|	|	|	|	1.02
69.750	0.00	0.01	0.301	O	|	|	|	|	1.02
69.833	0.00	0.01	0.301	O	|	|	|	|	1.02
69.917	0.00	0.01	0.301	O	|	|	|	|	1.01
70.000	0.00	0.01	0.300	O	|	|	|	|	1.01
70.083	0.00	0.01	0.300	O	|	|	|	|	1.01
70.167	0.00	0.01	0.300	O	|	|	|	|	1.01
70.250	0.00	0.01	0.300	O	|	|	|	|	1.01
70.333	0.00	0.01	0.300	O	|	|	|	|	1.01
70.417	0.00	0.01	0.300	O	|	|	|	|	1.01
70.500	0.00	0.01	0.300	O	|	|	|	|	1.01
70.583	0.00	0.01	0.300	O	|	|	|	|	1.01
70.667	0.00	0.01	0.300	O	|	|	|	|	1.01
70.750	0.00	0.01	0.300	O	|	|	|	|	1.01
70.833	0.00	0.01	0.300	O	|	|	|	|	

1.01

70.917	0.00	0.01	0.300	O	|	|	|	|	1.01
71.000	0.00	0.01	0.300	O	|	|	|	|	1.01
71.083	0.00	0.01	0.300	O	|	|	|	|	1.01
71.167	0.00	0.01	0.300	O	|	|	|	|	1.01
71.250	0.00	0.01	0.300	O	|	|	|	|	1.01
71.333	0.00	0.01	0.300	O	|	|	|	|	1.01
71.417	0.00	0.01	0.300	O	|	|	|	|	1.01
71.500	0.00	0.01	0.300	O	|	|	|	|	1.01
71.583	0.00	0.01	0.300	O	|	|	|	|	1.01
71.667	0.00	0.01	0.300	O	|	|	|	|	1.01
71.750	0.00	0.01	0.300	O	|	|	|	|	1.01
71.833	0.00	0.01	0.300	O	|	|	|	|	1.01
71.917	0.00	0.01	0.299	O	|	|	|	|	1.01
72.000	0.00	0.01	0.299	O	|	|	|	|	1.01
72.083	0.00	0.01	0.299	O	|	|	|	|	1.01
72.167	0.00	0.01	0.299	O	|	|	|	|	1.01
72.250	0.00	0.01	0.299	O	|	|	|	|	1.01
72.333	0.00	0.01	0.299	O	|	|	|	|	1.01
72.417	0.00	0.01	0.299	O	|	|	|	|	1.01
72.500	0.00	0.01	0.299	O	|	|	|	|	1.01
72.583	0.00	0.01	0.299	O	|	|	|	|	1.01
72.667	0.00	0.01	0.299	O	|	|	|	|	1.01
72.750	0.00	0.01	0.299	O	|	|	|	|	1.01
72.833	0.00	0.01	0.299	O	|	|	|	|	1.01
72.917	0.00	0.01	0.299	O	|	|	|	|	1.01
73.000	0.00	0.01	0.299	O	|	|	|	|	1.01
73.083	0.00	0.01	0.299	O	|	|	|	|	1.01
73.167	0.00	0.01	0.299	O	|	|	|	|	1.01

73.250	0.00	0.01	0.299	O	|	|	|	|	1.01
73.333	0.00	0.01	0.299	O	|	|	|	|	1.01
73.417	0.00	0.01	0.299	O	|	|	|	|	1.01
73.500	0.00	0.01	0.299	O	|	|	|	|	1.01
73.583	0.00	0.01	0.299	O	|	|	|	|	1.01
73.667	0.00	0.01	0.299	O	|	|	|	|	1.01
73.750	0.00	0.01	0.299	O	|	|	|	|	1.01
73.833	0.00	0.01	0.299	O	|	|	|	|	1.01
73.917	0.00	0.01	0.299	O	|	|	|	|	1.01
74.000	0.00	0.01	0.299	O	|	|	|	|	1.01
74.083	0.00	0.00	0.299	O	|	|	|	|	1.01
74.167	0.00	0.00	0.298	O	|	|	|	|	1.01
74.250	0.00	0.00	0.298	O	|	|	|	|	1.01
74.333	0.00	0.00	0.298	O	|	|	|	|	1.01
74.417	0.00	0.00	0.298	O	|	|	|	|	1.01
74.500	0.00	0.00	0.298	O	|	|	|	|	1.01
74.583	0.00	0.00	0.298	O	|	|	|	|	1.01
74.667	0.00	0.00	0.298	O	|	|	|	|	1.01
74.750	0.00	0.00	0.298	O	|	|	|	|	1.01
74.833	0.00	0.00	0.298	O	|	|	|	|	1.01
74.917	0.00	0.00	0.298	O	|	|	|	|	1.01
75.000	0.00	0.00	0.298	O	|	|	|	|	1.01
75.083	0.00	0.00	0.298	O	|	|	|	|	1.01
75.167	0.00	0.00	0.298	O	|	|	|	|	1.01
75.250	0.00	0.00	0.298	O	|	|	|	|	1.01
75.333	0.00	0.00	0.298	O	|	|	|	|	1.01
75.417	0.00	0.00	0.298	O	|	|	|	|	1.01
75.500	0.00	0.00	0.298	O	|	|	|	|	1.01
75.583	0.00	0.00	0.298	O	|	|	|	|	

1.01

75.667	0.00	0.00	0.298	O	|	|	|	1.01
75.750	0.00	0.00	0.298	O	|	|	|	1.01
75.833	0.00	0.00	0.298	O	|	|	|	1.01
75.917	0.00	0.00	0.298	O	|	|	|	1.01
76.000	0.00	0.00	0.298	O	|	|	|	1.01
76.083	0.00	0.00	0.298	O	|	|	|	1.01
76.167	0.00	0.00	0.298	O	|	|	|	1.01
76.250	0.00	0.00	0.298	O	|	|	|	1.01
76.333	0.00	0.00	0.298	O	|	|	|	1.01
76.417	0.00	0.00	0.298	O	|	|	|	1.01
76.500	0.00	0.00	0.298	O	|	|	|	1.01
76.583	0.00	0.00	0.298	O	|	|	|	1.01
76.667	0.00	0.00	0.298	O	|	|	|	1.01
76.750	0.00	0.00	0.298	O	|	|	|	1.01
76.833	0.00	0.00	0.297	O	|	|	|	1.01
76.917	0.00	0.00	0.297	O	|	|	|	1.01
77.000	0.00	0.00	0.297	O	|	|	|	1.01
77.083	0.00	0.00	0.297	O	|	|	|	1.01
77.167	0.00	0.00	0.297	O	|	|	|	1.01
77.250	0.00	0.00	0.297	O	|	|	|	1.01
77.333	0.00	0.00	0.297	O	|	|	|	1.01
77.417	0.00	0.00	0.297	O	|	|	|	1.01
77.500	0.00	0.00	0.297	O	|	|	|	1.01
77.583	0.00	0.00	0.297	O	|	|	|	1.01
77.667	0.00	0.00	0.297	O	|	|	|	1.01
77.750	0.00	0.00	0.297	O	|	|	|	1.01
77.833	0.00	0.00	0.297	O	|	|	|	1.01
77.917	0.00	0.00	0.297	O	|	|	|	1.01

78.000	0.00	0.00	0.297	O	|	|	|	|	1.01
78.083	0.00	0.00	0.297	O	|	|	|	|	1.01
78.167	0.00	0.00	0.297	O	|	|	|	|	1.01
78.250	0.00	0.00	0.297	O	|	|	|	|	1.01
78.333	0.00	0.00	0.297	O	|	|	|	|	1.01
78.417	0.00	0.00	0.297	O	|	|	|	|	1.01
78.500	0.00	0.00	0.297	O	|	|	|	|	1.01
78.583	0.00	0.00	0.297	O	|	|	|	|	1.01
78.667	0.00	0.00	0.297	O	|	|	|	|	1.01
78.750	0.00	0.00	0.297	O	|	|	|	|	1.01
78.833	0.00	0.00	0.297	O	|	|	|	|	1.01
78.917	0.00	0.00	0.297	O	|	|	|	|	1.01
79.000	0.00	0.00	0.297	O	|	|	|	|	1.01
79.083	0.00	0.00	0.297	O	|	|	|	|	1.01
79.167	0.00	0.00	0.297	O	|	|	|	|	1.01
79.250	0.00	0.00	0.297	O	|	|	|	|	1.01
79.333	0.00	0.00	0.297	O	|	|	|	|	1.01
79.417	0.00	0.00	0.297	O	|	|	|	|	1.01
79.500	0.00	0.00	0.297	O	|	|	|	|	1.01
79.583	0.00	0.00	0.297	O	|	|	|	|	1.01
79.667	0.00	0.00	0.297	O	|	|	|	|	1.01
79.750	0.00	0.00	0.297	O	|	|	|	|	1.01
79.833	0.00	0.00	0.297	O	|	|	|	|	1.01
79.917	0.00	0.00	0.297	O	|	|	|	|	1.01
80.000	0.00	0.00	0.297	O	|	|	|	|	1.01
80.083	0.00	0.00	0.297	O	|	|	|	|	1.01
80.167	0.00	0.00	0.296	O	|	|	|	|	1.01
80.250	0.00	0.00	0.296	O	|	|	|	|	1.01
80.333	0.00	0.00	0.296	O	|	|	|	|	

1.01

80.417	0.00	0.00	0.296	O	|	|	|	|	1.01
80.500	0.00	0.00	0.296	O	|	|	|	|	1.01
80.583	0.00	0.00	0.296	O	|	|	|	|	1.01
80.667	0.00	0.00	0.296	O	|	|	|	|	1.01
80.750	0.00	0.00	0.296	O	|	|	|	|	1.01
80.833	0.00	0.00	0.296	O	|	|	|	|	1.01
80.917	0.00	0.00	0.296	O	|	|	|	|	1.01
81.000	0.00	0.00	0.296	O	|	|	|	|	1.01
81.083	0.00	0.00	0.296	O	|	|	|	|	1.01
81.167	0.00	0.00	0.296	O	|	|	|	|	1.01
81.250	0.00	0.00	0.296	O	|	|	|	|	1.01
81.333	0.00	0.00	0.296	O	|	|	|	|	1.01
81.417	0.00	0.00	0.296	O	|	|	|	|	1.01
81.500	0.00	0.00	0.296	O	|	|	|	|	1.00
81.583	0.00	0.00	0.296	O	|	|	|	|	1.00
81.667	0.00	0.00	0.296	O	|	|	|	|	1.00
81.750	0.00	0.00	0.296	O	|	|	|	|	1.00
81.833	0.00	0.00	0.296	O	|	|	|	|	1.00
81.917	0.00	0.00	0.296	O	|	|	|	|	1.00
82.000	0.00	0.00	0.296	O	|	|	|	|	1.00
82.083	0.00	0.00	0.296	O	|	|	|	|	1.00
82.167	0.00	0.00	0.296	O	|	|	|	|	1.00
82.250	0.00	0.00	0.296	O	|	|	|	|	1.00
82.333	0.00	0.00	0.296	O	|	|	|	|	1.00
82.417	0.00	0.00	0.296	O	|	|	|	|	1.00
82.500	0.00	0.00	0.296	O	|	|	|	|	1.00
82.583	0.00	0.00	0.296	O	|	|	|	|	1.00
82.667	0.00	0.00	0.296	O	|	|	|	|	1.00

82.750	0.00	0.00	0.296	O	|	|	|	|	1.00
82.833	0.00	0.00	0.296	O	|	|	|	|	1.00
82.917	0.00	0.00	0.296	O	|	|	|	|	1.00
83.000	0.00	0.00	0.296	O	|	|	|	|	1.00
83.083	0.00	0.00	0.296	O	|	|	|	|	1.00
83.167	0.00	0.00	0.296	O	|	|	|	|	1.00
83.250	0.00	0.00	0.296	O	|	|	|	|	1.00
83.333	0.00	0.00	0.296	O	|	|	|	|	1.00
83.417	0.00	0.00	0.296	O	|	|	|	|	1.00
83.500	0.00	0.00	0.296	O	|	|	|	|	1.00
83.583	0.00	0.00	0.296	O	|	|	|	|	1.00
83.667	0.00	0.00	0.296	O	|	|	|	|	1.00
83.750	0.00	0.00	0.296	O	|	|	|	|	1.00
83.833	0.00	0.00	0.296	O	|	|	|	|	1.00
83.917	0.00	0.00	0.296	O	|	|	|	|	1.00
84.000	0.00	0.00	0.296	O	|	|	|	|	1.00
84.083	0.00	0.00	0.296	O	|	|	|	|	1.00
84.167	0.00	0.00	0.296	O	|	|	|	|	1.00
84.250	0.00	0.00	0.296	O	|	|	|	|	1.00
84.333	0.00	0.00	0.296	O	|	|	|	|	1.00
84.417	0.00	0.00	0.296	O	|	|	|	|	1.00
84.500	0.00	0.00	0.296	O	|	|	|	|	1.00
84.583	0.00	0.00	0.296	O	|	|	|	|	1.00
84.667	0.00	0.00	0.295	O	|	|	|	|	1.00
84.750	0.00	0.00	0.295	O	|	|	|	|	1.00
84.833	0.00	0.00	0.295	O	|	|	|	|	1.00
84.917	0.00	0.00	0.295	O	|	|	|	|	1.00
85.000	0.00	0.00	0.295	O	|	|	|	|	1.00
85.083	0.00	0.00	0.295	O	|	|	|	|	

1.00

85.167	0.00	0.00	0.295	O	|	|	|	1.00
85.250	0.00	0.00	0.295	O	|	|	|	1.00
85.333	0.00	0.00	0.295	O	|	|	|	1.00
85.417	0.00	0.00	0.295	O	|	|	|	1.00
85.500	0.00	0.00	0.295	O	|	|	|	1.00
85.583	0.00	0.00	0.295	O	|	|	|	1.00
85.667	0.00	0.00	0.295	O	|	|	|	1.00
85.750	0.00	0.00	0.295	O	|	|	|	1.00
85.833	0.00	0.00	0.295	O	|	|	|	1.00
85.917	0.00	0.00	0.295	O	|	|	|	1.00
86.000	0.00	0.00	0.295	O	|	|	|	1.00
86.083	0.00	0.00	0.295	O	|	|	|	1.00
86.167	0.00	0.00	0.295	O	|	|	|	1.00
86.250	0.00	0.00	0.295	O	|	|	|	1.00
86.333	0.00	0.00	0.295	O	|	|	|	1.00
86.417	0.00	0.00	0.295	O	|	|	|	1.00
86.500	0.00	0.00	0.295	O	|	|	|	1.00
86.583	0.00	0.00	0.295	O	|	|	|	1.00
86.667	0.00	0.00	0.295	O	|	|	|	1.00
86.750	0.00	0.00	0.295	O	|	|	|	1.00
86.833	0.00	0.00	0.295	O	|	|	|	1.00
86.917	0.00	0.00	0.295	O	|	|	|	1.00
87.000	0.00	0.00	0.295	O	|	|	|	1.00
87.083	0.00	0.00	0.295	O	|	|	|	1.00
87.167	0.00	0.00	0.295	O	|	|	|	1.00
87.250	0.00	0.00	0.295	O	|	|	|	1.00
87.333	0.00	0.00	0.295	O	|	|	|	1.00
87.417	0.00	0.00	0.295	O	|	|	|	1.00

87.500	0.00	0.00	0.295	O	|	|	|	|	1.00
87.583	0.00	0.00	0.295	O	|	|	|	|	1.00
87.667	0.00	0.00	0.295	O	|	|	|	|	1.00
87.750	0.00	0.00	0.295	O	|	|	|	|	1.00
87.833	0.00	0.00	0.295	O	|	|	|	|	1.00
87.917	0.00	0.00	0.295	O	|	|	|	|	1.00
88.000	0.00	0.00	0.295	O	|	|	|	|	1.00
88.083	0.00	0.00	0.295	O	|	|	|	|	1.00
88.167	0.00	0.00	0.295	O	|	|	|	|	1.00
88.250	0.00	0.00	0.295	O	|	|	|	|	1.00
88.333	0.00	0.00	0.295	O	|	|	|	|	1.00
88.417	0.00	0.00	0.295	O	|	|	|	|	1.00
88.500	0.00	0.00	0.295	O	|	|	|	|	1.00
88.583	0.00	0.00	0.295	O	|	|	|	|	1.00
88.667	0.00	0.00	0.295	O	|	|	|	|	1.00
88.750	0.00	0.00	0.295	O	|	|	|	|	1.00
88.833	0.00	0.00	0.295	O	|	|	|	|	1.00
88.917	0.00	0.00	0.295	O	|	|	|	|	1.00
89.000	0.00	0.00	0.295	O	|	|	|	|	1.00
89.083	0.00	0.00	0.295	O	|	|	|	|	1.00
89.167	0.00	0.00	0.295	O	|	|	|	|	1.00
89.250	0.00	0.00	0.295	O	|	|	|	|	1.00
89.333	0.00	0.00	0.295	O	|	|	|	|	1.00
89.417	0.00	0.00	0.295	O	|	|	|	|	1.00
89.500	0.00	0.00	0.295	O	|	|	|	|	1.00
89.583	0.00	0.00	0.295	O	|	|	|	|	1.00
89.667	0.00	0.00	0.295	O	|	|	|	|	1.00
89.750	0.00	0.00	0.295	O	|	|	|	|	1.00
89.833	0.00	0.00	0.295	O	|	|	|	|	

1.00

89.917	0.00	0.00	0.295	O	|	|	|	1.00
90.000	0.00	0.00	0.295	O	|	|	|	1.00
90.083	0.00	0.00	0.295	O	|	|	|	1.00
90.167	0.00	0.00	0.295	O	|	|	|	1.00
90.250	0.00	0.00	0.295	O	|	|	|	1.00
90.333	0.00	0.00	0.295	O	|	|	|	1.00
90.417	0.00	0.00	0.295	O	|	|	|	1.00
90.500	0.00	0.00	0.295	O	|	|	|	1.00
90.583	0.00	0.00	0.295	O	|	|	|	1.00
90.667	0.00	0.00	0.295	O	|	|	|	1.00
90.750	0.00	0.00	0.295	O	|	|	|	1.00
90.833	0.00	0.00	0.295	O	|	|	|	1.00
90.917	0.00	0.00	0.295	O	|	|	|	1.00
91.000	0.00	0.00	0.295	O	|	|	|	1.00
91.083	0.00	0.00	0.295	O	|	|	|	1.00
91.167	0.00	0.00	0.294	O	|	|	|	1.00
91.250	0.00	0.00	0.294	O	|	|	|	1.00
91.333	0.00	0.00	0.294	O	|	|	|	1.00
91.417	0.00	0.00	0.294	O	|	|	|	1.00
91.500	0.00	0.00	0.294	O	|	|	|	1.00
91.583	0.00	0.00	0.294	O	|	|	|	1.00
91.667	0.00	0.00	0.294	O	|	|	|	1.00
91.750	0.00	0.00	0.294	O	|	|	|	1.00
91.833	0.00	0.00	0.294	O	|	|	|	1.00
91.917	0.00	0.00	0.294	O	|	|	|	1.00
92.000	0.00	0.00	0.294	O	|	|	|	1.00
92.083	0.00	0.00	0.294	O	|	|	|	1.00
92.167	0.00	0.00	0.294	O	|	|	|	1.00

92.250	0.00	0.00	0.294	O	|	|	|	|	1.00
92.333	0.00	0.00	0.294	O	|	|	|	|	1.00
92.417	0.00	0.00	0.294	O	|	|	|	|	1.00
92.500	0.00	0.00	0.294	O	|	|	|	|	1.00
92.583	0.00	0.00	0.294	O	|	|	|	|	1.00
92.667	0.00	0.00	0.294	O	|	|	|	|	1.00
92.750	0.00	0.00	0.294	O	|	|	|	|	1.00
92.833	0.00	0.00	0.294	O	|	|	|	|	1.00
92.917	0.00	0.00	0.294	O	|	|	|	|	1.00
93.000	0.00	0.00	0.294	O	|	|	|	|	1.00
93.083	0.00	0.00	0.294	O	|	|	|	|	1.00
93.167	0.00	0.00	0.294	O	|	|	|	|	1.00
93.250	0.00	0.00	0.294	O	|	|	|	|	1.00
93.333	0.00	0.00	0.294	O	|	|	|	|	1.00
93.417	0.00	0.00	0.294	O	|	|	|	|	1.00
93.500	0.00	0.00	0.294	O	|	|	|	|	1.00
93.583	0.00	0.00	0.294	O	|	|	|	|	1.00
93.667	0.00	0.00	0.294	O	|	|	|	|	1.00
93.750	0.00	0.00	0.294	O	|	|	|	|	1.00
93.833	0.00	0.00	0.294	O	|	|	|	|	1.00
93.917	0.00	0.00	0.294	O	|	|	|	|	1.00
94.000	0.00	0.00	0.294	O	|	|	|	|	1.00
94.083	0.00	0.00	0.294	O	|	|	|	|	1.00
94.167	0.00	0.00	0.294	O	|	|	|	|	1.00
94.250	0.00	0.00	0.294	O	|	|	|	|	1.00
94.333	0.00	0.00	0.294	O	|	|	|	|	1.00
94.417	0.00	0.00	0.294	O	|	|	|	|	1.00
94.500	0.00	0.00	0.294	O	|	|	|	|	1.00
94.583	0.00	0.00	0.294	O	|	|	|	|	

1.00

94.667	0.00	0.00	0.294	O	|	|	|	1.00
94.750	0.00	0.00	0.294	O	|	|	|	1.00
94.833	0.00	0.00	0.294	O	|	|	|	1.00
94.917	0.00	0.00	0.294	O	|	|	|	1.00
95.000	0.00	0.00	0.294	O	|	|	|	1.00
95.083	0.00	0.00	0.294	O	|	|	|	1.00
95.167	0.00	0.00	0.294	O	|	|	|	1.00
95.250	0.00	0.00	0.294	O	|	|	|	1.00
95.333	0.00	0.00	0.294	O	|	|	|	1.00
95.417	0.00	0.00	0.294	O	|	|	|	1.00
95.500	0.00	0.00	0.294	O	|	|	|	1.00
95.583	0.00	0.00	0.294	O	|	|	|	1.00
95.667	0.00	0.00	0.294	O	|	|	|	1.00
95.750	0.00	0.00	0.294	O	|	|	|	1.00
95.833	0.00	0.00	0.294	O	|	|	|	1.00
95.917	0.00	0.00	0.294	O	|	|	|	1.00
96.000	0.00	0.00	0.294	O	|	|	|	1.00
96.083	0.00	0.00	0.294	O	|	|	|	1.00
96.167	0.00	0.00	0.294	O	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1154
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.265 (CFS)
Total volume = 0.509 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
5 YR - 24 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP245.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 2.405 (CFS)
Total volume = 1.461 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.6	1.20	1.80	2.40 (Ft.)	Depth
0.083	0.08	0.00	0.000	OI	|	|	|	|	0.00
0.167	0.13	0.00	0.001	OI	|	|	|	|	0.00
0.250	0.14	0.00	0.002	OI	|	|	|	|	0.01
0.333	0.18	0.00	0.003	O I	|	|	|	|	0.01
0.417	0.21	0.00	0.004	O I	|	|	|	|	0.01
0.500	0.21	0.00	0.006	O I	|	|	|	|	0.02
0.583	0.21	0.00	0.007	O I	|	|	|	|	0.02
0.667	0.21	0.00	0.009	O I	|	|	|	|	0.03
0.750	0.21	0.00	0.010	O I	|	|	|	|	0.03
0.833	0.25	0.00	0.012	O I	|	|	|	|	0.04
0.917	0.28	0.00	0.014	O I	|	|	|	|	0.05
1.000	0.28	0.00	0.016	O I	|	|	|	|	0.05
1.083	0.24	0.00	0.017	O I	|	|	|	|	0.06
1.167	0.22	0.00	0.019	O I	|	|	|	|	0.06
1.250	0.21	0.00	0.020	O I	|	|	|	|	0.07
1.333	0.21	0.00	0.022	O I	|	|	|	|	0.07
1.417	0.21	0.00	0.023	O I	|	|	|	|	0.08
1.500	0.21	0.00	0.025	O I	|	|	|	|	0.08
1.583	0.21	0.00	0.026	O I	|	|	|	|	0.09
1.667	0.21	0.00	0.028	O I	|	|	|	|	0.09
1.750	0.21	0.00	0.029	O I	|	|	|	|	0.10
1.833	0.25	0.00	0.031	O I	|	|	|	|	0.10
1.917	0.28	0.00	0.033	O I	|	|	|	|	0.11

2.000	0.28	0.00	0.035	O	I	|	|	|	0.12
2.083	0.28	0.00	0.037	O	I	|	|	|	0.12
2.167	0.28	0.00	0.038	O	I	|	|	|	0.13
2.250	0.28	0.00	0.040	O	I	|	|	|	0.14
2.333	0.28	0.00	0.042	O	I	|	|	|	0.14
2.417	0.28	0.00	0.044	O	I	|	|	|	0.15
2.500	0.28	0.00	0.046	O	I	|	|	|	0.16
2.583	0.32	0.00	0.048	O	I	|	|	|	0.16
2.667	0.35	0.00	0.051	O	I	|	|	|	0.17
2.750	0.35	0.00	0.053	O	I	|	|	|	0.18
2.833	0.35	0.00	0.056	O	I	|	|	|	0.19
2.917	0.35	0.00	0.058	O	I	|	|	|	0.20
3.000	0.35	0.00	0.060	O	I	|	|	|	0.21
3.083	0.35	0.00	0.063	O	I	|	|	|	0.21
3.167	0.35	0.00	0.065	O	I	|	|	|	0.22
3.250	0.35	0.00	0.068	O	I	|	|	|	0.23
3.333	0.35	0.00	0.070	O	I	|	|	|	0.24
3.417	0.35	0.00	0.073	O	I	|	|	|	0.25
3.500	0.35	0.00	0.075	O	I	|	|	|	0.26
3.583	0.35	0.00	0.077	O	I	|	|	|	0.26
3.667	0.35	0.00	0.080	O	I	|	|	|	0.27
3.750	0.35	0.00	0.082	O	I	|	|	|	0.28
3.833	0.39	0.00	0.085	O	I	|	|	|	0.29
3.917	0.42	0.00	0.088	O	I	|	|	|	0.30
4.000	0.42	0.00	0.091	O	I	|	|	|	0.31
4.083	0.42	0.00	0.093	O	I	|	|	|	0.32
4.167	0.42	0.00	0.096	O	I	|	|	|	0.33
4.250	0.42	0.00	0.099	O	I	|	|	|	0.34
4.333	0.46	0.00	0.102	O	I	|	|	|	0.35

4.417	0.49	0.00	0.106	O	I |	|	|	|	0.36
4.500	0.50	0.00	0.109	O	I |	|	|	|	0.37
4.583	0.50	0.00	0.112	O	I |	|	|	|	0.38
4.667	0.50	0.00	0.116	O	I |	|	|	|	0.39
4.750	0.50	0.00	0.119	O	I |	|	|	|	0.41
4.833	0.54	0.00	0.123	O	I|	|	|	|	0.42
4.917	0.56	0.00	0.127	O	I|	|	|	|	0.43
5.000	0.57	0.00	0.130	O	I|	|	|	|	0.44
5.083	0.49	0.00	0.134	O	I |	|	|	|	0.46
5.167	0.43	0.00	0.137	O	I |	|	|	|	0.47
5.250	0.42	0.00	0.140	O	I |	|	|	|	0.48
5.333	0.46	0.00	0.143	O	I |	|	|	|	0.49
5.417	0.49	0.00	0.147	O	I |	|	|	|	0.50
5.500	0.50	0.00	0.150	O	I |	|	|	|	0.51
5.583	0.54	0.00	0.153	O	I|	|	|	|	0.52
5.667	0.56	0.00	0.157	O	I|	|	|	|	0.53
5.750	0.57	0.00	0.161	O	I|	|	|	|	0.55
5.833	0.57	0.00	0.165	O	I|	|	|	|	0.56
5.917	0.57	0.00	0.169	O	I|	|	|	|	0.57
6.000	0.57	0.00	0.173	O	I|	|	|	|	0.59
6.083	0.61	0.00	0.177	O	I	|	|	|	0.60
6.167	0.63	0.00	0.181	O	I	|	|	|	0.62
6.250	0.64	0.00	0.185	O	I	|	|	|	0.63
6.333	0.64	0.00	0.190	O	I	|	|	|	0.65
6.417	0.64	0.00	0.194	O	I	|	|	|	0.66
6.500	0.64	0.00	0.199	O	I	|	|	|	0.68
6.583	0.68	0.00	0.203	O	|I	|	|	|	0.69
6.667	0.70	0.00	0.208	O	|I	|	|	|	0.71
6.750	0.71	0.00	0.213	O	|I	|	|	|	0.72
6.833	0.71	0.00	0.218	O	|I	|	|	|	0.74
6.917	0.71	0.00	0.222	O	|I	|	|	|	0.76
7.000	0.71	0.00	0.227	O	|I	|	|	|	0.77
7.083	0.71	0.00	0.232	O	|I	|	|	|	0.79

7.167	0.71	0.00	0.237	O	|I	|	|	|	0.81
7.250	0.71	0.00	0.242	O	|I	|	|	|	0.82
7.333	0.75	0.00	0.247	O	|I	|	|	|	0.84
7.417	0.77	0.00	0.252	O	| I	|	|	|	0.86
7.500	0.78	0.00	0.257	O	| I	|	|	|	0.88
7.583	0.82	0.00	0.263	O	| I	|	|	|	0.89
7.667	0.84	0.00	0.269	O	| I	|	|	|	0.91
7.750	0.85	0.00	0.275	O	| I	|	|	|	0.93
7.833	0.89	0.00	0.281	O	| I	|	|	|	0.95
7.917	0.92	0.00	0.287	O	| I	|	|	|	0.98
8.000	0.92	0.00	0.293	O	| I	|	|	|	1.00
8.083	1.00	0.01	0.300	O	| I	|	|	|	1.01
8.167	1.05	0.01	0.307	O	| I	|	|	|	1.03
8.250	1.06	0.02	0.314	O	| I	|	|	|	1.05
8.333	1.06	0.02	0.321	O	| I	|	|	|	1.06
8.417	1.06	0.03	0.328	O	| I	|	|	|	1.08
8.500	1.06	0.04	0.335	O	| I	|	|	|	1.09
8.583	1.10	0.04	0.342	O	| I	|	|	|	1.11
8.667	1.13	0.05	0.350	O	| I	|	|	|	1.13
8.750	1.13	0.06	0.357	O	| I	|	|	|	1.14
8.833	1.17	0.06	0.365	O	| I	|	|	|	1.16
8.917	1.20	0.07	0.372	O	| I	|	|	|	1.18
9.000	1.20	0.08	0.380	|O	| I	|	|	|	1.20
9.083	1.28	0.08	0.388	|O	| |I	|	|	|	1.22
9.167	1.34	0.09	0.396	|O	| |I	|	|	|	1.23
9.250	1.34	0.10	0.405	|O	| |I	|	|	|	1.25
9.333	1.38	0.10	0.414	|O	| | I	|	|	|	1.27
9.417	1.41	0.10	0.423	|O	| | I	|	|	|	1.29
9.500	1.41	0.11	0.432	|O	| | I	|	|	|	1.31
9.583	1.45	0.11	0.441	|O	| | I	|	|	|	1.33
9.667	1.48	0.11	0.450	|O	| | I	|	|	|	1.35
9.750	1.49	0.12	0.460	|O	| | I	|	|	|	1.37
9.833	1.53	0.12	0.469	|O	| | I	|	|	|	1.39
9.917	1.55	0.12	0.479	|O	| | I	|	|	|	1.41
10.000	1.56	0.13	0.489	|O	| | I	|	|	|	

1.43

10.083	1.28	0.13	0.498	O		I		1.45
10.167	1.09	0.13	0.505	O		I		1.47
10.250	1.06	0.13	0.511	O		I		1.48
10.333	1.06	0.14	0.518	O		I		1.50
10.417	1.06	0.14	0.524	O		I		1.51
10.500	1.06	0.14	0.530	O		I		1.52
10.583	1.26	0.15	0.537	O		I		1.54
10.667	1.39	0.15	0.545	O		I		1.55
10.750	1.41	0.16	0.554	O		I		1.57
10.833	1.41	0.17	0.563	O		I		1.59
10.917	1.41	0.17	0.571	O		I		1.60
11.000	1.41	0.18	0.580	O		I		1.62
11.083	1.37	0.18	0.588	O		I		1.64
11.167	1.35	0.19	0.596	O		I		1.65
11.250	1.34	0.19	0.604	O		I		1.67
11.333	1.34	0.20	0.612	O		I		1.69
11.417	1.34	0.20	0.620	O		I		1.70
11.500	1.34	0.21	0.628	O		I		1.72
11.583	1.26	0.21	0.635	O		I		1.73
11.667	1.21	0.22	0.642	O		I		1.75
11.750	1.20	0.22	0.649	O		I		1.76
11.833	1.24	0.22	0.656	O		I		1.78
11.917	1.27	0.23	0.663	O		I		1.79
12.000	1.27	0.23	0.670	O		I		1.80
12.083	1.55	0.23	0.679	O		I		1.82
12.167	1.74	0.23	0.688	O		I		1.84
12.250	1.77	0.24	0.699	O		I		1.86
12.333	1.81	0.24	0.709	O		I		1.88
12.417	1.83	0.25	0.720	O		I		1.90
12.500	1.84	0.25	0.731	O		I		1.92
12.583	1.92	0.25	0.742	O		I		1.95
12.667	1.97	0.26	0.754	O		I		1.97
12.750	1.98	0.26	0.766	O		I		1.99
12.833	2.02	0.27	0.778	O		I		2.01
12.917	2.05	0.27	0.790	O		I		2.04
13.000	2.05	0.27	0.802	O		I		2.06
13.083	2.25	0.28	0.815	O		I		2.09
13.167	2.38	0.28	0.829	O		I		2.11
13.250	2.40	0.29	0.844	O		I		2.14
13.333	2.40	0.29	0.858	O		I		2.17

13.417	2.40	0.29	0.873	O				I	2.20
13.500	2.40	0.30	0.887	O				I	2.23
13.583	1.96	0.30	0.900	O			I		2.25
13.667	1.68	0.30	0.911	O			I		2.27
13.750	1.63	0.31	0.920	O			I		2.29
13.833	1.63	0.31	0.929	O			I		2.31
13.917	1.63	0.31	0.938	O			I		2.32
14.000	1.63	0.31	0.947	O			I		2.34
14.083	1.79	0.32	0.957	O			I		2.36
14.167	1.89	0.32	0.967	O			I		2.38
14.250	1.91	0.32	0.978	O			I		2.40
14.333	1.87	0.33	0.989	O			I		2.42
14.417	1.84	0.33	0.999	O			I		2.44
14.500	1.84	0.33	1.010	O			I		2.46
14.583	1.84	0.33	1.020	O			I		2.48
14.667	1.84	0.34	1.031	O			I		2.50
14.750	1.84	0.34	1.041	O			I		2.52
14.833	1.80	0.34	1.051	O			I		2.54
14.917	1.77	0.34	1.061	O			I		2.56
15.000	1.77	0.35	1.071	O			I		2.58
15.083	1.73	0.35	1.081	O			I		2.59
15.167	1.70	0.35	1.090	O			I		2.61
15.250	1.70	0.35	1.099	O			I		2.63
15.333	1.66	0.35	1.108	O			I		2.65
15.417	1.63	0.36	1.117	O			I		2.66
15.500	1.63	0.36	1.126	O			I		2.68
15.583	1.47	0.36	1.134	O		I			2.70
15.667	1.36	0.36	1.141	O		I			2.71
15.750	1.34	0.36	1.148	O	I				2.72
15.833	1.34	0.37	1.155	O	I				2.73
15.917	1.34	0.37	1.162	O	I				2.75
16.000	1.34	0.37	1.168	O	I				2.76

16.083	0.74	0.37	1.173	O	I				2.77
16.167	0.35	0.37	1.174	O					2.77
16.250	0.28	0.37	1.174	IO					2.77
16.333	0.28	0.37	1.173	IO					2.77
16.417	0.28	0.37	1.173	IO					2.77
16.500	0.28	0.37	1.172	IO					2.77
16.583	0.24	0.37	1.171	IO					2.77
16.667	0.22	0.37	1.171	I O					2.76
16.750	0.21	0.37	1.169	I O					2.76
16.833	0.21	0.37	1.168	I O					2.76
16.917	0.21	0.37	1.167	I O					2.76
17.000	0.21	0.37	1.166	I O					2.76
17.083	0.29	0.37	1.165	IO					2.75
17.167	0.34	0.37	1.165	O					2.75
17.250	0.35	0.37	1.165	O					2.75
17.333	0.35	0.37	1.165	O					2.75
17.417	0.35	0.37	1.165	O					2.75
17.500	0.35	0.37	1.165	O					2.75
17.583	0.35	0.37	1.165	O					2.75
17.667	0.35	0.37	1.165	O					2.75
17.750	0.35	0.37	1.164	O					2.75
17.833	0.31	0.37	1.164	O					2.75
17.917	0.29	0.37	1.164	IO					2.75
18.000	0.28	0.37	1.163	IO					2.75
18.083	0.28	0.37	1.163	IO					2.75
18.167	0.28	0.37	1.162	IO					2.75
18.250	0.28	0.37	1.161	IO					2.75
18.333	0.28	0.37	1.161	IO					2.75
18.417	0.28	0.37	1.160	IO					2.74
18.500	0.28	0.37	1.160	IO					2.74
18.583	0.24	0.37	1.159	IO					2.74

18.667	0.22	0.37	1.158	| I O |	|	|	|	2.74
18.750	0.21	0.37	1.157	| I O |	|	|	|	2.74
18.833	0.17	0.37	1.156	| I O |	|	|	|	2.74
18.917	0.15	0.36	1.154	|I O |	|	|	|	2.73
19.000	0.14	0.36	1.153	|I O |	|	|	|	2.73
19.083	0.18	0.36	1.151	| I O |	|	|	|	2.73
19.167	0.21	0.36	1.150	| I O |	|	|	|	2.73
19.250	0.21	0.36	1.149	| I O |	|	|	|	2.72
19.333	0.25	0.36	1.148	| IO |	|	|	|	2.72
19.417	0.28	0.36	1.148	| IO |	|	|	|	2.72
19.500	0.28	0.36	1.147	| IO |	|	|	|	2.72
19.583	0.24	0.36	1.146	| IO |	|	|	|	2.72
19.667	0.22	0.36	1.145	| I O |	|	|	|	2.72
19.750	0.21	0.36	1.144	| I O |	|	|	|	2.71
19.833	0.17	0.36	1.143	| I O |	|	|	|	2.71
19.917	0.15	0.36	1.142	|I O |	|	|	|	2.71
20.000	0.14	0.36	1.140	|I O |	|	|	|	2.71
20.083	0.18	0.36	1.139	| I O |	|	|	|	2.70
20.167	0.21	0.36	1.138	| I O |	|	|	|	2.70
20.250	0.21	0.36	1.137	| I O |	|	|	|	2.70
20.333	0.21	0.36	1.136	| I O |	|	|	|	2.70
20.417	0.21	0.36	1.135	| I O |	|	|	|	2.70
20.500	0.21	0.36	1.134	| I O |	|	|	|	2.69
20.583	0.21	0.36	1.133	| I O |	|	|	|	2.69
20.667	0.21	0.36	1.132	| I O |	|	|	|	2.69
20.750	0.21	0.36	1.131	| I O |	|	|	|	2.69
20.833	0.17	0.36	1.130	| I O |	|	|	|	2.69
20.917	0.15	0.36	1.128	|I O |	|	|	|	2.68
21.000	0.14	0.36	1.127	|I O |	|	|	|	2.68
21.083	0.18	0.36	1.125	| I O |	|	|	|	2.68
21.167	0.21	0.36	1.124	| I O |	|	|	|	2.68
21.250	0.21	0.36	1.123	| I O |	|	|	|	2.67
21.333	0.17	0.36	1.122	| I O |	|	|	|	2.67
21.417	0.15	0.36	1.121	|I O |	|	|	|	2.67
21.500	0.14	0.36	1.119	|I O |	|	|	|	2.67
21.583	0.18	0.36	1.118	| I O |	|	|	|	2.66
21.667	0.21	0.36	1.117	| I O |	|	|	|	2.66
21.750	0.21	0.36	1.116	| I O |	|	|	|	2.66
21.833	0.17	0.36	1.115	| I O |	|	|	|	2.66
21.917	0.15	0.36	1.113	|I O |	|	|	|	2.66
22.000	0.14	0.35	1.112	|I O |	|	|	|	2.65
22.083	0.18	0.35	1.111	| I O |	|	|	|	2.65
22.167	0.21	0.35	1.109	| I O |	|	|	|	2.65

22.250	0.21	0.35	1.108	| I O |	|	|	|	2.65
22.333	0.17	0.35	1.107	| I O |	|	|	|	2.64
22.417	0.15	0.35	1.106	|I O |	|	|	|	2.64
22.500	0.14	0.35	1.105	|I O |	|	|	|	2.64
22.583	0.14	0.35	1.103	|I O |	|	|	|	2.64
22.667	0.14	0.35	1.102	|I O |	|	|	|	2.63
22.750	0.14	0.35	1.100	|I O |	|	|	|	2.63
22.833	0.14	0.35	1.099	|I O |	|	|	|	2.63
22.917	0.14	0.35	1.097	|I O |	|	|	|	2.63
23.000	0.14	0.35	1.096	|I O |	|	|	|	2.62
23.083	0.14	0.35	1.094	|I O |	|	|	|	2.62
23.167	0.14	0.35	1.093	|I O |	|	|	|	2.62
23.250	0.14	0.35	1.091	|I O |	|	|	|	2.61
23.333	0.14	0.35	1.090	|I O |	|	|	|	2.61
23.417	0.14	0.35	1.089	|I O |	|	|	|	2.61
23.500	0.14	0.35	1.087	|I O |	|	|	|	2.61
23.583	0.14	0.35	1.086	|I O |	|	|	|	2.60
23.667	0.14	0.35	1.084	|I O |	|	|	|	2.60
23.750	0.14	0.35	1.083	|I O |	|	|	|	2.60
23.833	0.14	0.35	1.081	|I O |	|	|	|	2.60
23.917	0.14	0.35	1.080	|I O |	|	|	|	2.59
24.000	0.14	0.35	1.079	|I O |	|	|	|	2.59
24.083	0.06	0.35	1.077	I O |	|	|	|	2.59
24.167	0.01	0.35	1.075	I O |	|	|	|	2.58
24.250	0.00	0.35	1.072	I O |	|	|	|	2.58
24.333	0.00	0.35	1.070	I O |	|	|	|	2.57
24.417	0.00	0.34	1.068	I O |	|	|	|	2.57
24.500	0.00	0.34	1.065	I O |	|	|	|	2.56
24.583	0.00	0.34	1.063	I O |	|	|	|	2.56
24.667	0.00	0.34	1.061	I O |	|	|	|	

2.56

24.750	0.00	0.34	1.058	I	O	|	|	|	|	2.55
24.833	0.00	0.34	1.056	I	O	|	|	|	|	2.55
24.917	0.00	0.34	1.054	I	O	|	|	|	|	2.54
25.000	0.00	0.34	1.051	I	O	|	|	|	|	2.54
25.083	0.00	0.34	1.049	I	O	|	|	|	|	2.53
25.167	0.00	0.34	1.046	I	O	|	|	|	|	2.53
25.250	0.00	0.34	1.044	I	O	|	|	|	|	2.52
25.333	0.00	0.34	1.042	I	O	|	|	|	|	2.52
25.417	0.00	0.34	1.039	I	O	|	|	|	|	2.52
25.500	0.00	0.34	1.037	I	O	|	|	|	|	2.51
25.583	0.00	0.34	1.035	I	O	|	|	|	|	2.51
25.667	0.00	0.34	1.033	I	O	|	|	|	|	2.50
25.750	0.00	0.34	1.030	I	O	|	|	|	|	2.50
25.833	0.00	0.34	1.028	I	O	|	|	|	|	2.49
25.917	0.00	0.33	1.026	I	O	|	|	|	|	2.49
26.000	0.00	0.33	1.023	I	O	|	|	|	|	2.49
26.083	0.00	0.33	1.021	I	O	|	|	|	|	2.48
26.167	0.00	0.33	1.019	I	O	|	|	|	|	2.48
26.250	0.00	0.33	1.016	I	O	|	|	|	|	2.47
26.333	0.00	0.33	1.014	I	O	|	|	|	|	2.47
26.417	0.00	0.33	1.012	I	O	|	|	|	|	2.46
26.500	0.00	0.33	1.010	I	O	|	|	|	|	2.46
26.583	0.00	0.33	1.007	I	O	|	|	|	|	2.45
26.667	0.00	0.33	1.005	I	O	|	|	|	|	2.45
26.750	0.00	0.33	1.003	I	O	|	|	|	|	2.45
26.833	0.00	0.33	1.000	I	O	|	|	|	|	2.44
26.917	0.00	0.33	0.998	I	O	|	|	|	|	2.44
27.000	0.00	0.33	0.996	I	O	|	|	|	|	2.43

27.083	0.00	0.33	0.994	I	O	|	|	|	|	2.43
27.167	0.00	0.33	0.991	I	O	|	|	|	|	2.42
27.250	0.00	0.33	0.989	I	O	|	|	|	|	2.42
27.333	0.00	0.32	0.987	I	O	|	|	|	|	2.42
27.417	0.00	0.32	0.985	I	O	|	|	|	|	2.41
27.500	0.00	0.32	0.983	I	O	|	|	|	|	2.41
27.583	0.00	0.32	0.980	I	O	|	|	|	|	2.40
27.667	0.00	0.32	0.978	I	O	|	|	|	|	2.40
27.750	0.00	0.32	0.976	I	O	|	|	|	|	2.39
27.833	0.00	0.32	0.974	I	O	|	|	|	|	2.39
27.917	0.00	0.32	0.971	I	O	|	|	|	|	2.39
28.000	0.00	0.32	0.969	I	O	|	|	|	|	2.38
28.083	0.00	0.32	0.967	I	O	|	|	|	|	2.38
28.167	0.00	0.32	0.965	I	O	|	|	|	|	2.37
28.250	0.00	0.32	0.963	I	O	|	|	|	|	2.37
28.333	0.00	0.32	0.960	I	O	|	|	|	|	2.37
28.417	0.00	0.32	0.958	I	O	|	|	|	|	2.36
28.500	0.00	0.32	0.956	I	O	|	|	|	|	2.36
28.583	0.00	0.32	0.954	I	O	|	|	|	|	2.35
28.667	0.00	0.32	0.952	I	O	|	|	|	|	2.35
28.750	0.00	0.31	0.950	I	O	|	|	|	|	2.34
28.833	0.00	0.31	0.947	I	O	|	|	|	|	2.34
28.917	0.00	0.31	0.945	I	O	|	|	|	|	2.34
29.000	0.00	0.31	0.943	I	O	|	|	|	|	2.33
29.083	0.00	0.31	0.941	I	O	|	|	|	|	2.33
29.167	0.00	0.31	0.939	I	O	|	|	|	|	2.32
29.250	0.00	0.31	0.937	I	O	|	|	|	|	2.32
29.333	0.00	0.31	0.934	I	O	|	|	|	|	2.32
29.417	0.00	0.31	0.932	I	O	|	|	|	|	

2.31

29.500	0.00	0.31	0.930	I	O	|	|	|	| 2.31
29.583	0.00	0.31	0.928	I	O	|	|	|	| 2.30
29.667	0.00	0.31	0.926	I	O	|	|	|	| 2.30
29.750	0.00	0.31	0.924	I	O	|	|	|	| 2.30
29.833	0.00	0.31	0.922	I	O	|	|	|	| 2.29
29.917	0.00	0.31	0.920	I	O	|	|	|	| 2.29
30.000	0.00	0.31	0.917	I	O	|	|	|	| 2.28
30.083	0.00	0.31	0.915	I	O	|	|	|	| 2.28
30.167	0.00	0.31	0.913	I	O	|	|	|	| 2.28
30.250	0.00	0.30	0.911	I	O	|	|	|	| 2.27
30.333	0.00	0.30	0.909	I	O	|	|	|	| 2.27
30.417	0.00	0.30	0.907	I	O	|	|	|	| 2.26
30.500	0.00	0.30	0.905	I	O	|	|	|	| 2.26
30.583	0.00	0.30	0.903	I	O	|	|	|	| 2.26
30.667	0.00	0.30	0.901	I	O	|	|	|	| 2.25
30.750	0.00	0.30	0.899	I	O	|	|	|	| 2.25
30.833	0.00	0.30	0.897	I	O	|	|	|	| 2.24
30.917	0.00	0.30	0.894	I	O	|	|	|	| 2.24
31.000	0.00	0.30	0.892	I	O	|	|	|	| 2.24
31.083	0.00	0.30	0.890	I	O	|	|	|	| 2.23
31.167	0.00	0.30	0.888	I	O	|	|	|	| 2.23
31.250	0.00	0.30	0.886	I	O	|	|	|	| 2.22
31.333	0.00	0.30	0.884	I	O	|	|	|	| 2.22
31.417	0.00	0.30	0.882	I	O	|	|	|	| 2.22
31.500	0.00	0.30	0.880	I	O	|	|	|	| 2.21
31.583	0.00	0.30	0.878	I	O	|	|	|	| 2.21
31.667	0.00	0.29	0.876	I	O	|	|	|	| 2.20
31.750	0.00	0.29	0.874	I	O	|	|	|	| 2.20

31.833	0.00	0.29	0.872	I	O	|	|	|	|	2.20
31.917	0.00	0.29	0.870	I	O	|	|	|	|	2.19
32.000	0.00	0.29	0.868	I	O	|	|	|	|	2.19
32.083	0.00	0.29	0.866	I	O	|	|	|	|	2.18
32.167	0.00	0.29	0.864	I	O	|	|	|	|	2.18
32.250	0.00	0.29	0.862	I	O	|	|	|	|	2.18
32.333	0.00	0.29	0.860	I	O	|	|	|	|	2.17
32.417	0.00	0.29	0.858	I	O	|	|	|	|	2.17
32.500	0.00	0.29	0.856	I	O	|	|	|	|	2.17
32.583	0.00	0.29	0.854	I	O	|	|	|	|	2.16
32.667	0.00	0.29	0.852	I	O	|	|	|	|	2.16
32.750	0.00	0.29	0.850	I	O	|	|	|	|	2.15
32.833	0.00	0.29	0.848	I	O	|	|	|	|	2.15
32.917	0.00	0.29	0.846	I	O	|	|	|	|	2.15
33.000	0.00	0.29	0.844	I	O	|	|	|	|	2.14
33.083	0.00	0.29	0.842	I	O	|	|	|	|	2.14
33.167	0.00	0.28	0.840	I	O	|	|	|	|	2.13
33.250	0.00	0.28	0.838	I	O	|	|	|	|	2.13
33.333	0.00	0.28	0.836	I	O	|	|	|	|	2.13
33.417	0.00	0.28	0.834	I	O	|	|	|	|	2.12
33.500	0.00	0.28	0.832	I	O	|	|	|	|	2.12
33.583	0.00	0.28	0.830	I	O	|	|	|	|	2.12
33.667	0.00	0.28	0.828	I	O	|	|	|	|	2.11
33.750	0.00	0.28	0.826	I	O	|	|	|	|	2.11
33.833	0.00	0.28	0.825	I	O	|	|	|	|	2.10
33.917	0.00	0.28	0.823	I	O	|	|	|	|	2.10
34.000	0.00	0.28	0.821	I	O	|	|	|	|	2.10
34.083	0.00	0.28	0.819	I	O	|	|	|	|	2.09
34.167	0.00	0.28	0.817	I	O	|	|	|	|	

2.09

34.250	0.00	0.28	0.815	I	O	|	|	|	| 2.09
34.333	0.00	0.28	0.813	I	O	|	|	|	| 2.08
34.417	0.00	0.28	0.811	I	O	|	|	|	| 2.08
34.500	0.00	0.28	0.809	I	O	|	|	|	| 2.08
34.583	0.00	0.27	0.807	I	O	|	|	|	| 2.07
34.667	0.00	0.27	0.805	I	O	|	|	|	| 2.07
34.750	0.00	0.27	0.804	I	O	|	|	|	| 2.06
34.833	0.00	0.27	0.802	I	O	|	|	|	| 2.06
34.917	0.00	0.27	0.800	I	O	|	|	|	| 2.06
35.000	0.00	0.27	0.798	I	O	|	|	|	| 2.05
35.083	0.00	0.27	0.796	I	O	|	|	|	| 2.05
35.167	0.00	0.27	0.794	I	O	|	|	|	| 2.05
35.250	0.00	0.27	0.792	I	O	|	|	|	| 2.04
35.333	0.00	0.27	0.790	I	O	|	|	|	| 2.04
35.417	0.00	0.27	0.789	I	O	|	|	|	| 2.04
35.500	0.00	0.27	0.787	I	O	|	|	|	| 2.03
35.583	0.00	0.27	0.785	I	O	|	|	|	| 2.03
35.667	0.00	0.27	0.783	I	O	|	|	|	| 2.03
35.750	0.00	0.27	0.781	I	O	|	|	|	| 2.02
35.833	0.00	0.27	0.779	I	O	|	|	|	| 2.02
35.917	0.00	0.27	0.778	I	O	|	|	|	| 2.01
36.000	0.00	0.27	0.776	I	O	|	|	|	| 2.01
36.083	0.00	0.27	0.774	I	O	|	|	|	| 2.01
36.167	0.00	0.26	0.772	I	O	|	|	|	| 2.00
36.250	0.00	0.26	0.770	I	O	|	|	|	| 2.00
36.333	0.00	0.26	0.768	I	O	|	|	|	| 2.00
36.417	0.00	0.26	0.767	I	O	|	|	|	| 1.99
36.500	0.00	0.26	0.765	I	O	|	|	|	| 1.99

36.583	0.00	0.26	0.763	I	O	|	|	|	|	1.99
36.667	0.00	0.26	0.761	I	O	|	|	|	|	1.98
36.750	0.00	0.26	0.759	I	O	|	|	|	|	1.98
36.833	0.00	0.26	0.758	I	O	|	|	|	|	1.98
36.917	0.00	0.26	0.756	I	O	|	|	|	|	1.97
37.000	0.00	0.26	0.754	I	O	|	|	|	|	1.97
37.083	0.00	0.26	0.752	I	O	|	|	|	|	1.97
37.167	0.00	0.26	0.751	I	O	|	|	|	|	1.96
37.250	0.00	0.26	0.749	I	O	|	|	|	|	1.96
37.333	0.00	0.26	0.747	I	O	|	|	|	|	1.95
37.417	0.00	0.26	0.745	I	O	|	|	|	|	1.95
37.500	0.00	0.25	0.743	I	O	|	|	|	|	1.95
37.583	0.00	0.25	0.742	I	O	|	|	|	|	1.94
37.667	0.00	0.25	0.740	I	O	|	|	|	|	1.94
37.750	0.00	0.25	0.738	I	O	|	|	|	|	1.94
37.833	0.00	0.25	0.737	I	O	|	|	|	|	1.93
37.917	0.00	0.25	0.735	I	O	|	|	|	|	1.93
38.000	0.00	0.25	0.733	I	O	|	|	|	|	1.93
38.083	0.00	0.25	0.731	I	O	|	|	|	|	1.92
38.167	0.00	0.25	0.730	I	O	|	|	|	|	1.92
38.250	0.00	0.25	0.728	I	O	|	|	|	|	1.92
38.333	0.00	0.25	0.726	I	O	|	|	|	|	1.91
38.417	0.00	0.25	0.724	I	O	|	|	|	|	1.91
38.500	0.00	0.25	0.723	I	O	|	|	|	|	1.91
38.583	0.00	0.25	0.721	I	O	|	|	|	|	1.90
38.667	0.00	0.25	0.719	I	O	|	|	|	|	1.90
38.750	0.00	0.25	0.718	I	O	|	|	|	|	1.90
38.833	0.00	0.24	0.716	I	O	|	|	|	|	1.89
38.917	0.00	0.24	0.714	I	O	|	|	|	|	

1.89

39.000	0.00	0.24	0.713	I	O	|	|	|	|	1.89
39.083	0.00	0.24	0.711	I	O	|	|	|	|	1.88
39.167	0.00	0.24	0.709	I	O	|	|	|	|	1.88
39.250	0.00	0.24	0.708	I	O	|	|	|	|	1.88
39.333	0.00	0.24	0.706	I	O	|	|	|	|	1.87
39.417	0.00	0.24	0.704	I	O	|	|	|	|	1.87
39.500	0.00	0.24	0.703	I	O	|	|	|	|	1.87
39.583	0.00	0.24	0.701	I	O	|	|	|	|	1.86
39.667	0.00	0.24	0.699	I	O	|	|	|	|	1.86
39.750	0.00	0.24	0.698	I	O	|	|	|	|	1.86
39.833	0.00	0.24	0.696	I	O	|	|	|	|	1.85
39.917	0.00	0.24	0.694	I	O	|	|	|	|	1.85
40.000	0.00	0.24	0.693	I	O	|	|	|	|	1.85
40.083	0.00	0.24	0.691	I	O	|	|	|	|	1.84
40.167	0.00	0.23	0.690	I	O	|	|	|	|	1.84
40.250	0.00	0.23	0.688	I	O	|	|	|	|	1.84
40.333	0.00	0.23	0.686	I	O	|	|	|	|	1.84
40.417	0.00	0.23	0.685	I	O	|	|	|	|	1.83
40.500	0.00	0.23	0.683	I	O	|	|	|	|	1.83
40.583	0.00	0.23	0.682	I	O	|	|	|	|	1.83
40.667	0.00	0.23	0.680	I	O	|	|	|	|	1.82
40.750	0.00	0.23	0.678	I	O	|	|	|	|	1.82
40.833	0.00	0.23	0.677	I	O	|	|	|	|	1.82
40.917	0.00	0.23	0.675	I	O	|	|	|	|	1.81
41.000	0.00	0.23	0.674	I	O	|	|	|	|	1.81
41.083	0.00	0.23	0.672	I	O	|	|	|	|	1.81
41.167	0.00	0.23	0.670	I	O	|	|	|	|	1.80
41.250	0.00	0.23	0.669	I	O	|	|	|	|	1.80

41.333	0.00	0.23	0.667	I O	|	|	|	1.80
41.417	0.00	0.23	0.666	I O	|	|	|	1.79
41.500	0.00	0.23	0.664	I O	|	|	|	1.79
41.583	0.00	0.23	0.663	I O	|	|	|	1.79
41.667	0.00	0.22	0.661	I O	|	|	|	1.79
41.750	0.00	0.22	0.660	I O	|	|	|	1.78
41.833	0.00	0.22	0.658	I O	|	|	|	1.78
41.917	0.00	0.22	0.656	I O	|	|	|	1.78
42.000	0.00	0.22	0.655	I O	|	|	|	1.77
42.083	0.00	0.22	0.653	I O	|	|	|	1.77
42.167	0.00	0.22	0.652	I O	|	|	|	1.77
42.250	0.00	0.22	0.650	I O	|	|	|	1.76
42.333	0.00	0.22	0.649	I O	|	|	|	1.76
42.417	0.00	0.22	0.647	I O	|	|	|	1.76
42.500	0.00	0.22	0.646	I O	|	|	|	1.76
42.583	0.00	0.22	0.644	I O	|	|	|	1.75
42.667	0.00	0.22	0.643	I O	|	|	|	1.75
42.750	0.00	0.22	0.641	I O	|	|	|	1.75
42.833	0.00	0.22	0.640	I O	|	|	|	1.74
42.917	0.00	0.21	0.638	I O	|	|	|	1.74
43.000	0.00	0.21	0.637	I O	|	|	|	1.74
43.083	0.00	0.21	0.635	I O	|	|	|	1.73
43.167	0.00	0.21	0.634	I O	|	|	|	1.73
43.250	0.00	0.21	0.632	I O	|	|	|	1.73
43.333	0.00	0.21	0.631	I O	|	|	|	1.73
43.417	0.00	0.21	0.630	I O	|	|	|	1.72
43.500	0.00	0.21	0.628	I O	|	|	|	1.72
43.583	0.00	0.21	0.627	I O	|	|	|	1.72
43.667	0.00	0.21	0.625	I O	|	|	|	1.71
43.750	0.00	0.21	0.624	I O	|	|	|	1.71
43.833	0.00	0.20	0.622	I O	|	|	|	1.71
43.917	0.00	0.20	0.621	I O	|	|	|	1.71
44.000	0.00	0.20	0.620	I O	|	|	|	1.70
44.083	0.00	0.20	0.618	I O	|	|	|	1.70
44.167	0.00	0.20	0.617	I O	|	|	|	1.70
44.250	0.00	0.20	0.616	I O	|	|	|	1.69
44.333	0.00	0.20	0.614	I O	|	|	|	1.69
44.417	0.00	0.20	0.613	I O	|	|	|	1.69
44.500	0.00	0.20	0.611	I O	|	|	|	1.69
44.583	0.00	0.20	0.610	I O	|	|	|	1.68
44.667	0.00	0.20	0.609	I O	|	|	|	1.68
44.750	0.00	0.19	0.607	I O	|	|	|	1.68
44.833	0.00	0.19	0.606	I O	|	|	|	1.67
44.917	0.00	0.19	0.605	I O	|	|	|	1.67
45.000	0.00	0.19	0.603	I O	|	|	|	1.67
45.083	0.00	0.19	0.602	I O	|	|	|	1.67
45.167	0.00	0.19	0.601	I O	|	|	|	1.66
45.250	0.00	0.19	0.599	I O	|	|	|	1.66
45.333	0.00	0.19	0.598	I O	|	|	|	1.66
45.417	0.00	0.19	0.597	I O	|	|	|	1.66
45.500	0.00	0.19	0.596	I O	|	|	|	1.65
45.583	0.00	0.19	0.594	I O	|	|	|	1.65
45.667	0.00	0.19	0.593	I O	|	|	|	1.65
45.750	0.00	0.18	0.592	I O	|	|	|	1.65

45.833	0.00	0.18	0.590	I O	|	|	|	1.64
45.917	0.00	0.18	0.589	I O	|	|	|	1.64
46.000	0.00	0.18	0.588	I O	|	|	|	1.64
46.083	0.00	0.18	0.587	I O	|	|	|	1.64
46.167	0.00	0.18	0.585	I O	|	|	|	1.63
46.250	0.00	0.18	0.584	I O	|	|	|	1.63
46.333	0.00	0.18	0.583	I O	|	|	|	1.63
46.417	0.00	0.18	0.582	I O	|	|	|	1.63
46.500	0.00	0.18	0.580	I O	|	|	|	1.62
46.583	0.00	0.18	0.579	I O	|	|	|	1.62
46.667	0.00	0.18	0.578	I O	|	|	|	1.62
46.750	0.00	0.17	0.577	I O	|	|	|	1.62
46.833	0.00	0.17	0.576	I O	|	|	|	1.61
46.917	0.00	0.17	0.574	I O	|	|	|	1.61
47.000	0.00	0.17	0.573	I O	|	|	|	1.61
47.083	0.00	0.17	0.572	I O	|	|	|	1.61
47.167	0.00	0.17	0.571	I O	|	|	|	1.60
47.250	0.00	0.17	0.570	I O	|	|	|	1.60
47.333	0.00	0.17	0.569	I O	|	|	|	1.60
47.417	0.00	0.17	0.567	I O	|	|	|	1.60
47.500	0.00	0.17	0.566	I O	|	|	|	1.59
47.583	0.00	0.17	0.565	I O	|	|	|	1.59
47.667	0.00	0.17	0.564	I O	|	|	|	1.59
47.750	0.00	0.17	0.563	I O	|	|	|	1.59
47.833	0.00	0.17	0.562	I O	|	|	|	1.58
47.917	0.00	0.16	0.560	I O	|	|	|	1.58
48.000	0.00	0.16	0.559	I O	|	|	|	1.58
48.083	0.00	0.16	0.558	I O	|	|	|	1.58
48.167	0.00	0.16	0.557	I O	|	|	|	1.58
48.250	0.00	0.16	0.556	I O	|	|	|	1.57
48.333	0.00	0.16	0.555	I O	|	|	|	1.57
48.417	0.00	0.16	0.554	I O	|	|	|	1.57
48.500	0.00	0.16	0.553	I O	|	|	|	1.57
48.583	0.00	0.16	0.552	I O	|	|	|	1.56
48.667	0.00	0.16	0.550	I O	|	|	|	1.56
48.750	0.00	0.16	0.549	I O	|	|	|	1.56
48.833	0.00	0.16	0.548	I O	|	|	|	1.56
48.917	0.00	0.16	0.547	I O	|	|	|	1.56
49.000	0.00	0.16	0.546	I O	|	|	|	1.55
49.083	0.00	0.15	0.545	I O	|	|	|	1.55
49.167	0.00	0.15	0.544	I O	|	|	|	1.55
49.250	0.00	0.15	0.543	I O	|	|	|	1.55
49.333	0.00	0.15	0.542	I O	|	|	|	1.54
49.417	0.00	0.15	0.541	I O	|	|	|	1.54
49.500	0.00	0.15	0.540	I O	|	|	|	1.54
49.583	0.00	0.15	0.539	IO	|	|	|	1.54
49.667	0.00	0.15	0.538	IO	|	|	|	1.54
49.750	0.00	0.15	0.537	IO	|	|	|	1.53
49.833	0.00	0.15	0.536	IO	|	|	|	1.53
49.917	0.00	0.15	0.535	IO	|	|	|	1.53
50.000	0.00	0.15	0.534	IO	|	|	|	1.53

50.083	0.00	0.15	0.533	IO	|	|	|	1.53
50.167	0.00	0.15	0.532	IO	|	|	|	1.52
50.250	0.00	0.14	0.531	IO	|	|	|	1.52
50.333	0.00	0.14	0.530	IO	|	|	|	1.52
50.417	0.00	0.14	0.529	IO	|	|	|	1.52
50.500	0.00	0.14	0.528	IO	|	|	|	1.52
50.583	0.00	0.14	0.527	IO	|	|	|	1.51
50.667	0.00	0.14	0.526	IO	|	|	|	1.51
50.750	0.00	0.14	0.525	IO	|	|	|	1.51
50.833	0.00	0.14	0.524	IO	|	|	|	1.51
50.917	0.00	0.14	0.523	IO	|	|	|	1.51
51.000	0.00	0.14	0.522	IO	|	|	|	1.50
51.083	0.00	0.14	0.521	IO	|	|	|	1.50
51.167	0.00	0.14	0.520	IO	|	|	|	1.50
51.250	0.00	0.14	0.519	IO	|	|	|	1.50
51.333	0.00	0.14	0.518	IO	|	|	|	1.50
51.417	0.00	0.14	0.517	IO	|	|	|	1.49
51.500	0.00	0.14	0.516	IO	|	|	|	1.49
51.583	0.00	0.14	0.515	IO	|	|	|	1.49
51.667	0.00	0.14	0.514	IO	|	|	|	1.49
51.750	0.00	0.14	0.513	IO	|	|	|	1.49
51.833	0.00	0.14	0.512	IO	|	|	|	1.48
51.917	0.00	0.14	0.512	IO	|	|	|	1.48
52.000	0.00	0.13	0.511	IO	|	|	|	1.48
52.083	0.00	0.13	0.510	IO	|	|	|	1.48
52.167	0.00	0.13	0.509	IO	|	|	|	1.48
52.250	0.00	0.13	0.508	IO	|	|	|	1.47
52.333	0.00	0.13	0.507	IO	|	|	|	1.47
52.417	0.00	0.13	0.506	IO	|	|	|	

1.47

52.500	0.00	0.13	0.505	IO	|	|	|	|	1.47
52.583	0.00	0.13	0.504	IO	|	|	|	|	1.47
52.667	0.00	0.13	0.503	IO	|	|	|	|	1.46
52.750	0.00	0.13	0.502	IO	|	|	|	|	1.46
52.833	0.00	0.13	0.501	IO	|	|	|	|	1.46
52.917	0.00	0.13	0.501	IO	|	|	|	|	1.46
53.000	0.00	0.13	0.500	IO	|	|	|	|	1.46
53.083	0.00	0.13	0.499	IO	|	|	|	|	1.45
53.167	0.00	0.13	0.498	IO	|	|	|	|	1.45
53.250	0.00	0.13	0.497	IO	|	|	|	|	1.45
53.333	0.00	0.13	0.496	IO	|	|	|	|	1.45
53.417	0.00	0.13	0.495	IO	|	|	|	|	1.45
53.500	0.00	0.13	0.494	IO	|	|	|	|	1.44
53.583	0.00	0.13	0.493	IO	|	|	|	|	1.44
53.667	0.00	0.13	0.492	IO	|	|	|	|	1.44
53.750	0.00	0.13	0.492	IO	|	|	|	|	1.44
53.833	0.00	0.13	0.491	IO	|	|	|	|	1.44
53.917	0.00	0.13	0.490	IO	|	|	|	|	1.44
54.000	0.00	0.13	0.489	IO	|	|	|	|	1.43
54.083	0.00	0.13	0.488	IO	|	|	|	|	1.43
54.167	0.00	0.13	0.487	IO	|	|	|	|	1.43
54.250	0.00	0.13	0.486	IO	|	|	|	|	1.43
54.333	0.00	0.13	0.485	IO	|	|	|	|	1.43
54.417	0.00	0.13	0.485	IO	|	|	|	|	1.42
54.500	0.00	0.13	0.484	IO	|	|	|	|	1.42
54.583	0.00	0.12	0.483	IO	|	|	|	|	1.42
54.667	0.00	0.12	0.482	IO	|	|	|	|	1.42
54.750	0.00	0.12	0.481	IO	|	|	|	|	1.42

54.833	0.00	0.12	0.480	IO					1.42
54.917	0.00	0.12	0.479	IO					1.41
55.000	0.00	0.12	0.479	IO					1.41
55.083	0.00	0.12	0.478	IO					1.41
55.167	0.00	0.12	0.477	IO					1.41
55.250	0.00	0.12	0.476	IO					1.41
55.333	0.00	0.12	0.475	IO					1.40
55.417	0.00	0.12	0.474	IO					1.40
55.500	0.00	0.12	0.474	IO					1.40
55.583	0.00	0.12	0.473	IO					1.40
55.667	0.00	0.12	0.472	IO					1.40
55.750	0.00	0.12	0.471	IO					1.40
55.833	0.00	0.12	0.470	IO					1.39
55.917	0.00	0.12	0.469	IO					1.39
56.000	0.00	0.12	0.469	IO					1.39
56.083	0.00	0.12	0.468	IO					1.39
56.167	0.00	0.12	0.467	IO					1.39
56.250	0.00	0.12	0.466	IO					1.38
56.333	0.00	0.12	0.465	IO					1.38
56.417	0.00	0.12	0.464	IO					1.38
56.500	0.00	0.12	0.464	IO					1.38
56.583	0.00	0.12	0.463	IO					1.38
56.667	0.00	0.12	0.462	IO					1.38
56.750	0.00	0.12	0.461	IO					1.37
56.833	0.00	0.12	0.460	IO					1.37
56.917	0.00	0.12	0.460	IO					1.37
57.000	0.00	0.12	0.459	IO					1.37
57.083	0.00	0.12	0.458	IO					1.37
57.167	0.00	0.12	0.457	IO					

1.37

57.250	0.00	0.12	0.456	IO	|	|	|	1.36
57.333	0.00	0.12	0.456	IO	|	|	|	1.36
57.417	0.00	0.12	0.455	IO	|	|	|	1.36
57.500	0.00	0.11	0.454	IO	|	|	|	1.36
57.583	0.00	0.11	0.453	IO	|	|	|	1.36
57.667	0.00	0.11	0.452	IO	|	|	|	1.36
57.750	0.00	0.11	0.452	IO	|	|	|	1.35
57.833	0.00	0.11	0.451	IO	|	|	|	1.35
57.917	0.00	0.11	0.450	IO	|	|	|	1.35
58.000	0.00	0.11	0.449	IO	|	|	|	1.35
58.083	0.00	0.11	0.448	IO	|	|	|	1.35
58.167	0.00	0.11	0.448	IO	|	|	|	1.35
58.250	0.00	0.11	0.447	IO	|	|	|	1.34
58.333	0.00	0.11	0.446	IO	|	|	|	1.34
58.417	0.00	0.11	0.445	IO	|	|	|	1.34
58.500	0.00	0.11	0.445	IO	|	|	|	1.34
58.583	0.00	0.11	0.444	IO	|	|	|	1.34
58.667	0.00	0.11	0.443	IO	|	|	|	1.34
58.750	0.00	0.11	0.442	IO	|	|	|	1.33
58.833	0.00	0.11	0.442	IO	|	|	|	1.33
58.917	0.00	0.11	0.441	IO	|	|	|	1.33
59.000	0.00	0.11	0.440	IO	|	|	|	1.33
59.083	0.00	0.11	0.439	IO	|	|	|	1.33
59.167	0.00	0.11	0.439	IO	|	|	|	1.33
59.250	0.00	0.11	0.438	IO	|	|	|	1.32
59.333	0.00	0.11	0.437	IO	|	|	|	1.32
59.417	0.00	0.11	0.436	IO	|	|	|	1.32
59.500	0.00	0.11	0.436	IO	|	|	|	1.32

59.583	0.00	0.11	0.435	IO	|	|	|	|	1.32
59.667	0.00	0.11	0.434	IO	|	|	|	|	1.32
59.750	0.00	0.11	0.433	IO	|	|	|	|	1.31
59.833	0.00	0.11	0.433	IO	|	|	|	|	1.31
59.917	0.00	0.11	0.432	IO	|	|	|	|	1.31
60.000	0.00	0.11	0.431	IO	|	|	|	|	1.31
60.083	0.00	0.11	0.430	IO	|	|	|	|	1.31
60.167	0.00	0.11	0.430	IO	|	|	|	|	1.31
60.250	0.00	0.11	0.429	IO	|	|	|	|	1.31
60.333	0.00	0.11	0.428	IO	|	|	|	|	1.30
60.417	0.00	0.11	0.427	IO	|	|	|	|	1.30
60.500	0.00	0.11	0.427	IO	|	|	|	|	1.30
60.583	0.00	0.11	0.426	IO	|	|	|	|	1.30
60.667	0.00	0.10	0.425	IO	|	|	|	|	1.30
60.750	0.00	0.10	0.425	IO	|	|	|	|	1.30
60.833	0.00	0.10	0.424	IO	|	|	|	|	1.29
60.917	0.00	0.10	0.423	IO	|	|	|	|	1.29
61.000	0.00	0.10	0.422	IO	|	|	|	|	1.29
61.083	0.00	0.10	0.422	IO	|	|	|	|	1.29
61.167	0.00	0.10	0.421	IO	|	|	|	|	1.29
61.250	0.00	0.10	0.420	IO	|	|	|	|	1.29
61.333	0.00	0.10	0.420	IO	|	|	|	|	1.29
61.417	0.00	0.10	0.419	IO	|	|	|	|	1.28
61.500	0.00	0.10	0.418	IO	|	|	|	|	1.28
61.583	0.00	0.10	0.417	IO	|	|	|	|	1.28
61.667	0.00	0.10	0.417	IO	|	|	|	|	1.28
61.750	0.00	0.10	0.416	IO	|	|	|	|	1.28
61.833	0.00	0.10	0.415	IO	|	|	|	|	1.28
61.917	0.00	0.10	0.415	IO	|	|	|	|	

1.27

62.000	0.00	0.10	0.414	IO	|	|	|	1.27
62.083	0.00	0.10	0.413	IO	|	|	|	1.27
62.167	0.00	0.10	0.413	IO	|	|	|	1.27
62.250	0.00	0.10	0.412	IO	|	|	|	1.27
62.333	0.00	0.10	0.411	IO	|	|	|	1.27
62.417	0.00	0.10	0.410	IO	|	|	|	1.27
62.500	0.00	0.10	0.410	IO	|	|	|	1.26
62.583	0.00	0.10	0.409	IO	|	|	|	1.26
62.667	0.00	0.10	0.408	IO	|	|	|	1.26
62.750	0.00	0.10	0.408	IO	|	|	|	1.26
62.833	0.00	0.10	0.407	IO	|	|	|	1.26
62.917	0.00	0.10	0.406	IO	|	|	|	1.26
63.000	0.00	0.10	0.406	IO	|	|	|	1.26
63.083	0.00	0.10	0.405	IO	|	|	|	1.25
63.167	0.00	0.10	0.404	IO	|	|	|	1.25
63.250	0.00	0.10	0.404	IO	|	|	|	1.25
63.333	0.00	0.10	0.403	IO	|	|	|	1.25
63.417	0.00	0.10	0.402	IO	|	|	|	1.25
63.500	0.00	0.10	0.402	IO	|	|	|	1.25
63.583	0.00	0.10	0.401	IO	|	|	|	1.25
63.667	0.00	0.09	0.400	IO	|	|	|	1.24
63.750	0.00	0.09	0.400	IO	|	|	|	1.24
63.833	0.00	0.09	0.399	IO	|	|	|	1.24
63.917	0.00	0.09	0.398	IO	|	|	|	1.24
64.000	0.00	0.09	0.398	IO	|	|	|	1.24
64.083	0.00	0.09	0.397	IO	|	|	|	1.24
64.167	0.00	0.09	0.397	IO	|	|	|	1.24
64.250	0.00	0.09	0.396	IO	|	|	|	1.23

64.333	0.00	0.09	0.395	IO	|	|	|	1.23
64.417	0.00	0.09	0.395	IO	|	|	|	1.23
64.500	0.00	0.09	0.394	IO	|	|	|	1.23
64.583	0.00	0.09	0.393	IO	|	|	|	1.23
64.667	0.00	0.09	0.393	IO	|	|	|	1.23
64.750	0.00	0.09	0.392	IO	|	|	|	1.23
64.833	0.00	0.09	0.392	IO	|	|	|	1.22
64.917	0.00	0.09	0.391	IO	|	|	|	1.22
65.000	0.00	0.09	0.390	IO	|	|	|	1.22
65.083	0.00	0.09	0.390	IO	|	|	|	1.22
65.167	0.00	0.08	0.389	IO	|	|	|	1.22
65.250	0.00	0.08	0.389	IO	|	|	|	1.22
65.333	0.00	0.08	0.388	IO	|	|	|	1.22
65.417	0.00	0.08	0.388	IO	|	|	|	1.21
65.500	0.00	0.08	0.387	IO	|	|	|	1.21
65.583	0.00	0.08	0.386	IO	|	|	|	1.21
65.667	0.00	0.08	0.386	IO	|	|	|	1.21
65.750	0.00	0.08	0.385	IO	|	|	|	1.21
65.833	0.00	0.08	0.385	IO	|	|	|	1.21
65.917	0.00	0.08	0.384	IO	|	|	|	1.21
66.000	0.00	0.08	0.384	IO	|	|	|	1.21
66.083	0.00	0.08	0.383	IO	|	|	|	1.20
66.167	0.00	0.08	0.382	IO	|	|	|	1.20
66.250	0.00	0.08	0.382	IO	|	|	|	1.20
66.333	0.00	0.08	0.381	IO	|	|	|	1.20
66.417	0.00	0.08	0.381	IO	|	|	|	1.20
66.500	0.00	0.08	0.380	IO	|	|	|	1.20
66.583	0.00	0.08	0.380	IO	|	|	|	1.20
66.667	0.00	0.08	0.379	IO	|	|	|	

1.20

66.750	0.00	0.08	0.379	IO	|	|	|	1.19
66.833	0.00	0.08	0.378	IO	|	|	|	1.19
66.917	0.00	0.07	0.378	O	|	|	|	1.19
67.000	0.00	0.07	0.377	O	|	|	|	1.19
67.083	0.00	0.07	0.377	O	|	|	|	1.19
67.167	0.00	0.07	0.376	O	|	|	|	1.19
67.250	0.00	0.07	0.376	O	|	|	|	1.19
67.333	0.00	0.07	0.375	O	|	|	|	1.19
67.417	0.00	0.07	0.375	O	|	|	|	1.19
67.500	0.00	0.07	0.374	O	|	|	|	1.18
67.583	0.00	0.07	0.374	O	|	|	|	1.18
67.667	0.00	0.07	0.373	O	|	|	|	1.18
67.750	0.00	0.07	0.373	O	|	|	|	1.18
67.833	0.00	0.07	0.372	O	|	|	|	1.18
67.917	0.00	0.07	0.372	O	|	|	|	1.18
68.000	0.00	0.07	0.371	O	|	|	|	1.18
68.083	0.00	0.07	0.371	O	|	|	|	1.18
68.167	0.00	0.07	0.370	O	|	|	|	1.18
68.250	0.00	0.07	0.370	O	|	|	|	1.17
68.333	0.00	0.07	0.369	O	|	|	|	1.17
68.417	0.00	0.07	0.369	O	|	|	|	1.17
68.500	0.00	0.07	0.368	O	|	|	|	1.17
68.583	0.00	0.07	0.368	O	|	|	|	1.17
68.667	0.00	0.07	0.368	O	|	|	|	1.17
68.750	0.00	0.07	0.367	O	|	|	|	1.17
68.833	0.00	0.07	0.367	O	|	|	|	1.17
68.917	0.00	0.06	0.366	O	|	|	|	1.17
69.000	0.00	0.06	0.366	O	|	|	|	1.16

69.083	0.00	0.06	0.365	O	|	|	|	|	1.16
69.167	0.00	0.06	0.365	O	|	|	|	|	1.16
69.250	0.00	0.06	0.364	O	|	|	|	|	1.16
69.333	0.00	0.06	0.364	O	|	|	|	|	1.16
69.417	0.00	0.06	0.364	O	|	|	|	|	1.16
69.500	0.00	0.06	0.363	O	|	|	|	|	1.16
69.583	0.00	0.06	0.363	O	|	|	|	|	1.16
69.667	0.00	0.06	0.362	O	|	|	|	|	1.16
69.750	0.00	0.06	0.362	O	|	|	|	|	1.16
69.833	0.00	0.06	0.362	O	|	|	|	|	1.15
69.917	0.00	0.06	0.361	O	|	|	|	|	1.15
70.000	0.00	0.06	0.361	O	|	|	|	|	1.15
70.083	0.00	0.06	0.360	O	|	|	|	|	1.15
70.167	0.00	0.06	0.360	O	|	|	|	|	1.15
70.250	0.00	0.06	0.359	O	|	|	|	|	1.15
70.333	0.00	0.06	0.359	O	|	|	|	|	1.15
70.417	0.00	0.06	0.359	O	|	|	|	|	1.15
70.500	0.00	0.06	0.358	O	|	|	|	|	1.15
70.583	0.00	0.06	0.358	O	|	|	|	|	1.15
70.667	0.00	0.06	0.357	O	|	|	|	|	1.15
70.750	0.00	0.06	0.357	O	|	|	|	|	1.14
70.833	0.00	0.06	0.357	O	|	|	|	|	1.14
70.917	0.00	0.06	0.356	O	|	|	|	|	1.14
71.000	0.00	0.06	0.356	O	|	|	|	|	1.14
71.083	0.00	0.06	0.356	O	|	|	|	|	1.14
71.167	0.00	0.05	0.355	O	|	|	|	|	1.14
71.250	0.00	0.05	0.355	O	|	|	|	|	1.14
71.333	0.00	0.05	0.354	O	|	|	|	|	1.14
71.417	0.00	0.05	0.354	O	|	|	|	|	

1.14

71.500	0.00	0.05	0.354	O	|	|	|	1.14
71.583	0.00	0.05	0.353	O	|	|	|	1.14
71.667	0.00	0.05	0.353	O	|	|	|	1.14
71.750	0.00	0.05	0.353	O	|	|	|	1.13
71.833	0.00	0.05	0.352	O	|	|	|	1.13
71.917	0.00	0.05	0.352	O	|	|	|	1.13
72.000	0.00	0.05	0.351	O	|	|	|	1.13
72.083	0.00	0.05	0.351	O	|	|	|	1.13
72.167	0.00	0.05	0.351	O	|	|	|	1.13
72.250	0.00	0.05	0.350	O	|	|	|	1.13
72.333	0.00	0.05	0.350	O	|	|	|	1.13
72.417	0.00	0.05	0.350	O	|	|	|	1.13
72.500	0.00	0.05	0.349	O	|	|	|	1.13
72.583	0.00	0.05	0.349	O	|	|	|	1.13
72.667	0.00	0.05	0.349	O	|	|	|	1.13
72.750	0.00	0.05	0.348	O	|	|	|	1.12
72.833	0.00	0.05	0.348	O	|	|	|	1.12
72.917	0.00	0.05	0.348	O	|	|	|	1.12
73.000	0.00	0.05	0.347	O	|	|	|	1.12
73.083	0.00	0.05	0.347	O	|	|	|	1.12
73.167	0.00	0.05	0.347	O	|	|	|	1.12
73.250	0.00	0.05	0.346	O	|	|	|	1.12
73.333	0.00	0.05	0.346	O	|	|	|	1.12
73.417	0.00	0.05	0.346	O	|	|	|	1.12
73.500	0.00	0.05	0.345	O	|	|	|	1.12
73.583	0.00	0.05	0.345	O	|	|	|	1.12
73.667	0.00	0.05	0.345	O	|	|	|	1.12
73.750	0.00	0.05	0.344	O	|	|	|	1.12

73.833	0.00	0.05	0.344	O	|	|	|	|	1.12
73.917	0.00	0.04	0.344	O	|	|	|	|	1.11
74.000	0.00	0.04	0.344	O	|	|	|	|	1.11
74.083	0.00	0.04	0.343	O	|	|	|	|	1.11
74.167	0.00	0.04	0.343	O	|	|	|	|	1.11
74.250	0.00	0.04	0.343	O	|	|	|	|	1.11
74.333	0.00	0.04	0.342	O	|	|	|	|	1.11
74.417	0.00	0.04	0.342	O	|	|	|	|	1.11
74.500	0.00	0.04	0.342	O	|	|	|	|	1.11
74.583	0.00	0.04	0.341	O	|	|	|	|	1.11
74.667	0.00	0.04	0.341	O	|	|	|	|	1.11
74.750	0.00	0.04	0.341	O	|	|	|	|	1.11
74.833	0.00	0.04	0.341	O	|	|	|	|	1.11
74.917	0.00	0.04	0.340	O	|	|	|	|	1.11
75.000	0.00	0.04	0.340	O	|	|	|	|	1.11
75.083	0.00	0.04	0.340	O	|	|	|	|	1.10
75.167	0.00	0.04	0.339	O	|	|	|	|	1.10
75.250	0.00	0.04	0.339	O	|	|	|	|	1.10
75.333	0.00	0.04	0.339	O	|	|	|	|	1.10
75.417	0.00	0.04	0.339	O	|	|	|	|	1.10
75.500	0.00	0.04	0.338	O	|	|	|	|	1.10
75.583	0.00	0.04	0.338	O	|	|	|	|	1.10
75.667	0.00	0.04	0.338	O	|	|	|	|	1.10
75.750	0.00	0.04	0.337	O	|	|	|	|	1.10
75.833	0.00	0.04	0.337	O	|	|	|	|	1.10
75.917	0.00	0.04	0.337	O	|	|	|	|	1.10
76.000	0.00	0.04	0.337	O	|	|	|	|	1.10
76.083	0.00	0.04	0.336	O	|	|	|	|	1.10
76.167	0.00	0.04	0.336	O	|	|	|	|	

1.10

76.250	0.00	0.04	0.336	O	|	|	|	|	1.10
76.333	0.00	0.04	0.336	O	|	|	|	|	1.10
76.417	0.00	0.04	0.335	O	|	|	|	|	1.09
76.500	0.00	0.04	0.335	O	|	|	|	|	1.09
76.583	0.00	0.04	0.335	O	|	|	|	|	1.09
76.667	0.00	0.04	0.335	O	|	|	|	|	1.09
76.750	0.00	0.04	0.334	O	|	|	|	|	1.09
76.833	0.00	0.04	0.334	O	|	|	|	|	1.09
76.917	0.00	0.04	0.334	O	|	|	|	|	1.09
77.000	0.00	0.04	0.334	O	|	|	|	|	1.09
77.083	0.00	0.04	0.333	O	|	|	|	|	1.09
77.167	0.00	0.04	0.333	O	|	|	|	|	1.09
77.250	0.00	0.04	0.333	O	|	|	|	|	1.09
77.333	0.00	0.04	0.333	O	|	|	|	|	1.09
77.417	0.00	0.03	0.332	O	|	|	|	|	1.09
77.500	0.00	0.03	0.332	O	|	|	|	|	1.09
77.583	0.00	0.03	0.332	O	|	|	|	|	1.09
77.667	0.00	0.03	0.332	O	|	|	|	|	1.09
77.750	0.00	0.03	0.331	O	|	|	|	|	1.09
77.833	0.00	0.03	0.331	O	|	|	|	|	1.09
77.917	0.00	0.03	0.331	O	|	|	|	|	1.08
78.000	0.00	0.03	0.331	O	|	|	|	|	1.08
78.083	0.00	0.03	0.331	O	|	|	|	|	1.08
78.167	0.00	0.03	0.330	O	|	|	|	|	1.08
78.250	0.00	0.03	0.330	O	|	|	|	|	1.08
78.333	0.00	0.03	0.330	O	|	|	|	|	1.08
78.417	0.00	0.03	0.330	O	|	|	|	|	1.08
78.500	0.00	0.03	0.329	O	|	|	|	|	1.08

78.583	0.00	0.03	0.329	O	|	|	|	|	1.08
78.667	0.00	0.03	0.329	O	|	|	|	|	1.08
78.750	0.00	0.03	0.329	O	|	|	|	|	1.08
78.833	0.00	0.03	0.329	O	|	|	|	|	1.08
78.917	0.00	0.03	0.328	O	|	|	|	|	1.08
79.000	0.00	0.03	0.328	O	|	|	|	|	1.08
79.083	0.00	0.03	0.328	O	|	|	|	|	1.08
79.167	0.00	0.03	0.328	O	|	|	|	|	1.08
79.250	0.00	0.03	0.327	O	|	|	|	|	1.08
79.333	0.00	0.03	0.327	O	|	|	|	|	1.08
79.417	0.00	0.03	0.327	O	|	|	|	|	1.08
79.500	0.00	0.03	0.327	O	|	|	|	|	1.08
79.583	0.00	0.03	0.327	O	|	|	|	|	1.07
79.667	0.00	0.03	0.326	O	|	|	|	|	1.07
79.750	0.00	0.03	0.326	O	|	|	|	|	1.07
79.833	0.00	0.03	0.326	O	|	|	|	|	1.07
79.917	0.00	0.03	0.326	O	|	|	|	|	1.07
80.000	0.00	0.03	0.326	O	|	|	|	|	1.07
80.083	0.00	0.03	0.325	O	|	|	|	|	1.07
80.167	0.00	0.03	0.325	O	|	|	|	|	1.07
80.250	0.00	0.03	0.325	O	|	|	|	|	1.07
80.333	0.00	0.03	0.325	O	|	|	|	|	1.07
80.417	0.00	0.03	0.325	O	|	|	|	|	1.07
80.500	0.00	0.03	0.324	O	|	|	|	|	1.07
80.583	0.00	0.03	0.324	O	|	|	|	|	1.07
80.667	0.00	0.03	0.324	O	|	|	|	|	1.07
80.750	0.00	0.03	0.324	O	|	|	|	|	1.07
80.833	0.00	0.03	0.324	O	|	|	|	|	1.07
80.917	0.00	0.03	0.323	O	|	|	|	|	

1.07

81.000	0.00	0.03	0.323	O	|	|	|	|	1.07
81.083	0.00	0.03	0.323	O	|	|	|	|	1.07
81.167	0.00	0.03	0.323	O	|	|	|	|	1.07
81.250	0.00	0.03	0.323	O	|	|	|	|	1.07
81.333	0.00	0.03	0.323	O	|	|	|	|	1.07
81.417	0.00	0.03	0.322	O	|	|	|	|	1.07
81.500	0.00	0.03	0.322	O	|	|	|	|	1.06
81.583	0.00	0.03	0.322	O	|	|	|	|	1.06
81.667	0.00	0.03	0.322	O	|	|	|	|	1.06
81.750	0.00	0.03	0.322	O	|	|	|	|	1.06
81.833	0.00	0.03	0.322	O	|	|	|	|	1.06
81.917	0.00	0.03	0.321	O	|	|	|	|	1.06
82.000	0.00	0.02	0.321	O	|	|	|	|	1.06
82.083	0.00	0.02	0.321	O	|	|	|	|	1.06
82.167	0.00	0.02	0.321	O	|	|	|	|	1.06
82.250	0.00	0.02	0.321	O	|	|	|	|	1.06
82.333	0.00	0.02	0.320	O	|	|	|	|	1.06
82.417	0.00	0.02	0.320	O	|	|	|	|	1.06
82.500	0.00	0.02	0.320	O	|	|	|	|	1.06
82.583	0.00	0.02	0.320	O	|	|	|	|	1.06
82.667	0.00	0.02	0.320	O	|	|	|	|	1.06
82.750	0.00	0.02	0.320	O	|	|	|	|	1.06
82.833	0.00	0.02	0.320	O	|	|	|	|	1.06
82.917	0.00	0.02	0.319	O	|	|	|	|	1.06
83.000	0.00	0.02	0.319	O	|	|	|	|	1.06
83.083	0.00	0.02	0.319	O	|	|	|	|	1.06
83.167	0.00	0.02	0.319	O	|	|	|	|	1.06
83.250	0.00	0.02	0.319	O	|	|	|	|	1.06

83.333	0.00	0.02	0.319	O	|	|	|	|	1.06
83.417	0.00	0.02	0.318	O	|	|	|	|	1.06
83.500	0.00	0.02	0.318	O	|	|	|	|	1.06
83.583	0.00	0.02	0.318	O	|	|	|	|	1.06
83.667	0.00	0.02	0.318	O	|	|	|	|	1.05
83.750	0.00	0.02	0.318	O	|	|	|	|	1.05
83.833	0.00	0.02	0.318	O	|	|	|	|	1.05
83.917	0.00	0.02	0.317	O	|	|	|	|	1.05
84.000	0.00	0.02	0.317	O	|	|	|	|	1.05
84.083	0.00	0.02	0.317	O	|	|	|	|	1.05
84.167	0.00	0.02	0.317	O	|	|	|	|	1.05
84.250	0.00	0.02	0.317	O	|	|	|	|	1.05
84.333	0.00	0.02	0.317	O	|	|	|	|	1.05
84.417	0.00	0.02	0.317	O	|	|	|	|	1.05
84.500	0.00	0.02	0.316	O	|	|	|	|	1.05
84.583	0.00	0.02	0.316	O	|	|	|	|	1.05
84.667	0.00	0.02	0.316	O	|	|	|	|	1.05
84.750	0.00	0.02	0.316	O	|	|	|	|	1.05
84.833	0.00	0.02	0.316	O	|	|	|	|	1.05
84.917	0.00	0.02	0.316	O	|	|	|	|	1.05
85.000	0.00	0.02	0.316	O	|	|	|	|	1.05
85.083	0.00	0.02	0.315	O	|	|	|	|	1.05
85.167	0.00	0.02	0.315	O	|	|	|	|	1.05
85.250	0.00	0.02	0.315	O	|	|	|	|	1.05
85.333	0.00	0.02	0.315	O	|	|	|	|	1.05
85.417	0.00	0.02	0.315	O	|	|	|	|	1.05
85.500	0.00	0.02	0.315	O	|	|	|	|	1.05
85.583	0.00	0.02	0.315	O	|	|	|	|	1.05
85.667	0.00	0.02	0.315	O	|	|	|	|	

1.05

85.750	0.00	0.02	0.314	O	|	|	|	|	1.05
85.833	0.00	0.02	0.314	O	|	|	|	|	1.05
85.917	0.00	0.02	0.314	O	|	|	|	|	1.05
86.000	0.00	0.02	0.314	O	|	|	|	|	1.05
86.083	0.00	0.02	0.314	O	|	|	|	|	1.05
86.167	0.00	0.02	0.314	O	|	|	|	|	1.05
86.250	0.00	0.02	0.314	O	|	|	|	|	1.05
86.333	0.00	0.02	0.314	O	|	|	|	|	1.04
86.417	0.00	0.02	0.313	O	|	|	|	|	1.04
86.500	0.00	0.02	0.313	O	|	|	|	|	1.04
86.583	0.00	0.02	0.313	O	|	|	|	|	1.04
86.667	0.00	0.02	0.313	O	|	|	|	|	1.04
86.750	0.00	0.02	0.313	O	|	|	|	|	1.04
86.833	0.00	0.02	0.313	O	|	|	|	|	1.04
86.917	0.00	0.02	0.313	O	|	|	|	|	1.04
87.000	0.00	0.02	0.313	O	|	|	|	|	1.04
87.083	0.00	0.02	0.312	O	|	|	|	|	1.04
87.167	0.00	0.02	0.312	O	|	|	|	|	1.04
87.250	0.00	0.02	0.312	O	|	|	|	|	1.04
87.333	0.00	0.02	0.312	O	|	|	|	|	1.04
87.417	0.00	0.02	0.312	O	|	|	|	|	1.04
87.500	0.00	0.02	0.312	O	|	|	|	|	1.04
87.583	0.00	0.02	0.312	O	|	|	|	|	1.04
87.667	0.00	0.02	0.312	O	|	|	|	|	1.04
87.750	0.00	0.02	0.311	O	|	|	|	|	1.04
87.833	0.00	0.02	0.311	O	|	|	|	|	1.04
87.917	0.00	0.02	0.311	O	|	|	|	|	1.04
88.000	0.00	0.02	0.311	O	|	|	|	|	1.04

88.083	0.00	0.02	0.311	O	|	|	|	|	1.04
88.167	0.00	0.02	0.311	O	|	|	|	|	1.04
88.250	0.00	0.02	0.311	O	|	|	|	|	1.04
88.333	0.00	0.02	0.311	O	|	|	|	|	1.04
88.417	0.00	0.02	0.311	O	|	|	|	|	1.04
88.500	0.00	0.02	0.311	O	|	|	|	|	1.04
88.583	0.00	0.02	0.310	O	|	|	|	|	1.04
88.667	0.00	0.02	0.310	O	|	|	|	|	1.04
88.750	0.00	0.02	0.310	O	|	|	|	|	1.04
88.833	0.00	0.02	0.310	O	|	|	|	|	1.04
88.917	0.00	0.02	0.310	O	|	|	|	|	1.04
89.000	0.00	0.01	0.310	O	|	|	|	|	1.04
89.083	0.00	0.01	0.310	O	|	|	|	|	1.04
89.167	0.00	0.01	0.310	O	|	|	|	|	1.04
89.250	0.00	0.01	0.310	O	|	|	|	|	1.04
89.333	0.00	0.01	0.309	O	|	|	|	|	1.04
89.417	0.00	0.01	0.309	O	|	|	|	|	1.04
89.500	0.00	0.01	0.309	O	|	|	|	|	1.04
89.583	0.00	0.01	0.309	O	|	|	|	|	1.03
89.667	0.00	0.01	0.309	O	|	|	|	|	1.03
89.750	0.00	0.01	0.309	O	|	|	|	|	1.03
89.833	0.00	0.01	0.309	O	|	|	|	|	1.03
89.917	0.00	0.01	0.309	O	|	|	|	|	1.03
90.000	0.00	0.01	0.309	O	|	|	|	|	1.03
90.083	0.00	0.01	0.309	O	|	|	|	|	1.03
90.167	0.00	0.01	0.308	O	|	|	|	|	1.03
90.250	0.00	0.01	0.308	O	|	|	|	|	1.03
90.333	0.00	0.01	0.308	O	|	|	|	|	1.03
90.417	0.00	0.01	0.308	O	|	|	|	|	

1.03

90.500	0.00	0.01	0.308	O	|	|	|	|	1.03
90.583	0.00	0.01	0.308	O	|	|	|	|	1.03
90.667	0.00	0.01	0.308	O	|	|	|	|	1.03
90.750	0.00	0.01	0.308	O	|	|	|	|	1.03
90.833	0.00	0.01	0.308	O	|	|	|	|	1.03
90.917	0.00	0.01	0.308	O	|	|	|	|	1.03
91.000	0.00	0.01	0.308	O	|	|	|	|	1.03
91.083	0.00	0.01	0.307	O	|	|	|	|	1.03
91.167	0.00	0.01	0.307	O	|	|	|	|	1.03
91.250	0.00	0.01	0.307	O	|	|	|	|	1.03
91.333	0.00	0.01	0.307	O	|	|	|	|	1.03
91.417	0.00	0.01	0.307	O	|	|	|	|	1.03
91.500	0.00	0.01	0.307	O	|	|	|	|	1.03
91.583	0.00	0.01	0.307	O	|	|	|	|	1.03
91.667	0.00	0.01	0.307	O	|	|	|	|	1.03
91.750	0.00	0.01	0.307	O	|	|	|	|	1.03
91.833	0.00	0.01	0.307	O	|	|	|	|	1.03
91.917	0.00	0.01	0.307	O	|	|	|	|	1.03
92.000	0.00	0.01	0.307	O	|	|	|	|	1.03
92.083	0.00	0.01	0.306	O	|	|	|	|	1.03
92.167	0.00	0.01	0.306	O	|	|	|	|	1.03
92.250	0.00	0.01	0.306	O	|	|	|	|	1.03
92.333	0.00	0.01	0.306	O	|	|	|	|	1.03
92.417	0.00	0.01	0.306	O	|	|	|	|	1.03
92.500	0.00	0.01	0.306	O	|	|	|	|	1.03
92.583	0.00	0.01	0.306	O	|	|	|	|	1.03
92.667	0.00	0.01	0.306	O	|	|	|	|	1.03
92.750	0.00	0.01	0.306	O	|	|	|	|	1.03

92.833	0.00	0.01	0.306	O	|	|	|	|	1.03
92.917	0.00	0.01	0.306	O	|	|	|	|	1.03
93.000	0.00	0.01	0.306	O	|	|	|	|	1.03
93.083	0.00	0.01	0.306	O	|	|	|	|	1.03
93.167	0.00	0.01	0.305	O	|	|	|	|	1.03
93.250	0.00	0.01	0.305	O	|	|	|	|	1.03
93.333	0.00	0.01	0.305	O	|	|	|	|	1.03
93.417	0.00	0.01	0.305	O	|	|	|	|	1.03
93.500	0.00	0.01	0.305	O	|	|	|	|	1.03
93.583	0.00	0.01	0.305	O	|	|	|	|	1.03
93.667	0.00	0.01	0.305	O	|	|	|	|	1.03
93.750	0.00	0.01	0.305	O	|	|	|	|	1.03
93.833	0.00	0.01	0.305	O	|	|	|	|	1.02
93.917	0.00	0.01	0.305	O	|	|	|	|	1.02
94.000	0.00	0.01	0.305	O	|	|	|	|	1.02
94.083	0.00	0.01	0.305	O	|	|	|	|	1.02
94.167	0.00	0.01	0.305	O	|	|	|	|	1.02
94.250	0.00	0.01	0.304	O	|	|	|	|	1.02
94.333	0.00	0.01	0.304	O	|	|	|	|	1.02
94.417	0.00	0.01	0.304	O	|	|	|	|	1.02
94.500	0.00	0.01	0.304	O	|	|	|	|	1.02
94.583	0.00	0.01	0.304	O	|	|	|	|	1.02
94.667	0.00	0.01	0.304	O	|	|	|	|	1.02
94.750	0.00	0.01	0.304	O	|	|	|	|	1.02
94.833	0.00	0.01	0.304	O	|	|	|	|	1.02
94.917	0.00	0.01	0.304	O	|	|	|	|	1.02
95.000	0.00	0.01	0.304	O	|	|	|	|	1.02
95.083	0.00	0.01	0.304	O	|	|	|	|	1.02
95.167	0.00	0.01	0.304	O	|	|	|	|	

1.02

95.250	0.00	0.01	0.304	O	|	|	|	|	1.02
95.333	0.00	0.01	0.304	O	|	|	|	|	1.02
95.417	0.00	0.01	0.304	O	|	|	|	|	1.02
95.500	0.00	0.01	0.303	O	|	|	|	|	1.02
95.583	0.00	0.01	0.303	O	|	|	|	|	1.02
95.667	0.00	0.01	0.303	O	|	|	|	|	1.02
95.750	0.00	0.01	0.303	O	|	|	|	|	1.02
95.833	0.00	0.01	0.303	O	|	|	|	|	1.02
95.917	0.00	0.01	0.303	O	|	|	|	|	1.02
96.000	0.00	0.01	0.303	O	|	|	|	|	1.02
96.083	0.00	0.01	0.303	O	|	|	|	|	1.02
96.167	0.00	0.01	0.303	O	|	|	|	|	1.02
96.250	0.00	0.01	0.303	O	|	|	|	|	1.02
96.333	0.00	0.01	0.303	O	|	|	|	|	1.02
96.417	0.00	0.01	0.303	O	|	|	|	|	1.02
96.500	0.00	0.01	0.303	O	|	|	|	|	1.02
96.583	0.00	0.01	0.303	O	|	|	|	|	1.02
96.667	0.00	0.01	0.303	O	|	|	|	|	1.02
96.750	0.00	0.01	0.303	O	|	|	|	|	1.02
96.833	0.00	0.01	0.302	O	|	|	|	|	1.02
96.917	0.00	0.01	0.302	O	|	|	|	|	1.02
97.000	0.00	0.01	0.302	O	|	|	|	|	1.02
97.083	0.00	0.01	0.302	O	|	|	|	|	1.02
97.167	0.00	0.01	0.302	O	|	|	|	|	1.02
97.250	0.00	0.01	0.302	O	|	|	|	|	1.02
97.333	0.00	0.01	0.302	O	|	|	|	|	1.02
97.417	0.00	0.01	0.302	O	|	|	|	|	1.02
97.500	0.00	0.01	0.302	O	|	|	|	|	1.02

97.583	0.00	0.01	0.302	O	|	|	|	|	1.02
97.667	0.00	0.01	0.302	O	|	|	|	|	1.02
97.750	0.00	0.01	0.302	O	|	|	|	|	1.02
97.833	0.00	0.01	0.302	O	|	|	|	|	1.02
97.917	0.00	0.01	0.302	O	|	|	|	|	1.02
98.000	0.00	0.01	0.302	O	|	|	|	|	1.02
98.083	0.00	0.01	0.302	O	|	|	|	|	1.02
98.167	0.00	0.01	0.302	O	|	|	|	|	1.02
98.250	0.00	0.01	0.302	O	|	|	|	|	1.02
98.333	0.00	0.01	0.301	O	|	|	|	|	1.02
98.417	0.00	0.01	0.301	O	|	|	|	|	1.02
98.500	0.00	0.01	0.301	O	|	|	|	|	1.02
98.583	0.00	0.01	0.301	O	|	|	|	|	1.02
98.667	0.00	0.01	0.301	O	|	|	|	|	1.02
98.750	0.00	0.01	0.301	O	|	|	|	|	1.02
98.833	0.00	0.01	0.301	O	|	|	|	|	1.02
98.917	0.00	0.01	0.301	O	|	|	|	|	1.02
99.000	0.00	0.01	0.301	O	|	|	|	|	1.02
99.083	0.00	0.01	0.301	O	|	|	|	|	1.02
99.167	0.00	0.01	0.301	O	|	|	|	|	1.02
99.250	0.00	0.01	0.301	O	|	|	|	|	1.02
99.333	0.00	0.01	0.301	O	|	|	|	|	1.02
99.417	0.00	0.01	0.301	O	|	|	|	|	1.02
99.500	0.00	0.01	0.301	O	|	|	|	|	1.02
99.583	0.00	0.01	0.301	O	|	|	|	|	1.02
99.667	0.00	0.01	0.301	O	|	|	|	|	1.02
99.750	0.00	0.01	0.301	O	|	|	|	|	1.02
99.833	0.00	0.01	0.301	O	|	|	|	|	1.02
99.917	0.00	0.01	0.301	O	|	|	|	|	

1.02

100.000	0.00	0.01	0.301	O	|	|	|	|	1.01
100.083	0.00	0.01	0.300	O	|	|	|	|	1.01
100.167	0.00	0.01	0.300	O	|	|	|	|	1.01
100.250	0.00	0.01	0.300	O	|	|	|	|	1.01
100.333	0.00	0.01	0.300	O	|	|	|	|	1.01
100.417	0.00	0.01	0.300	O	|	|	|	|	1.01
100.500	0.00	0.01	0.300	O	|	|	|	|	1.01
100.583	0.00	0.01	0.300	O	|	|	|	|	1.01
100.667	0.00	0.01	0.300	O	|	|	|	|	1.01
100.750	0.00	0.01	0.300	O	|	|	|	|	1.01
100.833	0.00	0.01	0.300	O	|	|	|	|	1.01
100.917	0.00	0.01	0.300	O	|	|	|	|	1.01
101.000	0.00	0.01	0.300	O	|	|	|	|	1.01
101.083	0.00	0.01	0.300	O	|	|	|	|	1.01
101.167	0.00	0.01	0.300	O	|	|	|	|	1.01
101.250	0.00	0.01	0.300	O	|	|	|	|	1.01
101.333	0.00	0.01	0.300	O	|	|	|	|	1.01
101.417	0.00	0.01	0.300	O	|	|	|	|	1.01
101.500	0.00	0.01	0.300	O	|	|	|	|	1.01
101.583	0.00	0.01	0.300	O	|	|	|	|	1.01
101.667	0.00	0.01	0.300	O	|	|	|	|	1.01
101.750	0.00	0.01	0.300	O	|	|	|	|	1.01
101.833	0.00	0.01	0.300	O	|	|	|	|	1.01
101.917	0.00	0.01	0.300	O	|	|	|	|	1.01
102.000	0.00	0.01	0.299	O	|	|	|	|	1.01
102.083	0.00	0.01	0.299	O	|	|	|	|	1.01
102.167	0.00	0.01	0.299	O	|	|	|	|	1.01
102.250	0.00	0.01	0.299	O	|	|	|	|	1.01

102.333	0.00	0.01	0.299	O	|	|	|	|	1.01
102.417	0.00	0.01	0.299	O	|	|	|	|	1.01
102.500	0.00	0.01	0.299	O	|	|	|	|	1.01
102.583	0.00	0.01	0.299	O	|	|	|	|	1.01
102.667	0.00	0.01	0.299	O	|	|	|	|	1.01
102.750	0.00	0.01	0.299	O	|	|	|	|	1.01
102.833	0.00	0.01	0.299	O	|	|	|	|	1.01
102.917	0.00	0.01	0.299	O	|	|	|	|	1.01
103.000	0.00	0.01	0.299	O	|	|	|	|	1.01
103.083	0.00	0.01	0.299	O	|	|	|	|	1.01
103.167	0.00	0.01	0.299	O	|	|	|	|	1.01
103.250	0.00	0.01	0.299	O	|	|	|	|	1.01
103.333	0.00	0.01	0.299	O	|	|	|	|	1.01
103.417	0.00	0.01	0.299	O	|	|	|	|	1.01
103.500	0.00	0.01	0.299	O	|	|	|	|	1.01
103.583	0.00	0.01	0.299	O	|	|	|	|	1.01
103.667	0.00	0.01	0.299	O	|	|	|	|	1.01
103.750	0.00	0.01	0.299	O	|	|	|	|	1.01
103.833	0.00	0.01	0.299	O	|	|	|	|	1.01
103.917	0.00	0.01	0.299	O	|	|	|	|	1.01
104.000	0.00	0.01	0.299	O	|	|	|	|	1.01
104.083	0.00	0.00	0.299	O	|	|	|	|	1.01
104.167	0.00	0.00	0.299	O	|	|	|	|	1.01
104.250	0.00	0.00	0.298	O	|	|	|	|	1.01
104.333	0.00	0.00	0.298	O	|	|	|	|	1.01
104.417	0.00	0.00	0.298	O	|	|	|	|	1.01
104.500	0.00	0.00	0.298	O	|	|	|	|	1.01
104.583	0.00	0.00	0.298	O	|	|	|	|	1.01
104.667	0.00	0.00	0.298	O	|	|	|	|	

1.01

104.750	0.00	0.00	0.298	O	|	|	|	|	1.01
104.833	0.00	0.00	0.298	O	|	|	|	|	1.01
104.917	0.00	0.00	0.298	O	|	|	|	|	1.01
105.000	0.00	0.00	0.298	O	|	|	|	|	1.01
105.083	0.00	0.00	0.298	O	|	|	|	|	1.01
105.167	0.00	0.00	0.298	O	|	|	|	|	1.01
105.250	0.00	0.00	0.298	O	|	|	|	|	1.01
105.333	0.00	0.00	0.298	O	|	|	|	|	1.01
105.417	0.00	0.00	0.298	O	|	|	|	|	1.01
105.500	0.00	0.00	0.298	O	|	|	|	|	1.01
105.583	0.00	0.00	0.298	O	|	|	|	|	1.01
105.667	0.00	0.00	0.298	O	|	|	|	|	1.01
105.750	0.00	0.00	0.298	O	|	|	|	|	1.01
105.833	0.00	0.00	0.298	O	|	|	|	|	1.01
105.917	0.00	0.00	0.298	O	|	|	|	|	1.01
106.000	0.00	0.00	0.298	O	|	|	|	|	1.01
106.083	0.00	0.00	0.298	O	|	|	|	|	1.01
106.167	0.00	0.00	0.298	O	|	|	|	|	1.01
106.250	0.00	0.00	0.298	O	|	|	|	|	1.01
106.333	0.00	0.00	0.298	O	|	|	|	|	1.01
106.417	0.00	0.00	0.298	O	|	|	|	|	1.01
106.500	0.00	0.00	0.298	O	|	|	|	|	1.01
106.583	0.00	0.00	0.298	O	|	|	|	|	1.01
106.667	0.00	0.00	0.298	O	|	|	|	|	1.01
106.750	0.00	0.00	0.298	O	|	|	|	|	1.01
106.833	0.00	0.00	0.298	O	|	|	|	|	1.01
106.917	0.00	0.00	0.297	O	|	|	|	|	1.01
107.000	0.00	0.00	0.297	O	|	|	|	|	1.01

107.083	0.00	0.00	0.297	O	|	|	|	|	1.01
107.167	0.00	0.00	0.297	O	|	|	|	|	1.01
107.250	0.00	0.00	0.297	O	|	|	|	|	1.01
107.333	0.00	0.00	0.297	O	|	|	|	|	1.01
107.417	0.00	0.00	0.297	O	|	|	|	|	1.01
107.500	0.00	0.00	0.297	O	|	|	|	|	1.01
107.583	0.00	0.00	0.297	O	|	|	|	|	1.01
107.667	0.00	0.00	0.297	O	|	|	|	|	1.01
107.750	0.00	0.00	0.297	O	|	|	|	|	1.01
107.833	0.00	0.00	0.297	O	|	|	|	|	1.01
107.917	0.00	0.00	0.297	O	|	|	|	|	1.01
108.000	0.00	0.00	0.297	O	|	|	|	|	1.01
108.083	0.00	0.00	0.297	O	|	|	|	|	1.01
108.167	0.00	0.00	0.297	O	|	|	|	|	1.01
108.250	0.00	0.00	0.297	O	|	|	|	|	1.01
108.333	0.00	0.00	0.297	O	|	|	|	|	1.01
108.417	0.00	0.00	0.297	O	|	|	|	|	1.01
108.500	0.00	0.00	0.297	O	|	|	|	|	1.01
108.583	0.00	0.00	0.297	O	|	|	|	|	1.01
108.667	0.00	0.00	0.297	O	|	|	|	|	1.01
108.750	0.00	0.00	0.297	O	|	|	|	|	1.01
108.833	0.00	0.00	0.297	O	|	|	|	|	1.01
108.917	0.00	0.00	0.297	O	|	|	|	|	1.01
109.000	0.00	0.00	0.297	O	|	|	|	|	1.01
109.083	0.00	0.00	0.297	O	|	|	|	|	1.01
109.167	0.00	0.00	0.297	O	|	|	|	|	1.01
109.250	0.00	0.00	0.297	O	|	|	|	|	1.01
109.333	0.00	0.00	0.297	O	|	|	|	|	1.01
109.417	0.00	0.00	0.297	O	|	|	|	|	

1.01

109.500	0.00	0.00	0.297	O	|	|	|	|	1.01
109.583	0.00	0.00	0.297	O	|	|	|	|	1.01
109.667	0.00	0.00	0.297	O	|	|	|	|	1.01
109.750	0.00	0.00	0.297	O	|	|	|	|	1.01
109.833	0.00	0.00	0.297	O	|	|	|	|	1.01
109.917	0.00	0.00	0.297	O	|	|	|	|	1.01
110.000	0.00	0.00	0.297	O	|	|	|	|	1.01
110.083	0.00	0.00	0.297	O	|	|	|	|	1.01
110.167	0.00	0.00	0.297	O	|	|	|	|	1.01
110.250	0.00	0.00	0.296	O	|	|	|	|	1.01
110.333	0.00	0.00	0.296	O	|	|	|	|	1.01
110.417	0.00	0.00	0.296	O	|	|	|	|	1.01
110.500	0.00	0.00	0.296	O	|	|	|	|	1.01
110.583	0.00	0.00	0.296	O	|	|	|	|	1.01
110.667	0.00	0.00	0.296	O	|	|	|	|	1.01
110.750	0.00	0.00	0.296	O	|	|	|	|	1.01
110.833	0.00	0.00	0.296	O	|	|	|	|	1.01
110.917	0.00	0.00	0.296	O	|	|	|	|	1.01
111.000	0.00	0.00	0.296	O	|	|	|	|	1.01
111.083	0.00	0.00	0.296	O	|	|	|	|	1.01
111.167	0.00	0.00	0.296	O	|	|	|	|	1.01
111.250	0.00	0.00	0.296	O	|	|	|	|	1.01
111.333	0.00	0.00	0.296	O	|	|	|	|	1.01
111.417	0.00	0.00	0.296	O	|	|	|	|	1.01
111.500	0.00	0.00	0.296	O	|	|	|	|	1.00
111.583	0.00	0.00	0.296	O	|	|	|	|	1.00
111.667	0.00	0.00	0.296	O	|	|	|	|	1.00
111.750	0.00	0.00	0.296	O	|	|	|	|	1.00

111.833	0.00	0.00	0.296	O	|	|	|	|	1.00
111.917	0.00	0.00	0.296	O	|	|	|	|	1.00
112.000	0.00	0.00	0.296	O	|	|	|	|	1.00
112.083	0.00	0.00	0.296	O	|	|	|	|	1.00
112.167	0.00	0.00	0.296	O	|	|	|	|	1.00
112.250	0.00	0.00	0.296	O	|	|	|	|	1.00
112.333	0.00	0.00	0.296	O	|	|	|	|	1.00
112.417	0.00	0.00	0.296	O	|	|	|	|	1.00
112.500	0.00	0.00	0.296	O	|	|	|	|	1.00
112.583	0.00	0.00	0.296	O	|	|	|	|	1.00
112.667	0.00	0.00	0.296	O	|	|	|	|	1.00
112.750	0.00	0.00	0.296	O	|	|	|	|	1.00
112.833	0.00	0.00	0.296	O	|	|	|	|	1.00
112.917	0.00	0.00	0.296	O	|	|	|	|	1.00
113.000	0.00	0.00	0.296	O	|	|	|	|	1.00
113.083	0.00	0.00	0.296	O	|	|	|	|	1.00
113.167	0.00	0.00	0.296	O	|	|	|	|	1.00
113.250	0.00	0.00	0.296	O	|	|	|	|	1.00
113.333	0.00	0.00	0.296	O	|	|	|	|	1.00
113.417	0.00	0.00	0.296	O	|	|	|	|	1.00
113.500	0.00	0.00	0.296	O	|	|	|	|	1.00
113.583	0.00	0.00	0.296	O	|	|	|	|	1.00
113.667	0.00	0.00	0.296	O	|	|	|	|	1.00
113.750	0.00	0.00	0.296	O	|	|	|	|	1.00
113.833	0.00	0.00	0.296	O	|	|	|	|	1.00
113.917	0.00	0.00	0.296	O	|	|	|	|	1.00
114.000	0.00	0.00	0.296	O	|	|	|	|	1.00
114.083	0.00	0.00	0.296	O	|	|	|	|	1.00
114.167	0.00	0.00	0.296	O	|	|	|	|	

1.00

114.250	0.00	0.00	0.296	O	|	|	|	|	1.00
114.333	0.00	0.00	0.296	O	|	|	|	|	1.00
114.417	0.00	0.00	0.296	O	|	|	|	|	1.00
114.500	0.00	0.00	0.296	O	|	|	|	|	1.00
114.583	0.00	0.00	0.296	O	|	|	|	|	1.00
114.667	0.00	0.00	0.295	O	|	|	|	|	1.00
114.750	0.00	0.00	0.295	O	|	|	|	|	1.00
114.833	0.00	0.00	0.295	O	|	|	|	|	1.00
114.917	0.00	0.00	0.295	O	|	|	|	|	1.00
115.000	0.00	0.00	0.295	O	|	|	|	|	1.00
115.083	0.00	0.00	0.295	O	|	|	|	|	1.00
115.167	0.00	0.00	0.295	O	|	|	|	|	1.00
115.250	0.00	0.00	0.295	O	|	|	|	|	1.00
115.333	0.00	0.00	0.295	O	|	|	|	|	1.00
115.417	0.00	0.00	0.295	O	|	|	|	|	1.00
115.500	0.00	0.00	0.295	O	|	|	|	|	1.00
115.583	0.00	0.00	0.295	O	|	|	|	|	1.00
115.667	0.00	0.00	0.295	O	|	|	|	|	1.00
115.750	0.00	0.00	0.295	O	|	|	|	|	1.00
115.833	0.00	0.00	0.295	O	|	|	|	|	1.00
115.917	0.00	0.00	0.295	O	|	|	|	|	1.00
116.000	0.00	0.00	0.295	O	|	|	|	|	1.00
116.083	0.00	0.00	0.295	O	|	|	|	|	1.00
116.167	0.00	0.00	0.295	O	|	|	|	|	1.00
116.250	0.00	0.00	0.295	O	|	|	|	|	1.00
116.333	0.00	0.00	0.295	O	|	|	|	|	1.00
116.417	0.00	0.00	0.295	O	|	|	|	|	1.00
116.500	0.00	0.00	0.295	O	|	|	|	|	1.00

116.583	0.00	0.00	0.295	O	|	|	|	|	1.00
116.667	0.00	0.00	0.295	O	|	|	|	|	1.00
116.750	0.00	0.00	0.295	O	|	|	|	|	1.00
116.833	0.00	0.00	0.295	O	|	|	|	|	1.00
116.917	0.00	0.00	0.295	O	|	|	|	|	1.00
117.000	0.00	0.00	0.295	O	|	|	|	|	1.00
117.083	0.00	0.00	0.295	O	|	|	|	|	1.00
117.167	0.00	0.00	0.295	O	|	|	|	|	1.00
117.250	0.00	0.00	0.295	O	|	|	|	|	1.00
117.333	0.00	0.00	0.295	O	|	|	|	|	1.00
117.417	0.00	0.00	0.295	O	|	|	|	|	1.00
117.500	0.00	0.00	0.295	O	|	|	|	|	1.00
117.583	0.00	0.00	0.295	O	|	|	|	|	1.00
117.667	0.00	0.00	0.295	O	|	|	|	|	1.00
117.750	0.00	0.00	0.295	O	|	|	|	|	1.00
117.833	0.00	0.00	0.295	O	|	|	|	|	1.00
117.917	0.00	0.00	0.295	O	|	|	|	|	1.00
118.000	0.00	0.00	0.295	O	|	|	|	|	1.00
118.083	0.00	0.00	0.295	O	|	|	|	|	1.00
118.167	0.00	0.00	0.295	O	|	|	|	|	1.00
118.250	0.00	0.00	0.295	O	|	|	|	|	1.00
118.333	0.00	0.00	0.295	O	|	|	|	|	1.00
118.417	0.00	0.00	0.295	O	|	|	|	|	1.00
118.500	0.00	0.00	0.295	O	|	|	|	|	1.00
118.583	0.00	0.00	0.295	O	|	|	|	|	1.00
118.667	0.00	0.00	0.295	O	|	|	|	|	1.00
118.750	0.00	0.00	0.295	O	|	|	|	|	1.00
118.833	0.00	0.00	0.295	O	|	|	|	|	1.00
118.917	0.00	0.00	0.295	O	|	|	|	|	

1.00

119.000	0.00	0.00	0.295	O	|	|	|	1.00
119.083	0.00	0.00	0.295	O	|	|	|	1.00
119.167	0.00	0.00	0.295	O	|	|	|	1.00
119.250	0.00	0.00	0.295	O	|	|	|	1.00
119.333	0.00	0.00	0.295	O	|	|	|	1.00
119.417	0.00	0.00	0.295	O	|	|	|	1.00
119.500	0.00	0.00	0.295	O	|	|	|	1.00
119.583	0.00	0.00	0.295	O	|	|	|	1.00
119.667	0.00	0.00	0.295	O	|	|	|	1.00
119.750	0.00	0.00	0.295	O	|	|	|	1.00
119.833	0.00	0.00	0.295	O	|	|	|	1.00
119.917	0.00	0.00	0.295	O	|	|	|	1.00
120.000	0.00	0.00	0.295	O	|	|	|	1.00
120.083	0.00	0.00	0.295	O	|	|	|	1.00
120.167	0.00	0.00	0.295	O	|	|	|	1.00
120.250	0.00	0.00	0.295	O	|	|	|	1.00
120.333	0.00	0.00	0.295	O	|	|	|	1.00
120.417	0.00	0.00	0.295	O	|	|	|	1.00
120.500	0.00	0.00	0.295	O	|	|	|	1.00
120.583	0.00	0.00	0.295	O	|	|	|	1.00
120.667	0.00	0.00	0.295	O	|	|	|	1.00
120.750	0.00	0.00	0.295	O	|	|	|	1.00
120.833	0.00	0.00	0.295	O	|	|	|	1.00
120.917	0.00	0.00	0.295	O	|	|	|	1.00
121.000	0.00	0.00	0.295	O	|	|	|	1.00
121.083	0.00	0.00	0.295	O	|	|	|	1.00
121.167	0.00	0.00	0.295	O	|	|	|	1.00
121.250	0.00	0.00	0.294	O	|	|	|	1.00

121.333	0.00	0.00	0.294	O	|	|	|	|	1.00
121.417	0.00	0.00	0.294	O	|	|	|	|	1.00
121.500	0.00	0.00	0.294	O	|	|	|	|	1.00
121.583	0.00	0.00	0.294	O	|	|	|	|	1.00
121.667	0.00	0.00	0.294	O	|	|	|	|	1.00
121.750	0.00	0.00	0.294	O	|	|	|	|	1.00
121.833	0.00	0.00	0.294	O	|	|	|	|	1.00
121.917	0.00	0.00	0.294	O	|	|	|	|	1.00
122.000	0.00	0.00	0.294	O	|	|	|	|	1.00
122.083	0.00	0.00	0.294	O	|	|	|	|	1.00
122.167	0.00	0.00	0.294	O	|	|	|	|	1.00
122.250	0.00	0.00	0.294	O	|	|	|	|	1.00
122.333	0.00	0.00	0.294	O	|	|	|	|	1.00
122.417	0.00	0.00	0.294	O	|	|	|	|	1.00
122.500	0.00	0.00	0.294	O	|	|	|	|	1.00
122.583	0.00	0.00	0.294	O	|	|	|	|	1.00
122.667	0.00	0.00	0.294	O	|	|	|	|	1.00
122.750	0.00	0.00	0.294	O	|	|	|	|	1.00
122.833	0.00	0.00	0.294	O	|	|	|	|	1.00
122.917	0.00	0.00	0.294	O	|	|	|	|	1.00
123.000	0.00	0.00	0.294	O	|	|	|	|	1.00
123.083	0.00	0.00	0.294	O	|	|	|	|	1.00
123.167	0.00	0.00	0.294	O	|	|	|	|	1.00
123.250	0.00	0.00	0.294	O	|	|	|	|	1.00
123.333	0.00	0.00	0.294	O	|	|	|	|	1.00
123.417	0.00	0.00	0.294	O	|	|	|	|	1.00
123.500	0.00	0.00	0.294	O	|	|	|	|	1.00
123.583	0.00	0.00	0.294	O	|	|	|	|	1.00
123.667	0.00	0.00	0.294	O	|	|	|	|	

1.00

123.750	0.00	0.00	0.294	O	|	|	|	1.00
123.833	0.00	0.00	0.294	O	|	|	|	1.00
123.917	0.00	0.00	0.294	O	|	|	|	1.00
124.000	0.00	0.00	0.294	O	|	|	|	1.00
124.083	0.00	0.00	0.294	O	|	|	|	1.00
124.167	0.00	0.00	0.294	O	|	|	|	1.00
124.250	0.00	0.00	0.294	O	|	|	|	1.00
124.333	0.00	0.00	0.294	O	|	|	|	1.00
124.417	0.00	0.00	0.294	O	|	|	|	1.00
124.500	0.00	0.00	0.294	O	|	|	|	1.00
124.583	0.00	0.00	0.294	O	|	|	|	1.00
124.667	0.00	0.00	0.294	O	|	|	|	1.00
124.750	0.00	0.00	0.294	O	|	|	|	1.00
124.833	0.00	0.00	0.294	O	|	|	|	1.00
124.917	0.00	0.00	0.294	O	|	|	|	1.00
125.000	0.00	0.00	0.294	O	|	|	|	1.00
125.083	0.00	0.00	0.294	O	|	|	|	1.00
125.167	0.00	0.00	0.294	O	|	|	|	1.00
125.250	0.00	0.00	0.294	O	|	|	|	1.00
125.333	0.00	0.00	0.294	O	|	|	|	1.00
125.417	0.00	0.00	0.294	O	|	|	|	1.00
125.500	0.00	0.00	0.294	O	|	|	|	1.00
125.583	0.00	0.00	0.294	O	|	|	|	1.00
125.667	0.00	0.00	0.294	O	|	|	|	1.00
125.750	0.00	0.00	0.294	O	|	|	|	1.00
125.833	0.00	0.00	0.294	O	|	|	|	1.00
125.917	0.00	0.00	0.294	O	|	|	|	1.00
126.000	0.00	0.00	0.294	O	|	|	|	1.00

```
126.083    0.00    0.00     0.294  O      |      |      |      |    1.00
126.167    0.00    0.00     0.294  O      |      |      |      |    1.00
126.250    0.00    0.00     0.294  O      |      |      |      |    1.00

      Remaining water in basin =    0.29 (Ac.Ft)


      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =  1515
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =       0.369 (CFS)
                  Total volume =      1.167 (Ac.Ft)
            Status of hydrographs being held in storage
                     Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)     0.000    0.000    0.000    0.000    0.000
            Vol (Ac.Ft)     0.000    0.000    0.000    0.000    0.000
      ***********************************************************************

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FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
10 YR - 1 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP110.rte
**********HYDROGRAPH DATA**********
Number of intervals = 14
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 14.495 (CFS)
Total volume = 0.435 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 14
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 3.6 7.25 10.87 14.49	Depth (Ft.)
0.083	1.43	0.00	0.005	O I | | | |	0.02
0.167	2.41	0.00	0.018	O I | | | |	0.06
0.250	2.83	0.00	0.036	O I | | | |	0.12
0.333	2.99	0.00	0.056	O I | | | |	0.19
0.417	3.29	0.00	0.078	O I| | | |	0.27
0.500	3.71	0.00	0.102	O I | | |	0.35
0.583	4.21	0.00	0.129	O |I | | |	0.44
0.667	4.84	0.00	0.160	O | I | | |	0.55
0.750	6.62	0.00	0.200	O | I | | |	0.68
0.833	14.49	0.00	0.273	O | | | I	0.93
0.917	10.22	0.06	0.358	O | | I | |	1.15
1.000	4.48	0.10	0.408	O |I | | |	1.26
1.083	1.38	0.11	0.427	O I | | | |	1.30
1.167	0.19	0.11	0.432	O | | | |	1.31
1.250	0.00	0.11	0.432	O | | | |	1.31
1.333	0.00	0.11	0.431	O | | | |	1.31
1.417	0.00	0.11	0.430	O | | | |	1.31
1.500	0.00	0.11	0.430	O | | | |	1.31

1.583	0.00	0.11	0.429	O	|	|	|	|	1.31
1.667	0.00	0.11	0.428	O	|	|	|	|	1.30
1.750	0.00	0.11	0.427	O	|	|	|	|	1.30
1.833	0.00	0.11	0.427	O	|	|	|	|	1.30
1.917	0.00	0.11	0.426	O	|	|	|	|	1.30
2.000	0.00	0.10	0.425	O	|	|	|	|	1.30
2.083	0.00	0.10	0.424	O	|	|	|	|	1.30
2.167	0.00	0.10	0.424	O	|	|	|	|	1.29
2.250	0.00	0.10	0.423	O	|	|	|	|	1.29
2.333	0.00	0.10	0.422	O	|	|	|	|	1.29
2.417	0.00	0.10	0.422	O	|	|	|	|	1.29
2.500	0.00	0.10	0.421	O	|	|	|	|	1.29
2.583	0.00	0.10	0.420	O	|	|	|	|	1.29
2.667	0.00	0.10	0.419	O	|	|	|	|	1.29
2.750	0.00	0.10	0.419	O	|	|	|	|	1.28
2.833	0.00	0.10	0.418	O	|	|	|	|	1.28
2.917	0.00	0.10	0.417	O	|	|	|	|	1.28
3.000	0.00	0.10	0.417	O	|	|	|	|	1.28
3.083	0.00	0.10	0.416	O	|	|	|	|	1.28
3.167	0.00	0.10	0.415	O	|	|	|	|	1.28
3.250	0.00	0.10	0.415	O	|	|	|	|	1.27
3.333	0.00	0.10	0.414	O	|	|	|	|	1.27
3.417	0.00	0.10	0.413	O	|	|	|	|	1.27
3.500	0.00	0.10	0.412	O	|	|	|	|	1.27
3.583	0.00	0.10	0.412	O	|	|	|	|	1.27
3.667	0.00	0.10	0.411	O	|	|	|	|	1.27
3.750	0.00	0.10	0.410	O	|	|	|	|	1.27
3.833	0.00	0.10	0.410	O	|	|	|	|	1.26
3.917	0.00	0.10	0.409	O	|	|	|	|	

1.26

4.000	0.00	0.10	0.408	O	|	|	|	1.26
4.083	0.00	0.10	0.408	O	|	|	|	1.26
4.167	0.00	0.10	0.407	O	|	|	|	1.26
4.250	0.00	0.10	0.406	O	|	|	|	1.26
4.333	0.00	0.10	0.406	O	|	|	|	1.26
4.417	0.00	0.10	0.405	O	|	|	|	1.25
4.500	0.00	0.10	0.404	O	|	|	|	1.25
4.583	0.00	0.10	0.404	O	|	|	|	1.25
4.667	0.00	0.10	0.403	O	|	|	|	1.25
4.750	0.00	0.10	0.402	O	|	|	|	1.25
4.833	0.00	0.10	0.402	O	|	|	|	1.25
4.917	0.00	0.10	0.401	O	|	|	|	1.25
5.000	0.00	0.09	0.400	O	|	|	|	1.24
5.083	0.00	0.09	0.400	O	|	|	|	1.24
5.167	0.00	0.09	0.399	O	|	|	|	1.24
5.250	0.00	0.09	0.398	O	|	|	|	1.24
5.333	0.00	0.09	0.398	O	|	|	|	1.24
5.417	0.00	0.09	0.397	O	|	|	|	1.24
5.500	0.00	0.09	0.396	O	|	|	|	1.24
5.583	0.00	0.09	0.396	O	|	|	|	1.23
5.667	0.00	0.09	0.395	O	|	|	|	1.23
5.750	0.00	0.09	0.395	O	|	|	|	1.23
5.833	0.00	0.09	0.394	O	|	|	|	1.23
5.917	0.00	0.09	0.393	O	|	|	|	1.23
6.000	0.00	0.09	0.393	O	|	|	|	1.23
6.083	0.00	0.09	0.392	O	|	|	|	1.23
6.167	0.00	0.09	0.392	O	|	|	|	1.22
6.250	0.00	0.09	0.391	O	|	|	|	1.22

6.333	0.00	0.09	0.390	O	|	|	|	|	1.22
6.417	0.00	0.09	0.390	O	|	|	|	|	1.22
6.500	0.00	0.08	0.389	O	|	|	|	|	1.22
6.583	0.00	0.08	0.389	O	|	|	|	|	1.22
6.667	0.00	0.08	0.388	O	|	|	|	|	1.22
6.750	0.00	0.08	0.387	O	|	|	|	|	1.21
6.833	0.00	0.08	0.387	O	|	|	|	|	1.21
6.917	0.00	0.08	0.386	O	|	|	|	|	1.21
7.000	0.00	0.08	0.386	O	|	|	|	|	1.21
7.083	0.00	0.08	0.385	O	|	|	|	|	1.21
7.167	0.00	0.08	0.385	O	|	|	|	|	1.21
7.250	0.00	0.08	0.384	O	|	|	|	|	1.21
7.333	0.00	0.08	0.384	O	|	|	|	|	1.21
7.417	0.00	0.08	0.383	O	|	|	|	|	1.20
7.500	0.00	0.08	0.382	O	|	|	|	|	1.20
7.583	0.00	0.08	0.382	O	|	|	|	|	1.20
7.667	0.00	0.08	0.381	O	|	|	|	|	1.20
7.750	0.00	0.08	0.381	O	|	|	|	|	1.20
7.833	0.00	0.08	0.380	O	|	|	|	|	1.20
7.917	0.00	0.08	0.380	O	|	|	|	|	1.20
8.000	0.00	0.08	0.379	O	|	|	|	|	1.20
8.083	0.00	0.08	0.379	O	|	|	|	|	1.19
8.167	0.00	0.08	0.378	O	|	|	|	|	1.19
8.250	0.00	0.07	0.378	O	|	|	|	|	1.19
8.333	0.00	0.07	0.377	O	|	|	|	|	1.19
8.417	0.00	0.07	0.377	O	|	|	|	|	1.19
8.500	0.00	0.07	0.376	O	|	|	|	|	1.19
8.583	0.00	0.07	0.376	O	|	|	|	|	1.19
8.667	0.00	0.07	0.375	O	|	|	|	|	

1.19

8.750	0.00	0.07	0.375	O	|	|	|	1.18
8.833	0.00	0.07	0.374	O	|	|	|	1.18
8.917	0.00	0.07	0.374	O	|	|	|	1.18
9.000	0.00	0.07	0.373	O	|	|	|	1.18
9.083	0.00	0.07	0.373	O	|	|	|	1.18
9.167	0.00	0.07	0.372	O	|	|	|	1.18
9.250	0.00	0.07	0.372	O	|	|	|	1.18
9.333	0.00	0.07	0.371	O	|	|	|	1.18
9.417	0.00	0.07	0.371	O	|	|	|	1.18
9.500	0.00	0.07	0.370	O	|	|	|	1.18
9.583	0.00	0.07	0.370	O	|	|	|	1.17
9.667	0.00	0.07	0.369	O	|	|	|	1.17
9.750	0.00	0.07	0.369	O	|	|	|	1.17
9.833	0.00	0.07	0.368	O	|	|	|	1.17
9.917	0.00	0.07	0.368	O	|	|	|	1.17
10.000	0.00	0.07	0.368	O	|	|	|	1.17
10.083	0.00	0.07	0.367	O	|	|	|	1.17
10.167	0.00	0.06	0.367	O	|	|	|	1.17
10.250	0.00	0.06	0.366	O	|	|	|	1.17
10.333	0.00	0.06	0.366	O	|	|	|	1.16
10.417	0.00	0.06	0.365	O	|	|	|	1.16
10.500	0.00	0.06	0.365	O	|	|	|	1.16
10.583	0.00	0.06	0.364	O	|	|	|	1.16
10.667	0.00	0.06	0.364	O	|	|	|	1.16
10.750	0.00	0.06	0.364	O	|	|	|	1.16
10.833	0.00	0.06	0.363	O	|	|	|	1.16
10.917	0.00	0.06	0.363	O	|	|	|	1.16
11.000	0.00	0.06	0.362	O	|	|	|	1.16

11.083	0.00	0.06	0.362	O	|	|	|	|	1.16
11.167	0.00	0.06	0.361	O	|	|	|	|	1.15
11.250	0.00	0.06	0.361	O	|	|	|	|	1.15
11.333	0.00	0.06	0.361	O	|	|	|	|	1.15
11.417	0.00	0.06	0.360	O	|	|	|	|	1.15
11.500	0.00	0.06	0.360	O	|	|	|	|	1.15
11.583	0.00	0.06	0.359	O	|	|	|	|	1.15
11.667	0.00	0.06	0.359	O	|	|	|	|	1.15
11.750	0.00	0.06	0.359	O	|	|	|	|	1.15
11.833	0.00	0.06	0.358	O	|	|	|	|	1.15
11.917	0.00	0.06	0.358	O	|	|	|	|	1.15
12.000	0.00	0.06	0.357	O	|	|	|	|	1.15
12.083	0.00	0.06	0.357	O	|	|	|	|	1.14
12.167	0.00	0.06	0.357	O	|	|	|	|	1.14
12.250	0.00	0.06	0.356	O	|	|	|	|	1.14
12.333	0.00	0.06	0.356	O	|	|	|	|	1.14
12.417	0.00	0.06	0.355	O	|	|	|	|	1.14
12.500	0.00	0.05	0.355	O	|	|	|	|	1.14
12.583	0.00	0.05	0.355	O	|	|	|	|	1.14
12.667	0.00	0.05	0.354	O	|	|	|	|	1.14
12.750	0.00	0.05	0.354	O	|	|	|	|	1.14
12.833	0.00	0.05	0.354	O	|	|	|	|	1.14
12.917	0.00	0.05	0.353	O	|	|	|	|	1.14
13.000	0.00	0.05	0.353	O	|	|	|	|	1.14
13.083	0.00	0.05	0.353	O	|	|	|	|	1.13
13.167	0.00	0.05	0.352	O	|	|	|	|	1.13
13.250	0.00	0.05	0.352	O	|	|	|	|	1.13
13.333	0.00	0.05	0.351	O	|	|	|	|	1.13
13.417	0.00	0.05	0.351	O	|	|	|	|	

1.13

13.500	0.00	0.05	0.351	O	|	|	|	|	1.13
13.583	0.00	0.05	0.350	O	|	|	|	|	1.13
13.667	0.00	0.05	0.350	O	|	|	|	|	1.13
13.750	0.00	0.05	0.350	O	|	|	|	|	1.13
13.833	0.00	0.05	0.349	O	|	|	|	|	1.13
13.917	0.00	0.05	0.349	O	|	|	|	|	1.13
14.000	0.00	0.05	0.349	O	|	|	|	|	1.13
14.083	0.00	0.05	0.348	O	|	|	|	|	1.12
14.167	0.00	0.05	0.348	O	|	|	|	|	1.12
14.250	0.00	0.05	0.348	O	|	|	|	|	1.12
14.333	0.00	0.05	0.347	O	|	|	|	|	1.12
14.417	0.00	0.05	0.347	O	|	|	|	|	1.12
14.500	0.00	0.05	0.347	O	|	|	|	|	1.12
14.583	0.00	0.05	0.346	O	|	|	|	|	1.12
14.667	0.00	0.05	0.346	O	|	|	|	|	1.12
14.750	0.00	0.05	0.346	O	|	|	|	|	1.12
14.833	0.00	0.05	0.345	O	|	|	|	|	1.12
14.917	0.00	0.05	0.345	O	|	|	|	|	1.12
15.000	0.00	0.05	0.345	O	|	|	|	|	1.12
15.083	0.00	0.05	0.344	O	|	|	|	|	1.12
15.167	0.00	0.05	0.344	O	|	|	|	|	1.11
15.250	0.00	0.04	0.344	O	|	|	|	|	1.11
15.333	0.00	0.04	0.344	O	|	|	|	|	1.11
15.417	0.00	0.04	0.343	O	|	|	|	|	1.11
15.500	0.00	0.04	0.343	O	|	|	|	|	1.11
15.583	0.00	0.04	0.343	O	|	|	|	|	1.11
15.667	0.00	0.04	0.342	O	|	|	|	|	1.11
15.750	0.00	0.04	0.342	O	|	|	|	|	1.11

15.833	0.00	0.04	0.342	O	|	|	|	|	1.11
15.917	0.00	0.04	0.341	O	|	|	|	|	1.11
16.000	0.00	0.04	0.341	O	|	|	|	|	1.11
16.083	0.00	0.04	0.341	O	|	|	|	|	1.11
16.167	0.00	0.04	0.341	O	|	|	|	|	1.11
16.250	0.00	0.04	0.340	O	|	|	|	|	1.11
16.333	0.00	0.04	0.340	O	|	|	|	|	1.11
16.417	0.00	0.04	0.340	O	|	|	|	|	1.10
16.500	0.00	0.04	0.339	O	|	|	|	|	1.10
16.583	0.00	0.04	0.339	O	|	|	|	|	1.10
16.667	0.00	0.04	0.339	O	|	|	|	|	1.10
16.750	0.00	0.04	0.339	O	|	|	|	|	1.10
16.833	0.00	0.04	0.338	O	|	|	|	|	1.10
16.917	0.00	0.04	0.338	O	|	|	|	|	1.10
17.000	0.00	0.04	0.338	O	|	|	|	|	1.10
17.083	0.00	0.04	0.337	O	|	|	|	|	1.10
17.167	0.00	0.04	0.337	O	|	|	|	|	1.10
17.250	0.00	0.04	0.337	O	|	|	|	|	1.10
17.333	0.00	0.04	0.337	O	|	|	|	|	1.10
17.417	0.00	0.04	0.336	O	|	|	|	|	1.10
17.500	0.00	0.04	0.336	O	|	|	|	|	1.10
17.583	0.00	0.04	0.336	O	|	|	|	|	1.10
17.667	0.00	0.04	0.336	O	|	|	|	|	1.10
17.750	0.00	0.04	0.335	O	|	|	|	|	1.09
17.833	0.00	0.04	0.335	O	|	|	|	|	1.09
17.917	0.00	0.04	0.335	O	|	|	|	|	1.09
18.000	0.00	0.04	0.335	O	|	|	|	|	1.09
18.083	0.00	0.04	0.334	O	|	|	|	|	1.09
18.167	0.00	0.04	0.334	O	|	|	|	|	

1.09

18.250	0.00	0.04	0.334	O	|	|	|	|	1.09
18.333	0.00	0.04	0.334	O	|	|	|	|	1.09
18.417	0.00	0.04	0.333	O	|	|	|	|	1.09
18.500	0.00	0.04	0.333	O	|	|	|	|	1.09
18.583	0.00	0.04	0.333	O	|	|	|	|	1.09
18.667	0.00	0.03	0.333	O	|	|	|	|	1.09
18.750	0.00	0.03	0.332	O	|	|	|	|	1.09
18.833	0.00	0.03	0.332	O	|	|	|	|	1.09
18.917	0.00	0.03	0.332	O	|	|	|	|	1.09
19.000	0.00	0.03	0.332	O	|	|	|	|	1.09
19.083	0.00	0.03	0.331	O	|	|	|	|	1.09
19.167	0.00	0.03	0.331	O	|	|	|	|	1.09
19.250	0.00	0.03	0.331	O	|	|	|	|	1.08
19.333	0.00	0.03	0.331	O	|	|	|	|	1.08
19.417	0.00	0.03	0.330	O	|	|	|	|	1.08
19.500	0.00	0.03	0.330	O	|	|	|	|	1.08
19.583	0.00	0.03	0.330	O	|	|	|	|	1.08
19.667	0.00	0.03	0.330	O	|	|	|	|	1.08
19.750	0.00	0.03	0.330	O	|	|	|	|	1.08
19.833	0.00	0.03	0.329	O	|	|	|	|	1.08
19.917	0.00	0.03	0.329	O	|	|	|	|	1.08
20.000	0.00	0.03	0.329	O	|	|	|	|	1.08
20.083	0.00	0.03	0.329	O	|	|	|	|	1.08
20.167	0.00	0.03	0.328	O	|	|	|	|	1.08
20.250	0.00	0.03	0.328	O	|	|	|	|	1.08
20.333	0.00	0.03	0.328	O	|	|	|	|	1.08
20.417	0.00	0.03	0.328	O	|	|	|	|	1.08
20.500	0.00	0.03	0.328	O	|	|	|	|	1.08

20.583	0.00	0.03	0.327	O	|	|	|	|	1.08
20.667	0.00	0.03	0.327	O	|	|	|	|	1.08
20.750	0.00	0.03	0.327	O	|	|	|	|	1.08
20.833	0.00	0.03	0.327	O	|	|	|	|	1.08
20.917	0.00	0.03	0.327	O	|	|	|	|	1.07
21.000	0.00	0.03	0.326	O	|	|	|	|	1.07
21.083	0.00	0.03	0.326	O	|	|	|	|	1.07
21.167	0.00	0.03	0.326	O	|	|	|	|	1.07
21.250	0.00	0.03	0.326	O	|	|	|	|	1.07
21.333	0.00	0.03	0.326	O	|	|	|	|	1.07
21.417	0.00	0.03	0.325	O	|	|	|	|	1.07
21.500	0.00	0.03	0.325	O	|	|	|	|	1.07
21.583	0.00	0.03	0.325	O	|	|	|	|	1.07
21.667	0.00	0.03	0.325	O	|	|	|	|	1.07
21.750	0.00	0.03	0.325	O	|	|	|	|	1.07
21.833	0.00	0.03	0.324	O	|	|	|	|	1.07
21.917	0.00	0.03	0.324	O	|	|	|	|	1.07
22.000	0.00	0.03	0.324	O	|	|	|	|	1.07
22.083	0.00	0.03	0.324	O	|	|	|	|	1.07
22.167	0.00	0.03	0.324	O	|	|	|	|	1.07
22.250	0.00	0.03	0.323	O	|	|	|	|	1.07
22.333	0.00	0.03	0.323	O	|	|	|	|	1.07
22.417	0.00	0.03	0.323	O	|	|	|	|	1.07
22.500	0.00	0.03	0.323	O	|	|	|	|	1.07
22.583	0.00	0.03	0.323	O	|	|	|	|	1.07
22.667	0.00	0.03	0.323	O	|	|	|	|	1.07
22.750	0.00	0.03	0.322	O	|	|	|	|	1.07
22.833	0.00	0.03	0.322	O	|	|	|	|	1.06

22.917	0.00	0.03	0.322	O	|	|	|	|	1.06
23.000	0.00	0.03	0.322	O	|	|	|	|	1.06
23.083	0.00	0.03	0.322	O	|	|	|	|	1.06
23.167	0.00	0.03	0.322	O	|	|	|	|	1.06
23.250	0.00	0.03	0.321	O	|	|	|	|	1.06
23.333	0.00	0.02	0.321	O	|	|	|	|	1.06
23.417	0.00	0.02	0.321	O	|	|	|	|	1.06
23.500	0.00	0.02	0.321	O	|	|	|	|	1.06
23.583	0.00	0.02	0.321	O	|	|	|	|	1.06
23.667	0.00	0.02	0.320	O	|	|	|	|	1.06
23.750	0.00	0.02	0.320	O	|	|	|	|	1.06
23.833	0.00	0.02	0.320	O	|	|	|	|	1.06
23.917	0.00	0.02	0.320	O	|	|	|	|	1.06
24.000	0.00	0.02	0.320	O	|	|	|	|	1.06
24.083	0.00	0.02	0.320	O	|	|	|	|	1.06
24.167	0.00	0.02	0.319	O	|	|	|	|	1.06
24.250	0.00	0.02	0.319	O	|	|	|	|	1.06
24.333	0.00	0.02	0.319	O	|	|	|	|	1.06
24.417	0.00	0.02	0.319	O	|	|	|	|	1.06
24.500	0.00	0.02	0.319	O	|	|	|	|	1.06
24.583	0.00	0.02	0.319	O	|	|	|	|	1.06
24.667	0.00	0.02	0.319	O	|	|	|	|	1.06
24.750	0.00	0.02	0.318	O	|	|	|	|	1.06
24.833	0.00	0.02	0.318	O	|	|	|	|	1.06
24.917	0.00	0.02	0.318	O	|	|	|	|	1.06
25.000	0.00	0.02	0.318	O	|	|	|	|	1.05
25.083	0.00	0.02	0.318	O	|	|	|	|	1.05
25.167	0.00	0.02	0.318	O	|	|	|	|	1.05
25.250	0.00	0.02	0.317	O	|	|	|	|	

1.05

25.333	0.00	0.02	0.317	O	|	|	|	|	1.05
25.417	0.00	0.02	0.317	O	|	|	|	|	1.05
25.500	0.00	0.02	0.317	O	|	|	|	|	1.05
25.583	0.00	0.02	0.317	O	|	|	|	|	1.05
25.667	0.00	0.02	0.317	O	|	|	|	|	1.05
25.750	0.00	0.02	0.317	O	|	|	|	|	1.05
25.833	0.00	0.02	0.316	O	|	|	|	|	1.05
25.917	0.00	0.02	0.316	O	|	|	|	|	1.05
26.000	0.00	0.02	0.316	O	|	|	|	|	1.05
26.083	0.00	0.02	0.316	O	|	|	|	|	1.05
26.167	0.00	0.02	0.316	O	|	|	|	|	1.05
26.250	0.00	0.02	0.316	O	|	|	|	|	1.05
26.333	0.00	0.02	0.316	O	|	|	|	|	1.05
26.417	0.00	0.02	0.315	O	|	|	|	|	1.05
26.500	0.00	0.02	0.315	O	|	|	|	|	1.05
26.583	0.00	0.02	0.315	O	|	|	|	|	1.05
26.667	0.00	0.02	0.315	O	|	|	|	|	1.05
26.750	0.00	0.02	0.315	O	|	|	|	|	1.05
26.833	0.00	0.02	0.315	O	|	|	|	|	1.05
26.917	0.00	0.02	0.315	O	|	|	|	|	1.05
27.000	0.00	0.02	0.315	O	|	|	|	|	1.05
27.083	0.00	0.02	0.314	O	|	|	|	|	1.05
27.167	0.00	0.02	0.314	O	|	|	|	|	1.05
27.250	0.00	0.02	0.314	O	|	|	|	|	1.05
27.333	0.00	0.02	0.314	O	|	|	|	|	1.05
27.417	0.00	0.02	0.314	O	|	|	|	|	1.05
27.500	0.00	0.02	0.314	O	|	|	|	|	1.05
27.583	0.00	0.02	0.314	O	|	|	|	|	1.05

27.667	0.00	0.02	0.314	O	|	|	|	|	1.04
27.750	0.00	0.02	0.313	O	|	|	|	|	1.04
27.833	0.00	0.02	0.313	O	|	|	|	|	1.04
27.917	0.00	0.02	0.313	O	|	|	|	|	1.04
28.000	0.00	0.02	0.313	O	|	|	|	|	1.04
28.083	0.00	0.02	0.313	O	|	|	|	|	1.04
28.167	0.00	0.02	0.313	O	|	|	|	|	1.04
28.250	0.00	0.02	0.313	O	|	|	|	|	1.04
28.333	0.00	0.02	0.313	O	|	|	|	|	1.04
28.417	0.00	0.02	0.312	O	|	|	|	|	1.04
28.500	0.00	0.02	0.312	O	|	|	|	|	1.04
28.583	0.00	0.02	0.312	O	|	|	|	|	1.04
28.667	0.00	0.02	0.312	O	|	|	|	|	1.04
28.750	0.00	0.02	0.312	O	|	|	|	|	1.04
28.833	0.00	0.02	0.312	O	|	|	|	|	1.04
28.917	0.00	0.02	0.312	O	|	|	|	|	1.04
29.000	0.00	0.02	0.312	O	|	|	|	|	1.04
29.083	0.00	0.02	0.311	O	|	|	|	|	1.04
29.167	0.00	0.02	0.311	O	|	|	|	|	1.04
29.250	0.00	0.02	0.311	O	|	|	|	|	1.04
29.333	0.00	0.02	0.311	O	|	|	|	|	1.04
29.417	0.00	0.02	0.311	O	|	|	|	|	1.04
29.500	0.00	0.02	0.311	O	|	|	|	|	1.04
29.583	0.00	0.02	0.311	O	|	|	|	|	1.04
29.667	0.00	0.02	0.311	O	|	|	|	|	1.04
29.750	0.00	0.02	0.311	O	|	|	|	|	1.04
29.833	0.00	0.02	0.310	O	|	|	|	|	1.04
29.917	0.00	0.02	0.310	O	|	|	|	|	1.04
30.000	0.00	0.02	0.310	O	|	|	|	|	

1.04

30.083	0.00	0.02	0.310	O	|	|	|	|	1.04
30.167	0.00	0.02	0.310	O	|	|	|	|	1.04
30.250	0.00	0.02	0.310	O	|	|	|	|	1.04
30.333	0.00	0.01	0.310	O	|	|	|	|	1.04
30.417	0.00	0.01	0.310	O	|	|	|	|	1.04
30.500	0.00	0.01	0.310	O	|	|	|	|	1.04
30.583	0.00	0.01	0.310	O	|	|	|	|	1.04
30.667	0.00	0.01	0.309	O	|	|	|	|	1.04
30.750	0.00	0.01	0.309	O	|	|	|	|	1.04
30.833	0.00	0.01	0.309	O	|	|	|	|	1.03
30.917	0.00	0.01	0.309	O	|	|	|	|	1.03
31.000	0.00	0.01	0.309	O	|	|	|	|	1.03
31.083	0.00	0.01	0.309	O	|	|	|	|	1.03
31.167	0.00	0.01	0.309	O	|	|	|	|	1.03
31.250	0.00	0.01	0.309	O	|	|	|	|	1.03
31.333	0.00	0.01	0.309	O	|	|	|	|	1.03
31.417	0.00	0.01	0.309	O	|	|	|	|	1.03
31.500	0.00	0.01	0.308	O	|	|	|	|	1.03
31.583	0.00	0.01	0.308	O	|	|	|	|	1.03
31.667	0.00	0.01	0.308	O	|	|	|	|	1.03
31.750	0.00	0.01	0.308	O	|	|	|	|	1.03
31.833	0.00	0.01	0.308	O	|	|	|	|	1.03
31.917	0.00	0.01	0.308	O	|	|	|	|	1.03
32.000	0.00	0.01	0.308	O	|	|	|	|	1.03
32.083	0.00	0.01	0.308	O	|	|	|	|	1.03
32.167	0.00	0.01	0.308	O	|	|	|	|	1.03
32.250	0.00	0.01	0.308	O	|	|	|	|	1.03
32.333	0.00	0.01	0.308	O	|	|	|	|	1.03

32.417	0.00	0.01	0.307	O	|	|	|	|	1.03
32.500	0.00	0.01	0.307	O	|	|	|	|	1.03
32.583	0.00	0.01	0.307	O	|	|	|	|	1.03
32.667	0.00	0.01	0.307	O	|	|	|	|	1.03
32.750	0.00	0.01	0.307	O	|	|	|	|	1.03
32.833	0.00	0.01	0.307	O	|	|	|	|	1.03
32.917	0.00	0.01	0.307	O	|	|	|	|	1.03
33.000	0.00	0.01	0.307	O	|	|	|	|	1.03
33.083	0.00	0.01	0.307	O	|	|	|	|	1.03
33.167	0.00	0.01	0.307	O	|	|	|	|	1.03
33.250	0.00	0.01	0.307	O	|	|	|	|	1.03
33.333	0.00	0.01	0.307	O	|	|	|	|	1.03
33.417	0.00	0.01	0.306	O	|	|	|	|	1.03
33.500	0.00	0.01	0.306	O	|	|	|	|	1.03
33.583	0.00	0.01	0.306	O	|	|	|	|	1.03
33.667	0.00	0.01	0.306	O	|	|	|	|	1.03
33.750	0.00	0.01	0.306	O	|	|	|	|	1.03
33.833	0.00	0.01	0.306	O	|	|	|	|	1.03
33.917	0.00	0.01	0.306	O	|	|	|	|	1.03
34.000	0.00	0.01	0.306	O	|	|	|	|	1.03
34.083	0.00	0.01	0.306	O	|	|	|	|	1.03
34.167	0.00	0.01	0.306	O	|	|	|	|	1.03
34.250	0.00	0.01	0.306	O	|	|	|	|	1.03
34.333	0.00	0.01	0.306	O	|	|	|	|	1.03
34.417	0.00	0.01	0.305	O	|	|	|	|	1.03
34.500	0.00	0.01	0.305	O	|	|	|	|	1.03
34.583	0.00	0.01	0.305	O	|	|	|	|	1.03
34.667	0.00	0.01	0.305	O	|	|	|	|	1.03
34.750	0.00	0.01	0.305	O	|	|	|	|	

1.03

34.833	0.00	0.01	0.305	O	|	|	|	|	1.03
34.917	0.00	0.01	0.305	O	|	|	|	|	1.03
35.000	0.00	0.01	0.305	O	|	|	|	|	1.03
35.083	0.00	0.01	0.305	O	|	|	|	|	1.02
35.167	0.00	0.01	0.305	O	|	|	|	|	1.02
35.250	0.00	0.01	0.305	O	|	|	|	|	1.02
35.333	0.00	0.01	0.305	O	|	|	|	|	1.02
35.417	0.00	0.01	0.305	O	|	|	|	|	1.02
35.500	0.00	0.01	0.305	O	|	|	|	|	1.02
35.583	0.00	0.01	0.304	O	|	|	|	|	1.02
35.667	0.00	0.01	0.304	O	|	|	|	|	1.02
35.750	0.00	0.01	0.304	O	|	|	|	|	1.02
35.833	0.00	0.01	0.304	O	|	|	|	|	1.02
35.917	0.00	0.01	0.304	O	|	|	|	|	1.02
36.000	0.00	0.01	0.304	O	|	|	|	|	1.02
36.083	0.00	0.01	0.304	O	|	|	|	|	1.02
36.167	0.00	0.01	0.304	O	|	|	|	|	1.02
36.250	0.00	0.01	0.304	O	|	|	|	|	1.02
36.333	0.00	0.01	0.304	O	|	|	|	|	1.02
36.417	0.00	0.01	0.304	O	|	|	|	|	1.02
36.500	0.00	0.01	0.304	O	|	|	|	|	1.02
36.583	0.00	0.01	0.304	O	|	|	|	|	1.02
36.667	0.00	0.01	0.304	O	|	|	|	|	1.02
36.750	0.00	0.01	0.304	O	|	|	|	|	1.02
36.833	0.00	0.01	0.303	O	|	|	|	|	1.02
36.917	0.00	0.01	0.303	O	|	|	|	|	1.02
37.000	0.00	0.01	0.303	O	|	|	|	|	1.02
37.083	0.00	0.01	0.303	O	|	|	|	|	1.02

37.167	0.00	0.01	0.303	O	|	|	|	|	1.02
37.250	0.00	0.01	0.303	O	|	|	|	|	1.02
37.333	0.00	0.01	0.303	O	|	|	|	|	1.02
37.417	0.00	0.01	0.303	O	|	|	|	|	1.02
37.500	0.00	0.01	0.303	O	|	|	|	|	1.02
37.583	0.00	0.01	0.303	O	|	|	|	|	1.02
37.667	0.00	0.01	0.303	O	|	|	|	|	1.02
37.750	0.00	0.01	0.303	O	|	|	|	|	1.02
37.833	0.00	0.01	0.303	O	|	|	|	|	1.02
37.917	0.00	0.01	0.303	O	|	|	|	|	1.02
38.000	0.00	0.01	0.303	O	|	|	|	|	1.02
38.083	0.00	0.01	0.303	O	|	|	|	|	1.02
38.167	0.00	0.01	0.302	O	|	|	|	|	1.02
38.250	0.00	0.01	0.302	O	|	|	|	|	1.02
38.333	0.00	0.01	0.302	O	|	|	|	|	1.02
38.417	0.00	0.01	0.302	O	|	|	|	|	1.02
38.500	0.00	0.01	0.302	O	|	|	|	|	1.02
38.583	0.00	0.01	0.302	O	|	|	|	|	1.02
38.667	0.00	0.01	0.302	O	|	|	|	|	1.02
38.750	0.00	0.01	0.302	O	|	|	|	|	1.02
38.833	0.00	0.01	0.302	O	|	|	|	|	1.02
38.917	0.00	0.01	0.302	O	|	|	|	|	1.02
39.000	0.00	0.01	0.302	O	|	|	|	|	1.02
39.083	0.00	0.01	0.302	O	|	|	|	|	1.02
39.167	0.00	0.01	0.302	O	|	|	|	|	1.02
39.250	0.00	0.01	0.302	O	|	|	|	|	1.02
39.333	0.00	0.01	0.302	O	|	|	|	|	1.02
39.417	0.00	0.01	0.302	O	|	|	|	|	1.02
39.500	0.00	0.01	0.302	O	|	|	|	|	

1.02

39.583	0.00	0.01	0.302	O	|	|	|	1.02
39.667	0.00	0.01	0.301	O	|	|	|	1.02
39.750	0.00	0.01	0.301	O	|	|	|	1.02
39.833	0.00	0.01	0.301	O	|	|	|	1.02
39.917	0.00	0.01	0.301	O	|	|	|	1.02
40.000	0.00	0.01	0.301	O	|	|	|	1.02
40.083	0.00	0.01	0.301	O	|	|	|	1.02
40.167	0.00	0.01	0.301	O	|	|	|	1.02
40.250	0.00	0.01	0.301	O	|	|	|	1.02
40.333	0.00	0.01	0.301	O	|	|	|	1.02
40.417	0.00	0.01	0.301	O	|	|	|	1.02
40.500	0.00	0.01	0.301	O	|	|	|	1.02
40.583	0.00	0.01	0.301	O	|	|	|	1.02
40.667	0.00	0.01	0.301	O	|	|	|	1.02
40.750	0.00	0.01	0.301	O	|	|	|	1.02
40.833	0.00	0.01	0.301	O	|	|	|	1.02
40.917	0.00	0.01	0.301	O	|	|	|	1.02
41.000	0.00	0.01	0.301	O	|	|	|	1.02
41.083	0.00	0.01	0.301	O	|	|	|	1.02
41.167	0.00	0.01	0.301	O	|	|	|	1.02
41.250	0.00	0.01	0.301	O	|	|	|	1.02
41.333	0.00	0.01	0.300	O	|	|	|	1.01
41.417	0.00	0.01	0.300	O	|	|	|	1.01
41.500	0.00	0.01	0.300	O	|	|	|	1.01
41.583	0.00	0.01	0.300	O	|	|	|	1.01
41.667	0.00	0.01	0.300	O	|	|	|	1.01
41.750	0.00	0.01	0.300	O	|	|	|	1.01
41.833	0.00	0.01	0.300	O	|	|	|	1.01

41.917	0.00	0.01	0.300	O	|	|	|	|	1.01
42.000	0.00	0.01	0.300	O	|	|	|	|	1.01
42.083	0.00	0.01	0.300	O	|	|	|	|	1.01
42.167	0.00	0.01	0.300	O	|	|	|	|	1.01
42.250	0.00	0.01	0.300	O	|	|	|	|	1.01
42.333	0.00	0.01	0.300	O	|	|	|	|	1.01
42.417	0.00	0.01	0.300	O	|	|	|	|	1.01
42.500	0.00	0.01	0.300	O	|	|	|	|	1.01
42.583	0.00	0.01	0.300	O	|	|	|	|	1.01
42.667	0.00	0.01	0.300	O	|	|	|	|	1.01
42.750	0.00	0.01	0.300	O	|	|	|	|	1.01
42.833	0.00	0.01	0.300	O	|	|	|	|	1.01
42.917	0.00	0.01	0.300	O	|	|	|	|	1.01
43.000	0.00	0.01	0.300	O	|	|	|	|	1.01
43.083	0.00	0.01	0.300	O	|	|	|	|	1.01
43.167	0.00	0.01	0.300	O	|	|	|	|	1.01
43.250	0.00	0.01	0.300	O	|	|	|	|	1.01
43.333	0.00	0.01	0.299	O	|	|	|	|	1.01
43.417	0.00	0.01	0.299	O	|	|	|	|	1.01
43.500	0.00	0.01	0.299	O	|	|	|	|	1.01
43.583	0.00	0.01	0.299	O	|	|	|	|	1.01
43.667	0.00	0.01	0.299	O	|	|	|	|	1.01
43.750	0.00	0.01	0.299	O	|	|	|	|	1.01
43.833	0.00	0.01	0.299	O	|	|	|	|	1.01
43.917	0.00	0.01	0.299	O	|	|	|	|	1.01
44.000	0.00	0.01	0.299	O	|	|	|	|	1.01
44.083	0.00	0.01	0.299	O	|	|	|	|	1.01
44.167	0.00	0.01	0.299	O	|	|	|	|	1.01

44.250	0.00	0.01	0.299	O	|	|	|	|	1.01
44.333	0.00	0.01	0.299	O	|	|	|	|	1.01
44.417	0.00	0.01	0.299	O	|	|	|	|	1.01
44.500	0.00	0.01	0.299	O	|	|	|	|	1.01
44.583	0.00	0.01	0.299	O	|	|	|	|	1.01
44.667	0.00	0.01	0.299	O	|	|	|	|	1.01
44.750	0.00	0.01	0.299	O	|	|	|	|	1.01
44.833	0.00	0.01	0.299	O	|	|	|	|	1.01
44.917	0.00	0.01	0.299	O	|	|	|	|	1.01
45.000	0.00	0.01	0.299	O	|	|	|	|	1.01
45.083	0.00	0.01	0.299	O	|	|	|	|	1.01
45.167	0.00	0.01	0.299	O	|	|	|	|	1.01
45.250	0.00	0.01	0.299	O	|	|	|	|	1.01
45.333	0.00	0.01	0.299	O	|	|	|	|	1.01
45.417	0.00	0.00	0.299	O	|	|	|	|	1.01
45.500	0.00	0.00	0.299	O	|	|	|	|	1.01
45.583	0.00	0.00	0.298	O	|	|	|	|	1.01
45.667	0.00	0.00	0.298	O	|	|	|	|	1.01
45.750	0.00	0.00	0.298	O	|	|	|	|	1.01
45.833	0.00	0.00	0.298	O	|	|	|	|	1.01
45.917	0.00	0.00	0.298	O	|	|	|	|	1.01
46.000	0.00	0.00	0.298	O	|	|	|	|	1.01
46.083	0.00	0.00	0.298	O	|	|	|	|	1.01
46.167	0.00	0.00	0.298	O	|	|	|	|	1.01
46.250	0.00	0.00	0.298	O	|	|	|	|	1.01
46.333	0.00	0.00	0.298	O	|	|	|	|	1.01
46.417	0.00	0.00	0.298	O	|	|	|	|	1.01
46.500	0.00	0.00	0.298	O	|	|	|	|	1.01
46.583	0.00	0.00	0.298	O	|	|	|	|	

1.01

46.667	0.00	0.00	0.298	O	|	|	|	|	1.01
46.750	0.00	0.00	0.298	O	|	|	|	|	1.01
46.833	0.00	0.00	0.298	O	|	|	|	|	1.01
46.917	0.00	0.00	0.298	O	|	|	|	|	1.01
47.000	0.00	0.00	0.298	O	|	|	|	|	1.01
47.083	0.00	0.00	0.298	O	|	|	|	|	1.01
47.167	0.00	0.00	0.298	O	|	|	|	|	1.01
47.250	0.00	0.00	0.298	O	|	|	|	|	1.01
47.333	0.00	0.00	0.298	O	|	|	|	|	1.01
47.417	0.00	0.00	0.298	O	|	|	|	|	1.01
47.500	0.00	0.00	0.298	O	|	|	|	|	1.01
47.583	0.00	0.00	0.298	O	|	|	|	|	1.01
47.667	0.00	0.00	0.298	O	|	|	|	|	1.01
47.750	0.00	0.00	0.298	O	|	|	|	|	1.01
47.833	0.00	0.00	0.298	O	|	|	|	|	1.01
47.917	0.00	0.00	0.298	O	|	|	|	|	1.01
48.000	0.00	0.00	0.298	O	|	|	|	|	1.01
48.083	0.00	0.00	0.298	O	|	|	|	|	1.01
48.167	0.00	0.00	0.298	O	|	|	|	|	1.01
48.250	0.00	0.00	0.297	O	|	|	|	|	1.01
48.333	0.00	0.00	0.297	O	|	|	|	|	1.01
48.417	0.00	0.00	0.297	O	|	|	|	|	1.01
48.500	0.00	0.00	0.297	O	|	|	|	|	1.01
48.583	0.00	0.00	0.297	O	|	|	|	|	1.01
48.667	0.00	0.00	0.297	O	|	|	|	|	1.01
48.750	0.00	0.00	0.297	O	|	|	|	|	1.01
48.833	0.00	0.00	0.297	O	|	|	|	|	1.01
48.917	0.00	0.00	0.297	O	|	|	|	|	1.01

49.000	0.00	0.00	0.297	O	|	|	|	|	1.01
49.083	0.00	0.00	0.297	O	|	|	|	|	1.01
49.167	0.00	0.00	0.297	O	|	|	|	|	1.01
49.250	0.00	0.00	0.297	O	|	|	|	|	1.01
49.333	0.00	0.00	0.297	O	|	|	|	|	1.01
49.417	0.00	0.00	0.297	O	|	|	|	|	1.01
49.500	0.00	0.00	0.297	O	|	|	|	|	1.01
49.583	0.00	0.00	0.297	O	|	|	|	|	1.01
49.667	0.00	0.00	0.297	O	|	|	|	|	1.01
49.750	0.00	0.00	0.297	O	|	|	|	|	1.01
49.833	0.00	0.00	0.297	O	|	|	|	|	1.01
49.917	0.00	0.00	0.297	O	|	|	|	|	1.01
50.000	0.00	0.00	0.297	O	|	|	|	|	1.01
50.083	0.00	0.00	0.297	O	|	|	|	|	1.01
50.167	0.00	0.00	0.297	O	|	|	|	|	1.01
50.250	0.00	0.00	0.297	O	|	|	|	|	1.01
50.333	0.00	0.00	0.297	O	|	|	|	|	1.01
50.417	0.00	0.00	0.297	O	|	|	|	|	1.01
50.500	0.00	0.00	0.297	O	|	|	|	|	1.01
50.583	0.00	0.00	0.297	O	|	|	|	|	1.01
50.667	0.00	0.00	0.297	O	|	|	|	|	1.01
50.750	0.00	0.00	0.297	O	|	|	|	|	1.01
50.833	0.00	0.00	0.297	O	|	|	|	|	1.01
50.917	0.00	0.00	0.297	O	|	|	|	|	1.01
51.000	0.00	0.00	0.297	O	|	|	|	|	1.01
51.083	0.00	0.00	0.297	O	|	|	|	|	1.01
51.167	0.00	0.00	0.297	O	|	|	|	|	1.01
51.250	0.00	0.00	0.297	O	|	|	|	|	1.01
51.333	0.00	0.00	0.297	O	|	|	|	|	

1.01

51.417	0.00	0.00	0.297	O	|	|	|	1.01
51.500	0.00	0.00	0.297	O	|	|	|	1.01
51.583	0.00	0.00	0.296	O	|	|	|	1.01
51.667	0.00	0.00	0.296	O	|	|	|	1.01
51.750	0.00	0.00	0.296	O	|	|	|	1.01
51.833	0.00	0.00	0.296	O	|	|	|	1.01
51.917	0.00	0.00	0.296	O	|	|	|	1.01
52.000	0.00	0.00	0.296	O	|	|	|	1.01
52.083	0.00	0.00	0.296	O	|	|	|	1.01
52.167	0.00	0.00	0.296	O	|	|	|	1.01
52.250	0.00	0.00	0.296	O	|	|	|	1.01
52.333	0.00	0.00	0.296	O	|	|	|	1.01
52.417	0.00	0.00	0.296	O	|	|	|	1.01
52.500	0.00	0.00	0.296	O	|	|	|	1.01
52.583	0.00	0.00	0.296	O	|	|	|	1.01
52.667	0.00	0.00	0.296	O	|	|	|	1.01
52.750	0.00	0.00	0.296	O	|	|	|	1.01
52.833	0.00	0.00	0.296	O	|	|	|	1.00
52.917	0.00	0.00	0.296	O	|	|	|	1.00
53.000	0.00	0.00	0.296	O	|	|	|	1.00
53.083	0.00	0.00	0.296	O	|	|	|	1.00
53.167	0.00	0.00	0.296	O	|	|	|	1.00
53.250	0.00	0.00	0.296	O	|	|	|	1.00
53.333	0.00	0.00	0.296	O	|	|	|	1.00
53.417	0.00	0.00	0.296	O	|	|	|	1.00
53.500	0.00	0.00	0.296	O	|	|	|	1.00
53.583	0.00	0.00	0.296	O	|	|	|	1.00
53.667	0.00	0.00	0.296	O	|	|	|	1.00

53.750	0.00	0.00	0.296	O	|	|	|	|	1.00
53.833	0.00	0.00	0.296	O	|	|	|	|	1.00
53.917	0.00	0.00	0.296	O	|	|	|	|	1.00
54.000	0.00	0.00	0.296	O	|	|	|	|	1.00
54.083	0.00	0.00	0.296	O	|	|	|	|	1.00
54.167	0.00	0.00	0.296	O	|	|	|	|	1.00
54.250	0.00	0.00	0.296	O	|	|	|	|	1.00
54.333	0.00	0.00	0.296	O	|	|	|	|	1.00
54.417	0.00	0.00	0.296	O	|	|	|	|	1.00
54.500	0.00	0.00	0.296	O	|	|	|	|	1.00
54.583	0.00	0.00	0.296	O	|	|	|	|	1.00
54.667	0.00	0.00	0.296	O	|	|	|	|	1.00
54.750	0.00	0.00	0.296	O	|	|	|	|	1.00
54.833	0.00	0.00	0.296	O	|	|	|	|	1.00
54.917	0.00	0.00	0.296	O	|	|	|	|	1.00
55.000	0.00	0.00	0.296	O	|	|	|	|	1.00
55.083	0.00	0.00	0.296	O	|	|	|	|	1.00
55.167	0.00	0.00	0.296	O	|	|	|	|	1.00
55.250	0.00	0.00	0.296	O	|	|	|	|	1.00
55.333	0.00	0.00	0.296	O	|	|	|	|	1.00
55.417	0.00	0.00	0.296	O	|	|	|	|	1.00
55.500	0.00	0.00	0.296	O	|	|	|	|	1.00
55.583	0.00	0.00	0.296	O	|	|	|	|	1.00
55.667	0.00	0.00	0.296	O	|	|	|	|	1.00
55.750	0.00	0.00	0.296	O	|	|	|	|	1.00
55.833	0.00	0.00	0.296	O	|	|	|	|	1.00
55.917	0.00	0.00	0.296	O	|	|	|	|	1.00
56.000	0.00	0.00	0.295	O	|	|	|	|	1.00
56.083	0.00	0.00	0.295	O	|	|	|	|	

1.00

56.167	0.00	0.00	0.295	O	|	|	|	1.00
56.250	0.00	0.00	0.295	O	|	|	|	1.00
56.333	0.00	0.00	0.295	O	|	|	|	1.00
56.417	0.00	0.00	0.295	O	|	|	|	1.00
56.500	0.00	0.00	0.295	O	|	|	|	1.00
56.583	0.00	0.00	0.295	O	|	|	|	1.00
56.667	0.00	0.00	0.295	O	|	|	|	1.00
56.750	0.00	0.00	0.295	O	|	|	|	1.00
56.833	0.00	0.00	0.295	O	|	|	|	1.00
56.917	0.00	0.00	0.295	O	|	|	|	1.00
57.000	0.00	0.00	0.295	O	|	|	|	1.00
57.083	0.00	0.00	0.295	O	|	|	|	1.00
57.167	0.00	0.00	0.295	O	|	|	|	1.00
57.250	0.00	0.00	0.295	O	|	|	|	1.00
57.333	0.00	0.00	0.295	O	|	|	|	1.00
57.417	0.00	0.00	0.295	O	|	|	|	1.00
57.500	0.00	0.00	0.295	O	|	|	|	1.00
57.583	0.00	0.00	0.295	O	|	|	|	1.00
57.667	0.00	0.00	0.295	O	|	|	|	1.00
57.750	0.00	0.00	0.295	O	|	|	|	1.00
57.833	0.00	0.00	0.295	O	|	|	|	1.00
57.917	0.00	0.00	0.295	O	|	|	|	1.00
58.000	0.00	0.00	0.295	O	|	|	|	1.00
58.083	0.00	0.00	0.295	O	|	|	|	1.00
58.167	0.00	0.00	0.295	O	|	|	|	1.00
58.250	0.00	0.00	0.295	O	|	|	|	1.00
58.333	0.00	0.00	0.295	O	|	|	|	1.00
58.417	0.00	0.00	0.295	O	|	|	|	1.00

58.500	0.00	0.00	0.295	O	|	|	|	|	1.00
58.583	0.00	0.00	0.295	O	|	|	|	|	1.00
58.667	0.00	0.00	0.295	O	|	|	|	|	1.00
58.750	0.00	0.00	0.295	O	|	|	|	|	1.00
58.833	0.00	0.00	0.295	O	|	|	|	|	1.00
58.917	0.00	0.00	0.295	O	|	|	|	|	1.00
59.000	0.00	0.00	0.295	O	|	|	|	|	1.00
59.083	0.00	0.00	0.295	O	|	|	|	|	1.00
59.167	0.00	0.00	0.295	O	|	|	|	|	1.00
59.250	0.00	0.00	0.295	O	|	|	|	|	1.00
59.333	0.00	0.00	0.295	O	|	|	|	|	1.00
59.417	0.00	0.00	0.295	O	|	|	|	|	1.00
59.500	0.00	0.00	0.295	O	|	|	|	|	1.00
59.583	0.00	0.00	0.295	O	|	|	|	|	1.00
59.667	0.00	0.00	0.295	O	|	|	|	|	1.00
59.750	0.00	0.00	0.295	O	|	|	|	|	1.00
59.833	0.00	0.00	0.295	O	|	|	|	|	1.00
59.917	0.00	0.00	0.295	O	|	|	|	|	1.00
60.000	0.00	0.00	0.295	O	|	|	|	|	1.00
60.083	0.00	0.00	0.295	O	|	|	|	|	1.00
60.167	0.00	0.00	0.295	O	|	|	|	|	1.00
60.250	0.00	0.00	0.295	O	|	|	|	|	1.00
60.333	0.00	0.00	0.295	O	|	|	|	|	1.00
60.417	0.00	0.00	0.295	O	|	|	|	|	1.00
60.500	0.00	0.00	0.295	O	|	|	|	|	1.00
60.583	0.00	0.00	0.295	O	|	|	|	|	1.00
60.667	0.00	0.00	0.295	O	|	|	|	|	1.00
60.750	0.00	0.00	0.295	O	|	|	|	|	1.00
60.833	0.00	0.00	0.295	O	|	|	|	|	

1.00

60.917	0.00	0.00	0.295	O	|	|	|	|	1.00
61.000	0.00	0.00	0.295	O	|	|	|	|	1.00
61.083	0.00	0.00	0.295	O	|	|	|	|	1.00
61.167	0.00	0.00	0.295	O	|	|	|	|	1.00
61.250	0.00	0.00	0.295	O	|	|	|	|	1.00
61.333	0.00	0.00	0.295	O	|	|	|	|	1.00
61.417	0.00	0.00	0.295	O	|	|	|	|	1.00
61.500	0.00	0.00	0.295	O	|	|	|	|	1.00
61.583	0.00	0.00	0.295	O	|	|	|	|	1.00
61.667	0.00	0.00	0.295	O	|	|	|	|	1.00
61.750	0.00	0.00	0.295	O	|	|	|	|	1.00
61.833	0.00	0.00	0.295	O	|	|	|	|	1.00
61.917	0.00	0.00	0.295	O	|	|	|	|	1.00
62.000	0.00	0.00	0.295	O	|	|	|	|	1.00
62.083	0.00	0.00	0.295	O	|	|	|	|	1.00
62.167	0.00	0.00	0.295	O	|	|	|	|	1.00
62.250	0.00	0.00	0.295	O	|	|	|	|	1.00
62.333	0.00	0.00	0.295	O	|	|	|	|	1.00
62.417	0.00	0.00	0.295	O	|	|	|	|	1.00
62.500	0.00	0.00	0.294	O	|	|	|	|	1.00
62.583	0.00	0.00	0.294	O	|	|	|	|	1.00
62.667	0.00	0.00	0.294	O	|	|	|	|	1.00
62.750	0.00	0.00	0.294	O	|	|	|	|	1.00
62.833	0.00	0.00	0.294	O	|	|	|	|	1.00
62.917	0.00	0.00	0.294	O	|	|	|	|	1.00
63.000	0.00	0.00	0.294	O	|	|	|	|	1.00
63.083	0.00	0.00	0.294	O	|	|	|	|	1.00
63.167	0.00	0.00	0.294	O	|	|	|	|	1.00

63.250	0.00	0.00	0.294	O	|	|	|	|	1.00
63.333	0.00	0.00	0.294	O	|	|	|	|	1.00
63.417	0.00	0.00	0.294	O	|	|	|	|	1.00
63.500	0.00	0.00	0.294	O	|	|	|	|	1.00
63.583	0.00	0.00	0.294	O	|	|	|	|	1.00
63.667	0.00	0.00	0.294	O	|	|	|	|	1.00
63.750	0.00	0.00	0.294	O	|	|	|	|	1.00
63.833	0.00	0.00	0.294	O	|	|	|	|	1.00
63.917	0.00	0.00	0.294	O	|	|	|	|	1.00
64.000	0.00	0.00	0.294	O	|	|	|	|	1.00
64.083	0.00	0.00	0.294	O	|	|	|	|	1.00
64.167	0.00	0.00	0.294	O	|	|	|	|	1.00
64.250	0.00	0.00	0.294	O	|	|	|	|	1.00
64.333	0.00	0.00	0.294	O	|	|	|	|	1.00
64.417	0.00	0.00	0.294	O	|	|	|	|	1.00
64.500	0.00	0.00	0.294	O	|	|	|	|	1.00
64.583	0.00	0.00	0.294	O	|	|	|	|	1.00
64.667	0.00	0.00	0.294	O	|	|	|	|	1.00
64.750	0.00	0.00	0.294	O	|	|	|	|	1.00
64.833	0.00	0.00	0.294	O	|	|	|	|	1.00
64.917	0.00	0.00	0.294	O	|	|	|	|	1.00
65.000	0.00	0.00	0.294	O	|	|	|	|	1.00
65.083	0.00	0.00	0.294	O	|	|	|	|	1.00
65.167	0.00	0.00	0.294	O	|	|	|	|	1.00
65.250	0.00	0.00	0.294	O	|	|	|	|	1.00
65.333	0.00	0.00	0.294	O	|	|	|	|	1.00
65.417	0.00	0.00	0.294	O	|	|	|	|	1.00
65.500	0.00	0.00	0.294	O	|	|	|	|	1.00

65.583	0.00	0.00	0.294	O	|	|	|	|	1.00
65.667	0.00	0.00	0.294	O	|	|	|	|	1.00
65.750	0.00	0.00	0.294	O	|	|	|	|	1.00
65.833	0.00	0.00	0.294	O	|	|	|	|	1.00
65.917	0.00	0.00	0.294	O	|	|	|	|	1.00
66.000	0.00	0.00	0.294	O	|	|	|	|	1.00
66.083	0.00	0.00	0.294	O	|	|	|	|	1.00
66.167	0.00	0.00	0.294	O	|	|	|	|	1.00
66.250	0.00	0.00	0.294	O	|	|	|	|	1.00
66.333	0.00	0.00	0.294	O	|	|	|	|	1.00
66.417	0.00	0.00	0.294	O	|	|	|	|	1.00
66.500	0.00	0.00	0.294	O	|	|	|	|	1.00
66.583	0.00	0.00	0.294	O	|	|	|	|	1.00
66.667	0.00	0.00	0.294	O	|	|	|	|	1.00
66.750	0.00	0.00	0.294	O	|	|	|	|	1.00
66.833	0.00	0.00	0.294	O	|	|	|	|	1.00
66.917	0.00	0.00	0.294	O	|	|	|	|	1.00
67.000	0.00	0.00	0.294	O	|	|	|	|	1.00
67.083	0.00	0.00	0.294	O	|	|	|	|	1.00
67.167	0.00	0.00	0.294	O	|	|	|	|	1.00
67.250	0.00	0.00	0.294	O	|	|	|	|	1.00
67.333	0.00	0.00	0.294	O	|	|	|	|	1.00
67.417	0.00	0.00	0.294	O	|	|	|	|	1.00
67.500	0.00	0.00	0.294	O	|	|	|	|	1.00
67.583	0.00	0.00	0.294	O	|	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 811

```
            Time interval =    5.0 (Min.)
            Maximum/Peak flow rate =       0.107 (CFS)
            Total volume =      0.141 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)     0.000    0.000    0.000    0.000    0.000
      Vol (Ac.Ft)     0.000    0.000    0.000    0.000    0.000
****************************************************************************

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FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
10 YR - 3 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP310.rte
**********HYDROGRAPH DATA**********
Number of intervals = 38
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 7.878 (CFS)
Total volume = 0.670 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 38
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 2.0 3.94 5.91 7.88 (Ft.)	Depth
0.083	0.71	0.00	0.002	O I | | | |	0.01
0.167	1.17	0.00	0.009	O I | | | |	0.03
0.250	1.14	0.00	0.017	O I | | | |	0.06
0.333	1.29	0.00	0.025	O I | | | |	0.09
0.417	1.42	0.00	0.035	O I | | | |	0.12
0.500	1.61	0.00	0.045	O I | | | |	0.15
0.583	1.55	0.00	0.056	O I | | | |	0.19
0.667	1.63	0.00	0.067	O I | | | |	0.23
0.750	1.72	0.00	0.078	O I | | | |	0.27
0.833	1.57	0.00	0.090	O I | | | |	0.31
0.917	1.52	0.00	0.100	O I | | | |	0.34
1.000	1.64	0.00	0.111	O I | | | |	0.38
1.083	1.94	0.00	0.124	O I| | | |	0.42
1.167	2.10	0.00	0.137	O I | | |	0.47
1.250	2.12	0.00	0.152	O I | | |	0.52
1.333	2.01	0.00	0.166	O I | | |	0.57
1.417	2.27	0.00	0.181	O |I | | |	0.62
1.500	2.52	0.00	0.197	O | I | | |	0.67
1.583	2.43	0.00	0.214	O |I | | |	0.73
1.667	2.49	0.00	0.231	O | I | | |	0.79
1.750	2.91	0.00	0.250	O | I | | |	

0.85

1.833	3.03	0.00	0.271	O	| I |	|	|	|	0.92
1.917	2.89	0.00	0.291	O	| I |	|	|	|	0.99
2.000	2.86	0.02	0.311	O	| I |	|	|	|	1.04
2.083	2.94	0.03	0.330	O	| I |	|	|	|	1.08
2.167	3.58	0.05	0.353	O	| I |	|	|	|	1.13
2.250	4.42	0.08	0.380	O	| |I |	|	|	1.20
2.333	3.95	0.10	0.408	O	| I |	|	|	1.26
2.417	5.37	0.11	0.439	O	| | I |	|	|	1.33
2.500	6.87	0.12	0.481	O	| | | I |	|	1.42
2.583	7.88	0.14	0.531	O	| | | | I	1.52
2.667	6.80	0.18	0.580	O	| | | I |	|	1.62
2.750	3.74	0.20	0.615	O	| I|	|	|	1.69
2.833	2.06	0.21	0.633	O	I |	|	|	1.73
2.917	1.75	0.22	0.645	O	I|	|	|	|	1.75
3.000	1.08	0.22	0.653	O	I |	|	|	|	1.77
3.083	0.32	0.22	0.657	OI	|	|	|	|	1.78
3.167	0.04	0.22	0.656	O	|	|	|	|	1.78
3.250	0.00	0.22	0.655	O	|	|	|	|	1.77
3.333	0.00	0.22	0.653	O	|	|	|	|	1.77
3.417	0.00	0.22	0.652	O	|	|	|	|	1.77
3.500	0.00	0.22	0.650	O	|	|	|	|	1.76
3.583	0.00	0.22	0.649	O	|	|	|	|	1.76
3.667	0.00	0.22	0.647	O	|	|	|	|	1.76
3.750	0.00	0.22	0.646	O	|	|	|	|	1.76
3.833	0.00	0.22	0.644	O	|	|	|	|	1.75
3.917	0.00	0.22	0.643	O	|	|	|	|	1.75
4.000	0.00	0.22	0.641	O	|	|	|	|	1.75
4.083	0.00	0.22	0.640	O	|	|	|	|	1.74
4.167	0.00	0.21	0.638	O	|	|	|	|	

1.74

4.250	0.00	0.21	0.637	O	|	|	|	|	1.74
4.333	0.00	0.21	0.635	O	|	|	|	|	1.73
4.417	0.00	0.21	0.634	O	|	|	|	|	1.73
4.500	0.00	0.21	0.632	O	|	|	|	|	1.73
4.583	0.00	0.21	0.631	O	|	|	|	|	1.73
4.667	0.00	0.21	0.630	O	|	|	|	|	1.72
4.750	0.00	0.21	0.628	O	|	|	|	|	1.72
4.833	0.00	0.21	0.627	O	|	|	|	|	1.72
4.917	0.00	0.21	0.625	O	|	|	|	|	1.71
5.000	0.00	0.21	0.624	O	|	|	|	|	1.71
5.083	0.00	0.20	0.622	O	|	|	|	|	1.71
5.167	0.00	0.20	0.621	O	|	|	|	|	1.71
5.250	0.00	0.20	0.620	O	|	|	|	|	1.70
5.333	0.00	0.20	0.618	O	|	|	|	|	1.70
5.417	0.00	0.20	0.617	O	|	|	|	|	1.70
5.500	0.00	0.20	0.615	O	|	|	|	|	1.69
5.583	0.00	0.20	0.614	O	|	|	|	|	1.69
5.667	0.00	0.20	0.613	O	|	|	|	|	1.69
5.750	0.00	0.20	0.611	O	|	|	|	|	1.69
5.833	0.00	0.20	0.610	O	|	|	|	|	1.68
5.917	0.00	0.20	0.609	O	|	|	|	|	1.68
6.000	0.00	0.19	0.607	O	|	|	|	|	1.68
6.083	0.00	0.19	0.606	O	|	|	|	|	1.67
6.167	0.00	0.19	0.605	O	|	|	|	|	1.67
6.250	0.00	0.19	0.603	O	|	|	|	|	1.67
6.333	0.00	0.19	0.602	O	|	|	|	|	1.67
6.417	0.00	0.19	0.601	O	|	|	|	|	1.66
6.500	0.00	0.19	0.599	O	|	|	|	|	1.66

6.583	0.00	0.19	0.598	O	|	|	|	|	1.66
6.667	0.00	0.19	0.597	O	|	|	|	|	1.66
6.750	0.00	0.19	0.595	O	|	|	|	|	1.65
6.833	0.00	0.19	0.594	O	|	|	|	|	1.65
6.917	0.00	0.19	0.593	O	|	|	|	|	1.65
7.000	0.00	0.18	0.592	O	|	|	|	|	1.65
7.083	0.00	0.18	0.590	O	|	|	|	|	1.64
7.167	0.00	0.18	0.589	O	|	|	|	|	1.64
7.250	0.00	0.18	0.588	O	|	|	|	|	1.64
7.333	0.00	0.18	0.587	O	|	|	|	|	1.64
7.417	0.00	0.18	0.585	O	|	|	|	|	1.63
7.500	0.00	0.18	0.584	O	|	|	|	|	1.63
7.583	0.00	0.18	0.583	O	|	|	|	|	1.63
7.667	0.00	0.18	0.582	O	|	|	|	|	1.63
7.750	0.00	0.18	0.580	O	|	|	|	|	1.62
7.833	0.00	0.18	0.579	O	|	|	|	|	1.62
7.917	0.00	0.18	0.578	O	|	|	|	|	1.62
8.000	0.00	0.17	0.577	O	|	|	|	|	1.62
8.083	0.00	0.17	0.576	O	|	|	|	|	1.61
8.167	0.00	0.17	0.574	O	|	|	|	|	1.61
8.250	0.00	0.17	0.573	O	|	|	|	|	1.61
8.333	0.00	0.17	0.572	O	|	|	|	|	1.61
8.417	0.00	0.17	0.571	O	|	|	|	|	1.60
8.500	0.00	0.17	0.570	O	|	|	|	|	1.60
8.583	0.00	0.17	0.568	O	|	|	|	|	1.60
8.667	0.00	0.17	0.567	O	|	|	|	|	1.60
8.750	0.00	0.17	0.566	O	|	|	|	|	1.59
8.833	0.00	0.17	0.565	O	|	|	|	|	1.59
8.917	0.00	0.17	0.564	O	|	|	|	|	

1.59

9.000	0.00	0.17	0.563	O	|	|	|	1.59
9.083	0.00	0.17	0.562	O	|	|	|	1.58
9.167	0.00	0.16	0.560	O	|	|	|	1.58
9.250	0.00	0.16	0.559	O	|	|	|	1.58
9.333	0.00	0.16	0.558	O	|	|	|	1.58
9.417	0.00	0.16	0.557	O	|	|	|	1.58
9.500	0.00	0.16	0.556	O	|	|	|	1.57
9.583	0.00	0.16	0.555	O	|	|	|	1.57
9.667	0.00	0.16	0.554	O	|	|	|	1.57
9.750	0.00	0.16	0.553	O	|	|	|	1.57
9.833	0.00	0.16	0.552	O	|	|	|	1.56
9.917	0.00	0.16	0.550	O	|	|	|	1.56
10.000	0.00	0.16	0.549	O	|	|	|	1.56
10.083	0.00	0.16	0.548	O	|	|	|	1.56
10.167	0.00	0.16	0.547	O	|	|	|	1.56
10.250	0.00	0.16	0.546	O	|	|	|	1.55
10.333	0.00	0.15	0.545	O	|	|	|	1.55
10.417	0.00	0.15	0.544	O	|	|	|	1.55
10.500	0.00	0.15	0.543	O	|	|	|	1.55
10.583	0.00	0.15	0.542	O	|	|	|	1.54
10.667	0.00	0.15	0.541	O	|	|	|	1.54
10.750	0.00	0.15	0.540	O	|	|	|	1.54
10.833	0.00	0.15	0.539	O	|	|	|	1.54
10.917	0.00	0.15	0.538	O	|	|	|	1.54
11.000	0.00	0.15	0.537	O	|	|	|	1.53
11.083	0.00	0.15	0.536	O	|	|	|	1.53
11.167	0.00	0.15	0.535	O	|	|	|	1.53
11.250	0.00	0.15	0.534	O	|	|	|	1.53

11.333	0.00	0.15	0.533	O	|	|	|	|	1.53
11.417	0.00	0.15	0.532	O	|	|	|	|	1.52
11.500	0.00	0.14	0.531	O	|	|	|	|	1.52
11.583	0.00	0.14	0.530	O	|	|	|	|	1.52
11.667	0.00	0.14	0.529	O	|	|	|	|	1.52
11.750	0.00	0.14	0.528	O	|	|	|	|	1.52
11.833	0.00	0.14	0.527	O	|	|	|	|	1.51
11.917	0.00	0.14	0.526	O	|	|	|	|	1.51
12.000	0.00	0.14	0.525	O	|	|	|	|	1.51
12.083	0.00	0.14	0.524	O	|	|	|	|	1.51
12.167	0.00	0.14	0.523	O	|	|	|	|	1.51
12.250	0.00	0.14	0.522	O	|	|	|	|	1.50
12.333	0.00	0.14	0.521	O	|	|	|	|	1.50
12.417	0.00	0.14	0.520	O	|	|	|	|	1.50
12.500	0.00	0.14	0.519	O	|	|	|	|	1.50
12.583	0.00	0.14	0.518	O	|	|	|	|	1.50
12.667	0.00	0.14	0.517	O	|	|	|	|	1.49
12.750	0.00	0.14	0.516	O	|	|	|	|	1.49
12.833	0.00	0.14	0.515	O	|	|	|	|	1.49
12.917	0.00	0.14	0.514	O	|	|	|	|	1.49
13.000	0.00	0.14	0.513	O	|	|	|	|	1.49
13.083	0.00	0.14	0.512	O	|	|	|	|	1.48
13.167	0.00	0.14	0.511	O	|	|	|	|	1.48
13.250	0.00	0.13	0.511	O	|	|	|	|	1.48
13.333	0.00	0.13	0.510	O	|	|	|	|	1.48
13.417	0.00	0.13	0.509	O	|	|	|	|	1.48
13.500	0.00	0.13	0.508	O	|	|	|	|	1.47
13.583	0.00	0.13	0.507	O	|	|	|	|	1.47
13.667	0.00	0.13	0.506	O	|	|	|	|	

1.47

13.750	0.00	0.13	0.505	O	|	|	|	1.47
13.833	0.00	0.13	0.504	O	|	|	|	1.47
13.917	0.00	0.13	0.503	O	|	|	|	1.46
14.000	0.00	0.13	0.502	O	|	|	|	1.46
14.083	0.00	0.13	0.501	O	|	|	|	1.46
14.167	0.00	0.13	0.500	O	|	|	|	1.46
14.250	0.00	0.13	0.500	O	|	|	|	1.46
14.333	0.00	0.13	0.499	O	|	|	|	1.45
14.417	0.00	0.13	0.498	O	|	|	|	1.45
14.500	0.00	0.13	0.497	O	|	|	|	1.45
14.583	0.00	0.13	0.496	O	|	|	|	1.45
14.667	0.00	0.13	0.495	O	|	|	|	1.45
14.750	0.00	0.13	0.494	O	|	|	|	1.44
14.833	0.00	0.13	0.493	O	|	|	|	1.44
14.917	0.00	0.13	0.492	O	|	|	|	1.44
15.000	0.00	0.13	0.492	O	|	|	|	1.44
15.083	0.00	0.13	0.491	O	|	|	|	1.44
15.167	0.00	0.13	0.490	O	|	|	|	1.44
15.250	0.00	0.13	0.489	O	|	|	|	1.43
15.333	0.00	0.13	0.488	O	|	|	|	1.43
15.417	0.00	0.13	0.487	O	|	|	|	1.43
15.500	0.00	0.13	0.486	O	|	|	|	1.43
15.583	0.00	0.13	0.485	O	|	|	|	1.43
15.667	0.00	0.13	0.485	O	|	|	|	1.42
15.750	0.00	0.13	0.484	O	|	|	|	1.42
15.833	0.00	0.12	0.483	O	|	|	|	1.42
15.917	0.00	0.12	0.482	O	|	|	|	1.42
16.000	0.00	0.12	0.481	O	|	|	|	1.42

16.083	0.00	0.12	0.480	O	|	|	|	|	1.42
16.167	0.00	0.12	0.479	O	|	|	|	|	1.41
16.250	0.00	0.12	0.479	O	|	|	|	|	1.41
16.333	0.00	0.12	0.478	O	|	|	|	|	1.41
16.417	0.00	0.12	0.477	O	|	|	|	|	1.41
16.500	0.00	0.12	0.476	O	|	|	|	|	1.41
16.583	0.00	0.12	0.475	O	|	|	|	|	1.40
16.667	0.00	0.12	0.474	O	|	|	|	|	1.40
16.750	0.00	0.12	0.474	O	|	|	|	|	1.40
16.833	0.00	0.12	0.473	O	|	|	|	|	1.40
16.917	0.00	0.12	0.472	O	|	|	|	|	1.40
17.000	0.00	0.12	0.471	O	|	|	|	|	1.40
17.083	0.00	0.12	0.470	O	|	|	|	|	1.39
17.167	0.00	0.12	0.469	O	|	|	|	|	1.39
17.250	0.00	0.12	0.469	O	|	|	|	|	1.39
17.333	0.00	0.12	0.468	O	|	|	|	|	1.39
17.417	0.00	0.12	0.467	O	|	|	|	|	1.39
17.500	0.00	0.12	0.466	O	|	|	|	|	1.38
17.583	0.00	0.12	0.465	O	|	|	|	|	1.38
17.667	0.00	0.12	0.464	O	|	|	|	|	1.38
17.750	0.00	0.12	0.464	O	|	|	|	|	1.38
17.833	0.00	0.12	0.463	O	|	|	|	|	1.38
17.917	0.00	0.12	0.462	O	|	|	|	|	1.38
18.000	0.00	0.12	0.461	O	|	|	|	|	1.37
18.083	0.00	0.12	0.460	O	|	|	|	|	1.37
18.167	0.00	0.12	0.460	O	|	|	|	|	1.37
18.250	0.00	0.12	0.459	O	|	|	|	|	1.37
18.333	0.00	0.12	0.458	O	|	|	|	|	1.37
18.417	0.00	0.12	0.457	O	|	|	|	|	

1.37

18.500	0.00	0.12	0.456	O	|	|	|	1.36
18.583	0.00	0.12	0.456	O	|	|	|	1.36
18.667	0.00	0.12	0.455	O	|	|	|	1.36
18.750	0.00	0.11	0.454	O	|	|	|	1.36
18.833	0.00	0.11	0.453	O	|	|	|	1.36
18.917	0.00	0.11	0.452	O	|	|	|	1.36
19.000	0.00	0.11	0.452	O	|	|	|	1.35
19.083	0.00	0.11	0.451	O	|	|	|	1.35
19.167	0.00	0.11	0.450	O	|	|	|	1.35
19.250	0.00	0.11	0.449	O	|	|	|	1.35
19.333	0.00	0.11	0.448	O	|	|	|	1.35
19.417	0.00	0.11	0.448	O	|	|	|	1.35
19.500	0.00	0.11	0.447	O	|	|	|	1.34
19.583	0.00	0.11	0.446	O	|	|	|	1.34
19.667	0.00	0.11	0.445	O	|	|	|	1.34
19.750	0.00	0.11	0.445	O	|	|	|	1.34
19.833	0.00	0.11	0.444	O	|	|	|	1.34
19.917	0.00	0.11	0.443	O	|	|	|	1.34
20.000	0.00	0.11	0.442	O	|	|	|	1.33
20.083	0.00	0.11	0.442	O	|	|	|	1.33
20.167	0.00	0.11	0.441	O	|	|	|	1.33
20.250	0.00	0.11	0.440	O	|	|	|	1.33
20.333	0.00	0.11	0.439	O	|	|	|	1.33
20.417	0.00	0.11	0.439	O	|	|	|	1.33
20.500	0.00	0.11	0.438	O	|	|	|	1.32
20.583	0.00	0.11	0.437	O	|	|	|	1.32
20.667	0.00	0.11	0.436	O	|	|	|	1.32
20.750	0.00	0.11	0.436	O	|	|	|	1.32

20.833	0.00	0.11	0.435	O	|	|	|	|	1.32
20.917	0.00	0.11	0.434	O	|	|	|	|	1.32
21.000	0.00	0.11	0.433	O	|	|	|	|	1.31
21.083	0.00	0.11	0.433	O	|	|	|	|	1.31
21.167	0.00	0.11	0.432	O	|	|	|	|	1.31
21.250	0.00	0.11	0.431	O	|	|	|	|	1.31
21.333	0.00	0.11	0.430	O	|	|	|	|	1.31
21.417	0.00	0.11	0.430	O	|	|	|	|	1.31
21.500	0.00	0.11	0.429	O	|	|	|	|	1.31
21.583	0.00	0.11	0.428	O	|	|	|	|	1.30
21.667	0.00	0.11	0.427	O	|	|	|	|	1.30
21.750	0.00	0.11	0.427	O	|	|	|	|	1.30
21.833	0.00	0.11	0.426	O	|	|	|	|	1.30
21.917	0.00	0.10	0.425	O	|	|	|	|	1.30
22.000	0.00	0.10	0.425	O	|	|	|	|	1.30
22.083	0.00	0.10	0.424	O	|	|	|	|	1.29
22.167	0.00	0.10	0.423	O	|	|	|	|	1.29
22.250	0.00	0.10	0.422	O	|	|	|	|	1.29
22.333	0.00	0.10	0.422	O	|	|	|	|	1.29
22.417	0.00	0.10	0.421	O	|	|	|	|	1.29
22.500	0.00	0.10	0.420	O	|	|	|	|	1.29
22.583	0.00	0.10	0.420	O	|	|	|	|	1.29
22.667	0.00	0.10	0.419	O	|	|	|	|	1.28
22.750	0.00	0.10	0.418	O	|	|	|	|	1.28
22.833	0.00	0.10	0.417	O	|	|	|	|	1.28
22.917	0.00	0.10	0.417	O	|	|	|	|	1.28
23.000	0.00	0.10	0.416	O	|	|	|	|	1.28
23.083	0.00	0.10	0.415	O	|	|	|	|	1.28

23.167	0.00	0.10	0.415	O	|	|	|	|	1.27
23.250	0.00	0.10	0.414	O	|	|	|	|	1.27
23.333	0.00	0.10	0.413	O	|	|	|	|	1.27
23.417	0.00	0.10	0.413	O	|	|	|	|	1.27
23.500	0.00	0.10	0.412	O	|	|	|	|	1.27
23.583	0.00	0.10	0.411	O	|	|	|	|	1.27
23.667	0.00	0.10	0.410	O	|	|	|	|	1.27
23.750	0.00	0.10	0.410	O	|	|	|	|	1.26
23.833	0.00	0.10	0.409	O	|	|	|	|	1.26
23.917	0.00	0.10	0.408	O	|	|	|	|	1.26
24.000	0.00	0.10	0.408	O	|	|	|	|	1.26
24.083	0.00	0.10	0.407	O	|	|	|	|	1.26
24.167	0.00	0.10	0.406	O	|	|	|	|	1.26
24.250	0.00	0.10	0.406	O	|	|	|	|	1.26
24.333	0.00	0.10	0.405	O	|	|	|	|	1.25
24.417	0.00	0.10	0.404	O	|	|	|	|	1.25
24.500	0.00	0.10	0.404	O	|	|	|	|	1.25
24.583	0.00	0.10	0.403	O	|	|	|	|	1.25
24.667	0.00	0.10	0.402	O	|	|	|	|	1.25
24.750	0.00	0.10	0.402	O	|	|	|	|	1.25
24.833	0.00	0.10	0.401	O	|	|	|	|	1.25
24.917	0.00	0.09	0.400	O	|	|	|	|	1.24
25.000	0.00	0.09	0.400	O	|	|	|	|	1.24
25.083	0.00	0.09	0.399	O	|	|	|	|	1.24
25.167	0.00	0.09	0.398	O	|	|	|	|	1.24
25.250	0.00	0.09	0.398	O	|	|	|	|	1.24
25.333	0.00	0.09	0.397	O	|	|	|	|	1.24
25.417	0.00	0.09	0.397	O	|	|	|	|	1.24
25.500	0.00	0.09	0.396	O	|	|	|	|	

1.23

25.583	0.00	0.09	0.395	O	|	|	|	1.23
25.667	0.00	0.09	0.395	O	|	|	|	1.23
25.750	0.00	0.09	0.394	O	|	|	|	1.23
25.833	0.00	0.09	0.393	O	|	|	|	1.23
25.917	0.00	0.09	0.393	O	|	|	|	1.23
26.000	0.00	0.09	0.392	O	|	|	|	1.23
26.083	0.00	0.09	0.392	O	|	|	|	1.22
26.167	0.00	0.09	0.391	O	|	|	|	1.22
26.250	0.00	0.09	0.390	O	|	|	|	1.22
26.333	0.00	0.09	0.390	O	|	|	|	1.22
26.417	0.00	0.08	0.389	O	|	|	|	1.22
26.500	0.00	0.08	0.389	O	|	|	|	1.22
26.583	0.00	0.08	0.388	O	|	|	|	1.22
26.667	0.00	0.08	0.388	O	|	|	|	1.21
26.750	0.00	0.08	0.387	O	|	|	|	1.21
26.833	0.00	0.08	0.386	O	|	|	|	1.21
26.917	0.00	0.08	0.386	O	|	|	|	1.21
27.000	0.00	0.08	0.385	O	|	|	|	1.21
27.083	0.00	0.08	0.385	O	|	|	|	1.21
27.167	0.00	0.08	0.384	O	|	|	|	1.21
27.250	0.00	0.08	0.384	O	|	|	|	1.21
27.333	0.00	0.08	0.383	O	|	|	|	1.20
27.417	0.00	0.08	0.382	O	|	|	|	1.20
27.500	0.00	0.08	0.382	O	|	|	|	1.20
27.583	0.00	0.08	0.381	O	|	|	|	1.20
27.667	0.00	0.08	0.381	O	|	|	|	1.20
27.750	0.00	0.08	0.380	O	|	|	|	1.20
27.833	0.00	0.08	0.380	O	|	|	|	1.20

27.917	0.00	0.08	0.379	O	|	|	|	|	1.20
28.000	0.00	0.08	0.379	O	|	|	|	|	1.19
28.083	0.00	0.08	0.378	O	|	|	|	|	1.19
28.167	0.00	0.07	0.378	O	|	|	|	|	1.19
28.250	0.00	0.07	0.377	O	|	|	|	|	1.19
28.333	0.00	0.07	0.377	O	|	|	|	|	1.19
28.417	0.00	0.07	0.376	O	|	|	|	|	1.19
28.500	0.00	0.07	0.376	O	|	|	|	|	1.19
28.583	0.00	0.07	0.375	O	|	|	|	|	1.19
28.667	0.00	0.07	0.375	O	|	|	|	|	1.19
28.750	0.00	0.07	0.374	O	|	|	|	|	1.18
28.833	0.00	0.07	0.374	O	|	|	|	|	1.18
28.917	0.00	0.07	0.373	O	|	|	|	|	1.18
29.000	0.00	0.07	0.373	O	|	|	|	|	1.18
29.083	0.00	0.07	0.372	O	|	|	|	|	1.18
29.167	0.00	0.07	0.372	O	|	|	|	|	1.18
29.250	0.00	0.07	0.371	O	|	|	|	|	1.18
29.333	0.00	0.07	0.371	O	|	|	|	|	1.18
29.417	0.00	0.07	0.370	O	|	|	|	|	1.18
29.500	0.00	0.07	0.370	O	|	|	|	|	1.17
29.583	0.00	0.07	0.369	O	|	|	|	|	1.17
29.667	0.00	0.07	0.369	O	|	|	|	|	1.17
29.750	0.00	0.07	0.368	O	|	|	|	|	1.17
29.833	0.00	0.07	0.368	O	|	|	|	|	1.17
29.917	0.00	0.07	0.368	O	|	|	|	|	1.17
30.000	0.00	0.07	0.367	O	|	|	|	|	1.17
30.083	0.00	0.07	0.367	O	|	|	|	|	1.17
30.167	0.00	0.06	0.366	O	|	|	|	|	1.17
30.250	0.00	0.06	0.366	O	|	|	|	|	

1.16

30.333	0.00	0.06	0.365	O	|	|	|	1.16
30.417	0.00	0.06	0.365	O	|	|	|	1.16
30.500	0.00	0.06	0.364	O	|	|	|	1.16
30.583	0.00	0.06	0.364	O	|	|	|	1.16
30.667	0.00	0.06	0.364	O	|	|	|	1.16
30.750	0.00	0.06	0.363	O	|	|	|	1.16
30.833	0.00	0.06	0.363	O	|	|	|	1.16
30.917	0.00	0.06	0.362	O	|	|	|	1.16
31.000	0.00	0.06	0.362	O	|	|	|	1.16
31.083	0.00	0.06	0.361	O	|	|	|	1.15
31.167	0.00	0.06	0.361	O	|	|	|	1.15
31.250	0.00	0.06	0.361	O	|	|	|	1.15
31.333	0.00	0.06	0.360	O	|	|	|	1.15
31.417	0.00	0.06	0.360	O	|	|	|	1.15
31.500	0.00	0.06	0.359	O	|	|	|	1.15
31.583	0.00	0.06	0.359	O	|	|	|	1.15
31.667	0.00	0.06	0.359	O	|	|	|	1.15
31.750	0.00	0.06	0.358	O	|	|	|	1.15
31.833	0.00	0.06	0.358	O	|	|	|	1.15
31.917	0.00	0.06	0.357	O	|	|	|	1.15
32.000	0.00	0.06	0.357	O	|	|	|	1.14
32.083	0.00	0.06	0.357	O	|	|	|	1.14
32.167	0.00	0.06	0.356	O	|	|	|	1.14
32.250	0.00	0.06	0.356	O	|	|	|	1.14
32.333	0.00	0.06	0.356	O	|	|	|	1.14
32.417	0.00	0.05	0.355	O	|	|	|	1.14
32.500	0.00	0.05	0.355	O	|	|	|	1.14
32.583	0.00	0.05	0.354	O	|	|	|	1.14

32.667	0.00	0.05	0.354	O	|	|	|	|	1.14
32.750	0.00	0.05	0.354	O	|	|	|	|	1.14
32.833	0.00	0.05	0.353	O	|	|	|	|	1.14
32.917	0.00	0.05	0.353	O	|	|	|	|	1.14
33.000	0.00	0.05	0.353	O	|	|	|	|	1.13
33.083	0.00	0.05	0.352	O	|	|	|	|	1.13
33.167	0.00	0.05	0.352	O	|	|	|	|	1.13
33.250	0.00	0.05	0.351	O	|	|	|	|	1.13
33.333	0.00	0.05	0.351	O	|	|	|	|	1.13
33.417	0.00	0.05	0.351	O	|	|	|	|	1.13
33.500	0.00	0.05	0.350	O	|	|	|	|	1.13
33.583	0.00	0.05	0.350	O	|	|	|	|	1.13
33.667	0.00	0.05	0.350	O	|	|	|	|	1.13
33.750	0.00	0.05	0.349	O	|	|	|	|	1.13
33.833	0.00	0.05	0.349	O	|	|	|	|	1.13
33.917	0.00	0.05	0.349	O	|	|	|	|	1.13
34.000	0.00	0.05	0.348	O	|	|	|	|	1.12
34.083	0.00	0.05	0.348	O	|	|	|	|	1.12
34.167	0.00	0.05	0.348	O	|	|	|	|	1.12
34.250	0.00	0.05	0.347	O	|	|	|	|	1.12
34.333	0.00	0.05	0.347	O	|	|	|	|	1.12
34.417	0.00	0.05	0.347	O	|	|	|	|	1.12
34.500	0.00	0.05	0.346	O	|	|	|	|	1.12
34.583	0.00	0.05	0.346	O	|	|	|	|	1.12
34.667	0.00	0.05	0.346	O	|	|	|	|	1.12
34.750	0.00	0.05	0.345	O	|	|	|	|	1.12
34.833	0.00	0.05	0.345	O	|	|	|	|	1.12
34.917	0.00	0.05	0.345	O	|	|	|	|	1.12
35.000	0.00	0.05	0.344	O	|	|	|	|	

1.12

35.083	0.00	0.05	0.344	O	|	|	|	|	1.12
35.167	0.00	0.04	0.344	O	|	|	|	|	1.11
35.250	0.00	0.04	0.344	O	|	|	|	|	1.11
35.333	0.00	0.04	0.343	O	|	|	|	|	1.11
35.417	0.00	0.04	0.343	O	|	|	|	|	1.11
35.500	0.00	0.04	0.343	O	|	|	|	|	1.11
35.583	0.00	0.04	0.342	O	|	|	|	|	1.11
35.667	0.00	0.04	0.342	O	|	|	|	|	1.11
35.750	0.00	0.04	0.342	O	|	|	|	|	1.11
35.833	0.00	0.04	0.341	O	|	|	|	|	1.11
35.917	0.00	0.04	0.341	O	|	|	|	|	1.11
36.000	0.00	0.04	0.341	O	|	|	|	|	1.11
36.083	0.00	0.04	0.341	O	|	|	|	|	1.11
36.167	0.00	0.04	0.340	O	|	|	|	|	1.11
36.250	0.00	0.04	0.340	O	|	|	|	|	1.11
36.333	0.00	0.04	0.340	O	|	|	|	|	1.10
36.417	0.00	0.04	0.339	O	|	|	|	|	1.10
36.500	0.00	0.04	0.339	O	|	|	|	|	1.10
36.583	0.00	0.04	0.339	O	|	|	|	|	1.10
36.667	0.00	0.04	0.339	O	|	|	|	|	1.10
36.750	0.00	0.04	0.338	O	|	|	|	|	1.10
36.833	0.00	0.04	0.338	O	|	|	|	|	1.10
36.917	0.00	0.04	0.338	O	|	|	|	|	1.10
37.000	0.00	0.04	0.337	O	|	|	|	|	1.10
37.083	0.00	0.04	0.337	O	|	|	|	|	1.10
37.167	0.00	0.04	0.337	O	|	|	|	|	1.10
37.250	0.00	0.04	0.337	O	|	|	|	|	1.10
37.333	0.00	0.04	0.336	O	|	|	|	|	1.10

37.417	0.00	0.04	0.336	O	|	|	|	|	1.10
37.500	0.00	0.04	0.336	O	|	|	|	|	1.10
37.583	0.00	0.04	0.336	O	|	|	|	|	1.10
37.667	0.00	0.04	0.335	O	|	|	|	|	1.09
37.750	0.00	0.04	0.335	O	|	|	|	|	1.09
37.833	0.00	0.04	0.335	O	|	|	|	|	1.09
37.917	0.00	0.04	0.335	O	|	|	|	|	1.09
38.000	0.00	0.04	0.334	O	|	|	|	|	1.09
38.083	0.00	0.04	0.334	O	|	|	|	|	1.09
38.167	0.00	0.04	0.334	O	|	|	|	|	1.09
38.250	0.00	0.04	0.334	O	|	|	|	|	1.09
38.333	0.00	0.04	0.333	O	|	|	|	|	1.09
38.417	0.00	0.04	0.333	O	|	|	|	|	1.09
38.500	0.00	0.04	0.333	O	|	|	|	|	1.09
38.583	0.00	0.04	0.333	O	|	|	|	|	1.09
38.667	0.00	0.03	0.332	O	|	|	|	|	1.09
38.750	0.00	0.03	0.332	O	|	|	|	|	1.09
38.833	0.00	0.03	0.332	O	|	|	|	|	1.09
38.917	0.00	0.03	0.332	O	|	|	|	|	1.09
39.000	0.00	0.03	0.331	O	|	|	|	|	1.09
39.083	0.00	0.03	0.331	O	|	|	|	|	1.09
39.167	0.00	0.03	0.331	O	|	|	|	|	1.08
39.250	0.00	0.03	0.331	O	|	|	|	|	1.08
39.333	0.00	0.03	0.331	O	|	|	|	|	1.08
39.417	0.00	0.03	0.330	O	|	|	|	|	1.08
39.500	0.00	0.03	0.330	O	|	|	|	|	1.08
39.583	0.00	0.03	0.330	O	|	|	|	|	1.08
39.667	0.00	0.03	0.330	O	|	|	|	|	1.08
39.750	0.00	0.03	0.329	O	|	|	|	|	

1.08

39.833	0.00	0.03	0.329	O	|	|	|	|	1.08
39.917	0.00	0.03	0.329	O	|	|	|	|	1.08
40.000	0.00	0.03	0.329	O	|	|	|	|	1.08
40.083	0.00	0.03	0.329	O	|	|	|	|	1.08
40.167	0.00	0.03	0.328	O	|	|	|	|	1.08
40.250	0.00	0.03	0.328	O	|	|	|	|	1.08
40.333	0.00	0.03	0.328	O	|	|	|	|	1.08
40.417	0.00	0.03	0.328	O	|	|	|	|	1.08
40.500	0.00	0.03	0.327	O	|	|	|	|	1.08
40.583	0.00	0.03	0.327	O	|	|	|	|	1.08
40.667	0.00	0.03	0.327	O	|	|	|	|	1.08
40.750	0.00	0.03	0.327	O	|	|	|	|	1.08
40.833	0.00	0.03	0.327	O	|	|	|	|	1.07
40.917	0.00	0.03	0.326	O	|	|	|	|	1.07
41.000	0.00	0.03	0.326	O	|	|	|	|	1.07
41.083	0.00	0.03	0.326	O	|	|	|	|	1.07
41.167	0.00	0.03	0.326	O	|	|	|	|	1.07
41.250	0.00	0.03	0.326	O	|	|	|	|	1.07
41.333	0.00	0.03	0.325	O	|	|	|	|	1.07
41.417	0.00	0.03	0.325	O	|	|	|	|	1.07
41.500	0.00	0.03	0.325	O	|	|	|	|	1.07
41.583	0.00	0.03	0.325	O	|	|	|	|	1.07
41.667	0.00	0.03	0.325	O	|	|	|	|	1.07
41.750	0.00	0.03	0.324	O	|	|	|	|	1.07
41.833	0.00	0.03	0.324	O	|	|	|	|	1.07
41.917	0.00	0.03	0.324	O	|	|	|	|	1.07
42.000	0.00	0.03	0.324	O	|	|	|	|	1.07
42.083	0.00	0.03	0.324	O	|	|	|	|	1.07

42.167	0.00	0.03	0.323	O	|	|	|	|	1.07
42.250	0.00	0.03	0.323	O	|	|	|	|	1.07
42.333	0.00	0.03	0.323	O	|	|	|	|	1.07
42.417	0.00	0.03	0.323	O	|	|	|	|	1.07
42.500	0.00	0.03	0.323	O	|	|	|	|	1.07
42.583	0.00	0.03	0.323	O	|	|	|	|	1.07
42.667	0.00	0.03	0.322	O	|	|	|	|	1.07
42.750	0.00	0.03	0.322	O	|	|	|	|	1.06
42.833	0.00	0.03	0.322	O	|	|	|	|	1.06
42.917	0.00	0.03	0.322	O	|	|	|	|	1.06
43.000	0.00	0.03	0.322	O	|	|	|	|	1.06
43.083	0.00	0.03	0.322	O	|	|	|	|	1.06
43.167	0.00	0.03	0.321	O	|	|	|	|	1.06
43.250	0.00	0.02	0.321	O	|	|	|	|	1.06
43.333	0.00	0.02	0.321	O	|	|	|	|	1.06
43.417	0.00	0.02	0.321	O	|	|	|	|	1.06
43.500	0.00	0.02	0.321	O	|	|	|	|	1.06
43.583	0.00	0.02	0.320	O	|	|	|	|	1.06
43.667	0.00	0.02	0.320	O	|	|	|	|	1.06
43.750	0.00	0.02	0.320	O	|	|	|	|	1.06
43.833	0.00	0.02	0.320	O	|	|	|	|	1.06
43.917	0.00	0.02	0.320	O	|	|	|	|	1.06
44.000	0.00	0.02	0.320	O	|	|	|	|	1.06
44.083	0.00	0.02	0.320	O	|	|	|	|	1.06
44.167	0.00	0.02	0.319	O	|	|	|	|	1.06
44.250	0.00	0.02	0.319	O	|	|	|	|	1.06
44.333	0.00	0.02	0.319	O	|	|	|	|	1.06
44.417	0.00	0.02	0.319	O	|	|	|	|	1.06

44.500	0.00	0.02	0.319	O	|	|	|	|	1.06
44.583	0.00	0.02	0.319	O	|	|	|	|	1.06
44.667	0.00	0.02	0.318	O	|	|	|	|	1.06
44.750	0.00	0.02	0.318	O	|	|	|	|	1.06
44.833	0.00	0.02	0.318	O	|	|	|	|	1.06
44.917	0.00	0.02	0.318	O	|	|	|	|	1.05
45.000	0.00	0.02	0.318	O	|	|	|	|	1.05
45.083	0.00	0.02	0.318	O	|	|	|	|	1.05
45.167	0.00	0.02	0.317	O	|	|	|	|	1.05
45.250	0.00	0.02	0.317	O	|	|	|	|	1.05
45.333	0.00	0.02	0.317	O	|	|	|	|	1.05
45.417	0.00	0.02	0.317	O	|	|	|	|	1.05
45.500	0.00	0.02	0.317	O	|	|	|	|	1.05
45.583	0.00	0.02	0.317	O	|	|	|	|	1.05
45.667	0.00	0.02	0.317	O	|	|	|	|	1.05
45.750	0.00	0.02	0.316	O	|	|	|	|	1.05
45.833	0.00	0.02	0.316	O	|	|	|	|	1.05
45.917	0.00	0.02	0.316	O	|	|	|	|	1.05
46.000	0.00	0.02	0.316	O	|	|	|	|	1.05
46.083	0.00	0.02	0.316	O	|	|	|	|	1.05
46.167	0.00	0.02	0.316	O	|	|	|	|	1.05
46.250	0.00	0.02	0.316	O	|	|	|	|	1.05
46.333	0.00	0.02	0.315	O	|	|	|	|	1.05
46.417	0.00	0.02	0.315	O	|	|	|	|	1.05
46.500	0.00	0.02	0.315	O	|	|	|	|	1.05
46.583	0.00	0.02	0.315	O	|	|	|	|	1.05
46.667	0.00	0.02	0.315	O	|	|	|	|	1.05
46.750	0.00	0.02	0.315	O	|	|	|	|	1.05
46.833	0.00	0.02	0.315	O	|	|	|	|	

1.05

46.917	0.00	0.02	0.315	O	|	|	|	|	1.05
47.000	0.00	0.02	0.314	O	|	|	|	|	1.05
47.083	0.00	0.02	0.314	O	|	|	|	|	1.05
47.167	0.00	0.02	0.314	O	|	|	|	|	1.05
47.250	0.00	0.02	0.314	O	|	|	|	|	1.05
47.333	0.00	0.02	0.314	O	|	|	|	|	1.05
47.417	0.00	0.02	0.314	O	|	|	|	|	1.05
47.500	0.00	0.02	0.314	O	|	|	|	|	1.05
47.583	0.00	0.02	0.314	O	|	|	|	|	1.04
47.667	0.00	0.02	0.313	O	|	|	|	|	1.04
47.750	0.00	0.02	0.313	O	|	|	|	|	1.04
47.833	0.00	0.02	0.313	O	|	|	|	|	1.04
47.917	0.00	0.02	0.313	O	|	|	|	|	1.04
48.000	0.00	0.02	0.313	O	|	|	|	|	1.04
48.083	0.00	0.02	0.313	O	|	|	|	|	1.04
48.167	0.00	0.02	0.313	O	|	|	|	|	1.04
48.250	0.00	0.02	0.313	O	|	|	|	|	1.04
48.333	0.00	0.02	0.312	O	|	|	|	|	1.04
48.417	0.00	0.02	0.312	O	|	|	|	|	1.04
48.500	0.00	0.02	0.312	O	|	|	|	|	1.04
48.583	0.00	0.02	0.312	O	|	|	|	|	1.04
48.667	0.00	0.02	0.312	O	|	|	|	|	1.04
48.750	0.00	0.02	0.312	O	|	|	|	|	1.04
48.833	0.00	0.02	0.312	O	|	|	|	|	1.04
48.917	0.00	0.02	0.312	O	|	|	|	|	1.04
49.000	0.00	0.02	0.311	O	|	|	|	|	1.04
49.083	0.00	0.02	0.311	O	|	|	|	|	1.04
49.167	0.00	0.02	0.311	O	|	|	|	|	1.04

49.250	0.00	0.02	0.311	O	|	|	|	|	1.04
49.333	0.00	0.02	0.311	O	|	|	|	|	1.04
49.417	0.00	0.02	0.311	O	|	|	|	|	1.04
49.500	0.00	0.02	0.311	O	|	|	|	|	1.04
49.583	0.00	0.02	0.311	O	|	|	|	|	1.04
49.667	0.00	0.02	0.311	O	|	|	|	|	1.04
49.750	0.00	0.02	0.311	O	|	|	|	|	1.04
49.833	0.00	0.02	0.310	O	|	|	|	|	1.04
49.917	0.00	0.02	0.310	O	|	|	|	|	1.04
50.000	0.00	0.02	0.310	O	|	|	|	|	1.04
50.083	0.00	0.02	0.310	O	|	|	|	|	1.04
50.167	0.00	0.02	0.310	O	|	|	|	|	1.04
50.250	0.00	0.01	0.310	O	|	|	|	|	1.04
50.333	0.00	0.01	0.310	O	|	|	|	|	1.04
50.417	0.00	0.01	0.310	O	|	|	|	|	1.04
50.500	0.00	0.01	0.310	O	|	|	|	|	1.04
50.583	0.00	0.01	0.309	O	|	|	|	|	1.04
50.667	0.00	0.01	0.309	O	|	|	|	|	1.04
50.750	0.00	0.01	0.309	O	|	|	|	|	1.04
50.833	0.00	0.01	0.309	O	|	|	|	|	1.03
50.917	0.00	0.01	0.309	O	|	|	|	|	1.03
51.000	0.00	0.01	0.309	O	|	|	|	|	1.03
51.083	0.00	0.01	0.309	O	|	|	|	|	1.03
51.167	0.00	0.01	0.309	O	|	|	|	|	1.03
51.250	0.00	0.01	0.309	O	|	|	|	|	1.03
51.333	0.00	0.01	0.309	O	|	|	|	|	1.03
51.417	0.00	0.01	0.308	O	|	|	|	|	1.03
51.500	0.00	0.01	0.308	O	|	|	|	|	1.03
51.583	0.00	0.01	0.308	O	|	|	|	|	

1.03

51.667	0.00	0.01	0.308	O	|	|	|	|	1.03
51.750	0.00	0.01	0.308	O	|	|	|	|	1.03
51.833	0.00	0.01	0.308	O	|	|	|	|	1.03
51.917	0.00	0.01	0.308	O	|	|	|	|	1.03
52.000	0.00	0.01	0.308	O	|	|	|	|	1.03
52.083	0.00	0.01	0.308	O	|	|	|	|	1.03
52.167	0.00	0.01	0.308	O	|	|	|	|	1.03
52.250	0.00	0.01	0.308	O	|	|	|	|	1.03
52.333	0.00	0.01	0.307	O	|	|	|	|	1.03
52.417	0.00	0.01	0.307	O	|	|	|	|	1.03
52.500	0.00	0.01	0.307	O	|	|	|	|	1.03
52.583	0.00	0.01	0.307	O	|	|	|	|	1.03
52.667	0.00	0.01	0.307	O	|	|	|	|	1.03
52.750	0.00	0.01	0.307	O	|	|	|	|	1.03
52.833	0.00	0.01	0.307	O	|	|	|	|	1.03
52.917	0.00	0.01	0.307	O	|	|	|	|	1.03
53.000	0.00	0.01	0.307	O	|	|	|	|	1.03
53.083	0.00	0.01	0.307	O	|	|	|	|	1.03
53.167	0.00	0.01	0.307	O	|	|	|	|	1.03
53.250	0.00	0.01	0.307	O	|	|	|	|	1.03
53.333	0.00	0.01	0.306	O	|	|	|	|	1.03
53.417	0.00	0.01	0.306	O	|	|	|	|	1.03
53.500	0.00	0.01	0.306	O	|	|	|	|	1.03
53.583	0.00	0.01	0.306	O	|	|	|	|	1.03
53.667	0.00	0.01	0.306	O	|	|	|	|	1.03
53.750	0.00	0.01	0.306	O	|	|	|	|	1.03
53.833	0.00	0.01	0.306	O	|	|	|	|	1.03
53.917	0.00	0.01	0.306	O	|	|	|	|	1.03

54.000	0.00	0.01	0.306	O	|	|	|	|	1.03
54.083	0.00	0.01	0.306	O	|	|	|	|	1.03
54.167	0.00	0.01	0.306	O	|	|	|	|	1.03
54.250	0.00	0.01	0.306	O	|	|	|	|	1.03
54.333	0.00	0.01	0.305	O	|	|	|	|	1.03
54.417	0.00	0.01	0.305	O	|	|	|	|	1.03
54.500	0.00	0.01	0.305	O	|	|	|	|	1.03
54.583	0.00	0.01	0.305	O	|	|	|	|	1.03
54.667	0.00	0.01	0.305	O	|	|	|	|	1.03
54.750	0.00	0.01	0.305	O	|	|	|	|	1.03
54.833	0.00	0.01	0.305	O	|	|	|	|	1.03
54.917	0.00	0.01	0.305	O	|	|	|	|	1.03
55.000	0.00	0.01	0.305	O	|	|	|	|	1.02
55.083	0.00	0.01	0.305	O	|	|	|	|	1.02
55.167	0.00	0.01	0.305	O	|	|	|	|	1.02
55.250	0.00	0.01	0.305	O	|	|	|	|	1.02
55.333	0.00	0.01	0.305	O	|	|	|	|	1.02
55.417	0.00	0.01	0.305	O	|	|	|	|	1.02
55.500	0.00	0.01	0.304	O	|	|	|	|	1.02
55.583	0.00	0.01	0.304	O	|	|	|	|	1.02
55.667	0.00	0.01	0.304	O	|	|	|	|	1.02
55.750	0.00	0.01	0.304	O	|	|	|	|	1.02
55.833	0.00	0.01	0.304	O	|	|	|	|	1.02
55.917	0.00	0.01	0.304	O	|	|	|	|	1.02
56.000	0.00	0.01	0.304	O	|	|	|	|	1.02
56.083	0.00	0.01	0.304	O	|	|	|	|	1.02
56.167	0.00	0.01	0.304	O	|	|	|	|	1.02
56.250	0.00	0.01	0.304	O	|	|	|	|	1.02
56.333	0.00	0.01	0.304	O	|	|	|	|	

1.02

56.417	0.00	0.01	0.304	O	|	|	|	|	1.02
56.500	0.00	0.01	0.304	O	|	|	|	|	1.02
56.583	0.00	0.01	0.304	O	|	|	|	|	1.02
56.667	0.00	0.01	0.304	O	|	|	|	|	1.02
56.750	0.00	0.01	0.303	O	|	|	|	|	1.02
56.833	0.00	0.01	0.303	O	|	|	|	|	1.02
56.917	0.00	0.01	0.303	O	|	|	|	|	1.02
57.000	0.00	0.01	0.303	O	|	|	|	|	1.02
57.083	0.00	0.01	0.303	O	|	|	|	|	1.02
57.167	0.00	0.01	0.303	O	|	|	|	|	1.02
57.250	0.00	0.01	0.303	O	|	|	|	|	1.02
57.333	0.00	0.01	0.303	O	|	|	|	|	1.02
57.417	0.00	0.01	0.303	O	|	|	|	|	1.02
57.500	0.00	0.01	0.303	O	|	|	|	|	1.02
57.583	0.00	0.01	0.303	O	|	|	|	|	1.02
57.667	0.00	0.01	0.303	O	|	|	|	|	1.02
57.750	0.00	0.01	0.303	O	|	|	|	|	1.02
57.833	0.00	0.01	0.303	O	|	|	|	|	1.02
57.917	0.00	0.01	0.303	O	|	|	|	|	1.02
58.000	0.00	0.01	0.303	O	|	|	|	|	1.02
58.083	0.00	0.01	0.302	O	|	|	|	|	1.02
58.167	0.00	0.01	0.302	O	|	|	|	|	1.02
58.250	0.00	0.01	0.302	O	|	|	|	|	1.02
58.333	0.00	0.01	0.302	O	|	|	|	|	1.02
58.417	0.00	0.01	0.302	O	|	|	|	|	1.02
58.500	0.00	0.01	0.302	O	|	|	|	|	1.02
58.583	0.00	0.01	0.302	O	|	|	|	|	1.02
58.667	0.00	0.01	0.302	O	|	|	|	|	1.02

58.750	0.00	0.01	0.302	O	|	|	|	|	1.02
58.833	0.00	0.01	0.302	O	|	|	|	|	1.02
58.917	0.00	0.01	0.302	O	|	|	|	|	1.02
59.000	0.00	0.01	0.302	O	|	|	|	|	1.02
59.083	0.00	0.01	0.302	O	|	|	|	|	1.02
59.167	0.00	0.01	0.302	O	|	|	|	|	1.02
59.250	0.00	0.01	0.302	O	|	|	|	|	1.02
59.333	0.00	0.01	0.302	O	|	|	|	|	1.02
59.417	0.00	0.01	0.302	O	|	|	|	|	1.02
59.500	0.00	0.01	0.302	O	|	|	|	|	1.02
59.583	0.00	0.01	0.301	O	|	|	|	|	1.02
59.667	0.00	0.01	0.301	O	|	|	|	|	1.02
59.750	0.00	0.01	0.301	O	|	|	|	|	1.02
59.833	0.00	0.01	0.301	O	|	|	|	|	1.02
59.917	0.00	0.01	0.301	O	|	|	|	|	1.02
60.000	0.00	0.01	0.301	O	|	|	|	|	1.02
60.083	0.00	0.01	0.301	O	|	|	|	|	1.02
60.167	0.00	0.01	0.301	O	|	|	|	|	1.02
60.250	0.00	0.01	0.301	O	|	|	|	|	1.02
60.333	0.00	0.01	0.301	O	|	|	|	|	1.02
60.417	0.00	0.01	0.301	O	|	|	|	|	1.02
60.500	0.00	0.01	0.301	O	|	|	|	|	1.02
60.583	0.00	0.01	0.301	O	|	|	|	|	1.02
60.667	0.00	0.01	0.301	O	|	|	|	|	1.02
60.750	0.00	0.01	0.301	O	|	|	|	|	1.02
60.833	0.00	0.01	0.301	O	|	|	|	|	1.02
60.917	0.00	0.01	0.301	O	|	|	|	|	1.02
61.000	0.00	0.01	0.301	O	|	|	|	|	1.02
61.083	0.00	0.01	0.301	O	|	|	|	|	

1.02

61.167	0.00	0.01	0.301	O	|	|	|	|	1.02
61.250	0.00	0.01	0.301	O	|	|	|	|	1.01
61.333	0.00	0.01	0.300	O	|	|	|	|	1.01
61.417	0.00	0.01	0.300	O	|	|	|	|	1.01
61.500	0.00	0.01	0.300	O	|	|	|	|	1.01
61.583	0.00	0.01	0.300	O	|	|	|	|	1.01
61.667	0.00	0.01	0.300	O	|	|	|	|	1.01
61.750	0.00	0.01	0.300	O	|	|	|	|	1.01
61.833	0.00	0.01	0.300	O	|	|	|	|	1.01
61.917	0.00	0.01	0.300	O	|	|	|	|	1.01
62.000	0.00	0.01	0.300	O	|	|	|	|	1.01
62.083	0.00	0.01	0.300	O	|	|	|	|	1.01
62.167	0.00	0.01	0.300	O	|	|	|	|	1.01
62.250	0.00	0.01	0.300	O	|	|	|	|	1.01
62.333	0.00	0.01	0.300	O	|	|	|	|	1.01
62.417	0.00	0.01	0.300	O	|	|	|	|	1.01
62.500	0.00	0.01	0.300	O	|	|	|	|	1.01
62.583	0.00	0.01	0.300	O	|	|	|	|	1.01
62.667	0.00	0.01	0.300	O	|	|	|	|	1.01
62.750	0.00	0.01	0.300	O	|	|	|	|	1.01
62.833	0.00	0.01	0.300	O	|	|	|	|	1.01
62.917	0.00	0.01	0.300	O	|	|	|	|	1.01
63.000	0.00	0.01	0.300	O	|	|	|	|	1.01
63.083	0.00	0.01	0.300	O	|	|	|	|	1.01
63.167	0.00	0.01	0.300	O	|	|	|	|	1.01
63.250	0.00	0.01	0.299	O	|	|	|	|	1.01
63.333	0.00	0.01	0.299	O	|	|	|	|	1.01
63.417	0.00	0.01	0.299	O	|	|	|	|	1.01

63.500	0.00	0.01	0.299	O	|	|	|	|	1.01
63.583	0.00	0.01	0.299	O	|	|	|	|	1.01
63.667	0.00	0.01	0.299	O	|	|	|	|	1.01
63.750	0.00	0.01	0.299	O	|	|	|	|	1.01
63.833	0.00	0.01	0.299	O	|	|	|	|	1.01
63.917	0.00	0.01	0.299	O	|	|	|	|	1.01
64.000	0.00	0.01	0.299	O	|	|	|	|	1.01
64.083	0.00	0.01	0.299	O	|	|	|	|	1.01
64.167	0.00	0.01	0.299	O	|	|	|	|	1.01
64.250	0.00	0.01	0.299	O	|	|	|	|	1.01
64.333	0.00	0.01	0.299	O	|	|	|	|	1.01
64.417	0.00	0.01	0.299	O	|	|	|	|	1.01
64.500	0.00	0.01	0.299	O	|	|	|	|	1.01
64.583	0.00	0.01	0.299	O	|	|	|	|	1.01
64.667	0.00	0.01	0.299	O	|	|	|	|	1.01
64.750	0.00	0.01	0.299	O	|	|	|	|	1.01
64.833	0.00	0.01	0.299	O	|	|	|	|	1.01
64.917	0.00	0.01	0.299	O	|	|	|	|	1.01
65.000	0.00	0.01	0.299	O	|	|	|	|	1.01
65.083	0.00	0.01	0.299	O	|	|	|	|	1.01
65.167	0.00	0.01	0.299	O	|	|	|	|	1.01
65.250	0.00	0.01	0.299	O	|	|	|	|	1.01
65.333	0.00	0.00	0.299	O	|	|	|	|	1.01
65.417	0.00	0.00	0.299	O	|	|	|	|	1.01
65.500	0.00	0.00	0.298	O	|	|	|	|	1.01
65.583	0.00	0.00	0.298	O	|	|	|	|	1.01
65.667	0.00	0.00	0.298	O	|	|	|	|	1.01
65.750	0.00	0.00	0.298	O	|	|	|	|	1.01

65.833	0.00	0.00	0.298	O	|	|	|	|	1.01
65.917	0.00	0.00	0.298	O	|	|	|	|	1.01
66.000	0.00	0.00	0.298	O	|	|	|	|	1.01
66.083	0.00	0.00	0.298	O	|	|	|	|	1.01
66.167	0.00	0.00	0.298	O	|	|	|	|	1.01
66.250	0.00	0.00	0.298	O	|	|	|	|	1.01
66.333	0.00	0.00	0.298	O	|	|	|	|	1.01
66.417	0.00	0.00	0.298	O	|	|	|	|	1.01
66.500	0.00	0.00	0.298	O	|	|	|	|	1.01
66.583	0.00	0.00	0.298	O	|	|	|	|	1.01
66.667	0.00	0.00	0.298	O	|	|	|	|	1.01
66.750	0.00	0.00	0.298	O	|	|	|	|	1.01
66.833	0.00	0.00	0.298	O	|	|	|	|	1.01
66.917	0.00	0.00	0.298	O	|	|	|	|	1.01
67.000	0.00	0.00	0.298	O	|	|	|	|	1.01
67.083	0.00	0.00	0.298	O	|	|	|	|	1.01
67.167	0.00	0.00	0.298	O	|	|	|	|	1.01
67.250	0.00	0.00	0.298	O	|	|	|	|	1.01
67.333	0.00	0.00	0.298	O	|	|	|	|	1.01
67.417	0.00	0.00	0.298	O	|	|	|	|	1.01
67.500	0.00	0.00	0.298	O	|	|	|	|	1.01
67.583	0.00	0.00	0.298	O	|	|	|	|	1.01
67.667	0.00	0.00	0.298	O	|	|	|	|	1.01
67.750	0.00	0.00	0.298	O	|	|	|	|	1.01
67.833	0.00	0.00	0.298	O	|	|	|	|	1.01
67.917	0.00	0.00	0.298	O	|	|	|	|	1.01
68.000	0.00	0.00	0.298	O	|	|	|	|	1.01
68.083	0.00	0.00	0.298	O	|	|	|	|	1.01
68.167	0.00	0.00	0.297	O	|	|	|	|	

1.01

68.250	0.00	0.00	0.297	O	|	|	|	|	1.01
68.333	0.00	0.00	0.297	O	|	|	|	|	1.01
68.417	0.00	0.00	0.297	O	|	|	|	|	1.01
68.500	0.00	0.00	0.297	O	|	|	|	|	1.01
68.583	0.00	0.00	0.297	O	|	|	|	|	1.01
68.667	0.00	0.00	0.297	O	|	|	|	|	1.01
68.750	0.00	0.00	0.297	O	|	|	|	|	1.01
68.833	0.00	0.00	0.297	O	|	|	|	|	1.01
68.917	0.00	0.00	0.297	O	|	|	|	|	1.01
69.000	0.00	0.00	0.297	O	|	|	|	|	1.01
69.083	0.00	0.00	0.297	O	|	|	|	|	1.01
69.167	0.00	0.00	0.297	O	|	|	|	|	1.01
69.250	0.00	0.00	0.297	O	|	|	|	|	1.01
69.333	0.00	0.00	0.297	O	|	|	|	|	1.01
69.417	0.00	0.00	0.297	O	|	|	|	|	1.01
69.500	0.00	0.00	0.297	O	|	|	|	|	1.01
69.583	0.00	0.00	0.297	O	|	|	|	|	1.01
69.667	0.00	0.00	0.297	O	|	|	|	|	1.01
69.750	0.00	0.00	0.297	O	|	|	|	|	1.01
69.833	0.00	0.00	0.297	O	|	|	|	|	1.01
69.917	0.00	0.00	0.297	O	|	|	|	|	1.01
70.000	0.00	0.00	0.297	O	|	|	|	|	1.01
70.083	0.00	0.00	0.297	O	|	|	|	|	1.01
70.167	0.00	0.00	0.297	O	|	|	|	|	1.01
70.250	0.00	0.00	0.297	O	|	|	|	|	1.01
70.333	0.00	0.00	0.297	O	|	|	|	|	1.01
70.417	0.00	0.00	0.297	O	|	|	|	|	1.01
70.500	0.00	0.00	0.297	O	|	|	|	|	1.01

70.583	0.00	0.00	0.297	O	|	|	|	|	1.01
70.667	0.00	0.00	0.297	O	|	|	|	|	1.01
70.750	0.00	0.00	0.297	O	|	|	|	|	1.01
70.833	0.00	0.00	0.297	O	|	|	|	|	1.01
70.917	0.00	0.00	0.297	O	|	|	|	|	1.01
71.000	0.00	0.00	0.297	O	|	|	|	|	1.01
71.083	0.00	0.00	0.297	O	|	|	|	|	1.01
71.167	0.00	0.00	0.297	O	|	|	|	|	1.01
71.250	0.00	0.00	0.297	O	|	|	|	|	1.01
71.333	0.00	0.00	0.297	O	|	|	|	|	1.01
71.417	0.00	0.00	0.297	O	|	|	|	|	1.01
71.500	0.00	0.00	0.296	O	|	|	|	|	1.01
71.583	0.00	0.00	0.296	O	|	|	|	|	1.01
71.667	0.00	0.00	0.296	O	|	|	|	|	1.01
71.750	0.00	0.00	0.296	O	|	|	|	|	1.01
71.833	0.00	0.00	0.296	O	|	|	|	|	1.01
71.917	0.00	0.00	0.296	O	|	|	|	|	1.01
72.000	0.00	0.00	0.296	O	|	|	|	|	1.01
72.083	0.00	0.00	0.296	O	|	|	|	|	1.01
72.167	0.00	0.00	0.296	O	|	|	|	|	1.01
72.250	0.00	0.00	0.296	O	|	|	|	|	1.01
72.333	0.00	0.00	0.296	O	|	|	|	|	1.01
72.417	0.00	0.00	0.296	O	|	|	|	|	1.01
72.500	0.00	0.00	0.296	O	|	|	|	|	1.01
72.583	0.00	0.00	0.296	O	|	|	|	|	1.01
72.667	0.00	0.00	0.296	O	|	|	|	|	1.01
72.750	0.00	0.00	0.296	O	|	|	|	|	1.00
72.833	0.00	0.00	0.296	O	|	|	|	|	1.00
72.917	0.00	0.00	0.296	O	|	|	|	|	

1.00

73.000	0.00	0.00	0.296	O	|	|	|	|	1.00
73.083	0.00	0.00	0.296	O	|	|	|	|	1.00
73.167	0.00	0.00	0.296	O	|	|	|	|	1.00
73.250	0.00	0.00	0.296	O	|	|	|	|	1.00
73.333	0.00	0.00	0.296	O	|	|	|	|	1.00
73.417	0.00	0.00	0.296	O	|	|	|	|	1.00
73.500	0.00	0.00	0.296	O	|	|	|	|	1.00
73.583	0.00	0.00	0.296	O	|	|	|	|	1.00
73.667	0.00	0.00	0.296	O	|	|	|	|	1.00
73.750	0.00	0.00	0.296	O	|	|	|	|	1.00
73.833	0.00	0.00	0.296	O	|	|	|	|	1.00
73.917	0.00	0.00	0.296	O	|	|	|	|	1.00
74.000	0.00	0.00	0.296	O	|	|	|	|	1.00
74.083	0.00	0.00	0.296	O	|	|	|	|	1.00
74.167	0.00	0.00	0.296	O	|	|	|	|	1.00
74.250	0.00	0.00	0.296	O	|	|	|	|	1.00
74.333	0.00	0.00	0.296	O	|	|	|	|	1.00
74.417	0.00	0.00	0.296	O	|	|	|	|	1.00
74.500	0.00	0.00	0.296	O	|	|	|	|	1.00
74.583	0.00	0.00	0.296	O	|	|	|	|	1.00
74.667	0.00	0.00	0.296	O	|	|	|	|	1.00
74.750	0.00	0.00	0.296	O	|	|	|	|	1.00
74.833	0.00	0.00	0.296	O	|	|	|	|	1.00
74.917	0.00	0.00	0.296	O	|	|	|	|	1.00
75.000	0.00	0.00	0.296	O	|	|	|	|	1.00
75.083	0.00	0.00	0.296	O	|	|	|	|	1.00
75.167	0.00	0.00	0.296	O	|	|	|	|	1.00
75.250	0.00	0.00	0.296	O	|	|	|	|	1.00

75.333	0.00	0.00	0.296	O	|	|	|	|	1.00
75.417	0.00	0.00	0.296	O	|	|	|	|	1.00
75.500	0.00	0.00	0.296	O	|	|	|	|	1.00
75.583	0.00	0.00	0.296	O	|	|	|	|	1.00
75.667	0.00	0.00	0.296	O	|	|	|	|	1.00
75.750	0.00	0.00	0.296	O	|	|	|	|	1.00
75.833	0.00	0.00	0.296	O	|	|	|	|	1.00
75.917	0.00	0.00	0.295	O	|	|	|	|	1.00
76.000	0.00	0.00	0.295	O	|	|	|	|	1.00
76.083	0.00	0.00	0.295	O	|	|	|	|	1.00
76.167	0.00	0.00	0.295	O	|	|	|	|	1.00
76.250	0.00	0.00	0.295	O	|	|	|	|	1.00
76.333	0.00	0.00	0.295	O	|	|	|	|	1.00
76.417	0.00	0.00	0.295	O	|	|	|	|	1.00
76.500	0.00	0.00	0.295	O	|	|	|	|	1.00
76.583	0.00	0.00	0.295	O	|	|	|	|	1.00
76.667	0.00	0.00	0.295	O	|	|	|	|	1.00
76.750	0.00	0.00	0.295	O	|	|	|	|	1.00
76.833	0.00	0.00	0.295	O	|	|	|	|	1.00
76.917	0.00	0.00	0.295	O	|	|	|	|	1.00
77.000	0.00	0.00	0.295	O	|	|	|	|	1.00
77.083	0.00	0.00	0.295	O	|	|	|	|	1.00
77.167	0.00	0.00	0.295	O	|	|	|	|	1.00
77.250	0.00	0.00	0.295	O	|	|	|	|	1.00
77.333	0.00	0.00	0.295	O	|	|	|	|	1.00
77.417	0.00	0.00	0.295	O	|	|	|	|	1.00
77.500	0.00	0.00	0.295	O	|	|	|	|	1.00
77.583	0.00	0.00	0.295	O	|	|	|	|	1.00
77.667	0.00	0.00	0.295	O	|	|	|	|	

1.00

77.750	0.00	0.00	0.295	O	|	|	|	1.00
77.833	0.00	0.00	0.295	O	|	|	|	1.00
77.917	0.00	0.00	0.295	O	|	|	|	1.00
78.000	0.00	0.00	0.295	O	|	|	|	1.00
78.083	0.00	0.00	0.295	O	|	|	|	1.00
78.167	0.00	0.00	0.295	O	|	|	|	1.00
78.250	0.00	0.00	0.295	O	|	|	|	1.00
78.333	0.00	0.00	0.295	O	|	|	|	1.00
78.417	0.00	0.00	0.295	O	|	|	|	1.00
78.500	0.00	0.00	0.295	O	|	|	|	1.00
78.583	0.00	0.00	0.295	O	|	|	|	1.00
78.667	0.00	0.00	0.295	O	|	|	|	1.00
78.750	0.00	0.00	0.295	O	|	|	|	1.00
78.833	0.00	0.00	0.295	O	|	|	|	1.00
78.917	0.00	0.00	0.295	O	|	|	|	1.00
79.000	0.00	0.00	0.295	O	|	|	|	1.00
79.083	0.00	0.00	0.295	O	|	|	|	1.00
79.167	0.00	0.00	0.295	O	|	|	|	1.00
79.250	0.00	0.00	0.295	O	|	|	|	1.00
79.333	0.00	0.00	0.295	O	|	|	|	1.00
79.417	0.00	0.00	0.295	O	|	|	|	1.00
79.500	0.00	0.00	0.295	O	|	|	|	1.00
79.583	0.00	0.00	0.295	O	|	|	|	1.00
79.667	0.00	0.00	0.295	O	|	|	|	1.00
79.750	0.00	0.00	0.295	O	|	|	|	1.00
79.833	0.00	0.00	0.295	O	|	|	|	1.00
79.917	0.00	0.00	0.295	O	|	|	|	1.00
80.000	0.00	0.00	0.295	O	|	|	|	1.00

80.083	0.00	0.00	0.295	O	|	|	|	|	1.00
80.167	0.00	0.00	0.295	O	|	|	|	|	1.00
80.250	0.00	0.00	0.295	O	|	|	|	|	1.00
80.333	0.00	0.00	0.295	O	|	|	|	|	1.00
80.417	0.00	0.00	0.295	O	|	|	|	|	1.00
80.500	0.00	0.00	0.295	O	|	|	|	|	1.00
80.583	0.00	0.00	0.295	O	|	|	|	|	1.00
80.667	0.00	0.00	0.295	O	|	|	|	|	1.00
80.750	0.00	0.00	0.295	O	|	|	|	|	1.00
80.833	0.00	0.00	0.295	O	|	|	|	|	1.00
80.917	0.00	0.00	0.295	O	|	|	|	|	1.00
81.000	0.00	0.00	0.295	O	|	|	|	|	1.00
81.083	0.00	0.00	0.295	O	|	|	|	|	1.00
81.167	0.00	0.00	0.295	O	|	|	|	|	1.00
81.250	0.00	0.00	0.295	O	|	|	|	|	1.00
81.333	0.00	0.00	0.295	O	|	|	|	|	1.00
81.417	0.00	0.00	0.295	O	|	|	|	|	1.00
81.500	0.00	0.00	0.295	O	|	|	|	|	1.00
81.583	0.00	0.00	0.295	O	|	|	|	|	1.00
81.667	0.00	0.00	0.295	O	|	|	|	|	1.00
81.750	0.00	0.00	0.295	O	|	|	|	|	1.00
81.833	0.00	0.00	0.295	O	|	|	|	|	1.00
81.917	0.00	0.00	0.295	O	|	|	|	|	1.00
82.000	0.00	0.00	0.295	O	|	|	|	|	1.00
82.083	0.00	0.00	0.295	O	|	|	|	|	1.00
82.167	0.00	0.00	0.295	O	|	|	|	|	1.00
82.250	0.00	0.00	0.295	O	|	|	|	|	1.00
82.333	0.00	0.00	0.295	O	|	|	|	|	1.00
82.417	0.00	0.00	0.295	O	|	|	|	|	

1.00

82.500	0.00	0.00	0.294	O	|	|	|	|	1.00
82.583	0.00	0.00	0.294	O	|	|	|	|	1.00
82.667	0.00	0.00	0.294	O	|	|	|	|	1.00
82.750	0.00	0.00	0.294	O	|	|	|	|	1.00
82.833	0.00	0.00	0.294	O	|	|	|	|	1.00
82.917	0.00	0.00	0.294	O	|	|	|	|	1.00
83.000	0.00	0.00	0.294	O	|	|	|	|	1.00
83.083	0.00	0.00	0.294	O	|	|	|	|	1.00
83.167	0.00	0.00	0.294	O	|	|	|	|	1.00
83.250	0.00	0.00	0.294	O	|	|	|	|	1.00
83.333	0.00	0.00	0.294	O	|	|	|	|	1.00
83.417	0.00	0.00	0.294	O	|	|	|	|	1.00
83.500	0.00	0.00	0.294	O	|	|	|	|	1.00
83.583	0.00	0.00	0.294	O	|	|	|	|	1.00
83.667	0.00	0.00	0.294	O	|	|	|	|	1.00
83.750	0.00	0.00	0.294	O	|	|	|	|	1.00
83.833	0.00	0.00	0.294	O	|	|	|	|	1.00
83.917	0.00	0.00	0.294	O	|	|	|	|	1.00
84.000	0.00	0.00	0.294	O	|	|	|	|	1.00
84.083	0.00	0.00	0.294	O	|	|	|	|	1.00
84.167	0.00	0.00	0.294	O	|	|	|	|	1.00
84.250	0.00	0.00	0.294	O	|	|	|	|	1.00
84.333	0.00	0.00	0.294	O	|	|	|	|	1.00
84.417	0.00	0.00	0.294	O	|	|	|	|	1.00
84.500	0.00	0.00	0.294	O	|	|	|	|	1.00
84.583	0.00	0.00	0.294	O	|	|	|	|	1.00
84.667	0.00	0.00	0.294	O	|	|	|	|	1.00
84.750	0.00	0.00	0.294	O	|	|	|	|	1.00

84.833	0.00	0.00	0.294	O	|	|	|	|	1.00
84.917	0.00	0.00	0.294	O	|	|	|	|	1.00
85.000	0.00	0.00	0.294	O	|	|	|	|	1.00
85.083	0.00	0.00	0.294	O	|	|	|	|	1.00
85.167	0.00	0.00	0.294	O	|	|	|	|	1.00
85.250	0.00	0.00	0.294	O	|	|	|	|	1.00
85.333	0.00	0.00	0.294	O	|	|	|	|	1.00
85.417	0.00	0.00	0.294	O	|	|	|	|	1.00
85.500	0.00	0.00	0.294	O	|	|	|	|	1.00
85.583	0.00	0.00	0.294	O	|	|	|	|	1.00
85.667	0.00	0.00	0.294	O	|	|	|	|	1.00
85.750	0.00	0.00	0.294	O	|	|	|	|	1.00
85.833	0.00	0.00	0.294	O	|	|	|	|	1.00
85.917	0.00	0.00	0.294	O	|	|	|	|	1.00
86.000	0.00	0.00	0.294	O	|	|	|	|	1.00
86.083	0.00	0.00	0.294	O	|	|	|	|	1.00
86.167	0.00	0.00	0.294	O	|	|	|	|	1.00
86.250	0.00	0.00	0.294	O	|	|	|	|	1.00
86.333	0.00	0.00	0.294	O	|	|	|	|	1.00
86.417	0.00	0.00	0.294	O	|	|	|	|	1.00
86.500	0.00	0.00	0.294	O	|	|	|	|	1.00
86.583	0.00	0.00	0.294	O	|	|	|	|	1.00
86.667	0.00	0.00	0.294	O	|	|	|	|	1.00
86.750	0.00	0.00	0.294	O	|	|	|	|	1.00
86.833	0.00	0.00	0.294	O	|	|	|	|	1.00
86.917	0.00	0.00	0.294	O	|	|	|	|	1.00
87.000	0.00	0.00	0.294	O	|	|	|	|	1.00
87.083	0.00	0.00	0.294	O	|	|	|	|	1.00

87.167	0.00	0.00	0.294	O	|	|	|	|	1.00
87.250	0.00	0.00	0.294	O	|	|	|	|	1.00
87.333	0.00	0.00	0.294	O	|	|	|	|	1.00
87.417	0.00	0.00	0.294	O	|	|	|	|	1.00
87.500	0.00	0.00	0.294	O	|	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1050
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.223 (CFS)
Total volume = 0.376 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
10 YR - 6 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP610.rte
**********HYDROGRAPH DATA**********
Number of intervals = 74
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 7.480 (CFS)
Total volume = 0.957 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 74
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.9	3.74	5.61	Depth 7.48 (Ft.)
0.083	0.39	0.00	0.001	OI	|	|	|	0.00
0.167	0.73	0.00	0.005	O I	|	|	|	0.02
0.250	0.82	0.00	0.011	O I	|	|	|	0.04
0.333	0.83	0.00	0.016	O I	|	|	|	0.06
0.417	0.83	0.00	0.022	O I	|	|	|	0.07
0.500	0.91	0.00	0.028	O I	|	|	|	0.09
0.583	0.96	0.00	0.034	O I	|	|	|	0.12
0.667	0.97	0.00	0.041	O I	|	|	|	0.14
0.750	0.97	0.00	0.048	O I	|	|	|	0.16
0.833	0.97	0.00	0.054	O I	|	|	|	0.18
0.917	0.97	0.00	0.061	O I	|	|	|	0.21
1.000	1.05	0.00	0.068	O I	|	|	|	0.23
1.083	1.10	0.00	0.075	O I	|	|	|	0.26
1.167	1.11	0.00	0.083	O I	|	|	|	0.28
1.250	1.11	0.00	0.091	O I	|	|	|	0.31
1.333	1.11	0.00	0.098	O I	|	|	|	

0.33

1.417	1.11	0.00	0.106	O	I	|	|	|	0.36
1.500	1.11	0.00	0.113	O	I	|	|	|	0.39
1.583	1.11	0.00	0.121	O	I	|	|	|	0.41
1.667	1.11	0.00	0.129	O	I	|	|	|	0.44
1.750	1.11	0.00	0.136	O	I	|	|	|	0.46
1.833	1.11	0.00	0.144	O	I	|	|	|	0.49
1.917	1.11	0.00	0.151	O	I	|	|	|	0.52
2.000	1.18	0.00	0.159	O	I	|	|	|	0.54
2.083	1.16	0.00	0.167	O	I	|	|	|	0.57
2.167	1.19	0.00	0.176	O	I	|	|	|	0.60
2.250	1.24	0.00	0.184	O	I	|	|	|	0.63
2.333	1.25	0.00	0.192	O	I	|	|	|	0.65
2.417	1.25	0.00	0.201	O	I	|	|	|	0.68
2.500	1.25	0.00	0.210	O	I	|	|	|	0.71
2.583	1.25	0.00	0.218	O	I	|	|	|	0.74
2.667	1.25	0.00	0.227	O	I	|	|	|	0.77
2.750	1.32	0.00	0.236	O	I	|	|	|	0.80
2.833	1.37	0.00	0.245	O	I	|	|	|	0.83
2.917	1.38	0.00	0.254	O	I	|	|	|	0.86
3.000	1.38	0.00	0.264	O	I	|	|	|	0.90
3.083	1.38	0.00	0.273	O	I	|	|	|	0.93
3.167	1.46	0.00	0.283	O	I	|	|	|	0.96
3.250	1.51	0.00	0.293	O	I	|	|	|	1.00
3.333	1.52	0.01	0.304	O	I	|	|	|	1.02
3.417	1.60	0.02	0.314	O	I	|	|	|	1.05
3.500	1.73	0.03	0.326	O	I	|	|	|	1.07
3.583	1.87	0.04	0.338	O	I	|	|	|	1.10
3.667	1.93	0.05	0.351	O	I	|	|	|	1.13
3.750	2.01	0.06	0.364	O	I	|	|	|	1.16
3.833	2.07	0.07	0.377	O	I	|	|	|	1.19

3.917	2.15	0.09	0.391	O	|I	|	|	|	1.22
4.000	2.20	0.10	0.406	O	|I	|	|	|	1.26
4.083	2.29	0.10	0.421	O	|I	|	|	|	1.29
4.167	2.42	0.11	0.436	O	| I	|	|	|	1.32
4.250	2.56	0.11	0.452	O	| I	|	|	|	1.36
4.333	2.70	0.12	0.470	O	| I	|	|	|	1.39
4.417	2.84	0.13	0.488	O	| I	|	|	|	1.43
4.500	2.90	0.13	0.507	O	| I	|	|	|	1.47
4.583	2.98	0.14	0.526	O	| I	|	|	|	1.51
4.667	3.11	0.15	0.546	O	| I	|	|	|	1.55
4.750	3.25	0.17	0.567	O	| I	|	|	|	1.60
4.833	3.31	0.18	0.588	O	| I	|	|	|	1.64
4.917	3.40	0.20	0.610	O	| I	|	|	|	1.68
5.000	3.53	0.21	0.632	O	| I|	|	|	1.73
5.083	3.98	0.22	0.657	O	| |I	|	|	1.78
5.167	4.64	0.23	0.685	O	| | I	|	|	1.83
5.250	5.17	0.24	0.717	|O	| |	I |	|	1.90
5.333	5.63	0.26	0.753	|O	| |	I |	|	1.97
5.417	6.30	0.27	0.792	|O	| |	| I |	|	2.04
5.500	7.48	0.28	0.837	|O	| |	| I|	|	2.13
5.583	4.95	0.30	0.878	|O	| |	I |	|	2.21
5.667	2.19	0.30	0.901	|O	|I	|	|	|	2.25
5.750	1.10	0.30	0.910	|O I	|	|	|	|	2.27
5.833	0.78	0.31	0.914	|O I	|	|	|	|	2.28
5.917	0.54	0.31	0.917	|OI	|	|	|	|	2.28
6.000	0.35	0.31	0.918	|O	|	|	|	|	2.28
6.083	0.13	0.31	0.917	IO	|	|	|	|	2.28
6.167	0.02	0.31	0.916	IO	|	|	|	|	2.28
6.250	0.00	0.31	0.914	IO	|	|	|	|	2.28
6.333	0.00	0.30	0.912	IO	|	|	|	|	2.27
6.417	0.00	0.30	0.909	IO	|	|	|	|	2.27
6.500	0.00	0.30	0.907	IO	|	|	|	|	2.26

6.583	0.00	0.30	0.905	IO					2.26
6.667	0.00	0.30	0.903	IO					2.26
6.750	0.00	0.30	0.901	IO					2.25
6.833	0.00	0.30	0.899	IO					2.25
6.917	0.00	0.30	0.897	IO					2.24
7.000	0.00	0.30	0.895	IO					2.24
7.083	0.00	0.30	0.893	IO					2.24
7.167	0.00	0.30	0.891	IO					2.23
7.250	0.00	0.30	0.889	IO					2.23
7.333	0.00	0.30	0.887	IO					2.22
7.417	0.00	0.30	0.885	IO					2.22
7.500	0.00	0.30	0.883	IO					2.22
7.583	0.00	0.30	0.880	IO					2.21
7.667	0.00	0.30	0.878	IO					2.21
7.750	0.00	0.30	0.876	IO					2.20
7.833	0.00	0.29	0.874	IO					2.20
7.917	0.00	0.29	0.872	IO					2.20
8.000	0.00	0.29	0.870	IO					2.19
8.083	0.00	0.29	0.868	IO					2.19
8.167	0.00	0.29	0.866	IO					2.19
8.250	0.00	0.29	0.864	IO					2.18
8.333	0.00	0.29	0.862	IO					2.18
8.417	0.00	0.29	0.860	IO					2.17
8.500	0.00	0.29	0.858	IO					2.17
8.583	0.00	0.29	0.856	IO					2.17
8.667	0.00	0.29	0.854	IO					2.16
8.750	0.00	0.29	0.852	IO					2.16
8.833	0.00	0.29	0.850	IO					2.15
8.917	0.00	0.29	0.848	IO					

2.15

9.000	0.00	0.29	0.846	IO	|	|	|	2.15
9.083	0.00	0.29	0.844	IO	|	|	|	2.14
9.167	0.00	0.29	0.842	IO	|	|	|	2.14
9.250	0.00	0.28	0.840	IO	|	|	|	2.14
9.333	0.00	0.28	0.839	IO	|	|	|	2.13
9.417	0.00	0.28	0.837	IO	|	|	|	2.13
9.500	0.00	0.28	0.835	IO	|	|	|	2.12
9.583	0.00	0.28	0.833	IO	|	|	|	2.12
9.667	0.00	0.28	0.831	IO	|	|	|	2.12
9.750	0.00	0.28	0.829	IO	|	|	|	2.11
9.833	0.00	0.28	0.827	IO	|	|	|	2.11
9.917	0.00	0.28	0.825	IO	|	|	|	2.11
10.000	0.00	0.28	0.823	IO	|	|	|	2.10
10.083	0.00	0.28	0.821	IO	|	|	|	2.10
10.167	0.00	0.28	0.819	IO	|	|	|	2.09
10.250	0.00	0.28	0.817	IO	|	|	|	2.09
10.333	0.00	0.28	0.815	IO	|	|	|	2.09
10.417	0.00	0.28	0.813	IO	|	|	|	2.08
10.500	0.00	0.28	0.811	IO	|	|	|	2.08
10.583	0.00	0.28	0.810	IO	|	|	|	2.08
10.667	0.00	0.28	0.808	IO	|	|	|	2.07
10.750	0.00	0.27	0.806	IO	|	|	|	2.07
10.833	0.00	0.27	0.804	IO	|	|	|	2.07
10.917	0.00	0.27	0.802	IO	|	|	|	2.06
11.000	0.00	0.27	0.800	IO	|	|	|	2.06
11.083	0.00	0.27	0.798	IO	|	|	|	2.05
11.167	0.00	0.27	0.796	IO	|	|	|	2.05
11.250	0.00	0.27	0.795	IO	|	|	|	2.05

11.333	0.00	0.27	0.793	IO				2.04
11.417	0.00	0.27	0.791	IO				2.04
11.500	0.00	0.27	0.789	IO				2.04
11.583	0.00	0.27	0.787	IO				2.03
11.667	0.00	0.27	0.785	IO				2.03
11.750	0.00	0.27	0.783	IO				2.03
11.833	0.00	0.27	0.782	IO				2.02
11.917	0.00	0.27	0.780	IO				2.02
12.000	0.00	0.27	0.778	IO				2.02
12.083	0.00	0.27	0.776	IO				2.01
12.167	0.00	0.27	0.774	IO				2.01
12.250	0.00	0.26	0.772	IO				2.00
12.333	0.00	0.26	0.771	IO				2.00
12.417	0.00	0.26	0.769	IO				2.00
12.500	0.00	0.26	0.767	IO				1.99
12.583	0.00	0.26	0.765	IO				1.99
12.667	0.00	0.26	0.763	IO				1.99
12.750	0.00	0.26	0.762	IO				1.98
12.833	0.00	0.26	0.760	IO				1.98
12.917	0.00	0.26	0.758	IO				1.98
13.000	0.00	0.26	0.756	IO				1.97
13.083	0.00	0.26	0.754	IO				1.97
13.167	0.00	0.26	0.753	IO				1.97
13.250	0.00	0.26	0.751	IO				1.96
13.333	0.00	0.26	0.749	IO				1.96
13.417	0.00	0.26	0.747	IO				1.96
13.500	0.00	0.26	0.746	IO				1.95
13.583	0.00	0.25	0.744	IO				1.95
13.667	0.00	0.25	0.742	IO				

1.94

13.750	0.00	0.25	0.740	IO				1.94
13.833	0.00	0.25	0.739	IO				1.94
13.917	0.00	0.25	0.737	IO				1.93
14.000	0.00	0.25	0.735	IO				1.93
14.083	0.00	0.25	0.733	IO				1.93
14.167	0.00	0.25	0.732	IO				1.92
14.250	0.00	0.25	0.730	IO				1.92
14.333	0.00	0.25	0.728	IO				1.92
14.417	0.00	0.25	0.726	IO				1.91
14.500	0.00	0.25	0.725	IO				1.91
14.583	0.00	0.25	0.723	IO				1.91
14.667	0.00	0.25	0.721	IO				1.90
14.750	0.00	0.25	0.720	IO				1.90
14.833	0.00	0.25	0.718	IO				1.90
14.917	0.00	0.24	0.716	IO				1.89
15.000	0.00	0.24	0.715	IO				1.89
15.083	0.00	0.24	0.713	IO				1.89
15.167	0.00	0.24	0.711	IO				1.88
15.250	0.00	0.24	0.710	IO				1.88
15.333	0.00	0.24	0.708	IO				1.88
15.417	0.00	0.24	0.706	IO				1.87
15.500	0.00	0.24	0.705	IO				1.87
15.583	0.00	0.24	0.703	IO				1.87
15.667	0.00	0.24	0.701	IO				1.86
15.750	0.00	0.24	0.700	IO				1.86
15.833	0.00	0.24	0.698	IO				1.86
15.917	0.00	0.24	0.696	IO				1.86
16.000	0.00	0.24	0.695	IO				1.85

16.083	0.00	0.24	0.693	IO					1.85
16.167	0.00	0.24	0.691	IO					1.85
16.250	0.00	0.23	0.690	IO					1.84
16.333	0.00	0.23	0.688	IO					1.84
16.417	0.00	0.23	0.687	IO					1.84
16.500	0.00	0.23	0.685	O					1.83
16.583	0.00	0.23	0.683	O					1.83
16.667	0.00	0.23	0.682	O					1.83
16.750	0.00	0.23	0.680	O					1.82
16.833	0.00	0.23	0.679	O					1.82
16.917	0.00	0.23	0.677	O					1.82
17.000	0.00	0.23	0.675	O					1.81
17.083	0.00	0.23	0.674	O					1.81
17.167	0.00	0.23	0.672	O					1.81
17.250	0.00	0.23	0.671	O					1.80
17.333	0.00	0.23	0.669	O					1.80
17.417	0.00	0.23	0.668	O					1.80
17.500	0.00	0.23	0.666	O					1.80
17.583	0.00	0.23	0.664	O					1.79
17.667	0.00	0.23	0.663	O					1.79
17.750	0.00	0.22	0.661	O					1.79
17.833	0.00	0.22	0.660	O					1.78
17.917	0.00	0.22	0.658	O					1.78
18.000	0.00	0.22	0.657	O					1.78
18.083	0.00	0.22	0.655	O					1.77
18.167	0.00	0.22	0.654	O					1.77
18.250	0.00	0.22	0.652	O					1.77
18.333	0.00	0.22	0.651	O					1.77
18.417	0.00	0.22	0.649	O					

1.76

18.500	0.00	0.22	0.648	O	|	|	|	|	1.76
18.583	0.00	0.22	0.646	O	|	|	|	|	1.76
18.667	0.00	0.22	0.645	O	|	|	|	|	1.75
18.750	0.00	0.22	0.643	O	|	|	|	|	1.75
18.833	0.00	0.22	0.642	O	|	|	|	|	1.75
18.917	0.00	0.22	0.640	O	|	|	|	|	1.74
19.000	0.00	0.22	0.639	O	|	|	|	|	1.74
19.083	0.00	0.21	0.637	O	|	|	|	|	1.74
19.167	0.00	0.21	0.636	O	|	|	|	|	1.74
19.250	0.00	0.21	0.634	O	|	|	|	|	1.73
19.333	0.00	0.21	0.633	O	|	|	|	|	1.73
19.417	0.00	0.21	0.631	O	|	|	|	|	1.73
19.500	0.00	0.21	0.630	O	|	|	|	|	1.72
19.583	0.00	0.21	0.628	O	|	|	|	|	1.72
19.667	0.00	0.21	0.627	O	|	|	|	|	1.72
19.750	0.00	0.21	0.626	O	|	|	|	|	1.71
19.833	0.00	0.21	0.624	O	|	|	|	|	1.71
19.917	0.00	0.20	0.623	O	|	|	|	|	1.71
20.000	0.00	0.20	0.621	O	|	|	|	|	1.71
20.083	0.00	0.20	0.620	O	|	|	|	|	1.70
20.167	0.00	0.20	0.619	O	|	|	|	|	1.70
20.250	0.00	0.20	0.617	O	|	|	|	|	1.70
20.333	0.00	0.20	0.616	O	|	|	|	|	1.69
20.417	0.00	0.20	0.614	O	|	|	|	|	1.69
20.500	0.00	0.20	0.613	O	|	|	|	|	1.69
20.583	0.00	0.20	0.612	O	|	|	|	|	1.69
20.667	0.00	0.20	0.610	O	|	|	|	|	1.68
20.750	0.00	0.20	0.609	O	|	|	|	|	1.68

20.833	0.00	0.19	0.608	O	|	|	|	|	1.68
20.917	0.00	0.19	0.606	O	|	|	|	|	1.68
21.000	0.00	0.19	0.605	O	|	|	|	|	1.67
21.083	0.00	0.19	0.604	O	|	|	|	|	1.67
21.167	0.00	0.19	0.602	O	|	|	|	|	1.67
21.250	0.00	0.19	0.601	O	|	|	|	|	1.66
21.333	0.00	0.19	0.600	O	|	|	|	|	1.66
21.417	0.00	0.19	0.598	O	|	|	|	|	1.66
21.500	0.00	0.19	0.597	O	|	|	|	|	1.66
21.583	0.00	0.19	0.596	O	|	|	|	|	1.65
21.667	0.00	0.19	0.594	O	|	|	|	|	1.65
21.750	0.00	0.19	0.593	O	|	|	|	|	1.65
21.833	0.00	0.18	0.592	O	|	|	|	|	1.65
21.917	0.00	0.18	0.591	O	|	|	|	|	1.64
22.000	0.00	0.18	0.589	O	|	|	|	|	1.64
22.083	0.00	0.18	0.588	O	|	|	|	|	1.64
22.167	0.00	0.18	0.587	O	|	|	|	|	1.64
22.250	0.00	0.18	0.586	O	|	|	|	|	1.63
22.333	0.00	0.18	0.584	O	|	|	|	|	1.63
22.417	0.00	0.18	0.583	O	|	|	|	|	1.63
22.500	0.00	0.18	0.582	O	|	|	|	|	1.63
22.583	0.00	0.18	0.581	O	|	|	|	|	1.62
22.667	0.00	0.18	0.579	O	|	|	|	|	1.62
22.750	0.00	0.18	0.578	O	|	|	|	|	1.62
22.833	0.00	0.18	0.577	O	|	|	|	|	1.62
22.917	0.00	0.17	0.576	O	|	|	|	|	1.61
23.000	0.00	0.17	0.575	O	|	|	|	|	1.61
23.083	0.00	0.17	0.573	O	|	|	|	|	1.61

23.167	0.00	0.17	0.572	O	|	|	|	|	1.61
23.250	0.00	0.17	0.571	O	|	|	|	|	1.60
23.333	0.00	0.17	0.570	O	|	|	|	|	1.60
23.417	0.00	0.17	0.569	O	|	|	|	|	1.60
23.500	0.00	0.17	0.568	O	|	|	|	|	1.60
23.583	0.00	0.17	0.566	O	|	|	|	|	1.59
23.667	0.00	0.17	0.565	O	|	|	|	|	1.59
23.750	0.00	0.17	0.564	O	|	|	|	|	1.59
23.833	0.00	0.17	0.563	O	|	|	|	|	1.59
23.917	0.00	0.17	0.562	O	|	|	|	|	1.58
24.000	0.00	0.16	0.561	O	|	|	|	|	1.58
24.083	0.00	0.16	0.560	O	|	|	|	|	1.58
24.167	0.00	0.16	0.558	O	|	|	|	|	1.58
24.250	0.00	0.16	0.557	O	|	|	|	|	1.58
24.333	0.00	0.16	0.556	O	|	|	|	|	1.57
24.417	0.00	0.16	0.555	O	|	|	|	|	1.57
24.500	0.00	0.16	0.554	O	|	|	|	|	1.57
24.583	0.00	0.16	0.553	O	|	|	|	|	1.57
24.667	0.00	0.16	0.552	O	|	|	|	|	1.56
24.750	0.00	0.16	0.551	O	|	|	|	|	1.56
24.833	0.00	0.16	0.550	O	|	|	|	|	1.56
24.917	0.00	0.16	0.549	O	|	|	|	|	1.56
25.000	0.00	0.16	0.547	O	|	|	|	|	1.56
25.083	0.00	0.16	0.546	O	|	|	|	|	1.55
25.167	0.00	0.15	0.545	O	|	|	|	|	1.55
25.250	0.00	0.15	0.544	O	|	|	|	|	1.55
25.333	0.00	0.15	0.543	O	|	|	|	|	1.55
25.417	0.00	0.15	0.542	O	|	|	|	|	1.54
25.500	0.00	0.15	0.541	O	|	|	|	|	

1.54

25.583	0.00	0.15	0.540	O	|	|	|	1.54
25.667	0.00	0.15	0.539	O	|	|	|	1.54
25.750	0.00	0.15	0.538	O	|	|	|	1.54
25.833	0.00	0.15	0.537	O	|	|	|	1.53
25.917	0.00	0.15	0.536	O	|	|	|	1.53
26.000	0.00	0.15	0.535	O	|	|	|	1.53
26.083	0.00	0.15	0.534	O	|	|	|	1.53
26.167	0.00	0.15	0.533	O	|	|	|	1.53
26.250	0.00	0.15	0.532	O	|	|	|	1.52
26.333	0.00	0.15	0.531	O	|	|	|	1.52
26.417	0.00	0.14	0.530	O	|	|	|	1.52
26.500	0.00	0.14	0.529	O	|	|	|	1.52
26.583	0.00	0.14	0.528	O	|	|	|	1.52
26.667	0.00	0.14	0.527	O	|	|	|	1.51
26.750	0.00	0.14	0.526	O	|	|	|	1.51
26.833	0.00	0.14	0.525	O	|	|	|	1.51
26.917	0.00	0.14	0.524	O	|	|	|	1.51
27.000	0.00	0.14	0.523	O	|	|	|	1.51
27.083	0.00	0.14	0.522	O	|	|	|	1.50
27.167	0.00	0.14	0.521	O	|	|	|	1.50
27.250	0.00	0.14	0.520	O	|	|	|	1.50
27.333	0.00	0.14	0.519	O	|	|	|	1.50
27.417	0.00	0.14	0.518	O	|	|	|	1.50
27.500	0.00	0.14	0.517	O	|	|	|	1.49
27.583	0.00	0.14	0.516	O	|	|	|	1.49
27.667	0.00	0.14	0.515	O	|	|	|	1.49
27.750	0.00	0.14	0.514	O	|	|	|	1.49
27.833	0.00	0.14	0.514	O	|	|	|	1.49

27.917	0.00	0.14	0.513	O	|	|	|	|	1.48
28.000	0.00	0.14	0.512	O	|	|	|	|	1.48
28.083	0.00	0.13	0.511	O	|	|	|	|	1.48
28.167	0.00	0.13	0.510	O	|	|	|	|	1.48
28.250	0.00	0.13	0.509	O	|	|	|	|	1.48
28.333	0.00	0.13	0.508	O	|	|	|	|	1.47
28.417	0.00	0.13	0.507	O	|	|	|	|	1.47
28.500	0.00	0.13	0.506	O	|	|	|	|	1.47
28.583	0.00	0.13	0.505	O	|	|	|	|	1.47
28.667	0.00	0.13	0.504	O	|	|	|	|	1.47
28.750	0.00	0.13	0.503	O	|	|	|	|	1.46
28.833	0.00	0.13	0.502	O	|	|	|	|	1.46
28.917	0.00	0.13	0.502	O	|	|	|	|	1.46
29.000	0.00	0.13	0.501	O	|	|	|	|	1.46
29.083	0.00	0.13	0.500	O	|	|	|	|	1.46
29.167	0.00	0.13	0.499	O	|	|	|	|	1.45
29.250	0.00	0.13	0.498	O	|	|	|	|	1.45
29.333	0.00	0.13	0.497	O	|	|	|	|	1.45
29.417	0.00	0.13	0.496	O	|	|	|	|	1.45
29.500	0.00	0.13	0.495	O	|	|	|	|	1.45
29.583	0.00	0.13	0.494	O	|	|	|	|	1.45
29.667	0.00	0.13	0.494	O	|	|	|	|	1.44
29.750	0.00	0.13	0.493	O	|	|	|	|	1.44
29.833	0.00	0.13	0.492	O	|	|	|	|	1.44
29.917	0.00	0.13	0.491	O	|	|	|	|	1.44
30.000	0.00	0.13	0.490	O	|	|	|	|	1.44
30.083	0.00	0.13	0.489	O	|	|	|	|	1.43
30.167	0.00	0.13	0.488	O	|	|	|	|	1.43
30.250	0.00	0.13	0.487	O	|	|	|	|	

1.43

30.333	0.00	0.13	0.486	O	|	|	|	1.43
30.417	0.00	0.13	0.486	O	|	|	|	1.43
30.500	0.00	0.13	0.485	O	|	|	|	1.42
30.583	0.00	0.13	0.484	O	|	|	|	1.42
30.667	0.00	0.13	0.483	O	|	|	|	1.42
30.750	0.00	0.12	0.482	O	|	|	|	1.42
30.833	0.00	0.12	0.481	O	|	|	|	1.42
30.917	0.00	0.12	0.480	O	|	|	|	1.42
31.000	0.00	0.12	0.480	O	|	|	|	1.41
31.083	0.00	0.12	0.479	O	|	|	|	1.41
31.167	0.00	0.12	0.478	O	|	|	|	1.41
31.250	0.00	0.12	0.477	O	|	|	|	1.41
31.333	0.00	0.12	0.476	O	|	|	|	1.41
31.417	0.00	0.12	0.475	O	|	|	|	1.40
31.500	0.00	0.12	0.475	O	|	|	|	1.40
31.583	0.00	0.12	0.474	O	|	|	|	1.40
31.667	0.00	0.12	0.473	O	|	|	|	1.40
31.750	0.00	0.12	0.472	O	|	|	|	1.40
31.833	0.00	0.12	0.471	O	|	|	|	1.40
31.917	0.00	0.12	0.470	O	|	|	|	1.39
32.000	0.00	0.12	0.470	O	|	|	|	1.39
32.083	0.00	0.12	0.469	O	|	|	|	1.39
32.167	0.00	0.12	0.468	O	|	|	|	1.39
32.250	0.00	0.12	0.467	O	|	|	|	1.39
32.333	0.00	0.12	0.466	O	|	|	|	1.39
32.417	0.00	0.12	0.465	O	|	|	|	1.38
32.500	0.00	0.12	0.465	O	|	|	|	1.38
32.583	0.00	0.12	0.464	O	|	|	|	1.38

32.667	0.00	0.12	0.463	O	|	|	|	|	1.38
32.750	0.00	0.12	0.462	O	|	|	|	|	1.38
32.833	0.00	0.12	0.461	O	|	|	|	|	1.37
32.917	0.00	0.12	0.461	O	|	|	|	|	1.37
33.000	0.00	0.12	0.460	O	|	|	|	|	1.37
33.083	0.00	0.12	0.459	O	|	|	|	|	1.37
33.167	0.00	0.12	0.458	O	|	|	|	|	1.37
33.250	0.00	0.12	0.457	O	|	|	|	|	1.37
33.333	0.00	0.12	0.457	O	|	|	|	|	1.36
33.417	0.00	0.12	0.456	O	|	|	|	|	1.36
33.500	0.00	0.12	0.455	O	|	|	|	|	1.36
33.583	0.00	0.11	0.454	O	|	|	|	|	1.36
33.667	0.00	0.11	0.453	O	|	|	|	|	1.36
33.750	0.00	0.11	0.453	O	|	|	|	|	1.36
33.833	0.00	0.11	0.452	O	|	|	|	|	1.35
33.917	0.00	0.11	0.451	O	|	|	|	|	1.35
34.000	0.00	0.11	0.450	O	|	|	|	|	1.35
34.083	0.00	0.11	0.449	O	|	|	|	|	1.35
34.167	0.00	0.11	0.449	O	|	|	|	|	1.35
34.250	0.00	0.11	0.448	O	|	|	|	|	1.35
34.333	0.00	0.11	0.447	O	|	|	|	|	1.34
34.417	0.00	0.11	0.446	O	|	|	|	|	1.34
34.500	0.00	0.11	0.446	O	|	|	|	|	1.34
34.583	0.00	0.11	0.445	O	|	|	|	|	1.34
34.667	0.00	0.11	0.444	O	|	|	|	|	1.34
34.750	0.00	0.11	0.443	O	|	|	|	|	1.34
34.833	0.00	0.11	0.442	O	|	|	|	|	1.33
34.917	0.00	0.11	0.442	O	|	|	|	|	1.33
35.000	0.00	0.11	0.441	O	|	|	|	|	

1.33

35.083	0.00	0.11	0.440	O	|	|	|	1.33
35.167	0.00	0.11	0.439	O	|	|	|	1.33
35.250	0.00	0.11	0.439	O	|	|	|	1.33
35.333	0.00	0.11	0.438	O	|	|	|	1.32
35.417	0.00	0.11	0.437	O	|	|	|	1.32
35.500	0.00	0.11	0.436	O	|	|	|	1.32
35.583	0.00	0.11	0.436	O	|	|	|	1.32
35.667	0.00	0.11	0.435	O	|	|	|	1.32
35.750	0.00	0.11	0.434	O	|	|	|	1.32
35.833	0.00	0.11	0.433	O	|	|	|	1.32
35.917	0.00	0.11	0.433	O	|	|	|	1.31
36.000	0.00	0.11	0.432	O	|	|	|	1.31
36.083	0.00	0.11	0.431	O	|	|	|	1.31
36.167	0.00	0.11	0.430	O	|	|	|	1.31
36.250	0.00	0.11	0.430	O	|	|	|	1.31
36.333	0.00	0.11	0.429	O	|	|	|	1.31
36.417	0.00	0.11	0.428	O	|	|	|	1.30
36.500	0.00	0.11	0.428	O	|	|	|	1.30
36.583	0.00	0.11	0.427	O	|	|	|	1.30
36.667	0.00	0.11	0.426	O	|	|	|	1.30
36.750	0.00	0.10	0.425	O	|	|	|	1.30
36.833	0.00	0.10	0.425	O	|	|	|	1.30
36.917	0.00	0.10	0.424	O	|	|	|	1.29
37.000	0.00	0.10	0.423	O	|	|	|	1.29
37.083	0.00	0.10	0.423	O	|	|	|	1.29
37.167	0.00	0.10	0.422	O	|	|	|	1.29
37.250	0.00	0.10	0.421	O	|	|	|	1.29
37.333	0.00	0.10	0.420	O	|	|	|	1.29

37.417	0.00	0.10	0.420	O	|	|	|	|	1.29
37.500	0.00	0.10	0.419	O	|	|	|	|	1.28
37.583	0.00	0.10	0.418	O	|	|	|	|	1.28
37.667	0.00	0.10	0.418	O	|	|	|	|	1.28
37.750	0.00	0.10	0.417	O	|	|	|	|	1.28
37.833	0.00	0.10	0.416	O	|	|	|	|	1.28
37.917	0.00	0.10	0.415	O	|	|	|	|	1.28
38.000	0.00	0.10	0.415	O	|	|	|	|	1.28
38.083	0.00	0.10	0.414	O	|	|	|	|	1.27
38.167	0.00	0.10	0.413	O	|	|	|	|	1.27
38.250	0.00	0.10	0.413	O	|	|	|	|	1.27
38.333	0.00	0.10	0.412	O	|	|	|	|	1.27
38.417	0.00	0.10	0.411	O	|	|	|	|	1.27
38.500	0.00	0.10	0.411	O	|	|	|	|	1.27
38.583	0.00	0.10	0.410	O	|	|	|	|	1.26
38.667	0.00	0.10	0.409	O	|	|	|	|	1.26
38.750	0.00	0.10	0.409	O	|	|	|	|	1.26
38.833	0.00	0.10	0.408	O	|	|	|	|	1.26
38.917	0.00	0.10	0.407	O	|	|	|	|	1.26
39.000	0.00	0.10	0.407	O	|	|	|	|	1.26
39.083	0.00	0.10	0.406	O	|	|	|	|	1.26
39.167	0.00	0.10	0.405	O	|	|	|	|	1.25
39.250	0.00	0.10	0.404	O	|	|	|	|	1.25
39.333	0.00	0.10	0.404	O	|	|	|	|	1.25
39.417	0.00	0.10	0.403	O	|	|	|	|	1.25
39.500	0.00	0.10	0.402	O	|	|	|	|	1.25
39.583	0.00	0.10	0.402	O	|	|	|	|	1.25
39.667	0.00	0.10	0.401	O	|	|	|	|	1.25
39.750	0.00	0.09	0.401	O	|	|	|	|	

1.24

39.833	0.00	0.09	0.400	O	|	|	|	1.24
39.917	0.00	0.09	0.399	O	|	|	|	1.24
40.000	0.00	0.09	0.399	O	|	|	|	1.24
40.083	0.00	0.09	0.398	O	|	|	|	1.24
40.167	0.00	0.09	0.397	O	|	|	|	1.24
40.250	0.00	0.09	0.397	O	|	|	|	1.24
40.333	0.00	0.09	0.396	O	|	|	|	1.23
40.417	0.00	0.09	0.395	O	|	|	|	1.23
40.500	0.00	0.09	0.395	O	|	|	|	1.23
40.583	0.00	0.09	0.394	O	|	|	|	1.23
40.667	0.00	0.09	0.394	O	|	|	|	1.23
40.750	0.00	0.09	0.393	O	|	|	|	1.23
40.833	0.00	0.09	0.392	O	|	|	|	1.23
40.917	0.00	0.09	0.392	O	|	|	|	1.22
41.000	0.00	0.09	0.391	O	|	|	|	1.22
41.083	0.00	0.09	0.391	O	|	|	|	1.22
41.167	0.00	0.09	0.390	O	|	|	|	1.22
41.250	0.00	0.08	0.389	O	|	|	|	1.22
41.333	0.00	0.08	0.389	O	|	|	|	1.22
41.417	0.00	0.08	0.388	O	|	|	|	1.22
41.500	0.00	0.08	0.388	O	|	|	|	1.21
41.583	0.00	0.08	0.387	O	|	|	|	1.21
41.667	0.00	0.08	0.386	O	|	|	|	1.21
41.750	0.00	0.08	0.386	O	|	|	|	1.21
41.833	0.00	0.08	0.385	O	|	|	|	1.21
41.917	0.00	0.08	0.385	O	|	|	|	1.21
42.000	0.00	0.08	0.384	O	|	|	|	1.21
42.083	0.00	0.08	0.384	O	|	|	|	1.21

42.167	0.00	0.08	0.383	O	|	|	|	|	1.20
42.250	0.00	0.08	0.383	O	|	|	|	|	1.20
42.333	0.00	0.08	0.382	O	|	|	|	|	1.20
42.417	0.00	0.08	0.382	O	|	|	|	|	1.20
42.500	0.00	0.08	0.381	O	|	|	|	|	1.20
42.583	0.00	0.08	0.380	O	|	|	|	|	1.20
42.667	0.00	0.08	0.380	O	|	|	|	|	1.20
42.750	0.00	0.08	0.379	O	|	|	|	|	1.20
42.833	0.00	0.08	0.379	O	|	|	|	|	1.19
42.917	0.00	0.08	0.378	O	|	|	|	|	1.19
43.000	0.00	0.07	0.378	O	|	|	|	|	1.19
43.083	0.00	0.07	0.377	O	|	|	|	|	1.19
43.167	0.00	0.07	0.377	O	|	|	|	|	1.19
43.250	0.00	0.07	0.376	O	|	|	|	|	1.19
43.333	0.00	0.07	0.376	O	|	|	|	|	1.19
43.417	0.00	0.07	0.375	O	|	|	|	|	1.19
43.500	0.00	0.07	0.375	O	|	|	|	|	1.19
43.583	0.00	0.07	0.374	O	|	|	|	|	1.18
43.667	0.00	0.07	0.374	O	|	|	|	|	1.18
43.750	0.00	0.07	0.373	O	|	|	|	|	1.18
43.833	0.00	0.07	0.373	O	|	|	|	|	1.18
43.917	0.00	0.07	0.372	O	|	|	|	|	1.18
44.000	0.00	0.07	0.372	O	|	|	|	|	1.18
44.083	0.00	0.07	0.371	O	|	|	|	|	1.18
44.167	0.00	0.07	0.371	O	|	|	|	|	1.18
44.250	0.00	0.07	0.370	O	|	|	|	|	1.18
44.333	0.00	0.07	0.370	O	|	|	|	|	1.17
44.417	0.00	0.07	0.370	O	|	|	|	|	1.17

44.500	0.00	0.07	0.369	O	|	|	|	|	1.17
44.583	0.00	0.07	0.369	O	|	|	|	|	1.17
44.667	0.00	0.07	0.368	O	|	|	|	|	1.17
44.750	0.00	0.07	0.368	O	|	|	|	|	1.17
44.833	0.00	0.07	0.367	O	|	|	|	|	1.17
44.917	0.00	0.07	0.367	O	|	|	|	|	1.17
45.000	0.00	0.06	0.366	O	|	|	|	|	1.17
45.083	0.00	0.06	0.366	O	|	|	|	|	1.16
45.167	0.00	0.06	0.365	O	|	|	|	|	1.16
45.250	0.00	0.06	0.365	O	|	|	|	|	1.16
45.333	0.00	0.06	0.365	O	|	|	|	|	1.16
45.417	0.00	0.06	0.364	O	|	|	|	|	1.16
45.500	0.00	0.06	0.364	O	|	|	|	|	1.16
45.583	0.00	0.06	0.363	O	|	|	|	|	1.16
45.667	0.00	0.06	0.363	O	|	|	|	|	1.16
45.750	0.00	0.06	0.362	O	|	|	|	|	1.16
45.833	0.00	0.06	0.362	O	|	|	|	|	1.16
45.917	0.00	0.06	0.362	O	|	|	|	|	1.15
46.000	0.00	0.06	0.361	O	|	|	|	|	1.15
46.083	0.00	0.06	0.361	O	|	|	|	|	1.15
46.167	0.00	0.06	0.360	O	|	|	|	|	1.15
46.250	0.00	0.06	0.360	O	|	|	|	|	1.15
46.333	0.00	0.06	0.360	O	|	|	|	|	1.15
46.417	0.00	0.06	0.359	O	|	|	|	|	1.15
46.500	0.00	0.06	0.359	O	|	|	|	|	1.15
46.583	0.00	0.06	0.358	O	|	|	|	|	1.15
46.667	0.00	0.06	0.358	O	|	|	|	|	1.15
46.750	0.00	0.06	0.358	O	|	|	|	|	1.15
46.833	0.00	0.06	0.357	O	|	|	|	|	

1.14

46.917	0.00	0.06	0.357	O	|	|	|	1.14
47.000	0.00	0.06	0.356	O	|	|	|	1.14
47.083	0.00	0.06	0.356	O	|	|	|	1.14
47.167	0.00	0.06	0.356	O	|	|	|	1.14
47.250	0.00	0.05	0.355	O	|	|	|	1.14
47.333	0.00	0.05	0.355	O	|	|	|	1.14
47.417	0.00	0.05	0.354	O	|	|	|	1.14
47.500	0.00	0.05	0.354	O	|	|	|	1.14
47.583	0.00	0.05	0.354	O	|	|	|	1.14
47.667	0.00	0.05	0.353	O	|	|	|	1.14
47.750	0.00	0.05	0.353	O	|	|	|	1.14
47.833	0.00	0.05	0.353	O	|	|	|	1.13
47.917	0.00	0.05	0.352	O	|	|	|	1.13
48.000	0.00	0.05	0.352	O	|	|	|	1.13
48.083	0.00	0.05	0.352	O	|	|	|	1.13
48.167	0.00	0.05	0.351	O	|	|	|	1.13
48.250	0.00	0.05	0.351	O	|	|	|	1.13
48.333	0.00	0.05	0.350	O	|	|	|	1.13
48.417	0.00	0.05	0.350	O	|	|	|	1.13
48.500	0.00	0.05	0.350	O	|	|	|	1.13
48.583	0.00	0.05	0.349	O	|	|	|	1.13
48.667	0.00	0.05	0.349	O	|	|	|	1.13
48.750	0.00	0.05	0.349	O	|	|	|	1.13
48.833	0.00	0.05	0.348	O	|	|	|	1.12
48.917	0.00	0.05	0.348	O	|	|	|	1.12
49.000	0.00	0.05	0.348	O	|	|	|	1.12
49.083	0.00	0.05	0.347	O	|	|	|	1.12
49.167	0.00	0.05	0.347	O	|	|	|	1.12

49.250	0.00	0.05	0.347	O	|	|	|	|	1.12
49.333	0.00	0.05	0.346	O	|	|	|	|	1.12
49.417	0.00	0.05	0.346	O	|	|	|	|	1.12
49.500	0.00	0.05	0.346	O	|	|	|	|	1.12
49.583	0.00	0.05	0.345	O	|	|	|	|	1.12
49.667	0.00	0.05	0.345	O	|	|	|	|	1.12
49.750	0.00	0.05	0.345	O	|	|	|	|	1.12
49.833	0.00	0.05	0.345	O	|	|	|	|	1.12
49.917	0.00	0.05	0.344	O	|	|	|	|	1.12
50.000	0.00	0.04	0.344	O	|	|	|	|	1.11
50.083	0.00	0.04	0.344	O	|	|	|	|	1.11
50.167	0.00	0.04	0.343	O	|	|	|	|	1.11
50.250	0.00	0.04	0.343	O	|	|	|	|	1.11
50.333	0.00	0.04	0.343	O	|	|	|	|	1.11
50.417	0.00	0.04	0.342	O	|	|	|	|	1.11
50.500	0.00	0.04	0.342	O	|	|	|	|	1.11
50.583	0.00	0.04	0.342	O	|	|	|	|	1.11
50.667	0.00	0.04	0.341	O	|	|	|	|	1.11
50.750	0.00	0.04	0.341	O	|	|	|	|	1.11
50.833	0.00	0.04	0.341	O	|	|	|	|	1.11
50.917	0.00	0.04	0.341	O	|	|	|	|	1.11
51.000	0.00	0.04	0.340	O	|	|	|	|	1.11
51.083	0.00	0.04	0.340	O	|	|	|	|	1.11
51.167	0.00	0.04	0.340	O	|	|	|	|	1.10
51.250	0.00	0.04	0.339	O	|	|	|	|	1.10
51.333	0.00	0.04	0.339	O	|	|	|	|	1.10
51.417	0.00	0.04	0.339	O	|	|	|	|	1.10
51.500	0.00	0.04	0.339	O	|	|	|	|	1.10
51.583	0.00	0.04	0.338	O	|	|	|	|	

1.10

51.667	0.00	0.04	0.338	O	|	|	|	|	1.10
51.750	0.00	0.04	0.338	O	|	|	|	|	1.10
51.833	0.00	0.04	0.338	O	|	|	|	|	1.10
51.917	0.00	0.04	0.337	O	|	|	|	|	1.10
52.000	0.00	0.04	0.337	O	|	|	|	|	1.10
52.083	0.00	0.04	0.337	O	|	|	|	|	1.10
52.167	0.00	0.04	0.336	O	|	|	|	|	1.10
52.250	0.00	0.04	0.336	O	|	|	|	|	1.10
52.333	0.00	0.04	0.336	O	|	|	|	|	1.10
52.417	0.00	0.04	0.336	O	|	|	|	|	1.10
52.500	0.00	0.04	0.335	O	|	|	|	|	1.09
52.583	0.00	0.04	0.335	O	|	|	|	|	1.09
52.667	0.00	0.04	0.335	O	|	|	|	|	1.09
52.750	0.00	0.04	0.335	O	|	|	|	|	1.09
52.833	0.00	0.04	0.334	O	|	|	|	|	1.09
52.917	0.00	0.04	0.334	O	|	|	|	|	1.09
53.000	0.00	0.04	0.334	O	|	|	|	|	1.09
53.083	0.00	0.04	0.334	O	|	|	|	|	1.09
53.167	0.00	0.04	0.333	O	|	|	|	|	1.09
53.250	0.00	0.04	0.333	O	|	|	|	|	1.09
53.333	0.00	0.04	0.333	O	|	|	|	|	1.09
53.417	0.00	0.04	0.333	O	|	|	|	|	1.09
53.500	0.00	0.03	0.332	O	|	|	|	|	1.09
53.583	0.00	0.03	0.332	O	|	|	|	|	1.09
53.667	0.00	0.03	0.332	O	|	|	|	|	1.09
53.750	0.00	0.03	0.332	O	|	|	|	|	1.09
53.833	0.00	0.03	0.331	O	|	|	|	|	1.09
53.917	0.00	0.03	0.331	O	|	|	|	|	1.09

54.000	0.00	0.03	0.331	O	|	|	|	|	1.08
54.083	0.00	0.03	0.331	O	|	|	|	|	1.08
54.167	0.00	0.03	0.331	O	|	|	|	|	1.08
54.250	0.00	0.03	0.330	O	|	|	|	|	1.08
54.333	0.00	0.03	0.330	O	|	|	|	|	1.08
54.417	0.00	0.03	0.330	O	|	|	|	|	1.08
54.500	0.00	0.03	0.330	O	|	|	|	|	1.08
54.583	0.00	0.03	0.329	O	|	|	|	|	1.08
54.667	0.00	0.03	0.329	O	|	|	|	|	1.08
54.750	0.00	0.03	0.329	O	|	|	|	|	1.08
54.833	0.00	0.03	0.329	O	|	|	|	|	1.08
54.917	0.00	0.03	0.329	O	|	|	|	|	1.08
55.000	0.00	0.03	0.328	O	|	|	|	|	1.08
55.083	0.00	0.03	0.328	O	|	|	|	|	1.08
55.167	0.00	0.03	0.328	O	|	|	|	|	1.08
55.250	0.00	0.03	0.328	O	|	|	|	|	1.08
55.333	0.00	0.03	0.327	O	|	|	|	|	1.08
55.417	0.00	0.03	0.327	O	|	|	|	|	1.08
55.500	0.00	0.03	0.327	O	|	|	|	|	1.08
55.583	0.00	0.03	0.327	O	|	|	|	|	1.08
55.667	0.00	0.03	0.327	O	|	|	|	|	1.07
55.750	0.00	0.03	0.326	O	|	|	|	|	1.07
55.833	0.00	0.03	0.326	O	|	|	|	|	1.07
55.917	0.00	0.03	0.326	O	|	|	|	|	1.07
56.000	0.00	0.03	0.326	O	|	|	|	|	1.07
56.083	0.00	0.03	0.326	O	|	|	|	|	1.07
56.167	0.00	0.03	0.325	O	|	|	|	|	1.07
56.250	0.00	0.03	0.325	O	|	|	|	|	1.07
56.333	0.00	0.03	0.325	O	|	|	|	|	

1.07

56.417	0.00	0.03	0.325	O	|	|	|	1.07
56.500	0.00	0.03	0.325	O	|	|	|	1.07
56.583	0.00	0.03	0.324	O	|	|	|	1.07
56.667	0.00	0.03	0.324	O	|	|	|	1.07
56.750	0.00	0.03	0.324	O	|	|	|	1.07
56.833	0.00	0.03	0.324	O	|	|	|	1.07
56.917	0.00	0.03	0.324	O	|	|	|	1.07
57.000	0.00	0.03	0.324	O	|	|	|	1.07
57.083	0.00	0.03	0.323	O	|	|	|	1.07
57.167	0.00	0.03	0.323	O	|	|	|	1.07
57.250	0.00	0.03	0.323	O	|	|	|	1.07
57.333	0.00	0.03	0.323	O	|	|	|	1.07
57.417	0.00	0.03	0.323	O	|	|	|	1.07
57.500	0.00	0.03	0.322	O	|	|	|	1.07
57.583	0.00	0.03	0.322	O	|	|	|	1.06
57.667	0.00	0.03	0.322	O	|	|	|	1.06
57.750	0.00	0.03	0.322	O	|	|	|	1.06
57.833	0.00	0.03	0.322	O	|	|	|	1.06
57.917	0.00	0.03	0.322	O	|	|	|	1.06
58.000	0.00	0.03	0.321	O	|	|	|	1.06
58.083	0.00	0.02	0.321	O	|	|	|	1.06
58.167	0.00	0.02	0.321	O	|	|	|	1.06
58.250	0.00	0.02	0.321	O	|	|	|	1.06
58.333	0.00	0.02	0.321	O	|	|	|	1.06
58.417	0.00	0.02	0.321	O	|	|	|	1.06
58.500	0.00	0.02	0.320	O	|	|	|	1.06
58.583	0.00	0.02	0.320	O	|	|	|	1.06
58.667	0.00	0.02	0.320	O	|	|	|	1.06

58.750	0.00	0.02	0.320	O	|	|	|	|	1.06
58.833	0.00	0.02	0.320	O	|	|	|	|	1.06
58.917	0.00	0.02	0.320	O	|	|	|	|	1.06
59.000	0.00	0.02	0.319	O	|	|	|	|	1.06
59.083	0.00	0.02	0.319	O	|	|	|	|	1.06
59.167	0.00	0.02	0.319	O	|	|	|	|	1.06
59.250	0.00	0.02	0.319	O	|	|	|	|	1.06
59.333	0.00	0.02	0.319	O	|	|	|	|	1.06
59.417	0.00	0.02	0.319	O	|	|	|	|	1.06
59.500	0.00	0.02	0.318	O	|	|	|	|	1.06
59.583	0.00	0.02	0.318	O	|	|	|	|	1.06
59.667	0.00	0.02	0.318	O	|	|	|	|	1.06
59.750	0.00	0.02	0.318	O	|	|	|	|	1.05
59.833	0.00	0.02	0.318	O	|	|	|	|	1.05
59.917	0.00	0.02	0.318	O	|	|	|	|	1.05
60.000	0.00	0.02	0.318	O	|	|	|	|	1.05
60.083	0.00	0.02	0.317	O	|	|	|	|	1.05
60.167	0.00	0.02	0.317	O	|	|	|	|	1.05
60.250	0.00	0.02	0.317	O	|	|	|	|	1.05
60.333	0.00	0.02	0.317	O	|	|	|	|	1.05
60.417	0.00	0.02	0.317	O	|	|	|	|	1.05
60.500	0.00	0.02	0.317	O	|	|	|	|	1.05
60.583	0.00	0.02	0.316	O	|	|	|	|	1.05
60.667	0.00	0.02	0.316	O	|	|	|	|	1.05
60.750	0.00	0.02	0.316	O	|	|	|	|	1.05
60.833	0.00	0.02	0.316	O	|	|	|	|	1.05
60.917	0.00	0.02	0.316	O	|	|	|	|	1.05
61.000	0.00	0.02	0.316	O	|	|	|	|	1.05
61.083	0.00	0.02	0.316	O	|	|	|	|	

1.05

61.167	0.00	0.02	0.316	O	|	|	|	|	1.05
61.250	0.00	0.02	0.315	O	|	|	|	|	1.05
61.333	0.00	0.02	0.315	O	|	|	|	|	1.05
61.417	0.00	0.02	0.315	O	|	|	|	|	1.05
61.500	0.00	0.02	0.315	O	|	|	|	|	1.05
61.583	0.00	0.02	0.315	O	|	|	|	|	1.05
61.667	0.00	0.02	0.315	O	|	|	|	|	1.05
61.750	0.00	0.02	0.315	O	|	|	|	|	1.05
61.833	0.00	0.02	0.314	O	|	|	|	|	1.05
61.917	0.00	0.02	0.314	O	|	|	|	|	1.05
62.000	0.00	0.02	0.314	O	|	|	|	|	1.05
62.083	0.00	0.02	0.314	O	|	|	|	|	1.05
62.167	0.00	0.02	0.314	O	|	|	|	|	1.05
62.250	0.00	0.02	0.314	O	|	|	|	|	1.05
62.333	0.00	0.02	0.314	O	|	|	|	|	1.05
62.417	0.00	0.02	0.314	O	|	|	|	|	1.04
62.500	0.00	0.02	0.313	O	|	|	|	|	1.04
62.583	0.00	0.02	0.313	O	|	|	|	|	1.04
62.667	0.00	0.02	0.313	O	|	|	|	|	1.04
62.750	0.00	0.02	0.313	O	|	|	|	|	1.04
62.833	0.00	0.02	0.313	O	|	|	|	|	1.04
62.917	0.00	0.02	0.313	O	|	|	|	|	1.04
63.000	0.00	0.02	0.313	O	|	|	|	|	1.04
63.083	0.00	0.02	0.313	O	|	|	|	|	1.04
63.167	0.00	0.02	0.312	O	|	|	|	|	1.04
63.250	0.00	0.02	0.312	O	|	|	|	|	1.04
63.333	0.00	0.02	0.312	O	|	|	|	|	1.04
63.417	0.00	0.02	0.312	O	|	|	|	|	1.04

63.500	0.00	0.02	0.312	O	|	|	|	|	1.04
63.583	0.00	0.02	0.312	O	|	|	|	|	1.04
63.667	0.00	0.02	0.312	O	|	|	|	|	1.04
63.750	0.00	0.02	0.312	O	|	|	|	|	1.04
63.833	0.00	0.02	0.312	O	|	|	|	|	1.04
63.917	0.00	0.02	0.311	O	|	|	|	|	1.04
64.000	0.00	0.02	0.311	O	|	|	|	|	1.04
64.083	0.00	0.02	0.311	O	|	|	|	|	1.04
64.167	0.00	0.02	0.311	O	|	|	|	|	1.04
64.250	0.00	0.02	0.311	O	|	|	|	|	1.04
64.333	0.00	0.02	0.311	O	|	|	|	|	1.04
64.417	0.00	0.02	0.311	O	|	|	|	|	1.04
64.500	0.00	0.02	0.311	O	|	|	|	|	1.04
64.583	0.00	0.02	0.311	O	|	|	|	|	1.04
64.667	0.00	0.02	0.310	O	|	|	|	|	1.04
64.750	0.00	0.02	0.310	O	|	|	|	|	1.04
64.833	0.00	0.02	0.310	O	|	|	|	|	1.04
64.917	0.00	0.02	0.310	O	|	|	|	|	1.04
65.000	0.00	0.02	0.310	O	|	|	|	|	1.04
65.083	0.00	0.01	0.310	O	|	|	|	|	1.04
65.167	0.00	0.01	0.310	O	|	|	|	|	1.04
65.250	0.00	0.01	0.310	O	|	|	|	|	1.04
65.333	0.00	0.01	0.310	O	|	|	|	|	1.04
65.417	0.00	0.01	0.309	O	|	|	|	|	1.04
65.500	0.00	0.01	0.309	O	|	|	|	|	1.04
65.583	0.00	0.01	0.309	O	|	|	|	|	1.04
65.667	0.00	0.01	0.309	O	|	|	|	|	1.03
65.750	0.00	0.01	0.309	O	|	|	|	|	1.03

65.833	0.00	0.01	0.309	O	|	|	|	|	1.03
65.917	0.00	0.01	0.309	O	|	|	|	|	1.03
66.000	0.00	0.01	0.309	O	|	|	|	|	1.03
66.083	0.00	0.01	0.309	O	|	|	|	|	1.03
66.167	0.00	0.01	0.309	O	|	|	|	|	1.03
66.250	0.00	0.01	0.309	O	|	|	|	|	1.03
66.333	0.00	0.01	0.308	O	|	|	|	|	1.03
66.417	0.00	0.01	0.308	O	|	|	|	|	1.03
66.500	0.00	0.01	0.308	O	|	|	|	|	1.03
66.583	0.00	0.01	0.308	O	|	|	|	|	1.03
66.667	0.00	0.01	0.308	O	|	|	|	|	1.03
66.750	0.00	0.01	0.308	O	|	|	|	|	1.03
66.833	0.00	0.01	0.308	O	|	|	|	|	1.03
66.917	0.00	0.01	0.308	O	|	|	|	|	1.03
67.000	0.00	0.01	0.308	O	|	|	|	|	1.03
67.083	0.00	0.01	0.308	O	|	|	|	|	1.03
67.167	0.00	0.01	0.307	O	|	|	|	|	1.03
67.250	0.00	0.01	0.307	O	|	|	|	|	1.03
67.333	0.00	0.01	0.307	O	|	|	|	|	1.03
67.417	0.00	0.01	0.307	O	|	|	|	|	1.03
67.500	0.00	0.01	0.307	O	|	|	|	|	1.03
67.583	0.00	0.01	0.307	O	|	|	|	|	1.03
67.667	0.00	0.01	0.307	O	|	|	|	|	1.03
67.750	0.00	0.01	0.307	O	|	|	|	|	1.03
67.833	0.00	0.01	0.307	O	|	|	|	|	1.03
67.917	0.00	0.01	0.307	O	|	|	|	|	1.03
68.000	0.00	0.01	0.307	O	|	|	|	|	1.03
68.083	0.00	0.01	0.307	O	|	|	|	|	1.03
68.167	0.00	0.01	0.306	O	|	|	|	|	

1.03

68.250	0.00	0.01	0.306	O	|	|	|	|	1.03
68.333	0.00	0.01	0.306	O	|	|	|	|	1.03
68.417	0.00	0.01	0.306	O	|	|	|	|	1.03
68.500	0.00	0.01	0.306	O	|	|	|	|	1.03
68.583	0.00	0.01	0.306	O	|	|	|	|	1.03
68.667	0.00	0.01	0.306	O	|	|	|	|	1.03
68.750	0.00	0.01	0.306	O	|	|	|	|	1.03
68.833	0.00	0.01	0.306	O	|	|	|	|	1.03
68.917	0.00	0.01	0.306	O	|	|	|	|	1.03
69.000	0.00	0.01	0.306	O	|	|	|	|	1.03
69.083	0.00	0.01	0.306	O	|	|	|	|	1.03
69.167	0.00	0.01	0.306	O	|	|	|	|	1.03
69.250	0.00	0.01	0.305	O	|	|	|	|	1.03
69.333	0.00	0.01	0.305	O	|	|	|	|	1.03
69.417	0.00	0.01	0.305	O	|	|	|	|	1.03
69.500	0.00	0.01	0.305	O	|	|	|	|	1.03
69.583	0.00	0.01	0.305	O	|	|	|	|	1.03
69.667	0.00	0.01	0.305	O	|	|	|	|	1.03
69.750	0.00	0.01	0.305	O	|	|	|	|	1.03
69.833	0.00	0.01	0.305	O	|	|	|	|	1.03
69.917	0.00	0.01	0.305	O	|	|	|	|	1.02
70.000	0.00	0.01	0.305	O	|	|	|	|	1.02
70.083	0.00	0.01	0.305	O	|	|	|	|	1.02
70.167	0.00	0.01	0.305	O	|	|	|	|	1.02
70.250	0.00	0.01	0.305	O	|	|	|	|	1.02
70.333	0.00	0.01	0.304	O	|	|	|	|	1.02
70.417	0.00	0.01	0.304	O	|	|	|	|	1.02
70.500	0.00	0.01	0.304	O	|	|	|	|	1.02

70.583	0.00	0.01	0.304	O	|	|	|	|	1.02
70.667	0.00	0.01	0.304	O	|	|	|	|	1.02
70.750	0.00	0.01	0.304	O	|	|	|	|	1.02
70.833	0.00	0.01	0.304	O	|	|	|	|	1.02
70.917	0.00	0.01	0.304	O	|	|	|	|	1.02
71.000	0.00	0.01	0.304	O	|	|	|	|	1.02
71.083	0.00	0.01	0.304	O	|	|	|	|	1.02
71.167	0.00	0.01	0.304	O	|	|	|	|	1.02
71.250	0.00	0.01	0.304	O	|	|	|	|	1.02
71.333	0.00	0.01	0.304	O	|	|	|	|	1.02
71.417	0.00	0.01	0.304	O	|	|	|	|	1.02
71.500	0.00	0.01	0.304	O	|	|	|	|	1.02
71.583	0.00	0.01	0.303	O	|	|	|	|	1.02
71.667	0.00	0.01	0.303	O	|	|	|	|	1.02
71.750	0.00	0.01	0.303	O	|	|	|	|	1.02
71.833	0.00	0.01	0.303	O	|	|	|	|	1.02
71.917	0.00	0.01	0.303	O	|	|	|	|	1.02
72.000	0.00	0.01	0.303	O	|	|	|	|	1.02
72.083	0.00	0.01	0.303	O	|	|	|	|	1.02
72.167	0.00	0.01	0.303	O	|	|	|	|	1.02
72.250	0.00	0.01	0.303	O	|	|	|	|	1.02
72.333	0.00	0.01	0.303	O	|	|	|	|	1.02
72.417	0.00	0.01	0.303	O	|	|	|	|	1.02
72.500	0.00	0.01	0.303	O	|	|	|	|	1.02
72.583	0.00	0.01	0.303	O	|	|	|	|	1.02
72.667	0.00	0.01	0.303	O	|	|	|	|	1.02
72.750	0.00	0.01	0.303	O	|	|	|	|	1.02
72.833	0.00	0.01	0.303	O	|	|	|	|	1.02
72.917	0.00	0.01	0.302	O	|	|	|	|	

1.02

73.000	0.00	0.01	0.302	O	|	|	|	|	1.02
73.083	0.00	0.01	0.302	O	|	|	|	|	1.02
73.167	0.00	0.01	0.302	O	|	|	|	|	1.02
73.250	0.00	0.01	0.302	O	|	|	|	|	1.02
73.333	0.00	0.01	0.302	O	|	|	|	|	1.02
73.417	0.00	0.01	0.302	O	|	|	|	|	1.02
73.500	0.00	0.01	0.302	O	|	|	|	|	1.02
73.583	0.00	0.01	0.302	O	|	|	|	|	1.02
73.667	0.00	0.01	0.302	O	|	|	|	|	1.02
73.750	0.00	0.01	0.302	O	|	|	|	|	1.02
73.833	0.00	0.01	0.302	O	|	|	|	|	1.02
73.917	0.00	0.01	0.302	O	|	|	|	|	1.02
74.000	0.00	0.01	0.302	O	|	|	|	|	1.02
74.083	0.00	0.01	0.302	O	|	|	|	|	1.02
74.167	0.00	0.01	0.302	O	|	|	|	|	1.02
74.250	0.00	0.01	0.302	O	|	|	|	|	1.02
74.333	0.00	0.01	0.302	O	|	|	|	|	1.02
74.417	0.00	0.01	0.301	O	|	|	|	|	1.02
74.500	0.00	0.01	0.301	O	|	|	|	|	1.02
74.583	0.00	0.01	0.301	O	|	|	|	|	1.02
74.667	0.00	0.01	0.301	O	|	|	|	|	1.02
74.750	0.00	0.01	0.301	O	|	|	|	|	1.02
74.833	0.00	0.01	0.301	O	|	|	|	|	1.02
74.917	0.00	0.01	0.301	O	|	|	|	|	1.02
75.000	0.00	0.01	0.301	O	|	|	|	|	1.02
75.083	0.00	0.01	0.301	O	|	|	|	|	1.02
75.167	0.00	0.01	0.301	O	|	|	|	|	1.02
75.250	0.00	0.01	0.301	O	|	|	|	|	1.02

75.333	0.00	0.01	0.301	O	|	|	|	|	1.02
75.417	0.00	0.01	0.301	O	|	|	|	|	1.02
75.500	0.00	0.01	0.301	O	|	|	|	|	1.02
75.583	0.00	0.01	0.301	O	|	|	|	|	1.02
75.667	0.00	0.01	0.301	O	|	|	|	|	1.02
75.750	0.00	0.01	0.301	O	|	|	|	|	1.02
75.833	0.00	0.01	0.301	O	|	|	|	|	1.02
75.917	0.00	0.01	0.301	O	|	|	|	|	1.02
76.000	0.00	0.01	0.301	O	|	|	|	|	1.02
76.083	0.00	0.01	0.301	O	|	|	|	|	1.01
76.167	0.00	0.01	0.300	O	|	|	|	|	1.01
76.250	0.00	0.01	0.300	O	|	|	|	|	1.01
76.333	0.00	0.01	0.300	O	|	|	|	|	1.01
76.417	0.00	0.01	0.300	O	|	|	|	|	1.01
76.500	0.00	0.01	0.300	O	|	|	|	|	1.01
76.583	0.00	0.01	0.300	O	|	|	|	|	1.01
76.667	0.00	0.01	0.300	O	|	|	|	|	1.01
76.750	0.00	0.01	0.300	O	|	|	|	|	1.01
76.833	0.00	0.01	0.300	O	|	|	|	|	1.01
76.917	0.00	0.01	0.300	O	|	|	|	|	1.01
77.000	0.00	0.01	0.300	O	|	|	|	|	1.01
77.083	0.00	0.01	0.300	O	|	|	|	|	1.01
77.167	0.00	0.01	0.300	O	|	|	|	|	1.01
77.250	0.00	0.01	0.300	O	|	|	|	|	1.01
77.333	0.00	0.01	0.300	O	|	|	|	|	1.01
77.417	0.00	0.01	0.300	O	|	|	|	|	1.01
77.500	0.00	0.01	0.300	O	|	|	|	|	1.01
77.583	0.00	0.01	0.300	O	|	|	|	|	1.01
77.667	0.00	0.01	0.300	O	|	|	|	|	

1.01

77.750	0.00	0.01	0.300	O	|	|	|	|	1.01
77.833	0.00	0.01	0.300	O	|	|	|	|	1.01
77.917	0.00	0.01	0.300	O	|	|	|	|	1.01
78.000	0.00	0.01	0.300	O	|	|	|	|	1.01
78.083	0.00	0.01	0.299	O	|	|	|	|	1.01
78.167	0.00	0.01	0.299	O	|	|	|	|	1.01
78.250	0.00	0.01	0.299	O	|	|	|	|	1.01
78.333	0.00	0.01	0.299	O	|	|	|	|	1.01
78.417	0.00	0.01	0.299	O	|	|	|	|	1.01
78.500	0.00	0.01	0.299	O	|	|	|	|	1.01
78.583	0.00	0.01	0.299	O	|	|	|	|	1.01
78.667	0.00	0.01	0.299	O	|	|	|	|	1.01
78.750	0.00	0.01	0.299	O	|	|	|	|	1.01
78.833	0.00	0.01	0.299	O	|	|	|	|	1.01
78.917	0.00	0.01	0.299	O	|	|	|	|	1.01
79.000	0.00	0.01	0.299	O	|	|	|	|	1.01
79.083	0.00	0.01	0.299	O	|	|	|	|	1.01
79.167	0.00	0.01	0.299	O	|	|	|	|	1.01
79.250	0.00	0.01	0.299	O	|	|	|	|	1.01
79.333	0.00	0.01	0.299	O	|	|	|	|	1.01
79.417	0.00	0.01	0.299	O	|	|	|	|	1.01
79.500	0.00	0.01	0.299	O	|	|	|	|	1.01
79.583	0.00	0.01	0.299	O	|	|	|	|	1.01
79.667	0.00	0.01	0.299	O	|	|	|	|	1.01
79.750	0.00	0.01	0.299	O	|	|	|	|	1.01
79.833	0.00	0.01	0.299	O	|	|	|	|	1.01
79.917	0.00	0.01	0.299	O	|	|	|	|	1.01
80.000	0.00	0.01	0.299	O	|	|	|	|	1.01

80.083	0.00	0.01	0.299	O	|	|	|	|	1.01
80.167	0.00	0.01	0.299	O	|	|	|	|	1.01
80.250	0.00	0.00	0.299	O	|	|	|	|	1.01
80.333	0.00	0.00	0.298	O	|	|	|	|	1.01
80.417	0.00	0.00	0.298	O	|	|	|	|	1.01
80.500	0.00	0.00	0.298	O	|	|	|	|	1.01
80.583	0.00	0.00	0.298	O	|	|	|	|	1.01
80.667	0.00	0.00	0.298	O	|	|	|	|	1.01
80.750	0.00	0.00	0.298	O	|	|	|	|	1.01
80.833	0.00	0.00	0.298	O	|	|	|	|	1.01
80.917	0.00	0.00	0.298	O	|	|	|	|	1.01
81.000	0.00	0.00	0.298	O	|	|	|	|	1.01
81.083	0.00	0.00	0.298	O	|	|	|	|	1.01
81.167	0.00	0.00	0.298	O	|	|	|	|	1.01
81.250	0.00	0.00	0.298	O	|	|	|	|	1.01
81.333	0.00	0.00	0.298	O	|	|	|	|	1.01
81.417	0.00	0.00	0.298	O	|	|	|	|	1.01
81.500	0.00	0.00	0.298	O	|	|	|	|	1.01
81.583	0.00	0.00	0.298	O	|	|	|	|	1.01
81.667	0.00	0.00	0.298	O	|	|	|	|	1.01
81.750	0.00	0.00	0.298	O	|	|	|	|	1.01
81.833	0.00	0.00	0.298	O	|	|	|	|	1.01
81.917	0.00	0.00	0.298	O	|	|	|	|	1.01
82.000	0.00	0.00	0.298	O	|	|	|	|	1.01
82.083	0.00	0.00	0.298	O	|	|	|	|	1.01
82.167	0.00	0.00	0.298	O	|	|	|	|	1.01
82.250	0.00	0.00	0.298	O	|	|	|	|	1.01
82.333	0.00	0.00	0.298	O	|	|	|	|	1.01
82.417	0.00	0.00	0.298	O	|	|	|	|	

1.01

82.500	0.00	0.00	0.298	O	|	|	|	|	1.01
82.583	0.00	0.00	0.298	O	|	|	|	|	1.01
82.667	0.00	0.00	0.298	O	|	|	|	|	1.01
82.750	0.00	0.00	0.298	O	|	|	|	|	1.01
82.833	0.00	0.00	0.298	O	|	|	|	|	1.01
82.917	0.00	0.00	0.298	O	|	|	|	|	1.01
83.000	0.00	0.00	0.297	O	|	|	|	|	1.01
83.083	0.00	0.00	0.297	O	|	|	|	|	1.01
83.167	0.00	0.00	0.297	O	|	|	|	|	1.01
83.250	0.00	0.00	0.297	O	|	|	|	|	1.01
83.333	0.00	0.00	0.297	O	|	|	|	|	1.01
83.417	0.00	0.00	0.297	O	|	|	|	|	1.01
83.500	0.00	0.00	0.297	O	|	|	|	|	1.01
83.583	0.00	0.00	0.297	O	|	|	|	|	1.01
83.667	0.00	0.00	0.297	O	|	|	|	|	1.01
83.750	0.00	0.00	0.297	O	|	|	|	|	1.01
83.833	0.00	0.00	0.297	O	|	|	|	|	1.01
83.917	0.00	0.00	0.297	O	|	|	|	|	1.01
84.000	0.00	0.00	0.297	O	|	|	|	|	1.01
84.083	0.00	0.00	0.297	O	|	|	|	|	1.01
84.167	0.00	0.00	0.297	O	|	|	|	|	1.01
84.250	0.00	0.00	0.297	O	|	|	|	|	1.01
84.333	0.00	0.00	0.297	O	|	|	|	|	1.01
84.417	0.00	0.00	0.297	O	|	|	|	|	1.01
84.500	0.00	0.00	0.297	O	|	|	|	|	1.01
84.583	0.00	0.00	0.297	O	|	|	|	|	1.01
84.667	0.00	0.00	0.297	O	|	|	|	|	1.01
84.750	0.00	0.00	0.297	O	|	|	|	|	1.01

84.833	0.00	0.00	0.297	O	|	|	|	|	1.01
84.917	0.00	0.00	0.297	O	|	|	|	|	1.01
85.000	0.00	0.00	0.297	O	|	|	|	|	1.01
85.083	0.00	0.00	0.297	O	|	|	|	|	1.01
85.167	0.00	0.00	0.297	O	|	|	|	|	1.01
85.250	0.00	0.00	0.297	O	|	|	|	|	1.01
85.333	0.00	0.00	0.297	O	|	|	|	|	1.01
85.417	0.00	0.00	0.297	O	|	|	|	|	1.01
85.500	0.00	0.00	0.297	O	|	|	|	|	1.01
85.583	0.00	0.00	0.297	O	|	|	|	|	1.01
85.667	0.00	0.00	0.297	O	|	|	|	|	1.01
85.750	0.00	0.00	0.297	O	|	|	|	|	1.01
85.833	0.00	0.00	0.297	O	|	|	|	|	1.01
85.917	0.00	0.00	0.297	O	|	|	|	|	1.01
86.000	0.00	0.00	0.297	O	|	|	|	|	1.01
86.083	0.00	0.00	0.297	O	|	|	|	|	1.01
86.167	0.00	0.00	0.297	O	|	|	|	|	1.01
86.250	0.00	0.00	0.297	O	|	|	|	|	1.01
86.333	0.00	0.00	0.296	O	|	|	|	|	1.01
86.417	0.00	0.00	0.296	O	|	|	|	|	1.01
86.500	0.00	0.00	0.296	O	|	|	|	|	1.01
86.583	0.00	0.00	0.296	O	|	|	|	|	1.01
86.667	0.00	0.00	0.296	O	|	|	|	|	1.01
86.750	0.00	0.00	0.296	O	|	|	|	|	1.01
86.833	0.00	0.00	0.296	O	|	|	|	|	1.01
86.917	0.00	0.00	0.296	O	|	|	|	|	1.01
87.000	0.00	0.00	0.296	O	|	|	|	|	1.01
87.083	0.00	0.00	0.296	O	|	|	|	|	1.01

87.167	0.00	0.00	0.296	O	|	|	|	|	1.01
87.250	0.00	0.00	0.296	O	|	|	|	|	1.01
87.333	0.00	0.00	0.296	O	|	|	|	|	1.01
87.417	0.00	0.00	0.296	O	|	|	|	|	1.01
87.500	0.00	0.00	0.296	O	|	|	|	|	1.01
87.583	0.00	0.00	0.296	O	|	|	|	|	1.00
87.667	0.00	0.00	0.296	O	|	|	|	|	1.00
87.750	0.00	0.00	0.296	O	|	|	|	|	1.00
87.833	0.00	0.00	0.296	O	|	|	|	|	1.00
87.917	0.00	0.00	0.296	O	|	|	|	|	1.00
88.000	0.00	0.00	0.296	O	|	|	|	|	1.00
88.083	0.00	0.00	0.296	O	|	|	|	|	1.00
88.167	0.00	0.00	0.296	O	|	|	|	|	1.00
88.250	0.00	0.00	0.296	O	|	|	|	|	1.00
88.333	0.00	0.00	0.296	O	|	|	|	|	1.00
88.417	0.00	0.00	0.296	O	|	|	|	|	1.00
88.500	0.00	0.00	0.296	O	|	|	|	|	1.00
88.583	0.00	0.00	0.296	O	|	|	|	|	1.00
88.667	0.00	0.00	0.296	O	|	|	|	|	1.00
88.750	0.00	0.00	0.296	O	|	|	|	|	1.00
88.833	0.00	0.00	0.296	O	|	|	|	|	1.00
88.917	0.00	0.00	0.296	O	|	|	|	|	1.00
89.000	0.00	0.00	0.296	O	|	|	|	|	1.00
89.083	0.00	0.00	0.296	O	|	|	|	|	1.00
89.167	0.00	0.00	0.296	O	|	|	|	|	1.00
89.250	0.00	0.00	0.296	O	|	|	|	|	1.00
89.333	0.00	0.00	0.296	O	|	|	|	|	1.00
89.417	0.00	0.00	0.296	O	|	|	|	|	1.00
89.500	0.00	0.00	0.296	O	|	|	|	|	

1.00

89.583	0.00	0.00	0.296	O	|	|	|	|	1.00
89.667	0.00	0.00	0.296	O	|	|	|	|	1.00
89.750	0.00	0.00	0.296	O	|	|	|	|	1.00
89.833	0.00	0.00	0.296	O	|	|	|	|	1.00
89.917	0.00	0.00	0.296	O	|	|	|	|	1.00
90.000	0.00	0.00	0.296	O	|	|	|	|	1.00
90.083	0.00	0.00	0.296	O	|	|	|	|	1.00
90.167	0.00	0.00	0.296	O	|	|	|	|	1.00
90.250	0.00	0.00	0.296	O	|	|	|	|	1.00
90.333	0.00	0.00	0.296	O	|	|	|	|	1.00
90.417	0.00	0.00	0.296	O	|	|	|	|	1.00
90.500	0.00	0.00	0.296	O	|	|	|	|	1.00
90.583	0.00	0.00	0.296	O	|	|	|	|	1.00
90.667	0.00	0.00	0.296	O	|	|	|	|	1.00
90.750	0.00	0.00	0.295	O	|	|	|	|	1.00
90.833	0.00	0.00	0.295	O	|	|	|	|	1.00
90.917	0.00	0.00	0.295	O	|	|	|	|	1.00
91.000	0.00	0.00	0.295	O	|	|	|	|	1.00
91.083	0.00	0.00	0.295	O	|	|	|	|	1.00
91.167	0.00	0.00	0.295	O	|	|	|	|	1.00
91.250	0.00	0.00	0.295	O	|	|	|	|	1.00
91.333	0.00	0.00	0.295	O	|	|	|	|	1.00
91.417	0.00	0.00	0.295	O	|	|	|	|	1.00
91.500	0.00	0.00	0.295	O	|	|	|	|	1.00
91.583	0.00	0.00	0.295	O	|	|	|	|	1.00
91.667	0.00	0.00	0.295	O	|	|	|	|	1.00
91.750	0.00	0.00	0.295	O	|	|	|	|	1.00
91.833	0.00	0.00	0.295	O	|	|	|	|	1.00

91.917	0.00	0.00	0.295	O	|	|	|	|	1.00
92.000	0.00	0.00	0.295	O	|	|	|	|	1.00
92.083	0.00	0.00	0.295	O	|	|	|	|	1.00
92.167	0.00	0.00	0.295	O	|	|	|	|	1.00
92.250	0.00	0.00	0.295	O	|	|	|	|	1.00
92.333	0.00	0.00	0.295	O	|	|	|	|	1.00
92.417	0.00	0.00	0.295	O	|	|	|	|	1.00
92.500	0.00	0.00	0.295	O	|	|	|	|	1.00
92.583	0.00	0.00	0.295	O	|	|	|	|	1.00
92.667	0.00	0.00	0.295	O	|	|	|	|	1.00
92.750	0.00	0.00	0.295	O	|	|	|	|	1.00
92.833	0.00	0.00	0.295	O	|	|	|	|	1.00
92.917	0.00	0.00	0.295	O	|	|	|	|	1.00
93.000	0.00	0.00	0.295	O	|	|	|	|	1.00
93.083	0.00	0.00	0.295	O	|	|	|	|	1.00
93.167	0.00	0.00	0.295	O	|	|	|	|	1.00
93.250	0.00	0.00	0.295	O	|	|	|	|	1.00
93.333	0.00	0.00	0.295	O	|	|	|	|	1.00
93.417	0.00	0.00	0.295	O	|	|	|	|	1.00
93.500	0.00	0.00	0.295	O	|	|	|	|	1.00
93.583	0.00	0.00	0.295	O	|	|	|	|	1.00
93.667	0.00	0.00	0.295	O	|	|	|	|	1.00
93.750	0.00	0.00	0.295	O	|	|	|	|	1.00
93.833	0.00	0.00	0.295	O	|	|	|	|	1.00
93.917	0.00	0.00	0.295	O	|	|	|	|	1.00
94.000	0.00	0.00	0.295	O	|	|	|	|	1.00
94.083	0.00	0.00	0.295	O	|	|	|	|	1.00
94.167	0.00	0.00	0.295	O	|	|	|	|	1.00
94.250	0.00	0.00	0.295	O	|	|	|	|	

1.00

94.333	0.00	0.00	0.295	O	|	|	|	1.00
94.417	0.00	0.00	0.295	O	|	|	|	1.00
94.500	0.00	0.00	0.295	O	|	|	|	1.00
94.583	0.00	0.00	0.295	O	|	|	|	1.00
94.667	0.00	0.00	0.295	O	|	|	|	1.00
94.750	0.00	0.00	0.295	O	|	|	|	1.00
94.833	0.00	0.00	0.295	O	|	|	|	1.00
94.917	0.00	0.00	0.295	O	|	|	|	1.00
95.000	0.00	0.00	0.295	O	|	|	|	1.00
95.083	0.00	0.00	0.295	O	|	|	|	1.00
95.167	0.00	0.00	0.295	O	|	|	|	1.00
95.250	0.00	0.00	0.295	O	|	|	|	1.00
95.333	0.00	0.00	0.295	O	|	|	|	1.00
95.417	0.00	0.00	0.295	O	|	|	|	1.00
95.500	0.00	0.00	0.295	O	|	|	|	1.00
95.583	0.00	0.00	0.295	O	|	|	|	1.00
95.667	0.00	0.00	0.295	O	|	|	|	1.00
95.750	0.00	0.00	0.295	O	|	|	|	1.00
95.833	0.00	0.00	0.295	O	|	|	|	1.00
95.917	0.00	0.00	0.295	O	|	|	|	1.00
96.000	0.00	0.00	0.295	O	|	|	|	1.00
96.083	0.00	0.00	0.295	O	|	|	|	1.00
96.167	0.00	0.00	0.295	O	|	|	|	1.00
96.250	0.00	0.00	0.295	O	|	|	|	1.00
96.333	0.00	0.00	0.295	O	|	|	|	1.00
96.417	0.00	0.00	0.295	O	|	|	|	1.00
96.500	0.00	0.00	0.295	O	|	|	|	1.00
96.583	0.00	0.00	0.295	O	|	|	|	1.00

96.667	0.00	0.00	0.295	O	|	|	|	|	1.00
96.750	0.00	0.00	0.295	O	|	|	|	|	1.00
96.833	0.00	0.00	0.295	O	|	|	|	|	1.00
96.917	0.00	0.00	0.295	O	|	|	|	|	1.00
97.000	0.00	0.00	0.295	O	|	|	|	|	1.00
97.083	0.00	0.00	0.295	O	|	|	|	|	1.00
97.167	0.00	0.00	0.295	O	|	|	|	|	1.00
97.250	0.00	0.00	0.295	O	|	|	|	|	1.00
97.333	0.00	0.00	0.294	O	|	|	|	|	1.00
97.417	0.00	0.00	0.294	O	|	|	|	|	1.00
97.500	0.00	0.00	0.294	O	|	|	|	|	1.00
97.583	0.00	0.00	0.294	O	|	|	|	|	1.00
97.667	0.00	0.00	0.294	O	|	|	|	|	1.00
97.750	0.00	0.00	0.294	O	|	|	|	|	1.00
97.833	0.00	0.00	0.294	O	|	|	|	|	1.00
97.917	0.00	0.00	0.294	O	|	|	|	|	1.00
98.000	0.00	0.00	0.294	O	|	|	|	|	1.00
98.083	0.00	0.00	0.294	O	|	|	|	|	1.00
98.167	0.00	0.00	0.294	O	|	|	|	|	1.00
98.250	0.00	0.00	0.294	O	|	|	|	|	1.00
98.333	0.00	0.00	0.294	O	|	|	|	|	1.00
98.417	0.00	0.00	0.294	O	|	|	|	|	1.00
98.500	0.00	0.00	0.294	O	|	|	|	|	1.00
98.583	0.00	0.00	0.294	O	|	|	|	|	1.00
98.667	0.00	0.00	0.294	O	|	|	|	|	1.00
98.750	0.00	0.00	0.294	O	|	|	|	|	1.00
98.833	0.00	0.00	0.294	O	|	|	|	|	1.00
98.917	0.00	0.00	0.294	O	|	|	|	|	1.00
99.000	0.00	0.00	0.294	O	|	|	|	|	

1.00

99.083	0.00	0.00	0.294	O	|	|	|	1.00
99.167	0.00	0.00	0.294	O	|	|	|	1.00
99.250	0.00	0.00	0.294	O	|	|	|	1.00
99.333	0.00	0.00	0.294	O	|	|	|	1.00
99.417	0.00	0.00	0.294	O	|	|	|	1.00
99.500	0.00	0.00	0.294	O	|	|	|	1.00
99.583	0.00	0.00	0.294	O	|	|	|	1.00
99.667	0.00	0.00	0.294	O	|	|	|	1.00
99.750	0.00	0.00	0.294	O	|	|	|	1.00
99.833	0.00	0.00	0.294	O	|	|	|	1.00
99.917	0.00	0.00	0.294	O	|	|	|	1.00
100.000	0.00	0.00	0.294	O	|	|	|	1.00
100.083	0.00	0.00	0.294	O	|	|	|	1.00
100.167	0.00	0.00	0.294	O	|	|	|	1.00
100.250	0.00	0.00	0.294	O	|	|	|	1.00
100.333	0.00	0.00	0.294	O	|	|	|	1.00
100.417	0.00	0.00	0.294	O	|	|	|	1.00
100.500	0.00	0.00	0.294	O	|	|	|	1.00
100.583	0.00	0.00	0.294	O	|	|	|	1.00
100.667	0.00	0.00	0.294	O	|	|	|	1.00
100.750	0.00	0.00	0.294	O	|	|	|	1.00
100.833	0.00	0.00	0.294	O	|	|	|	1.00
100.917	0.00	0.00	0.294	O	|	|	|	1.00
101.000	0.00	0.00	0.294	O	|	|	|	1.00
101.083	0.00	0.00	0.294	O	|	|	|	1.00
101.167	0.00	0.00	0.294	O	|	|	|	1.00
101.250	0.00	0.00	0.294	O	|	|	|	1.00
101.333	0.00	0.00	0.294	O	|	|	|	1.00

101.417	0.00	0.00	0.294	O	|	|	|	| 1.00
101.500	0.00	0.00	0.294	O	|	|	|	| 1.00
101.583	0.00	0.00	0.294	O	|	|	|	| 1.00
101.667	0.00	0.00	0.294	O	|	|	|	| 1.00
101.750	0.00	0.00	0.294	O	|	|	|	| 1.00
101.833	0.00	0.00	0.294	O	|	|	|	| 1.00
101.917	0.00	0.00	0.294	O	|	|	|	| 1.00
102.000	0.00	0.00	0.294	O	|	|	|	| 1.00
102.083	0.00	0.00	0.294	O	|	|	|	| 1.00
102.167	0.00	0.00	0.294	O	|	|	|	| 1.00
102.250	0.00	0.00	0.294	O	|	|	|	| 1.00
102.333	0.00	0.00	0.294	O	|	|	|	| 1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1228
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.307 (CFS)
Total volume = 0.663 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
10 YR - 24 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP2410.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 2.975 (CFS)
Total volume = 1.808 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****
_____

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.7	1.49	2.23	Depth 2.98 (Ft.)
0.083	0.10	0.00	0.000	OI	|	|	|	0.00
0.167	0.16	0.00	0.001	OI	|	|	|	0.00
0.250	0.18	0.00	0.002	OI	|	|	|	0.01
0.333	0.22	0.00	0.004	O I	|	|	|	0.01
0.417	0.26	0.00	0.005	O I	|	|	|	0.02
0.500	0.26	0.00	0.007	O I	|	|	|	0.02
0.583	0.26	0.00	0.009	O I	|	|	|	0.03
0.667	0.26	0.00	0.011	O I	|	|	|	0.04
0.750	0.26	0.00	0.013	O I	|	|	|	0.04
0.833	0.31	0.00	0.015	O I	|	|	|	0.05
0.917	0.34	0.00	0.017	O I	|	|	|	0.06
1.000	0.35	0.00	0.019	O I	|	|	|	0.07
1.083	0.30	0.00	0.022	O I	|	|	|	0.07
1.167	0.27	0.00	0.023	O I	|	|	|	0.08
1.250	0.26	0.00	0.025	O I	|	|	|	0.09
1.333	0.26	0.00	0.027	O I	|	|	|	0.09
1.417	0.26	0.00	0.029	O I	|	|	|	0.10
1.500	0.26	0.00	0.031	O I	|	|	|	0.10
1.583	0.26	0.00	0.033	O I	|	|	|	0.11
1.667	0.26	0.00	0.034	O I	|	|	|	0.12
1.750	0.26	0.00	0.036	O I	|	|	|	0.12
1.833	0.31	0.00	0.038	O I	|	|	|	0.13
1.917	0.34	0.00	0.040	O I	|	|	|	0.14

2.000	0.35	0.00	0.043	O	I	|	|	|	0.15
2.083	0.35	0.00	0.045	O	I	|	|	|	0.15
2.167	0.35	0.00	0.048	O	I	|	|	|	0.16
2.250	0.35	0.00	0.050	O	I	|	|	|	0.17
2.333	0.35	0.00	0.052	O	I	|	|	|	0.18
2.417	0.35	0.00	0.055	O	I	|	|	|	0.19
2.500	0.35	0.00	0.057	O	I	|	|	|	0.19
2.583	0.40	0.00	0.060	O	I	|	|	|	0.20
2.667	0.43	0.00	0.063	O	I	|	|	|	0.21
2.750	0.44	0.00	0.066	O	I	|	|	|	0.22
2.833	0.44	0.00	0.069	O	I	|	|	|	0.23
2.917	0.44	0.00	0.072	O	I	|	|	|	0.24
3.000	0.44	0.00	0.075	O	I	|	|	|	0.25
3.083	0.44	0.00	0.078	O	I	|	|	|	0.26
3.167	0.44	0.00	0.081	O	I	|	|	|	0.27
3.250	0.44	0.00	0.084	O	I	|	|	|	0.28
3.333	0.44	0.00	0.087	O	I	|	|	|	0.30
3.417	0.44	0.00	0.090	O	I	|	|	|	0.31
3.500	0.44	0.00	0.093	O	I	|	|	|	0.32
3.583	0.44	0.00	0.096	O	I	|	|	|	0.33
3.667	0.44	0.00	0.099	O	I	|	|	|	0.34
3.750	0.44	0.00	0.102	O	I	|	|	|	0.35
3.833	0.49	0.00	0.105	O	I	|	|	|	0.36
3.917	0.52	0.00	0.108	O	I	|	|	|	0.37
4.000	0.53	0.00	0.112	O	I	|	|	|	0.38
4.083	0.53	0.00	0.116	O	I	|	|	|	0.39
4.167	0.53	0.00	0.119	O	I	|	|	|	0.41
4.250	0.53	0.00	0.123	O	I	|	|	|	0.42
4.333	0.57	0.00	0.127	O	I	|	|	|	0.43

4.417	0.61	0.00	0.131	O	I	|	|	|	0.44
4.500	0.61	0.00	0.135	O	I	|	|	|	0.46
4.583	0.61	0.00	0.139	O	I	|	|	|	0.47
4.667	0.61	0.00	0.143	O	I	|	|	|	0.49
4.750	0.61	0.00	0.148	O	I	|	|	|	0.50
4.833	0.66	0.00	0.152	O	I	|	|	|	0.52
4.917	0.69	0.00	0.157	O	I	|	|	|	0.53
5.000	0.70	0.00	0.161	O	I	|	|	|	0.55
5.083	0.60	0.00	0.166	O	I	|	|	|	0.56
5.167	0.54	0.00	0.170	O	I	|	|	|	0.58
5.250	0.53	0.00	0.173	O	I	|	|	|	0.59
5.333	0.57	0.00	0.177	O	I	|	|	|	0.60
5.417	0.61	0.00	0.181	O	I	|	|	|	0.62
5.500	0.61	0.00	0.186	O	I	|	|	|	0.63
5.583	0.66	0.00	0.190	O	I	|	|	|	0.65
5.667	0.69	0.00	0.195	O	I	|	|	|	0.66
5.750	0.70	0.00	0.199	O	I	|	|	|	0.68
5.833	0.70	0.00	0.204	O	I	|	|	|	0.69
5.917	0.70	0.00	0.209	O	I	|	|	|	0.71
6.000	0.70	0.00	0.214	O	I	|	|	|	0.73
6.083	0.75	0.00	0.219	O	I	|	|	|	0.74
6.167	0.78	0.00	0.224	O	I	|	|	|	0.76
6.250	0.79	0.00	0.229	O	I	|	|	|	0.78
6.333	0.79	0.00	0.235	O	I	|	|	|	0.80
6.417	0.79	0.00	0.240	O	I	|	|	|	0.82
6.500	0.79	0.00	0.246	O	I	|	|	|	0.84
6.583	0.84	0.00	0.251	O	|I	|	|	|	0.85
6.667	0.87	0.00	0.257	O	|I	|	|	|	0.87
6.750	0.88	0.00	0.263	O	|I	|	|	|	0.90
6.833	0.88	0.00	0.269	O	|I	|	|	|	0.92
6.917	0.88	0.00	0.275	O	|I	|	|	|	0.94
7.000	0.88	0.00	0.281	O	|I	|	|	|	0.96
7.083	0.88	0.00	0.287	O	|I	|	|	|	0.98

7.167	0.88	0.00	0.293	O	I			1.00
7.250	0.88	0.01	0.299	O	I			1.01
7.333	0.92	0.01	0.305	O	I			1.03
7.417	0.96	0.02	0.312	O	I			1.04
7.500	0.96	0.02	0.318	O	I			1.06
7.583	1.01	0.03	0.325	O	I			1.07
7.667	1.04	0.03	0.332	O	I			1.09
7.750	1.05	0.04	0.339	O	I			1.10
7.833	1.10	0.05	0.346	O	I			1.12
7.917	1.13	0.05	0.353	O	I			1.14
8.000	1.14	0.06	0.361	O	I			1.15
8.083	1.24	0.07	0.368	O	I			1.17
8.167	1.30	0.07	0.377	O	I			1.19
8.250	1.31	0.08	0.385	O	I			1.21
8.333	1.31	0.09	0.394	O	I			1.23
8.417	1.31	0.10	0.402	O	I			1.25
8.500	1.31	0.10	0.410	O	I			1.27
8.583	1.36	0.10	0.419	O	I			1.28
8.667	1.39	0.11	0.428	O	I			1.30
8.750	1.40	0.11	0.436	O	I			1.32
8.833	1.45	0.11	0.446	O	I			1.34
8.917	1.48	0.12	0.455	O	I			1.36
9.000	1.49	0.12	0.464	O	I			1.38
9.083	1.59	0.12	0.474	O	I			1.40
9.167	1.65	0.13	0.484	O	I			1.42
9.250	1.66	0.13	0.495	O	I			1.45
9.333	1.71	0.13	0.506	O	I			1.47
9.417	1.74	0.14	0.517	O	I			1.49
9.500	1.75	0.14	0.528	O	I			1.52
9.583	1.80	0.15	0.539	O	I			1.54
9.667	1.83	0.16	0.550	O	I			1.56
9.750	1.84	0.17	0.562	O	I			1.58
9.833	1.89	0.17	0.573	O	I			1.61
9.917	1.92	0.18	0.585	O	I			1.63
10.000	1.93	0.19	0.597	O	I			1.66

10.083	1.58	0.20	0.608	O		I		1.68
10.167	1.35	0.20	0.617	O	I			1.70
10.250	1.31	0.21	0.625	O	I			1.71
10.333	1.31	0.21	0.632	O	I			1.73
10.417	1.31	0.22	0.640	O	I			1.74
10.500	1.31	0.22	0.647	O	I			1.76
10.583	1.56	0.22	0.656	O		I		1.77
10.667	1.72	0.23	0.665	O		I		1.79
10.750	1.75	0.23	0.676	O		I		1.81
10.833	1.75	0.23	0.686	O		I		1.84
10.917	1.75	0.24	0.697	O		I		1.86
11.000	1.75	0.24	0.707	O		I		1.88
11.083	1.70	0.24	0.717	O		I		1.90
11.167	1.67	0.25	0.727	O		I		1.92
11.250	1.66	0.25	0.737	O		I		1.93
11.333	1.66	0.26	0.747	O		I		1.95
11.417	1.66	0.26	0.756	O		I		1.97
11.500	1.66	0.26	0.766	O		I		1.99
11.583	1.56	0.27	0.775	O		I		2.01
11.667	1.50	0.27	0.784	O		I		2.03
11.750	1.49	0.27	0.792	O		I		2.04
11.833	1.54	0.27	0.801	O		I		2.06
11.917	1.57	0.28	0.810	O		I		2.08
12.000	1.58	0.28	0.819	O		I		2.09
12.083	1.92	0.28	0.829	O		I		2.11
12.167	2.15	0.28	0.841	O		I		2.14
12.250	2.19	0.29	0.854	O		I		2.16
12.333	2.24	0.29	0.867	O		I		2.19
12.417	2.27	0.30	0.881	O		I		2.21
12.500	2.28	0.30	0.894	O		I		2.24
12.583	2.37	0.30	0.908	O		I		2.27
12.667	2.44	0.31	0.923	O		I		2.29
12.750	2.45	0.31	0.937	O		I		2.32
12.833	2.50	0.32	0.952	O		I		2.35
12.917	2.53	0.32	0.967	O		I		2.38
13.000	2.54	0.32	0.983	O		I		2.41
13.083	2.79	0.33	0.999	O		I		2.44
13.167	2.95	0.33	1.016	O		I		2.47
13.250	2.98	0.34	1.034	O		I		2.51
13.333	2.98	0.34	1.052	O		I		2.54
13.417	2.98	0.35	1.070	O		I		2.57
13.500	2.98	0.35	1.089	O		I		2.61

13.583	2.43	0.35	1.105	O				I	2.64
13.667	2.07	0.36	1.118	O			I		2.66
13.750	2.01	0.36	1.129	O			I		2.69
13.833	2.01	0.36	1.141	O			I		2.71
13.917	2.01	0.36	1.152	O			I		2.73
14.000	2.01	0.37	1.164	O			I		2.75
14.083	2.21	0.37	1.176	O			I		2.77
14.167	2.34	0.37	1.189	O			I		2.80
14.250	2.36	0.38	1.202	O			I		2.83
14.333	2.31	0.38	1.216	O			I		2.85
14.417	2.28	0.38	1.229	O			I		2.88
14.500	2.28	0.38	1.242	O			I		2.90
14.583	2.28	0.39	1.255	O			I		2.93
14.667	2.28	0.39	1.268	O			I		2.95
14.750	2.28	0.39	1.281	O			I		2.98
14.833	2.23	0.40	1.294	O			I		3.00
14.917	2.19	0.40	1.306	O			I		3.03
15.000	2.19	0.40	1.319	O			I		3.05
15.083	2.14	0.40	1.331	O			I		3.08
15.167	2.11	0.41	1.343	O			I		3.10
15.250	2.10	0.41	1.354	O			I		3.12
15.333	2.05	0.41	1.366	O			I		3.15
15.417	2.02	0.41	1.377	O			I		3.17
15.500	2.01	0.41	1.388	O			I		3.19
15.583	1.81	0.42	1.398	O		I			3.21
15.667	1.68	0.42	1.407	O		I			3.23
15.750	1.66	0.42	1.416	O		I			3.24
15.833	1.66	0.42	1.425	O		I			3.26
15.917	1.66	0.42	1.433	O		I			3.28
16.000	1.66	0.43	1.442	O		I			3.30
16.083	0.92	0.43	1.448	O	I				3.31
16.167	0.43	0.43	1.449	O					3.31

16.250	0.35	0.43	1.449	IO				3.31
16.333	0.35	0.43	1.449	IO				3.31
16.417	0.35	0.43	1.448	IO				3.31
16.500	0.35	0.43	1.448	IO				3.31
16.583	0.30	0.43	1.447	IO				3.31
16.667	0.27	0.43	1.446	I O				3.30
16.750	0.26	0.43	1.445	I O				3.30
16.833	0.26	0.43	1.444	I O				3.30
16.917	0.26	0.43	1.442	I O				3.30
17.000	0.26	0.43	1.441	I O				3.30
17.083	0.36	0.43	1.441	IO				3.29
17.167	0.43	0.43	1.440	O				3.29
17.250	0.44	0.43	1.440	O				3.29
17.333	0.44	0.43	1.440	O				3.29
17.417	0.44	0.43	1.441	O				3.29
17.500	0.44	0.43	1.441	O				3.29
17.583	0.44	0.43	1.441	O				3.29
17.667	0.44	0.43	1.441	O				3.29
17.750	0.44	0.43	1.441	O				3.29
17.833	0.39	0.43	1.441	O				3.29
17.917	0.36	0.43	1.440	IO				3.29
18.000	0.35	0.43	1.440	IO				3.29
18.083	0.35	0.43	1.439	IO				3.29
18.167	0.35	0.43	1.439	IO				3.29
18.250	0.35	0.42	1.438	IO				3.29
18.333	0.35	0.42	1.438	IO				3.29
18.417	0.35	0.42	1.437	IO				3.29
18.500	0.35	0.42	1.437	IO				3.29
18.583	0.30	0.42	1.436	IO				3.28
18.667	0.27	0.42	1.435	I O				3.28
18.750	0.26	0.42	1.434	I O				3.28
18.833	0.21	0.42	1.433	I O				3.28
18.917	0.18	0.42	1.431	I O				

3.27

19.000	0.18	0.42	1.430	I O				3.27
19.083	0.22	0.42	1.428	I O				3.27
19.167	0.26	0.42	1.427	I O				3.27
19.250	0.26	0.42	1.426	I O				3.26
19.333	0.31	0.42	1.425	IO				3.26
19.417	0.34	0.42	1.424	IO				3.26
19.500	0.35	0.42	1.424	IO				3.26
19.583	0.30	0.42	1.423	IO				3.26
19.667	0.27	0.42	1.422	I O				3.26
19.750	0.26	0.42	1.421	I O				3.25
19.833	0.21	0.42	1.420	I O				3.25
19.917	0.18	0.42	1.418	I O				3.25
20.000	0.18	0.42	1.416	I O				3.24
20.083	0.22	0.42	1.415	I O				3.24
20.167	0.26	0.42	1.414	I O				3.24
20.250	0.26	0.42	1.413	I O				3.24
20.333	0.26	0.42	1.411	I O				3.24
20.417	0.26	0.42	1.410	I O				3.23
20.500	0.26	0.42	1.409	I O				3.23
20.583	0.26	0.42	1.408	I O				3.23
20.667	0.26	0.42	1.407	I O				3.23
20.750	0.26	0.42	1.406	I O				3.22
20.833	0.21	0.42	1.405	I O				3.22
20.917	0.18	0.42	1.403	I O				3.22
21.000	0.18	0.42	1.402	I O				3.22
21.083	0.22	0.42	1.400	I O				3.21
21.167	0.26	0.42	1.399	I O				3.21
21.250	0.26	0.42	1.398	I O				3.21
21.333	0.21	0.42	1.397	I O				3.21
21.417	0.18	0.42	1.395	I O				3.20
21.500	0.18	0.42	1.393	I O				3.20
21.583	0.22	0.42	1.392	I O				3.20
21.667	0.26	0.42	1.391	I O				3.19
21.750	0.26	0.42	1.390	I O				3.19
21.833	0.21	0.41	1.389	I O				3.19
21.917	0.18	0.41	1.387	I O				3.19
22.000	0.18	0.41	1.385	I O				3.18
22.083	0.22	0.41	1.384	I O				3.18
22.167	0.26	0.41	1.383	I O				3.18
22.250	0.26	0.41	1.382	I O				3.18
22.333	0.21	0.41	1.380	I O				3.17
22.417	0.18	0.41	1.379	I O				3.17

22.500	0.18	0.41	1.377	I	O				3.17
22.583	0.18	0.41	1.376	I	O				3.16
22.667	0.18	0.41	1.374	I	O				3.16
22.750	0.18	0.41	1.372	I	O				3.16
22.833	0.18	0.41	1.371	I	O				3.16
22.917	0.18	0.41	1.369	I	O				3.15
23.000	0.18	0.41	1.368	I	O				3.15
23.083	0.18	0.41	1.366	I	O				3.15
23.167	0.18	0.41	1.364	I	O				3.14
23.250	0.18	0.41	1.363	I	O				3.14
23.333	0.18	0.41	1.361	I	O				3.14
23.417	0.18	0.41	1.359	I	O				3.13
23.500	0.18	0.41	1.358	I	O				3.13
23.583	0.18	0.41	1.356	I	O				3.13
23.667	0.18	0.41	1.355	I	O				3.12
23.750	0.18	0.41	1.353	I	O				3.12
23.833	0.18	0.41	1.351	I	O				3.12
23.917	0.18	0.41	1.350	I	O				3.11
24.000	0.18	0.41	1.348	I	O				3.11
24.083	0.08	0.41	1.346	I	O				3.11
24.167	0.01	0.41	1.344	I	O				3.10
24.250	0.00	0.41	1.341	I	O				3.10
24.333	0.00	0.40	1.338	I	O				3.09
24.417	0.00	0.40	1.336	I	O				3.09
24.500	0.00	0.40	1.333	I	O				3.08
24.583	0.00	0.40	1.330	I	O				3.07
24.667	0.00	0.40	1.327	I	O				3.07
24.750	0.00	0.40	1.324	I	O				3.06
24.833	0.00	0.40	1.322	I	O				

3.06

24.917	0.00	0.40	1.319	I	O	|	|	|	|	3.05
25.000	0.00	0.40	1.316	I	O	|	|	|	|	3.05
25.083	0.00	0.40	1.313	I	O	|	|	|	|	3.04
25.167	0.00	0.40	1.311	I	O	|	|	|	|	3.04
25.250	0.00	0.40	1.308	I	O	|	|	|	|	3.03
25.333	0.00	0.40	1.305	I	O	|	|	|	|	3.03
25.417	0.00	0.40	1.302	I	O	|	|	|	|	3.02
25.500	0.00	0.40	1.300	I	O	|	|	|	|	3.02
25.583	0.00	0.40	1.297	I	O	|	|	|	|	3.01
25.667	0.00	0.40	1.294	I	O	|	|	|	|	3.00
25.750	0.00	0.39	1.292	I	O	|	|	|	|	3.00
25.833	0.00	0.39	1.289	I	O	|	|	|	|	2.99
25.917	0.00	0.39	1.286	I	O	|	|	|	|	2.99
26.000	0.00	0.39	1.283	I	O	|	|	|	|	2.98
26.083	0.00	0.39	1.281	I	O	|	|	|	|	2.98
26.167	0.00	0.39	1.278	I	O	|	|	|	|	2.97
26.250	0.00	0.39	1.275	I	O	|	|	|	|	2.97
26.333	0.00	0.39	1.273	I	O	|	|	|	|	2.96
26.417	0.00	0.39	1.270	I	O	|	|	|	|	2.96
26.500	0.00	0.39	1.267	I	O	|	|	|	|	2.95
26.583	0.00	0.39	1.265	I	O	|	|	|	|	2.95
26.667	0.00	0.39	1.262	I	O	|	|	|	|	2.94
26.750	0.00	0.39	1.259	I	O	|	|	|	|	2.94
26.833	0.00	0.39	1.256	I	O	|	|	|	|	2.93
26.917	0.00	0.39	1.254	I	O	|	|	|	|	2.93
27.000	0.00	0.39	1.251	I	O	|	|	|	|	2.92
27.083	0.00	0.39	1.249	I	O	|	|	|	|	2.92
27.167	0.00	0.38	1.246	I	O	|	|	|	|	2.91

27.250	0.00	0.38	1.243	I	O	|	|	|	|	2.91
27.333	0.00	0.38	1.241	I	O	|	|	|	|	2.90
27.417	0.00	0.38	1.238	I	O	|	|	|	|	2.90
27.500	0.00	0.38	1.235	I	O	|	|	|	|	2.89
27.583	0.00	0.38	1.233	I	O	|	|	|	|	2.88
27.667	0.00	0.38	1.230	I	O	|	|	|	|	2.88
27.750	0.00	0.38	1.227	I	O	|	|	|	|	2.87
27.833	0.00	0.38	1.225	I	O	|	|	|	|	2.87
27.917	0.00	0.38	1.222	I	O	|	|	|	|	2.86
28.000	0.00	0.38	1.220	I	O	|	|	|	|	2.86
28.083	0.00	0.38	1.217	I	O	|	|	|	|	2.85
28.167	0.00	0.38	1.214	I	O	|	|	|	|	2.85
28.250	0.00	0.38	1.212	I	O	|	|	|	|	2.84
28.333	0.00	0.38	1.209	I	O	|	|	|	|	2.84
28.417	0.00	0.38	1.207	I	O	|	|	|	|	2.83
28.500	0.00	0.38	1.204	I	O	|	|	|	|	2.83
28.583	0.00	0.38	1.201	I	O	|	|	|	|	2.82
28.667	0.00	0.37	1.199	I	O	|	|	|	|	2.82
28.750	0.00	0.37	1.196	I	O	|	|	|	|	2.81
28.833	0.00	0.37	1.194	I	O	|	|	|	|	2.81
28.917	0.00	0.37	1.191	I	O	|	|	|	|	2.80
29.000	0.00	0.37	1.188	I	O	|	|	|	|	2.80
29.083	0.00	0.37	1.186	I	O	|	|	|	|	2.79
29.167	0.00	0.37	1.183	I	O	|	|	|	|	2.79
29.250	0.00	0.37	1.181	I	O	|	|	|	|	2.78
29.333	0.00	0.37	1.178	I	O	|	|	|	|	2.78
29.417	0.00	0.37	1.176	I	O	|	|	|	|	2.77
29.500	0.00	0.37	1.173	I	O	|	|	|	|	2.77
29.583	0.00	0.37	1.171	I	O	|	|	|	|	

2.76

29.667	0.00	0.37	1.168	I	O	|	|	|	| 2.76
29.750	0.00	0.37	1.166	I	O	|	|	|	| 2.75
29.833	0.00	0.37	1.163	I	O	|	|	|	| 2.75
29.917	0.00	0.37	1.160	I	O	|	|	|	| 2.75
30.000	0.00	0.37	1.158	I	O	|	|	|	| 2.74
30.083	0.00	0.37	1.155	I	O	|	|	|	| 2.74
30.167	0.00	0.36	1.153	I	O	|	|	|	| 2.73
30.250	0.00	0.36	1.150	I	O	|	|	|	| 2.73
30.333	0.00	0.36	1.148	I	O	|	|	|	| 2.72
30.417	0.00	0.36	1.145	I	O	|	|	|	| 2.72
30.500	0.00	0.36	1.143	I	O	|	|	|	| 2.71
30.583	0.00	0.36	1.140	I	O	|	|	|	| 2.71
30.667	0.00	0.36	1.138	I	O	|	|	|	| 2.70
30.750	0.00	0.36	1.135	I	O	|	|	|	| 2.70
30.833	0.00	0.36	1.133	I	O	|	|	|	| 2.69
30.917	0.00	0.36	1.130	I	O	|	|	|	| 2.69
31.000	0.00	0.36	1.128	I	O	|	|	|	| 2.68
31.083	0.00	0.36	1.126	I	O	|	|	|	| 2.68
31.167	0.00	0.36	1.123	I	O	|	|	|	| 2.67
31.250	0.00	0.36	1.121	I	O	|	|	|	| 2.67
31.333	0.00	0.36	1.118	I	O	|	|	|	| 2.67
31.417	0.00	0.36	1.116	I	O	|	|	|	| 2.66
31.500	0.00	0.36	1.113	I	O	|	|	|	| 2.66
31.583	0.00	0.35	1.111	I	O	|	|	|	| 2.65
31.667	0.00	0.35	1.108	I	O	|	|	|	| 2.65
31.750	0.00	0.35	1.106	I	O	|	|	|	| 2.64
31.833	0.00	0.35	1.104	I	O	|	|	|	| 2.64
31.917	0.00	0.35	1.101	I	O	|	|	|	| 2.63

32.000	0.00	0.35	1.099	I	O	|	|	|	|	2.63
32.083	0.00	0.35	1.096	I	O	|	|	|	|	2.62
32.167	0.00	0.35	1.094	I	O	|	|	|	|	2.62
32.250	0.00	0.35	1.091	I	O	|	|	|	|	2.61
32.333	0.00	0.35	1.089	I	O	|	|	|	|	2.61
32.417	0.00	0.35	1.087	I	O	|	|	|	|	2.61
32.500	0.00	0.35	1.084	I	O	|	|	|	|	2.60
32.583	0.00	0.35	1.082	I	O	|	|	|	|	2.60
32.667	0.00	0.35	1.079	I	O	|	|	|	|	2.59
32.750	0.00	0.35	1.077	I	O	|	|	|	|	2.59
32.833	0.00	0.35	1.075	I	O	|	|	|	|	2.58
32.917	0.00	0.35	1.072	I	O	|	|	|	|	2.58
33.000	0.00	0.35	1.070	I	O	|	|	|	|	2.57
33.083	0.00	0.34	1.067	I	O	|	|	|	|	2.57
33.167	0.00	0.34	1.065	I	O	|	|	|	|	2.56
33.250	0.00	0.34	1.063	I	O	|	|	|	|	2.56
33.333	0.00	0.34	1.060	I	O	|	|	|	|	2.56
33.417	0.00	0.34	1.058	I	O	|	|	|	|	2.55
33.500	0.00	0.34	1.056	I	O	|	|	|	|	2.55
33.583	0.00	0.34	1.053	I	O	|	|	|	|	2.54
33.667	0.00	0.34	1.051	I	O	|	|	|	|	2.54
33.750	0.00	0.34	1.049	I	O	|	|	|	|	2.53
33.833	0.00	0.34	1.046	I	O	|	|	|	|	2.53
33.917	0.00	0.34	1.044	I	O	|	|	|	|	2.52
34.000	0.00	0.34	1.042	I	O	|	|	|	|	2.52
34.083	0.00	0.34	1.039	I	O	|	|	|	|	2.52
34.167	0.00	0.34	1.037	I	O	|	|	|	|	2.51
34.250	0.00	0.34	1.035	I	O	|	|	|	|	2.51
34.333	0.00	0.34	1.032	I	O	|	|	|	|	

2.50

34.417	0.00	0.34	1.030	I	O	|	|	|	| 2.50
34.500	0.00	0.34	1.028	I	O	|	|	|	| 2.49
34.583	0.00	0.33	1.025	I	O	|	|	|	| 2.49
34.667	0.00	0.33	1.023	I	O	|	|	|	| 2.48
34.750	0.00	0.33	1.021	I	O	|	|	|	| 2.48
34.833	0.00	0.33	1.018	I	O	|	|	|	| 2.48
34.917	0.00	0.33	1.016	I	O	|	|	|	| 2.47
35.000	0.00	0.33	1.014	I	O	|	|	|	| 2.47
35.083	0.00	0.33	1.012	I	O	|	|	|	| 2.46
35.167	0.00	0.33	1.009	I	O	|	|	|	| 2.46
35.250	0.00	0.33	1.007	I	O	|	|	|	| 2.45
35.333	0.00	0.33	1.005	I	O	|	|	|	| 2.45
35.417	0.00	0.33	1.003	I	O	|	|	|	| 2.45
35.500	0.00	0.33	1.000	I	O	|	|	|	| 2.44
35.583	0.00	0.33	0.998	I	O	|	|	|	| 2.44
35.667	0.00	0.33	0.996	I	O	|	|	|	| 2.43
35.750	0.00	0.33	0.994	I	O	|	|	|	| 2.43
35.833	0.00	0.33	0.991	I	O	|	|	|	| 2.42
35.917	0.00	0.33	0.989	I	O	|	|	|	| 2.42
36.000	0.00	0.32	0.987	I	O	|	|	|	| 2.42
36.083	0.00	0.32	0.985	I	O	|	|	|	| 2.41
36.167	0.00	0.32	0.982	I	O	|	|	|	| 2.41
36.250	0.00	0.32	0.980	I	O	|	|	|	| 2.40
36.333	0.00	0.32	0.978	I	O	|	|	|	| 2.40
36.417	0.00	0.32	0.976	I	O	|	|	|	| 2.39
36.500	0.00	0.32	0.973	I	O	|	|	|	| 2.39
36.583	0.00	0.32	0.971	I	O	|	|	|	| 2.39
36.667	0.00	0.32	0.969	I	O	|	|	|	| 2.38

36.750	0.00	0.32	0.967	I	O	|	|	|	|	2.38
36.833	0.00	0.32	0.965	I	O	|	|	|	|	2.37
36.917	0.00	0.32	0.962	I	O	|	|	|	|	2.37
37.000	0.00	0.32	0.960	I	O	|	|	|	|	2.37
37.083	0.00	0.32	0.958	I	O	|	|	|	|	2.36
37.167	0.00	0.32	0.956	I	O	|	|	|	|	2.36
37.250	0.00	0.32	0.954	I	O	|	|	|	|	2.35
37.333	0.00	0.32	0.952	I	O	|	|	|	|	2.35
37.417	0.00	0.31	0.949	I	O	|	|	|	|	2.34
37.500	0.00	0.31	0.947	I	O	|	|	|	|	2.34
37.583	0.00	0.31	0.945	I	O	|	|	|	|	2.34
37.667	0.00	0.31	0.943	I	O	|	|	|	|	2.33
37.750	0.00	0.31	0.941	I	O	|	|	|	|	2.33
37.833	0.00	0.31	0.939	I	O	|	|	|	|	2.32
37.917	0.00	0.31	0.936	I	O	|	|	|	|	2.32
38.000	0.00	0.31	0.934	I	O	|	|	|	|	2.32
38.083	0.00	0.31	0.932	I	O	|	|	|	|	2.31
38.167	0.00	0.31	0.930	I	O	|	|	|	|	2.31
38.250	0.00	0.31	0.928	I	O	|	|	|	|	2.30
38.333	0.00	0.31	0.926	I	O	|	|	|	|	2.30
38.417	0.00	0.31	0.924	I	O	|	|	|	|	2.30
38.500	0.00	0.31	0.922	I	O	|	|	|	|	2.29
38.583	0.00	0.31	0.919	I	O	|	|	|	|	2.29
38.667	0.00	0.31	0.917	I	O	|	|	|	|	2.28
38.750	0.00	0.31	0.915	I	O	|	|	|	|	2.28
38.833	0.00	0.31	0.913	I	O	|	|	|	|	2.27
38.917	0.00	0.30	0.911	I	O	|	|	|	|	2.27
39.000	0.00	0.30	0.909	I	O	|	|	|	|	2.27
39.083	0.00	0.30	0.907	I	O	|	|	|	|	

2.26

39.167	0.00	0.30	0.905	I	O	|	|	|	| 2.26
39.250	0.00	0.30	0.903	I	O	|	|	|	| 2.25
39.333	0.00	0.30	0.901	I	O	|	|	|	| 2.25
39.417	0.00	0.30	0.898	I	O	|	|	|	| 2.25
39.500	0.00	0.30	0.896	I	O	|	|	|	| 2.24
39.583	0.00	0.30	0.894	I	O	|	|	|	| 2.24
39.667	0.00	0.30	0.892	I	O	|	|	|	| 2.24
39.750	0.00	0.30	0.890	I	O	|	|	|	| 2.23
39.833	0.00	0.30	0.888	I	O	|	|	|	| 2.23
39.917	0.00	0.30	0.886	I	O	|	|	|	| 2.22
40.000	0.00	0.30	0.884	I	O	|	|	|	| 2.22
40.083	0.00	0.30	0.882	I	O	|	|	|	| 2.22
40.167	0.00	0.30	0.880	I	O	|	|	|	| 2.21
40.250	0.00	0.30	0.878	I	O	|	|	|	| 2.21
40.333	0.00	0.29	0.876	I	O	|	|	|	| 2.20
40.417	0.00	0.29	0.874	I	O	|	|	|	| 2.20
40.500	0.00	0.29	0.872	I	O	|	|	|	| 2.20
40.583	0.00	0.29	0.870	I	O	|	|	|	| 2.19
40.667	0.00	0.29	0.868	I	O	|	|	|	| 2.19
40.750	0.00	0.29	0.866	I	O	|	|	|	| 2.18
40.833	0.00	0.29	0.864	I	O	|	|	|	| 2.18
40.917	0.00	0.29	0.862	I	O	|	|	|	| 2.18
41.000	0.00	0.29	0.860	I	O	|	|	|	| 2.17
41.083	0.00	0.29	0.858	I	O	|	|	|	| 2.17
41.167	0.00	0.29	0.856	I	O	|	|	|	| 2.16
41.250	0.00	0.29	0.854	I	O	|	|	|	| 2.16
41.333	0.00	0.29	0.852	I	O	|	|	|	| 2.16
41.417	0.00	0.29	0.850	I	O	|	|	|	| 2.15

41.500	0.00	0.29	0.848	I	O	|	|	|	2.15
41.583	0.00	0.29	0.846	I	O	|	|	|	2.15
41.667	0.00	0.29	0.844	I	O	|	|	|	2.14
41.750	0.00	0.29	0.842	I	O	|	|	|	2.14
41.833	0.00	0.28	0.840	I	O	|	|	|	2.13
41.917	0.00	0.28	0.838	I	O	|	|	|	2.13
42.000	0.00	0.28	0.836	I	O	|	|	|	2.13
42.083	0.00	0.28	0.834	I	O	|	|	|	2.12
42.167	0.00	0.28	0.832	I	O	|	|	|	2.12
42.250	0.00	0.28	0.830	I	O	|	|	|	2.12
42.333	0.00	0.28	0.828	I	O	|	|	|	2.11
42.417	0.00	0.28	0.826	I	O	|	|	|	2.11
42.500	0.00	0.28	0.824	I	O	|	|	|	2.10
42.583	0.00	0.28	0.822	I	O	|	|	|	2.10
42.667	0.00	0.28	0.821	I	O	|	|	|	2.10
42.750	0.00	0.28	0.819	I	O	|	|	|	2.09
42.833	0.00	0.28	0.817	I	O	|	|	|	2.09
42.917	0.00	0.28	0.815	I	O	|	|	|	2.09
43.000	0.00	0.28	0.813	I	O	|	|	|	2.08
43.083	0.00	0.28	0.811	I	O	|	|	|	2.08
43.167	0.00	0.28	0.809	I	O	|	|	|	2.08
43.250	0.00	0.27	0.807	I	O	|	|	|	2.07
43.333	0.00	0.27	0.805	I	O	|	|	|	2.07
43.417	0.00	0.27	0.803	I	O	|	|	|	2.06
43.500	0.00	0.27	0.802	I	O	|	|	|	2.06
43.583	0.00	0.27	0.800	I	O	|	|	|	2.06
43.667	0.00	0.27	0.798	I	O	|	|	|	2.05
43.750	0.00	0.27	0.796	I	O	|	|	|	2.05
43.833	0.00	0.27	0.794	I	O	|	|	|	2.05
43.917	0.00	0.27	0.792	I	O	|	|	|	2.04
44.000	0.00	0.27	0.790	I	O	|	|	|	2.04
44.083	0.00	0.27	0.788	I	O	|	|	|	2.04
44.167	0.00	0.27	0.787	I	O	|	|	|	2.03
44.250	0.00	0.27	0.785	I	O	|	|	|	2.03
44.333	0.00	0.27	0.783	I	O	|	|	|	2.02
44.417	0.00	0.27	0.781	I	O	|	|	|	2.02
44.500	0.00	0.27	0.779	I	O	|	|	|	2.02
44.583	0.00	0.27	0.777	I	O	|	|	|	2.01
44.667	0.00	0.27	0.776	I	O	|	|	|	2.01
44.750	0.00	0.27	0.774	I	O	|	|	|	2.01
44.833	0.00	0.26	0.772	I	O	|	|	|	2.00
44.917	0.00	0.26	0.770	I	O	|	|	|	2.00
45.000	0.00	0.26	0.768	I	O	|	|	|	2.00

45.083	0.00	0.26	0.766	I	O	|	|	|	| 1.99
45.167	0.00	0.26	0.765	I	O	|	|	|	| 1.99
45.250	0.00	0.26	0.763	I	O	|	|	|	| 1.99
45.333	0.00	0.26	0.761	I	O	|	|	|	| 1.98
45.417	0.00	0.26	0.759	I	O	|	|	|	| 1.98
45.500	0.00	0.26	0.757	I	O	|	|	|	| 1.98
45.583	0.00	0.26	0.756	I	O	|	|	|	| 1.97
45.667	0.00	0.26	0.754	I	O	|	|	|	| 1.97
45.750	0.00	0.26	0.752	I	O	|	|	|	| 1.96
45.833	0.00	0.26	0.750	I	O	|	|	|	| 1.96
45.917	0.00	0.26	0.749	I	O	|	|	|	| 1.96
46.000	0.00	0.26	0.747	I	O	|	|	|	| 1.95
46.083	0.00	0.25	0.745	I	O	|	|	|	| 1.95
46.167	0.00	0.25	0.743	I	O	|	|	|	| 1.95
46.250	0.00	0.25	0.742	I	O	|	|	|	| 1.94
46.333	0.00	0.25	0.740	I	O	|	|	|	| 1.94
46.417	0.00	0.25	0.738	I	O	|	|	|	| 1.94
46.500	0.00	0.25	0.736	I	O	|	|	|	| 1.93
46.583	0.00	0.25	0.735	I	O	|	|	|	| 1.93
46.667	0.00	0.25	0.733	I	O	|	|	|	| 1.93
46.750	0.00	0.25	0.731	I	O	|	|	|	| 1.92
46.833	0.00	0.25	0.729	I	O	|	|	|	| 1.92
46.917	0.00	0.25	0.728	I	O	|	|	|	| 1.92
47.000	0.00	0.25	0.726	I	O	|	|	|	| 1.91
47.083	0.00	0.25	0.724	I	O	|	|	|	| 1.91
47.167	0.00	0.25	0.723	I	O	|	|	|	| 1.91
47.250	0.00	0.25	0.721	I	O	|	|	|	| 1.90
47.333	0.00	0.25	0.719	I	O	|	|	|	| 1.90
47.417	0.00	0.24	0.718	I	O	|	|	|	| 1.90
47.500	0.00	0.24	0.716	I	O	|	|	|	| 1.89
47.583	0.00	0.24	0.714	I	O	|	|	|	| 1.89
47.667	0.00	0.24	0.712	I	O	|	|	|	| 1.89
47.750	0.00	0.24	0.711	I	O	|	|	|	| 1.88
47.833	0.00	0.24	0.709	I	O	|	|	|	| 1.88
47.917	0.00	0.24	0.707	I	O	|	|	|	| 1.88
48.000	0.00	0.24	0.706	I	O	|	|	|	| 1.87
48.083	0.00	0.24	0.704	I	O	|	|	|	| 1.87
48.167	0.00	0.24	0.703	I	O	|	|	|	| 1.87
48.250	0.00	0.24	0.701	I	O	|	|	|	| 1.86
48.333	0.00	0.24	0.699	I	O	|	|	|	| 1.86
48.417	0.00	0.24	0.698	I	O	|	|	|	| 1.86
48.500	0.00	0.24	0.696	I	O	|	|	|	| 1.85
48.583	0.00	0.24	0.694	I	O	|	|	|	| 1.85
48.667	0.00	0.24	0.693	I	O	|	|	|	| 1.85
48.750	0.00	0.24	0.691	I	O	|	|	|	| 1.84
48.833	0.00	0.23	0.689	I	O	|	|	|	| 1.84
48.917	0.00	0.23	0.688	I	O	|	|	|	| 1.84
49.000	0.00	0.23	0.686	I	O	|	|	|	| 1.84
49.083	0.00	0.23	0.685	I	O	|	|	|	| 1.83
49.167	0.00	0.23	0.683	I	O	|	|	|	| 1.83
49.250	0.00	0.23	0.681	I	O	|	|	|	| 1.83
49.333	0.00	0.23	0.680	I	O	|	|	|	| 1.82
49.417	0.00	0.23	0.678	I	O	|	|	|	| 1.82
49.500	0.00	0.23	0.677	I	O	|	|	|	| 1.82
49.583	0.00	0.23	0.675	I	O	|	|	|	| 1.81
49.667	0.00	0.23	0.673	I	O	|	|	|	| 1.81
49.750	0.00	0.23	0.672	I	O	|	|	|	| 1.81

49.833	0.00	0.23	0.670	I O	|	|	|	1.80
49.917	0.00	0.23	0.669	I O	|	|	|	1.80
50.000	0.00	0.23	0.667	I O	|	|	|	1.80
50.083	0.00	0.23	0.666	I O	|	|	|	1.79
50.167	0.00	0.23	0.664	I O	|	|	|	1.79
50.250	0.00	0.23	0.663	I O	|	|	|	1.79
50.333	0.00	0.22	0.661	I O	|	|	|	1.79
50.417	0.00	0.22	0.659	I O	|	|	|	1.78
50.500	0.00	0.22	0.658	I O	|	|	|	1.78
50.583	0.00	0.22	0.656	I O	|	|	|	1.78
50.667	0.00	0.22	0.655	I O	|	|	|	1.77
50.750	0.00	0.22	0.653	I O	|	|	|	1.77
50.833	0.00	0.22	0.652	I O	|	|	|	1.77
50.917	0.00	0.22	0.650	I O	|	|	|	1.76
51.000	0.00	0.22	0.649	I O	|	|	|	1.76
51.083	0.00	0.22	0.647	I O	|	|	|	1.76
51.167	0.00	0.22	0.646	I O	|	|	|	1.76
51.250	0.00	0.22	0.644	I O	|	|	|	1.75
51.333	0.00	0.22	0.643	I O	|	|	|	1.75
51.417	0.00	0.22	0.641	I O	|	|	|	1.75
51.500	0.00	0.22	0.640	I O	|	|	|	1.74
51.583	0.00	0.21	0.638	I O	|	|	|	1.74
51.667	0.00	0.21	0.637	I O	|	|	|	1.74
51.750	0.00	0.21	0.635	I O	|	|	|	1.73
51.833	0.00	0.21	0.634	I O	|	|	|	1.73
51.917	0.00	0.21	0.632	I O	|	|	|	1.73
52.000	0.00	0.21	0.631	I O	|	|	|	1.73
52.083	0.00	0.21	0.629	I O	|	|	|	1.72
52.167	0.00	0.21	0.628	I O	|	|	|	1.72
52.250	0.00	0.21	0.627	I O	|	|	|	1.72
52.333	0.00	0.21	0.625	I O	|	|	|	1.71
52.417	0.00	0.21	0.624	I O	|	|	|	1.71
52.500	0.00	0.20	0.622	I O	|	|	|	1.71
52.583	0.00	0.20	0.621	I O	|	|	|	1.71
52.667	0.00	0.20	0.620	I O	|	|	|	1.70
52.750	0.00	0.20	0.618	I O	|	|	|	1.70
52.833	0.00	0.20	0.617	I O	|	|	|	1.70
52.917	0.00	0.20	0.615	I O	|	|	|	1.69
53.000	0.00	0.20	0.614	I O	|	|	|	1.69
53.083	0.00	0.20	0.613	I O	|	|	|	1.69
53.167	0.00	0.20	0.611	I O	|	|	|	1.69
53.250	0.00	0.20	0.610	I O	|	|	|	1.68
53.333	0.00	0.20	0.609	I O	|	|	|	1.68
53.417	0.00	0.19	0.607	I O	|	|	|	1.68
53.500	0.00	0.19	0.606	I O	|	|	|	1.67
53.583	0.00	0.19	0.605	I O	|	|	|	1.67
53.667	0.00	0.19	0.603	I O	|	|	|	1.67
53.750	0.00	0.19	0.602	I O	|	|	|	1.67
53.833	0.00	0.19	0.601	I O	|	|	|	1.66
53.917	0.00	0.19	0.599	I O	|	|	|	1.66
54.000	0.00	0.19	0.598	I O	|	|	|	1.66
54.083	0.00	0.19	0.597	I O	|	|	|	1.66
54.167	0.00	0.19	0.595	I O	|	|	|	1.65
54.250	0.00	0.19	0.594	I O	|	|	|	1.65
54.333	0.00	0.19	0.593	IO	|	|	|	1.65
54.417	0.00	0.18	0.592	IO	|	|	|	

1.65

54.500	0.00	0.18	0.590	IO	|	|	|	1.64
54.583	0.00	0.18	0.589	IO	|	|	|	1.64
54.667	0.00	0.18	0.588	IO	|	|	|	1.64
54.750	0.00	0.18	0.587	IO	|	|	|	1.64
54.833	0.00	0.18	0.585	IO	|	|	|	1.63
54.917	0.00	0.18	0.584	IO	|	|	|	1.63
55.000	0.00	0.18	0.583	IO	|	|	|	1.63
55.083	0.00	0.18	0.582	IO	|	|	|	1.63
55.167	0.00	0.18	0.580	IO	|	|	|	1.62
55.250	0.00	0.18	0.579	IO	|	|	|	1.62
55.333	0.00	0.18	0.578	IO	|	|	|	1.62
55.417	0.00	0.17	0.577	IO	|	|	|	1.62
55.500	0.00	0.17	0.576	IO	|	|	|	1.61
55.583	0.00	0.17	0.574	IO	|	|	|	1.61
55.667	0.00	0.17	0.573	IO	|	|	|	1.61
55.750	0.00	0.17	0.572	IO	|	|	|	1.61
55.833	0.00	0.17	0.571	IO	|	|	|	1.60
55.917	0.00	0.17	0.570	IO	|	|	|	1.60
56.000	0.00	0.17	0.568	IO	|	|	|	1.60
56.083	0.00	0.17	0.567	IO	|	|	|	1.60
56.167	0.00	0.17	0.566	IO	|	|	|	1.59
56.250	0.00	0.17	0.565	IO	|	|	|	1.59
56.333	0.00	0.17	0.564	IO	|	|	|	1.59
56.417	0.00	0.17	0.563	IO	|	|	|	1.59
56.500	0.00	0.16	0.561	IO	|	|	|	1.58
56.583	0.00	0.16	0.560	IO	|	|	|	1.58
56.667	0.00	0.16	0.559	IO	|	|	|	1.58
56.750	0.00	0.16	0.558	IO	|	|	|	1.58

56.833	0.00	0.16	0.557	IO	|	|	|	| 1.58
56.917	0.00	0.16	0.556	IO	|	|	|	| 1.57
57.000	0.00	0.16	0.555	IO	|	|	|	| 1.57
57.083	0.00	0.16	0.554	IO	|	|	|	| 1.57
57.167	0.00	0.16	0.553	IO	|	|	|	| 1.57
57.250	0.00	0.16	0.551	IO	|	|	|	| 1.56
57.333	0.00	0.16	0.550	IO	|	|	|	| 1.56
57.417	0.00	0.16	0.549	IO	|	|	|	| 1.56
57.500	0.00	0.16	0.548	IO	|	|	|	| 1.56
57.583	0.00	0.16	0.547	IO	|	|	|	| 1.56
57.667	0.00	0.15	0.546	IO	|	|	|	| 1.55
57.750	0.00	0.15	0.545	IO	|	|	|	| 1.55
57.833	0.00	0.15	0.544	IO	|	|	|	| 1.55
57.917	0.00	0.15	0.543	IO	|	|	|	| 1.55
58.000	0.00	0.15	0.542	IO	|	|	|	| 1.54
58.083	0.00	0.15	0.541	IO	|	|	|	| 1.54
58.167	0.00	0.15	0.540	IO	|	|	|	| 1.54
58.250	0.00	0.15	0.539	IO	|	|	|	| 1.54
58.333	0.00	0.15	0.538	IO	|	|	|	| 1.54
58.417	0.00	0.15	0.537	IO	|	|	|	| 1.53
58.500	0.00	0.15	0.536	IO	|	|	|	| 1.53
58.583	0.00	0.15	0.535	IO	|	|	|	| 1.53
58.667	0.00	0.15	0.534	IO	|	|	|	| 1.53
58.750	0.00	0.15	0.533	IO	|	|	|	| 1.53
58.833	0.00	0.15	0.532	IO	|	|	|	| 1.52
58.917	0.00	0.14	0.531	IO	|	|	|	| 1.52
59.000	0.00	0.14	0.530	IO	|	|	|	| 1.52
59.083	0.00	0.14	0.529	IO	|	|	|	| 1.52
59.167	0.00	0.14	0.528	IO	|	|	|	|

1.52

59.250	0.00	0.14	0.527	IO	|	|	|	1.51
59.333	0.00	0.14	0.526	IO	|	|	|	1.51
59.417	0.00	0.14	0.525	IO	|	|	|	1.51
59.500	0.00	0.14	0.524	IO	|	|	|	1.51
59.583	0.00	0.14	0.523	IO	|	|	|	1.51
59.667	0.00	0.14	0.522	IO	|	|	|	1.50
59.750	0.00	0.14	0.521	IO	|	|	|	1.50
59.833	0.00	0.14	0.520	IO	|	|	|	1.50
59.917	0.00	0.14	0.519	IO	|	|	|	1.50
60.000	0.00	0.14	0.518	IO	|	|	|	1.50
60.083	0.00	0.14	0.517	IO	|	|	|	1.49
60.167	0.00	0.14	0.516	IO	|	|	|	1.49
60.250	0.00	0.14	0.515	IO	|	|	|	1.49
60.333	0.00	0.14	0.514	IO	|	|	|	1.49
60.417	0.00	0.14	0.513	IO	|	|	|	1.49
60.500	0.00	0.14	0.512	IO	|	|	|	1.48
60.583	0.00	0.13	0.511	IO	|	|	|	1.48
60.667	0.00	0.13	0.510	IO	|	|	|	1.48
60.750	0.00	0.13	0.510	IO	|	|	|	1.48
60.833	0.00	0.13	0.509	IO	|	|	|	1.48
60.917	0.00	0.13	0.508	IO	|	|	|	1.47
61.000	0.00	0.13	0.507	IO	|	|	|	1.47
61.083	0.00	0.13	0.506	IO	|	|	|	1.47
61.167	0.00	0.13	0.505	IO	|	|	|	1.47
61.250	0.00	0.13	0.504	IO	|	|	|	1.47
61.333	0.00	0.13	0.503	IO	|	|	|	1.46
61.417	0.00	0.13	0.502	IO	|	|	|	1.46
61.500	0.00	0.13	0.501	IO	|	|	|	1.46

61.583	0.00	0.13	0.500	IO				1.46
61.667	0.00	0.13	0.500	IO				1.46
61.750	0.00	0.13	0.499	IO				1.45
61.833	0.00	0.13	0.498	IO				1.45
61.917	0.00	0.13	0.497	IO				1.45
62.000	0.00	0.13	0.496	IO				1.45
62.083	0.00	0.13	0.495	IO				1.45
62.167	0.00	0.13	0.494	IO				1.44
62.250	0.00	0.13	0.493	IO				1.44
62.333	0.00	0.13	0.492	IO				1.44
62.417	0.00	0.13	0.492	IO				1.44
62.500	0.00	0.13	0.491	IO				1.44
62.583	0.00	0.13	0.490	IO				1.44
62.667	0.00	0.13	0.489	IO				1.43
62.750	0.00	0.13	0.488	IO				1.43
62.833	0.00	0.13	0.487	IO				1.43
62.917	0.00	0.13	0.486	IO				1.43
63.000	0.00	0.13	0.485	IO				1.43
63.083	0.00	0.13	0.485	IO				1.42
63.167	0.00	0.13	0.484	IO				1.42
63.250	0.00	0.12	0.483	IO				1.42
63.333	0.00	0.12	0.482	IO				1.42
63.417	0.00	0.12	0.481	IO				1.42
63.500	0.00	0.12	0.480	IO				1.41
63.583	0.00	0.12	0.479	IO				1.41
63.667	0.00	0.12	0.479	IO				1.41
63.750	0.00	0.12	0.478	IO				1.41
63.833	0.00	0.12	0.477	IO				1.41
63.917	0.00	0.12	0.476	IO				

1.41

64.000	0.00	0.12	0.475	IO	|	|	|	1.40
64.083	0.00	0.12	0.474	IO	|	|	|	1.40
64.167	0.00	0.12	0.473	IO	|	|	|	1.40
64.250	0.00	0.12	0.473	IO	|	|	|	1.40
64.333	0.00	0.12	0.472	IO	|	|	|	1.40
64.417	0.00	0.12	0.471	IO	|	|	|	1.40
64.500	0.00	0.12	0.470	IO	|	|	|	1.39
64.583	0.00	0.12	0.469	IO	|	|	|	1.39
64.667	0.00	0.12	0.468	IO	|	|	|	1.39
64.750	0.00	0.12	0.468	IO	|	|	|	1.39
64.833	0.00	0.12	0.467	IO	|	|	|	1.39
64.917	0.00	0.12	0.466	IO	|	|	|	1.38
65.000	0.00	0.12	0.465	IO	|	|	|	1.38
65.083	0.00	0.12	0.464	IO	|	|	|	1.38
65.167	0.00	0.12	0.464	IO	|	|	|	1.38
65.250	0.00	0.12	0.463	IO	|	|	|	1.38
65.333	0.00	0.12	0.462	IO	|	|	|	1.38
65.417	0.00	0.12	0.461	IO	|	|	|	1.37
65.500	0.00	0.12	0.460	IO	|	|	|	1.37
65.583	0.00	0.12	0.459	IO	|	|	|	1.37
65.667	0.00	0.12	0.459	IO	|	|	|	1.37
65.750	0.00	0.12	0.458	IO	|	|	|	1.37
65.833	0.00	0.12	0.457	IO	|	|	|	1.37
65.917	0.00	0.12	0.456	IO	|	|	|	1.36
66.000	0.00	0.12	0.455	IO	|	|	|	1.36
66.083	0.00	0.12	0.455	IO	|	|	|	1.36
66.167	0.00	0.11	0.454	IO	|	|	|	1.36
66.250	0.00	0.11	0.453	IO	|	|	|	1.36

66.333	0.00	0.11	0.452	IO	|	|	|	1.36
66.417	0.00	0.11	0.452	IO	|	|	|	1.35
66.500	0.00	0.11	0.451	IO	|	|	|	1.35
66.583	0.00	0.11	0.450	IO	|	|	|	1.35
66.667	0.00	0.11	0.449	IO	|	|	|	1.35
66.750	0.00	0.11	0.448	IO	|	|	|	1.35
66.833	0.00	0.11	0.448	IO	|	|	|	1.35
66.917	0.00	0.11	0.447	IO	|	|	|	1.34
67.000	0.00	0.11	0.446	IO	|	|	|	1.34
67.083	0.00	0.11	0.445	IO	|	|	|	1.34
67.167	0.00	0.11	0.445	IO	|	|	|	1.34
67.250	0.00	0.11	0.444	IO	|	|	|	1.34
67.333	0.00	0.11	0.443	IO	|	|	|	1.34
67.417	0.00	0.11	0.442	IO	|	|	|	1.33
67.500	0.00	0.11	0.441	IO	|	|	|	1.33
67.583	0.00	0.11	0.441	IO	|	|	|	1.33
67.667	0.00	0.11	0.440	IO	|	|	|	1.33
67.750	0.00	0.11	0.439	IO	|	|	|	1.33
67.833	0.00	0.11	0.438	IO	|	|	|	1.33
67.917	0.00	0.11	0.438	IO	|	|	|	1.32
68.000	0.00	0.11	0.437	IO	|	|	|	1.32
68.083	0.00	0.11	0.436	IO	|	|	|	1.32
68.167	0.00	0.11	0.435	IO	|	|	|	1.32
68.250	0.00	0.11	0.435	IO	|	|	|	1.32
68.333	0.00	0.11	0.434	IO	|	|	|	1.32
68.417	0.00	0.11	0.433	IO	|	|	|	1.31
68.500	0.00	0.11	0.432	IO	|	|	|	1.31
68.583	0.00	0.11	0.432	IO	|	|	|	1.31
68.667	0.00	0.11	0.431	IO	|	|	|	

1.31

68.750	0.00	0.11	0.430	IO	|	|	|	1.31
68.833	0.00	0.11	0.430	IO	|	|	|	1.31
68.917	0.00	0.11	0.429	IO	|	|	|	1.31
69.000	0.00	0.11	0.428	IO	|	|	|	1.30
69.083	0.00	0.11	0.427	IO	|	|	|	1.30
69.167	0.00	0.11	0.427	IO	|	|	|	1.30
69.250	0.00	0.11	0.426	IO	|	|	|	1.30
69.333	0.00	0.10	0.425	IO	|	|	|	1.30
69.417	0.00	0.10	0.424	IO	|	|	|	1.30
69.500	0.00	0.10	0.424	IO	|	|	|	1.29
69.583	0.00	0.10	0.423	IO	|	|	|	1.29
69.667	0.00	0.10	0.422	IO	|	|	|	1.29
69.750	0.00	0.10	0.422	IO	|	|	|	1.29
69.833	0.00	0.10	0.421	IO	|	|	|	1.29
69.917	0.00	0.10	0.420	IO	|	|	|	1.29
70.000	0.00	0.10	0.419	IO	|	|	|	1.29
70.083	0.00	0.10	0.419	IO	|	|	|	1.28
70.167	0.00	0.10	0.418	IO	|	|	|	1.28
70.250	0.00	0.10	0.417	IO	|	|	|	1.28
70.333	0.00	0.10	0.417	IO	|	|	|	1.28
70.417	0.00	0.10	0.416	IO	|	|	|	1.28
70.500	0.00	0.10	0.415	IO	|	|	|	1.28
70.583	0.00	0.10	0.415	IO	|	|	|	1.27
70.667	0.00	0.10	0.414	IO	|	|	|	1.27
70.750	0.00	0.10	0.413	IO	|	|	|	1.27
70.833	0.00	0.10	0.412	IO	|	|	|	1.27
70.917	0.00	0.10	0.412	IO	|	|	|	1.27
71.000	0.00	0.10	0.411	IO	|	|	|	1.27

71.083	0.00	0.10	0.410	IO					1.27
71.167	0.00	0.10	0.410	IO					1.26
71.250	0.00	0.10	0.409	IO					1.26
71.333	0.00	0.10	0.408	IO					1.26
71.417	0.00	0.10	0.408	IO					1.26
71.500	0.00	0.10	0.407	IO					1.26
71.583	0.00	0.10	0.406	IO					1.26
71.667	0.00	0.10	0.406	IO					1.26
71.750	0.00	0.10	0.405	IO					1.25
71.833	0.00	0.10	0.404	IO					1.25
71.917	0.00	0.10	0.404	IO					1.25
72.000	0.00	0.10	0.403	IO					1.25
72.083	0.00	0.10	0.402	IO					1.25
72.167	0.00	0.10	0.402	IO					1.25
72.250	0.00	0.10	0.401	IO					1.25
72.333	0.00	0.09	0.400	IO					1.24
72.417	0.00	0.09	0.400	IO					1.24
72.500	0.00	0.09	0.399	IO					1.24
72.583	0.00	0.09	0.398	O					1.24
72.667	0.00	0.09	0.398	O					1.24
72.750	0.00	0.09	0.397	O					1.24
72.833	0.00	0.09	0.396	O					1.24
72.917	0.00	0.09	0.396	O					1.23
73.000	0.00	0.09	0.395	O					1.23
73.083	0.00	0.09	0.395	O					1.23
73.167	0.00	0.09	0.394	O					1.23
73.250	0.00	0.09	0.393	O					1.23
73.333	0.00	0.09	0.393	O					1.23
73.417	0.00	0.09	0.392	O					

1.23

73.500	0.00	0.09	0.392	O	|	|	|	1.22
73.583	0.00	0.09	0.391	O	|	|	|	1.22
73.667	0.00	0.09	0.390	O	|	|	|	1.22
73.750	0.00	0.09	0.390	O	|	|	|	1.22
73.833	0.00	0.08	0.389	O	|	|	|	1.22
73.917	0.00	0.08	0.389	O	|	|	|	1.22
74.000	0.00	0.08	0.388	O	|	|	|	1.22
74.083	0.00	0.08	0.387	O	|	|	|	1.21
74.167	0.00	0.08	0.387	O	|	|	|	1.21
74.250	0.00	0.08	0.386	O	|	|	|	1.21
74.333	0.00	0.08	0.386	O	|	|	|	1.21
74.417	0.00	0.08	0.385	O	|	|	|	1.21
74.500	0.00	0.08	0.385	O	|	|	|	1.21
74.583	0.00	0.08	0.384	O	|	|	|	1.21
74.667	0.00	0.08	0.384	O	|	|	|	1.21
74.750	0.00	0.08	0.383	O	|	|	|	1.20
74.833	0.00	0.08	0.382	O	|	|	|	1.20
74.917	0.00	0.08	0.382	O	|	|	|	1.20
75.000	0.00	0.08	0.381	O	|	|	|	1.20
75.083	0.00	0.08	0.381	O	|	|	|	1.20
75.167	0.00	0.08	0.380	O	|	|	|	1.20
75.250	0.00	0.08	0.380	O	|	|	|	1.20
75.333	0.00	0.08	0.379	O	|	|	|	1.20
75.417	0.00	0.08	0.379	O	|	|	|	1.19
75.500	0.00	0.08	0.378	O	|	|	|	1.19
75.583	0.00	0.07	0.378	O	|	|	|	1.19
75.667	0.00	0.07	0.377	O	|	|	|	1.19
75.750	0.00	0.07	0.377	O	|	|	|	1.19

75.833	0.00	0.07	0.376	O	|	|	|	|	1.19
75.917	0.00	0.07	0.376	O	|	|	|	|	1.19
76.000	0.00	0.07	0.375	O	|	|	|	|	1.19
76.083	0.00	0.07	0.375	O	|	|	|	|	1.18
76.167	0.00	0.07	0.374	O	|	|	|	|	1.18
76.250	0.00	0.07	0.374	O	|	|	|	|	1.18
76.333	0.00	0.07	0.373	O	|	|	|	|	1.18
76.417	0.00	0.07	0.373	O	|	|	|	|	1.18
76.500	0.00	0.07	0.372	O	|	|	|	|	1.18
76.583	0.00	0.07	0.372	O	|	|	|	|	1.18
76.667	0.00	0.07	0.371	O	|	|	|	|	1.18
76.750	0.00	0.07	0.371	O	|	|	|	|	1.18
76.833	0.00	0.07	0.370	O	|	|	|	|	1.18
76.917	0.00	0.07	0.370	O	|	|	|	|	1.17
77.000	0.00	0.07	0.369	O	|	|	|	|	1.17
77.083	0.00	0.07	0.369	O	|	|	|	|	1.17
77.167	0.00	0.07	0.368	O	|	|	|	|	1.17
77.250	0.00	0.07	0.368	O	|	|	|	|	1.17
77.333	0.00	0.07	0.368	O	|	|	|	|	1.17
77.417	0.00	0.07	0.367	O	|	|	|	|	1.17
77.500	0.00	0.06	0.367	O	|	|	|	|	1.17
77.583	0.00	0.06	0.366	O	|	|	|	|	1.17
77.667	0.00	0.06	0.366	O	|	|	|	|	1.16
77.750	0.00	0.06	0.365	O	|	|	|	|	1.16
77.833	0.00	0.06	0.365	O	|	|	|	|	1.16
77.917	0.00	0.06	0.364	O	|	|	|	|	1.16
78.000	0.00	0.06	0.364	O	|	|	|	|	1.16
78.083	0.00	0.06	0.364	O	|	|	|	|	1.16
78.167	0.00	0.06	0.363	O	|	|	|	|	

1.16

78.250	0.00	0.06	0.363	O	|	|	|	|	1.16
78.333	0.00	0.06	0.362	O	|	|	|	|	1.16
78.417	0.00	0.06	0.362	O	|	|	|	|	1.16
78.500	0.00	0.06	0.361	O	|	|	|	|	1.15
78.583	0.00	0.06	0.361	O	|	|	|	|	1.15
78.667	0.00	0.06	0.361	O	|	|	|	|	1.15
78.750	0.00	0.06	0.360	O	|	|	|	|	1.15
78.833	0.00	0.06	0.360	O	|	|	|	|	1.15
78.917	0.00	0.06	0.359	O	|	|	|	|	1.15
79.000	0.00	0.06	0.359	O	|	|	|	|	1.15
79.083	0.00	0.06	0.359	O	|	|	|	|	1.15
79.167	0.00	0.06	0.358	O	|	|	|	|	1.15
79.250	0.00	0.06	0.358	O	|	|	|	|	1.15
79.333	0.00	0.06	0.357	O	|	|	|	|	1.15
79.417	0.00	0.06	0.357	O	|	|	|	|	1.14
79.500	0.00	0.06	0.357	O	|	|	|	|	1.14
79.583	0.00	0.06	0.356	O	|	|	|	|	1.14
79.667	0.00	0.06	0.356	O	|	|	|	|	1.14
79.750	0.00	0.06	0.355	O	|	|	|	|	1.14
79.833	0.00	0.05	0.355	O	|	|	|	|	1.14
79.917	0.00	0.05	0.355	O	|	|	|	|	1.14
80.000	0.00	0.05	0.354	O	|	|	|	|	1.14
80.083	0.00	0.05	0.354	O	|	|	|	|	1.14
80.167	0.00	0.05	0.354	O	|	|	|	|	1.14
80.250	0.00	0.05	0.353	O	|	|	|	|	1.14
80.333	0.00	0.05	0.353	O	|	|	|	|	1.14
80.417	0.00	0.05	0.353	O	|	|	|	|	1.13
80.500	0.00	0.05	0.352	O	|	|	|	|	1.13

80.583	0.00	0.05	0.352	O	|	|	|	|	1.13
80.667	0.00	0.05	0.351	O	|	|	|	|	1.13
80.750	0.00	0.05	0.351	O	|	|	|	|	1.13
80.833	0.00	0.05	0.351	O	|	|	|	|	1.13
80.917	0.00	0.05	0.350	O	|	|	|	|	1.13
81.000	0.00	0.05	0.350	O	|	|	|	|	1.13
81.083	0.00	0.05	0.350	O	|	|	|	|	1.13
81.167	0.00	0.05	0.349	O	|	|	|	|	1.13
81.250	0.00	0.05	0.349	O	|	|	|	|	1.13
81.333	0.00	0.05	0.349	O	|	|	|	|	1.13
81.417	0.00	0.05	0.348	O	|	|	|	|	1.12
81.500	0.00	0.05	0.348	O	|	|	|	|	1.12
81.583	0.00	0.05	0.348	O	|	|	|	|	1.12
81.667	0.00	0.05	0.347	O	|	|	|	|	1.12
81.750	0.00	0.05	0.347	O	|	|	|	|	1.12
81.833	0.00	0.05	0.347	O	|	|	|	|	1.12
81.917	0.00	0.05	0.346	O	|	|	|	|	1.12
82.000	0.00	0.05	0.346	O	|	|	|	|	1.12
82.083	0.00	0.05	0.346	O	|	|	|	|	1.12
82.167	0.00	0.05	0.345	O	|	|	|	|	1.12
82.250	0.00	0.05	0.345	O	|	|	|	|	1.12
82.333	0.00	0.05	0.345	O	|	|	|	|	1.12
82.417	0.00	0.05	0.344	O	|	|	|	|	1.12
82.500	0.00	0.05	0.344	O	|	|	|	|	1.11
82.583	0.00	0.04	0.344	O	|	|	|	|	1.11
82.667	0.00	0.04	0.344	O	|	|	|	|	1.11
82.750	0.00	0.04	0.343	O	|	|	|	|	1.11
82.833	0.00	0.04	0.343	O	|	|	|	|	1.11
82.917	0.00	0.04	0.343	O	|	|	|	|	

1.11

83.000	0.00	0.04	0.342	O	|	|	|	|	1.11
83.083	0.00	0.04	0.342	O	|	|	|	|	1.11
83.167	0.00	0.04	0.342	O	|	|	|	|	1.11
83.250	0.00	0.04	0.341	O	|	|	|	|	1.11
83.333	0.00	0.04	0.341	O	|	|	|	|	1.11
83.417	0.00	0.04	0.341	O	|	|	|	|	1.11
83.500	0.00	0.04	0.341	O	|	|	|	|	1.11
83.583	0.00	0.04	0.340	O	|	|	|	|	1.11
83.667	0.00	0.04	0.340	O	|	|	|	|	1.11
83.750	0.00	0.04	0.340	O	|	|	|	|	1.10
83.833	0.00	0.04	0.339	O	|	|	|	|	1.10
83.917	0.00	0.04	0.339	O	|	|	|	|	1.10
84.000	0.00	0.04	0.339	O	|	|	|	|	1.10
84.083	0.00	0.04	0.339	O	|	|	|	|	1.10
84.167	0.00	0.04	0.338	O	|	|	|	|	1.10
84.250	0.00	0.04	0.338	O	|	|	|	|	1.10
84.333	0.00	0.04	0.338	O	|	|	|	|	1.10
84.417	0.00	0.04	0.337	O	|	|	|	|	1.10
84.500	0.00	0.04	0.337	O	|	|	|	|	1.10
84.583	0.00	0.04	0.337	O	|	|	|	|	1.10
84.667	0.00	0.04	0.337	O	|	|	|	|	1.10
84.750	0.00	0.04	0.336	O	|	|	|	|	1.10
84.833	0.00	0.04	0.336	O	|	|	|	|	1.10
84.917	0.00	0.04	0.336	O	|	|	|	|	1.10
85.000	0.00	0.04	0.336	O	|	|	|	|	1.10
85.083	0.00	0.04	0.335	O	|	|	|	|	1.09
85.167	0.00	0.04	0.335	O	|	|	|	|	1.09
85.250	0.00	0.04	0.335	O	|	|	|	|	1.09

85.333	0.00	0.04	0.335	O	|	|	|	|	1.09
85.417	0.00	0.04	0.334	O	|	|	|	|	1.09
85.500	0.00	0.04	0.334	O	|	|	|	|	1.09
85.583	0.00	0.04	0.334	O	|	|	|	|	1.09
85.667	0.00	0.04	0.334	O	|	|	|	|	1.09
85.750	0.00	0.04	0.333	O	|	|	|	|	1.09
85.833	0.00	0.04	0.333	O	|	|	|	|	1.09
85.917	0.00	0.04	0.333	O	|	|	|	|	1.09
86.000	0.00	0.04	0.333	O	|	|	|	|	1.09
86.083	0.00	0.03	0.332	O	|	|	|	|	1.09
86.167	0.00	0.03	0.332	O	|	|	|	|	1.09
86.250	0.00	0.03	0.332	O	|	|	|	|	1.09
86.333	0.00	0.03	0.332	O	|	|	|	|	1.09
86.417	0.00	0.03	0.331	O	|	|	|	|	1.09
86.500	0.00	0.03	0.331	O	|	|	|	|	1.09
86.583	0.00	0.03	0.331	O	|	|	|	|	1.08
86.667	0.00	0.03	0.331	O	|	|	|	|	1.08
86.750	0.00	0.03	0.330	O	|	|	|	|	1.08
86.833	0.00	0.03	0.330	O	|	|	|	|	1.08
86.917	0.00	0.03	0.330	O	|	|	|	|	1.08
87.000	0.00	0.03	0.330	O	|	|	|	|	1.08
87.083	0.00	0.03	0.330	O	|	|	|	|	1.08
87.167	0.00	0.03	0.329	O	|	|	|	|	1.08
87.250	0.00	0.03	0.329	O	|	|	|	|	1.08
87.333	0.00	0.03	0.329	O	|	|	|	|	1.08
87.417	0.00	0.03	0.329	O	|	|	|	|	1.08
87.500	0.00	0.03	0.328	O	|	|	|	|	1.08
87.583	0.00	0.03	0.328	O	|	|	|	|	1.08
87.667	0.00	0.03	0.328	O	|	|	|	|	

1.08

87.750	0.00	0.03	0.328	O	|	|	|	|	1.08
87.833	0.00	0.03	0.328	O	|	|	|	|	1.08
87.917	0.00	0.03	0.327	O	|	|	|	|	1.08
88.000	0.00	0.03	0.327	O	|	|	|	|	1.08
88.083	0.00	0.03	0.327	O	|	|	|	|	1.08
88.167	0.00	0.03	0.327	O	|	|	|	|	1.08
88.250	0.00	0.03	0.327	O	|	|	|	|	1.07
88.333	0.00	0.03	0.326	O	|	|	|	|	1.07
88.417	0.00	0.03	0.326	O	|	|	|	|	1.07
88.500	0.00	0.03	0.326	O	|	|	|	|	1.07
88.583	0.00	0.03	0.326	O	|	|	|	|	1.07
88.667	0.00	0.03	0.326	O	|	|	|	|	1.07
88.750	0.00	0.03	0.325	O	|	|	|	|	1.07
88.833	0.00	0.03	0.325	O	|	|	|	|	1.07
88.917	0.00	0.03	0.325	O	|	|	|	|	1.07
89.000	0.00	0.03	0.325	O	|	|	|	|	1.07
89.083	0.00	0.03	0.325	O	|	|	|	|	1.07
89.167	0.00	0.03	0.324	O	|	|	|	|	1.07
89.250	0.00	0.03	0.324	O	|	|	|	|	1.07
89.333	0.00	0.03	0.324	O	|	|	|	|	1.07
89.417	0.00	0.03	0.324	O	|	|	|	|	1.07
89.500	0.00	0.03	0.324	O	|	|	|	|	1.07
89.583	0.00	0.03	0.323	O	|	|	|	|	1.07
89.667	0.00	0.03	0.323	O	|	|	|	|	1.07
89.750	0.00	0.03	0.323	O	|	|	|	|	1.07
89.833	0.00	0.03	0.323	O	|	|	|	|	1.07
89.917	0.00	0.03	0.323	O	|	|	|	|	1.07
90.000	0.00	0.03	0.323	O	|	|	|	|	1.07

90.083	0.00	0.03	0.322	O	|	|	|	|	1.07
90.167	0.00	0.03	0.322	O	|	|	|	|	1.06
90.250	0.00	0.03	0.322	O	|	|	|	|	1.06
90.333	0.00	0.03	0.322	O	|	|	|	|	1.06
90.417	0.00	0.03	0.322	O	|	|	|	|	1.06
90.500	0.00	0.03	0.322	O	|	|	|	|	1.06
90.583	0.00	0.03	0.321	O	|	|	|	|	1.06
90.667	0.00	0.02	0.321	O	|	|	|	|	1.06
90.750	0.00	0.02	0.321	O	|	|	|	|	1.06
90.833	0.00	0.02	0.321	O	|	|	|	|	1.06
90.917	0.00	0.02	0.321	O	|	|	|	|	1.06
91.000	0.00	0.02	0.320	O	|	|	|	|	1.06
91.083	0.00	0.02	0.320	O	|	|	|	|	1.06
91.167	0.00	0.02	0.320	O	|	|	|	|	1.06
91.250	0.00	0.02	0.320	O	|	|	|	|	1.06
91.333	0.00	0.02	0.320	O	|	|	|	|	1.06
91.417	0.00	0.02	0.320	O	|	|	|	|	1.06
91.500	0.00	0.02	0.319	O	|	|	|	|	1.06
91.583	0.00	0.02	0.319	O	|	|	|	|	1.06
91.667	0.00	0.02	0.319	O	|	|	|	|	1.06
91.750	0.00	0.02	0.319	O	|	|	|	|	1.06
91.833	0.00	0.02	0.319	O	|	|	|	|	1.06
91.917	0.00	0.02	0.319	O	|	|	|	|	1.06
92.000	0.00	0.02	0.319	O	|	|	|	|	1.06
92.083	0.00	0.02	0.318	O	|	|	|	|	1.06
92.167	0.00	0.02	0.318	O	|	|	|	|	1.06
92.250	0.00	0.02	0.318	O	|	|	|	|	1.06
92.333	0.00	0.02	0.318	O	|	|	|	|	1.05
92.417	0.00	0.02	0.318	O	|	|	|	|	

1.05

92.500	0.00	0.02	0.318	O	|	|	|	|	1.05
92.583	0.00	0.02	0.317	O	|	|	|	|	1.05
92.667	0.00	0.02	0.317	O	|	|	|	|	1.05
92.750	0.00	0.02	0.317	O	|	|	|	|	1.05
92.833	0.00	0.02	0.317	O	|	|	|	|	1.05
92.917	0.00	0.02	0.317	O	|	|	|	|	1.05
93.000	0.00	0.02	0.317	O	|	|	|	|	1.05
93.083	0.00	0.02	0.317	O	|	|	|	|	1.05
93.167	0.00	0.02	0.316	O	|	|	|	|	1.05
93.250	0.00	0.02	0.316	O	|	|	|	|	1.05
93.333	0.00	0.02	0.316	O	|	|	|	|	1.05
93.417	0.00	0.02	0.316	O	|	|	|	|	1.05
93.500	0.00	0.02	0.316	O	|	|	|	|	1.05
93.583	0.00	0.02	0.316	O	|	|	|	|	1.05
93.667	0.00	0.02	0.316	O	|	|	|	|	1.05
93.750	0.00	0.02	0.315	O	|	|	|	|	1.05
93.833	0.00	0.02	0.315	O	|	|	|	|	1.05
93.917	0.00	0.02	0.315	O	|	|	|	|	1.05
94.000	0.00	0.02	0.315	O	|	|	|	|	1.05
94.083	0.00	0.02	0.315	O	|	|	|	|	1.05
94.167	0.00	0.02	0.315	O	|	|	|	|	1.05
94.250	0.00	0.02	0.315	O	|	|	|	|	1.05
94.333	0.00	0.02	0.315	O	|	|	|	|	1.05
94.417	0.00	0.02	0.314	O	|	|	|	|	1.05
94.500	0.00	0.02	0.314	O	|	|	|	|	1.05
94.583	0.00	0.02	0.314	O	|	|	|	|	1.05
94.667	0.00	0.02	0.314	O	|	|	|	|	1.05
94.750	0.00	0.02	0.314	O	|	|	|	|	1.05

94.833	0.00	0.02	0.314	O	|	|	|	|	1.05
94.917	0.00	0.02	0.314	O	|	|	|	|	1.05
95.000	0.00	0.02	0.314	O	|	|	|	|	1.04
95.083	0.00	0.02	0.313	O	|	|	|	|	1.04
95.167	0.00	0.02	0.313	O	|	|	|	|	1.04
95.250	0.00	0.02	0.313	O	|	|	|	|	1.04
95.333	0.00	0.02	0.313	O	|	|	|	|	1.04
95.417	0.00	0.02	0.313	O	|	|	|	|	1.04
95.500	0.00	0.02	0.313	O	|	|	|	|	1.04
95.583	0.00	0.02	0.313	O	|	|	|	|	1.04
95.667	0.00	0.02	0.313	O	|	|	|	|	1.04
95.750	0.00	0.02	0.312	O	|	|	|	|	1.04
95.833	0.00	0.02	0.312	O	|	|	|	|	1.04
95.917	0.00	0.02	0.312	O	|	|	|	|	1.04
96.000	0.00	0.02	0.312	O	|	|	|	|	1.04
96.083	0.00	0.02	0.312	O	|	|	|	|	1.04
96.167	0.00	0.02	0.312	O	|	|	|	|	1.04
96.250	0.00	0.02	0.312	O	|	|	|	|	1.04
96.333	0.00	0.02	0.312	O	|	|	|	|	1.04
96.417	0.00	0.02	0.311	O	|	|	|	|	1.04
96.500	0.00	0.02	0.311	O	|	|	|	|	1.04
96.583	0.00	0.02	0.311	O	|	|	|	|	1.04
96.667	0.00	0.02	0.311	O	|	|	|	|	1.04
96.750	0.00	0.02	0.311	O	|	|	|	|	1.04
96.833	0.00	0.02	0.311	O	|	|	|	|	1.04
96.917	0.00	0.02	0.311	O	|	|	|	|	1.04
97.000	0.00	0.02	0.311	O	|	|	|	|	1.04
97.083	0.00	0.02	0.311	O	|	|	|	|	1.04
97.167	0.00	0.02	0.310	O	|	|	|	|	

1.04

97.250	0.00	0.02	0.310	O	|	|	|	|	1.04
97.333	0.00	0.02	0.310	O	|	|	|	|	1.04
97.417	0.00	0.02	0.310	O	|	|	|	|	1.04
97.500	0.00	0.02	0.310	O	|	|	|	|	1.04
97.583	0.00	0.02	0.310	O	|	|	|	|	1.04
97.667	0.00	0.01	0.310	O	|	|	|	|	1.04
97.750	0.00	0.01	0.310	O	|	|	|	|	1.04
97.833	0.00	0.01	0.310	O	|	|	|	|	1.04
97.917	0.00	0.01	0.310	O	|	|	|	|	1.04
98.000	0.00	0.01	0.309	O	|	|	|	|	1.04
98.083	0.00	0.01	0.309	O	|	|	|	|	1.04
98.167	0.00	0.01	0.309	O	|	|	|	|	1.03
98.250	0.00	0.01	0.309	O	|	|	|	|	1.03
98.333	0.00	0.01	0.309	O	|	|	|	|	1.03
98.417	0.00	0.01	0.309	O	|	|	|	|	1.03
98.500	0.00	0.01	0.309	O	|	|	|	|	1.03
98.583	0.00	0.01	0.309	O	|	|	|	|	1.03
98.667	0.00	0.01	0.309	O	|	|	|	|	1.03
98.750	0.00	0.01	0.309	O	|	|	|	|	1.03
98.833	0.00	0.01	0.308	O	|	|	|	|	1.03
98.917	0.00	0.01	0.308	O	|	|	|	|	1.03
99.000	0.00	0.01	0.308	O	|	|	|	|	1.03
99.083	0.00	0.01	0.308	O	|	|	|	|	1.03
99.167	0.00	0.01	0.308	O	|	|	|	|	1.03
99.250	0.00	0.01	0.308	O	|	|	|	|	1.03
99.333	0.00	0.01	0.308	O	|	|	|	|	1.03
99.417	0.00	0.01	0.308	O	|	|	|	|	1.03
99.500	0.00	0.01	0.308	O	|	|	|	|	1.03

99.583	0.00	0.01	0.308	O	|	|	|	|	1.03
99.667	0.00	0.01	0.308	O	|	|	|	|	1.03
99.750	0.00	0.01	0.307	O	|	|	|	|	1.03
99.833	0.00	0.01	0.307	O	|	|	|	|	1.03
99.917	0.00	0.01	0.307	O	|	|	|	|	1.03
100.000	0.00	0.01	0.307	O	|	|	|	|	1.03
100.083	0.00	0.01	0.307	O	|	|	|	|	1.03
100.167	0.00	0.01	0.307	O	|	|	|	|	1.03
100.250	0.00	0.01	0.307	O	|	|	|	|	1.03
100.333	0.00	0.01	0.307	O	|	|	|	|	1.03
100.417	0.00	0.01	0.307	O	|	|	|	|	1.03
100.500	0.00	0.01	0.307	O	|	|	|	|	1.03
100.583	0.00	0.01	0.307	O	|	|	|	|	1.03
100.667	0.00	0.01	0.307	O	|	|	|	|	1.03
100.750	0.00	0.01	0.306	O	|	|	|	|	1.03
100.833	0.00	0.01	0.306	O	|	|	|	|	1.03
100.917	0.00	0.01	0.306	O	|	|	|	|	1.03
101.000	0.00	0.01	0.306	O	|	|	|	|	1.03
101.083	0.00	0.01	0.306	O	|	|	|	|	1.03
101.167	0.00	0.01	0.306	O	|	|	|	|	1.03
101.250	0.00	0.01	0.306	O	|	|	|	|	1.03
101.333	0.00	0.01	0.306	O	|	|	|	|	1.03
101.417	0.00	0.01	0.306	O	|	|	|	|	1.03
101.500	0.00	0.01	0.306	O	|	|	|	|	1.03
101.583	0.00	0.01	0.306	O	|	|	|	|	1.03
101.667	0.00	0.01	0.306	O	|	|	|	|	1.03
101.750	0.00	0.01	0.305	O	|	|	|	|	1.03
101.833	0.00	0.01	0.305	O	|	|	|	|	1.03
101.917	0.00	0.01	0.305	O	|	|	|	|	

1.03

102.000	0.00	0.01	0.305	O	|	|	|	|	1.03
102.083	0.00	0.01	0.305	O	|	|	|	|	1.03
102.167	0.00	0.01	0.305	O	|	|	|	|	1.03
102.250	0.00	0.01	0.305	O	|	|	|	|	1.03
102.333	0.00	0.01	0.305	O	|	|	|	|	1.03
102.417	0.00	0.01	0.305	O	|	|	|	|	1.02
102.500	0.00	0.01	0.305	O	|	|	|	|	1.02
102.583	0.00	0.01	0.305	O	|	|	|	|	1.02
102.667	0.00	0.01	0.305	O	|	|	|	|	1.02
102.750	0.00	0.01	0.305	O	|	|	|	|	1.02
102.833	0.00	0.01	0.305	O	|	|	|	|	1.02
102.917	0.00	0.01	0.304	O	|	|	|	|	1.02
103.000	0.00	0.01	0.304	O	|	|	|	|	1.02
103.083	0.00	0.01	0.304	O	|	|	|	|	1.02
103.167	0.00	0.01	0.304	O	|	|	|	|	1.02
103.250	0.00	0.01	0.304	O	|	|	|	|	1.02
103.333	0.00	0.01	0.304	O	|	|	|	|	1.02
103.417	0.00	0.01	0.304	O	|	|	|	|	1.02
103.500	0.00	0.01	0.304	O	|	|	|	|	1.02
103.583	0.00	0.01	0.304	O	|	|	|	|	1.02
103.667	0.00	0.01	0.304	O	|	|	|	|	1.02
103.750	0.00	0.01	0.304	O	|	|	|	|	1.02
103.833	0.00	0.01	0.304	O	|	|	|	|	1.02
103.917	0.00	0.01	0.304	O	|	|	|	|	1.02
104.000	0.00	0.01	0.304	O	|	|	|	|	1.02
104.083	0.00	0.01	0.304	O	|	|	|	|	1.02
104.167	0.00	0.01	0.303	O	|	|	|	|	1.02
104.250	0.00	0.01	0.303	O	|	|	|	|	1.02

104.333	0.00	0.01	0.303	O	|	|	|	|	1.02
104.417	0.00	0.01	0.303	O	|	|	|	|	1.02
104.500	0.00	0.01	0.303	O	|	|	|	|	1.02
104.583	0.00	0.01	0.303	O	|	|	|	|	1.02
104.667	0.00	0.01	0.303	O	|	|	|	|	1.02
104.750	0.00	0.01	0.303	O	|	|	|	|	1.02
104.833	0.00	0.01	0.303	O	|	|	|	|	1.02
104.917	0.00	0.01	0.303	O	|	|	|	|	1.02
105.000	0.00	0.01	0.303	O	|	|	|	|	1.02
105.083	0.00	0.01	0.303	O	|	|	|	|	1.02
105.167	0.00	0.01	0.303	O	|	|	|	|	1.02
105.250	0.00	0.01	0.303	O	|	|	|	|	1.02
105.333	0.00	0.01	0.303	O	|	|	|	|	1.02
105.417	0.00	0.01	0.303	O	|	|	|	|	1.02
105.500	0.00	0.01	0.302	O	|	|	|	|	1.02
105.583	0.00	0.01	0.302	O	|	|	|	|	1.02
105.667	0.00	0.01	0.302	O	|	|	|	|	1.02
105.750	0.00	0.01	0.302	O	|	|	|	|	1.02
105.833	0.00	0.01	0.302	O	|	|	|	|	1.02
105.917	0.00	0.01	0.302	O	|	|	|	|	1.02
106.000	0.00	0.01	0.302	O	|	|	|	|	1.02
106.083	0.00	0.01	0.302	O	|	|	|	|	1.02
106.167	0.00	0.01	0.302	O	|	|	|	|	1.02
106.250	0.00	0.01	0.302	O	|	|	|	|	1.02
106.333	0.00	0.01	0.302	O	|	|	|	|	1.02
106.417	0.00	0.01	0.302	O	|	|	|	|	1.02
106.500	0.00	0.01	0.302	O	|	|	|	|	1.02
106.583	0.00	0.01	0.302	O	|	|	|	|	1.02
106.667	0.00	0.01	0.302	O	|	|	|	|	

1.02

106.750	0.00	0.01	0.302	O	|	|	|	|	1.02
106.833	0.00	0.01	0.302	O	|	|	|	|	1.02
106.917	0.00	0.01	0.302	O	|	|	|	|	1.02
107.000	0.00	0.01	0.301	O	|	|	|	|	1.02
107.083	0.00	0.01	0.301	O	|	|	|	|	1.02
107.167	0.00	0.01	0.301	O	|	|	|	|	1.02
107.250	0.00	0.01	0.301	O	|	|	|	|	1.02
107.333	0.00	0.01	0.301	O	|	|	|	|	1.02
107.417	0.00	0.01	0.301	O	|	|	|	|	1.02
107.500	0.00	0.01	0.301	O	|	|	|	|	1.02
107.583	0.00	0.01	0.301	O	|	|	|	|	1.02
107.667	0.00	0.01	0.301	O	|	|	|	|	1.02
107.750	0.00	0.01	0.301	O	|	|	|	|	1.02
107.833	0.00	0.01	0.301	O	|	|	|	|	1.02
107.917	0.00	0.01	0.301	O	|	|	|	|	1.02
108.000	0.00	0.01	0.301	O	|	|	|	|	1.02
108.083	0.00	0.01	0.301	O	|	|	|	|	1.02
108.167	0.00	0.01	0.301	O	|	|	|	|	1.02
108.250	0.00	0.01	0.301	O	|	|	|	|	1.02
108.333	0.00	0.01	0.301	O	|	|	|	|	1.02
108.417	0.00	0.01	0.301	O	|	|	|	|	1.02
108.500	0.00	0.01	0.301	O	|	|	|	|	1.02
108.583	0.00	0.01	0.301	O	|	|	|	|	1.02
108.667	0.00	0.01	0.300	O	|	|	|	|	1.01
108.750	0.00	0.01	0.300	O	|	|	|	|	1.01
108.833	0.00	0.01	0.300	O	|	|	|	|	1.01
108.917	0.00	0.01	0.300	O	|	|	|	|	1.01
109.000	0.00	0.01	0.300	O	|	|	|	|	1.01

109.083	0.00	0.01	0.300	O	|	|	|	|	1.01
109.167	0.00	0.01	0.300	O	|	|	|	|	1.01
109.250	0.00	0.01	0.300	O	|	|	|	|	1.01
109.333	0.00	0.01	0.300	O	|	|	|	|	1.01
109.417	0.00	0.01	0.300	O	|	|	|	|	1.01
109.500	0.00	0.01	0.300	O	|	|	|	|	1.01
109.583	0.00	0.01	0.300	O	|	|	|	|	1.01
109.667	0.00	0.01	0.300	O	|	|	|	|	1.01
109.750	0.00	0.01	0.300	O	|	|	|	|	1.01
109.833	0.00	0.01	0.300	O	|	|	|	|	1.01
109.917	0.00	0.01	0.300	O	|	|	|	|	1.01
110.000	0.00	0.01	0.300	O	|	|	|	|	1.01
110.083	0.00	0.01	0.300	O	|	|	|	|	1.01
110.167	0.00	0.01	0.300	O	|	|	|	|	1.01
110.250	0.00	0.01	0.300	O	|	|	|	|	1.01
110.333	0.00	0.01	0.300	O	|	|	|	|	1.01
110.417	0.00	0.01	0.300	O	|	|	|	|	1.01
110.500	0.00	0.01	0.300	O	|	|	|	|	1.01
110.583	0.00	0.01	0.300	O	|	|	|	|	1.01
110.667	0.00	0.01	0.299	O	|	|	|	|	1.01
110.750	0.00	0.01	0.299	O	|	|	|	|	1.01
110.833	0.00	0.01	0.299	O	|	|	|	|	1.01
110.917	0.00	0.01	0.299	O	|	|	|	|	1.01
111.000	0.00	0.01	0.299	O	|	|	|	|	1.01
111.083	0.00	0.01	0.299	O	|	|	|	|	1.01
111.167	0.00	0.01	0.299	O	|	|	|	|	1.01
111.250	0.00	0.01	0.299	O	|	|	|	|	1.01
111.333	0.00	0.01	0.299	O	|	|	|	|	1.01
111.417	0.00	0.01	0.299	O	|	|	|	|	

1.01

111.500	0.00	0.01	0.299	O	|	|	|	|	1.01
111.583	0.00	0.01	0.299	O	|	|	|	|	1.01
111.667	0.00	0.01	0.299	O	|	|	|	|	1.01
111.750	0.00	0.01	0.299	O	|	|	|	|	1.01
111.833	0.00	0.01	0.299	O	|	|	|	|	1.01
111.917	0.00	0.01	0.299	O	|	|	|	|	1.01
112.000	0.00	0.01	0.299	O	|	|	|	|	1.01
112.083	0.00	0.01	0.299	O	|	|	|	|	1.01
112.167	0.00	0.01	0.299	O	|	|	|	|	1.01
112.250	0.00	0.01	0.299	O	|	|	|	|	1.01
112.333	0.00	0.01	0.299	O	|	|	|	|	1.01
112.417	0.00	0.01	0.299	O	|	|	|	|	1.01
112.500	0.00	0.01	0.299	O	|	|	|	|	1.01
112.583	0.00	0.01	0.299	O	|	|	|	|	1.01
112.667	0.00	0.01	0.299	O	|	|	|	|	1.01
112.750	0.00	0.00	0.299	O	|	|	|	|	1.01
112.833	0.00	0.00	0.299	O	|	|	|	|	1.01
112.917	0.00	0.00	0.298	O	|	|	|	|	1.01
113.000	0.00	0.00	0.298	O	|	|	|	|	1.01
113.083	0.00	0.00	0.298	O	|	|	|	|	1.01
113.167	0.00	0.00	0.298	O	|	|	|	|	1.01
113.250	0.00	0.00	0.298	O	|	|	|	|	1.01
113.333	0.00	0.00	0.298	O	|	|	|	|	1.01
113.417	0.00	0.00	0.298	O	|	|	|	|	1.01
113.500	0.00	0.00	0.298	O	|	|	|	|	1.01
113.583	0.00	0.00	0.298	O	|	|	|	|	1.01
113.667	0.00	0.00	0.298	O	|	|	|	|	1.01
113.750	0.00	0.00	0.298	O	|	|	|	|	1.01

113.833	0.00	0.00	0.298	O	|	|	|	|	1.01
113.917	0.00	0.00	0.298	O	|	|	|	|	1.01
114.000	0.00	0.00	0.298	O	|	|	|	|	1.01
114.083	0.00	0.00	0.298	O	|	|	|	|	1.01
114.167	0.00	0.00	0.298	O	|	|	|	|	1.01
114.250	0.00	0.00	0.298	O	|	|	|	|	1.01
114.333	0.00	0.00	0.298	O	|	|	|	|	1.01
114.417	0.00	0.00	0.298	O	|	|	|	|	1.01
114.500	0.00	0.00	0.298	O	|	|	|	|	1.01
114.583	0.00	0.00	0.298	O	|	|	|	|	1.01
114.667	0.00	0.00	0.298	O	|	|	|	|	1.01
114.750	0.00	0.00	0.298	O	|	|	|	|	1.01
114.833	0.00	0.00	0.298	O	|	|	|	|	1.01
114.917	0.00	0.00	0.298	O	|	|	|	|	1.01
115.000	0.00	0.00	0.298	O	|	|	|	|	1.01
115.083	0.00	0.00	0.298	O	|	|	|	|	1.01
115.167	0.00	0.00	0.298	O	|	|	|	|	1.01
115.250	0.00	0.00	0.298	O	|	|	|	|	1.01
115.333	0.00	0.00	0.298	O	|	|	|	|	1.01
115.417	0.00	0.00	0.298	O	|	|	|	|	1.01
115.500	0.00	0.00	0.298	O	|	|	|	|	1.01
115.583	0.00	0.00	0.297	O	|	|	|	|	1.01
115.667	0.00	0.00	0.297	O	|	|	|	|	1.01
115.750	0.00	0.00	0.297	O	|	|	|	|	1.01
115.833	0.00	0.00	0.297	O	|	|	|	|	1.01
115.917	0.00	0.00	0.297	O	|	|	|	|	1.01
116.000	0.00	0.00	0.297	O	|	|	|	|	1.01
116.083	0.00	0.00	0.297	O	|	|	|	|	1.01
116.167	0.00	0.00	0.297	O	|	|	|	|	

1.01

116.250	0.00	0.00	0.297	O	|	|	|	|	1.01
116.333	0.00	0.00	0.297	O	|	|	|	|	1.01
116.417	0.00	0.00	0.297	O	|	|	|	|	1.01
116.500	0.00	0.00	0.297	O	|	|	|	|	1.01
116.583	0.00	0.00	0.297	O	|	|	|	|	1.01
116.667	0.00	0.00	0.297	O	|	|	|	|	1.01
116.750	0.00	0.00	0.297	O	|	|	|	|	1.01
116.833	0.00	0.00	0.297	O	|	|	|	|	1.01
116.917	0.00	0.00	0.297	O	|	|	|	|	1.01
117.000	0.00	0.00	0.297	O	|	|	|	|	1.01
117.083	0.00	0.00	0.297	O	|	|	|	|	1.01
117.167	0.00	0.00	0.297	O	|	|	|	|	1.01
117.250	0.00	0.00	0.297	O	|	|	|	|	1.01
117.333	0.00	0.00	0.297	O	|	|	|	|	1.01
117.417	0.00	0.00	0.297	O	|	|	|	|	1.01
117.500	0.00	0.00	0.297	O	|	|	|	|	1.01
117.583	0.00	0.00	0.297	O	|	|	|	|	1.01
117.667	0.00	0.00	0.297	O	|	|	|	|	1.01
117.750	0.00	0.00	0.297	O	|	|	|	|	1.01
117.833	0.00	0.00	0.297	O	|	|	|	|	1.01
117.917	0.00	0.00	0.297	O	|	|	|	|	1.01
118.000	0.00	0.00	0.297	O	|	|	|	|	1.01
118.083	0.00	0.00	0.297	O	|	|	|	|	1.01
118.167	0.00	0.00	0.297	O	|	|	|	|	1.01
118.250	0.00	0.00	0.297	O	|	|	|	|	1.01
118.333	0.00	0.00	0.297	O	|	|	|	|	1.01
118.417	0.00	0.00	0.297	O	|	|	|	|	1.01
118.500	0.00	0.00	0.297	O	|	|	|	|	1.01

118.583	0.00	0.00	0.297	O	|	|	|	|	1.01
118.667	0.00	0.00	0.297	O	|	|	|	|	1.01
118.750	0.00	0.00	0.297	O	|	|	|	|	1.01
118.833	0.00	0.00	0.297	O	|	|	|	|	1.01
118.917	0.00	0.00	0.296	O	|	|	|	|	1.01
119.000	0.00	0.00	0.296	O	|	|	|	|	1.01
119.083	0.00	0.00	0.296	O	|	|	|	|	1.01
119.167	0.00	0.00	0.296	O	|	|	|	|	1.01
119.250	0.00	0.00	0.296	O	|	|	|	|	1.01
119.333	0.00	0.00	0.296	O	|	|	|	|	1.01
119.417	0.00	0.00	0.296	O	|	|	|	|	1.01
119.500	0.00	0.00	0.296	O	|	|	|	|	1.01
119.583	0.00	0.00	0.296	O	|	|	|	|	1.01
119.667	0.00	0.00	0.296	O	|	|	|	|	1.01
119.750	0.00	0.00	0.296	O	|	|	|	|	1.01
119.833	0.00	0.00	0.296	O	|	|	|	|	1.01
119.917	0.00	0.00	0.296	O	|	|	|	|	1.01
120.000	0.00	0.00	0.296	O	|	|	|	|	1.01
120.083	0.00	0.00	0.296	O	|	|	|	|	1.01
120.167	0.00	0.00	0.296	O	|	|	|	|	1.00
120.250	0.00	0.00	0.296	O	|	|	|	|	1.00
120.333	0.00	0.00	0.296	O	|	|	|	|	1.00
120.417	0.00	0.00	0.296	O	|	|	|	|	1.00
120.500	0.00	0.00	0.296	O	|	|	|	|	1.00
120.583	0.00	0.00	0.296	O	|	|	|	|	1.00
120.667	0.00	0.00	0.296	O	|	|	|	|	1.00
120.750	0.00	0.00	0.296	O	|	|	|	|	1.00
120.833	0.00	0.00	0.296	O	|	|	|	|	1.00
120.917	0.00	0.00	0.296	O	|	|	|	|	

1.00

121.000	0.00	0.00	0.296	O	|	|	|	1.00
121.083	0.00	0.00	0.296	O	|	|	|	1.00
121.167	0.00	0.00	0.296	O	|	|	|	1.00
121.250	0.00	0.00	0.296	O	|	|	|	1.00
121.333	0.00	0.00	0.296	O	|	|	|	1.00
121.417	0.00	0.00	0.296	O	|	|	|	1.00
121.500	0.00	0.00	0.296	O	|	|	|	1.00
121.583	0.00	0.00	0.296	O	|	|	|	1.00
121.667	0.00	0.00	0.296	O	|	|	|	1.00
121.750	0.00	0.00	0.296	O	|	|	|	1.00
121.833	0.00	0.00	0.296	O	|	|	|	1.00
121.917	0.00	0.00	0.296	O	|	|	|	1.00
122.000	0.00	0.00	0.296	O	|	|	|	1.00
122.083	0.00	0.00	0.296	O	|	|	|	1.00
122.167	0.00	0.00	0.296	O	|	|	|	1.00
122.250	0.00	0.00	0.296	O	|	|	|	1.00
122.333	0.00	0.00	0.296	O	|	|	|	1.00
122.417	0.00	0.00	0.296	O	|	|	|	1.00
122.500	0.00	0.00	0.296	O	|	|	|	1.00
122.583	0.00	0.00	0.296	O	|	|	|	1.00
122.667	0.00	0.00	0.296	O	|	|	|	1.00
122.750	0.00	0.00	0.296	O	|	|	|	1.00
122.833	0.00	0.00	0.296	O	|	|	|	1.00
122.917	0.00	0.00	0.296	O	|	|	|	1.00
123.000	0.00	0.00	0.296	O	|	|	|	1.00
123.083	0.00	0.00	0.296	O	|	|	|	1.00
123.167	0.00	0.00	0.296	O	|	|	|	1.00
123.250	0.00	0.00	0.296	O	|	|	|	1.00

123.333	0.00	0.00	0.295	O	|	|	|	|	1.00
123.417	0.00	0.00	0.295	O	|	|	|	|	1.00
123.500	0.00	0.00	0.295	O	|	|	|	|	1.00
123.583	0.00	0.00	0.295	O	|	|	|	|	1.00
123.667	0.00	0.00	0.295	O	|	|	|	|	1.00
123.750	0.00	0.00	0.295	O	|	|	|	|	1.00
123.833	0.00	0.00	0.295	O	|	|	|	|	1.00
123.917	0.00	0.00	0.295	O	|	|	|	|	1.00
124.000	0.00	0.00	0.295	O	|	|	|	|	1.00
124.083	0.00	0.00	0.295	O	|	|	|	|	1.00
124.167	0.00	0.00	0.295	O	|	|	|	|	1.00
124.250	0.00	0.00	0.295	O	|	|	|	|	1.00
124.333	0.00	0.00	0.295	O	|	|	|	|	1.00
124.417	0.00	0.00	0.295	O	|	|	|	|	1.00
124.500	0.00	0.00	0.295	O	|	|	|	|	1.00
124.583	0.00	0.00	0.295	O	|	|	|	|	1.00
124.667	0.00	0.00	0.295	O	|	|	|	|	1.00
124.750	0.00	0.00	0.295	O	|	|	|	|	1.00
124.833	0.00	0.00	0.295	O	|	|	|	|	1.00
124.917	0.00	0.00	0.295	O	|	|	|	|	1.00
125.000	0.00	0.00	0.295	O	|	|	|	|	1.00
125.083	0.00	0.00	0.295	O	|	|	|	|	1.00
125.167	0.00	0.00	0.295	O	|	|	|	|	1.00
125.250	0.00	0.00	0.295	O	|	|	|	|	1.00
125.333	0.00	0.00	0.295	O	|	|	|	|	1.00
125.417	0.00	0.00	0.295	O	|	|	|	|	1.00
125.500	0.00	0.00	0.295	O	|	|	|	|	1.00
125.583	0.00	0.00	0.295	O	|	|	|	|	1.00
125.667	0.00	0.00	0.295	O	|	|	|	|	

1.00

125.750	0.00	0.00	0.295	O	|	|	|	1.00
125.833	0.00	0.00	0.295	O	|	|	|	1.00
125.917	0.00	0.00	0.295	O	|	|	|	1.00
126.000	0.00	0.00	0.295	O	|	|	|	1.00
126.083	0.00	0.00	0.295	O	|	|	|	1.00
126.167	0.00	0.00	0.295	O	|	|	|	1.00
126.250	0.00	0.00	0.295	O	|	|	|	1.00
126.333	0.00	0.00	0.295	O	|	|	|	1.00
126.417	0.00	0.00	0.295	O	|	|	|	1.00
126.500	0.00	0.00	0.295	O	|	|	|	1.00
126.583	0.00	0.00	0.295	O	|	|	|	1.00
126.667	0.00	0.00	0.295	O	|	|	|	1.00
126.750	0.00	0.00	0.295	O	|	|	|	1.00
126.833	0.00	0.00	0.295	O	|	|	|	1.00
126.917	0.00	0.00	0.295	O	|	|	|	1.00
127.000	0.00	0.00	0.295	O	|	|	|	1.00
127.083	0.00	0.00	0.295	O	|	|	|	1.00
127.167	0.00	0.00	0.295	O	|	|	|	1.00
127.250	0.00	0.00	0.295	O	|	|	|	1.00
127.333	0.00	0.00	0.295	O	|	|	|	1.00
127.417	0.00	0.00	0.295	O	|	|	|	1.00
127.500	0.00	0.00	0.295	O	|	|	|	1.00
127.583	0.00	0.00	0.295	O	|	|	|	1.00
127.667	0.00	0.00	0.295	O	|	|	|	1.00
127.750	0.00	0.00	0.295	O	|	|	|	1.00
127.833	0.00	0.00	0.295	O	|	|	|	1.00
127.917	0.00	0.00	0.295	O	|	|	|	1.00
128.000	0.00	0.00	0.295	O	|	|	|	1.00

128.083	0.00	0.00	0.295	O	|	|	|	|	1.00
128.167	0.00	0.00	0.295	O	|	|	|	|	1.00
128.250	0.00	0.00	0.295	O	|	|	|	|	1.00
128.333	0.00	0.00	0.295	O	|	|	|	|	1.00
128.417	0.00	0.00	0.295	O	|	|	|	|	1.00
128.500	0.00	0.00	0.295	O	|	|	|	|	1.00
128.583	0.00	0.00	0.295	O	|	|	|	|	1.00
128.667	0.00	0.00	0.295	O	|	|	|	|	1.00
128.750	0.00	0.00	0.295	O	|	|	|	|	1.00
128.833	0.00	0.00	0.295	O	|	|	|	|	1.00
128.917	0.00	0.00	0.295	O	|	|	|	|	1.00
129.000	0.00	0.00	0.295	O	|	|	|	|	1.00
129.083	0.00	0.00	0.295	O	|	|	|	|	1.00
129.167	0.00	0.00	0.295	O	|	|	|	|	1.00
129.250	0.00	0.00	0.295	O	|	|	|	|	1.00
129.333	0.00	0.00	0.295	O	|	|	|	|	1.00
129.417	0.00	0.00	0.295	O	|	|	|	|	1.00
129.500	0.00	0.00	0.295	O	|	|	|	|	1.00
129.583	0.00	0.00	0.295	O	|	|	|	|	1.00
129.667	0.00	0.00	0.295	O	|	|	|	|	1.00
129.750	0.00	0.00	0.295	O	|	|	|	|	1.00
129.833	0.00	0.00	0.294	O	|	|	|	|	1.00
129.917	0.00	0.00	0.294	O	|	|	|	|	1.00
130.000	0.00	0.00	0.294	O	|	|	|	|	1.00
130.083	0.00	0.00	0.294	O	|	|	|	|	1.00
130.167	0.00	0.00	0.294	O	|	|	|	|	1.00
130.250	0.00	0.00	0.294	O	|	|	|	|	1.00
130.333	0.00	0.00	0.294	O	|	|	|	|	1.00
130.417	0.00	0.00	0.294	O	|	|	|	|	

1.00

130.500	0.00	0.00	0.294	O	|	|	|	|	1.00
130.583	0.00	0.00	0.294	O	|	|	|	|	1.00
130.667	0.00	0.00	0.294	O	|	|	|	|	1.00
130.750	0.00	0.00	0.294	O	|	|	|	|	1.00
130.833	0.00	0.00	0.294	O	|	|	|	|	1.00
130.917	0.00	0.00	0.294	O	|	|	|	|	1.00
131.000	0.00	0.00	0.294	O	|	|	|	|	1.00
131.083	0.00	0.00	0.294	O	|	|	|	|	1.00
131.167	0.00	0.00	0.294	O	|	|	|	|	1.00
131.250	0.00	0.00	0.294	O	|	|	|	|	1.00
131.333	0.00	0.00	0.294	O	|	|	|	|	1.00
131.417	0.00	0.00	0.294	O	|	|	|	|	1.00
131.500	0.00	0.00	0.294	O	|	|	|	|	1.00
131.583	0.00	0.00	0.294	O	|	|	|	|	1.00
131.667	0.00	0.00	0.294	O	|	|	|	|	1.00
131.750	0.00	0.00	0.294	O	|	|	|	|	1.00
131.833	0.00	0.00	0.294	O	|	|	|	|	1.00
131.917	0.00	0.00	0.294	O	|	|	|	|	1.00
132.000	0.00	0.00	0.294	O	|	|	|	|	1.00
132.083	0.00	0.00	0.294	O	|	|	|	|	1.00
132.167	0.00	0.00	0.294	O	|	|	|	|	1.00
132.250	0.00	0.00	0.294	O	|	|	|	|	1.00
132.333	0.00	0.00	0.294	O	|	|	|	|	1.00
132.417	0.00	0.00	0.294	O	|	|	|	|	1.00
132.500	0.00	0.00	0.294	O	|	|	|	|	1.00
132.583	0.00	0.00	0.294	O	|	|	|	|	1.00
132.667	0.00	0.00	0.294	O	|	|	|	|	1.00
132.750	0.00	0.00	0.294	O	|	|	|	|	1.00

132.833	0.00	0.00	0.294	O	|	|	|	|	1.00
132.917	0.00	0.00	0.294	O	|	|	|	|	1.00
133.000	0.00	0.00	0.294	O	|	|	|	|	1.00
133.083	0.00	0.00	0.294	O	|	|	|	|	1.00
133.167	0.00	0.00	0.294	O	|	|	|	|	1.00
133.250	0.00	0.00	0.294	O	|	|	|	|	1.00
133.333	0.00	0.00	0.294	O	|	|	|	|	1.00
133.417	0.00	0.00	0.294	O	|	|	|	|	1.00
133.500	0.00	0.00	0.294	O	|	|	|	|	1.00
133.583	0.00	0.00	0.294	O	|	|	|	|	1.00
133.667	0.00	0.00	0.294	O	|	|	|	|	1.00
133.750	0.00	0.00	0.294	O	|	|	|	|	1.00
133.833	0.00	0.00	0.294	O	|	|	|	|	1.00
133.917	0.00	0.00	0.294	O	|	|	|	|	1.00
134.000	0.00	0.00	0.294	O	|	|	|	|	1.00
134.083	0.00	0.00	0.294	O	|	|	|	|	1.00
134.167	0.00	0.00	0.294	O	|	|	|	|	1.00
134.250	0.00	0.00	0.294	O	|	|	|	|	1.00
134.333	0.00	0.00	0.294	O	|	|	|	|	1.00
134.417	0.00	0.00	0.294	O	|	|	|	|	1.00
134.500	0.00	0.00	0.294	O	|	|	|	|	1.00
134.583	0.00	0.00	0.294	O	|	|	|	|	1.00
134.667	0.00	0.00	0.294	O	|	|	|	|	1.00
134.750	0.00	0.00	0.294	O	|	|	|	|	1.00
134.833	0.00	0.00	0.294	O	|	|	|	|	1.00
134.917	0.00	0.00	0.294	O	|	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

```
**************************HYDROGRAPH DATA**************************
            Number of intervals =  1619
            Time interval =   5.0 (Min.)
            Maximum/Peak flow rate =       0.427 (CFS)
            Total volume =      1.514 (Ac.Ft)
      Status of hydrographs being held in storage
                Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)     0.000    0.000    0.000    0.000    0.000
      Vol (Ac.Ft)     0.000    0.000    0.000    0.000    0.000
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FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
100 YR - 1 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP1100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 14
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 23.337 (CFS)
Total volume = 0.698 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 14
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 5.8 11.67 17.50 23.34	Depth (Ft.)
0.083	2.25	0.00	0.008	O I | | | |	0.03
0.167	3.78	0.00	0.029	O I | | | |	0.10
0.250	4.44	0.00	0.057	O I | | | |	0.19
0.333	4.69	0.00	0.088	O I | | | |	0.30
0.417	5.16	0.00	0.122	O I| | | |	0.42
0.500	5.89	0.00	0.160	O I | | |	0.54
0.583	6.80	0.00	0.204	O |I | | |	0.69
0.667	8.00	0.00	0.255	O | I | | |	0.87
0.750	10.94	0.02	0.320	O | I | | |	1.06
0.833	23.34	0.11	0.438	O | | | I	1.32
0.917	16.40	0.17	0.573	O | | I | |	1.61
1.000	7.13	0.22	0.653	O |I | | |	1.77
1.083	2.18	0.23	0.684	O I | | | |	1.83
1.167	0.30	0.24	0.690	O | | | |	1.84
1.250	0.00	0.23	0.690	O | | | |	1.84
1.333	0.00	0.23	0.688	O | | | |	1.84
1.417	0.00	0.23	0.687	O | | | |	1.84
1.500	0.00	0.23	0.685	O | | | |	1.83
1.583	0.00	0.23	0.683	O | | | |	1.83

1.667	0.00	0.23	0.682	O	|	|	|	|	1.83
1.750	0.00	0.23	0.680	O	|	|	|	|	1.82
1.833	0.00	0.23	0.679	O	|	|	|	|	1.82
1.917	0.00	0.23	0.677	O	|	|	|	|	1.82
2.000	0.00	0.23	0.675	O	|	|	|	|	1.81
2.083	0.00	0.23	0.674	O	|	|	|	|	1.81
2.167	0.00	0.23	0.672	O	|	|	|	|	1.81
2.250	0.00	0.23	0.671	O	|	|	|	|	1.80
2.333	0.00	0.23	0.669	O	|	|	|	|	1.80
2.417	0.00	0.23	0.668	O	|	|	|	|	1.80
2.500	0.00	0.23	0.666	O	|	|	|	|	1.80
2.583	0.00	0.23	0.664	O	|	|	|	|	1.79
2.667	0.00	0.23	0.663	O	|	|	|	|	1.79
2.750	0.00	0.22	0.661	O	|	|	|	|	1.79
2.833	0.00	0.22	0.660	O	|	|	|	|	1.78
2.917	0.00	0.22	0.658	O	|	|	|	|	1.78
3.000	0.00	0.22	0.657	O	|	|	|	|	1.78
3.083	0.00	0.22	0.655	O	|	|	|	|	1.77
3.167	0.00	0.22	0.654	O	|	|	|	|	1.77
3.250	0.00	0.22	0.652	O	|	|	|	|	1.77
3.333	0.00	0.22	0.651	O	|	|	|	|	1.77
3.417	0.00	0.22	0.649	O	|	|	|	|	1.76
3.500	0.00	0.22	0.648	O	|	|	|	|	1.76
3.583	0.00	0.22	0.646	O	|	|	|	|	1.76
3.667	0.00	0.22	0.645	O	|	|	|	|	1.75
3.750	0.00	0.22	0.643	O	|	|	|	|	1.75
3.833	0.00	0.22	0.642	O	|	|	|	|	1.75
3.917	0.00	0.22	0.640	O	|	|	|	|	1.74
4.000	0.00	0.22	0.639	O	|	|	|	|	

1.74

4.083	0.00	0.21	0.637	O	|	|	|	|	1.74
4.167	0.00	0.21	0.636	O	|	|	|	|	1.74
4.250	0.00	0.21	0.634	O	|	|	|	|	1.73
4.333	0.00	0.21	0.633	O	|	|	|	|	1.73
4.417	0.00	0.21	0.631	O	|	|	|	|	1.73
4.500	0.00	0.21	0.630	O	|	|	|	|	1.72
4.583	0.00	0.21	0.628	O	|	|	|	|	1.72
4.667	0.00	0.21	0.627	O	|	|	|	|	1.72
4.750	0.00	0.21	0.626	O	|	|	|	|	1.71
4.833	0.00	0.21	0.624	O	|	|	|	|	1.71
4.917	0.00	0.20	0.623	O	|	|	|	|	1.71
5.000	0.00	0.20	0.621	O	|	|	|	|	1.71
5.083	0.00	0.20	0.620	O	|	|	|	|	1.70
5.167	0.00	0.20	0.619	O	|	|	|	|	1.70
5.250	0.00	0.20	0.617	O	|	|	|	|	1.70
5.333	0.00	0.20	0.616	O	|	|	|	|	1.69
5.417	0.00	0.20	0.614	O	|	|	|	|	1.69
5.500	0.00	0.20	0.613	O	|	|	|	|	1.69
5.583	0.00	0.20	0.612	O	|	|	|	|	1.69
5.667	0.00	0.20	0.610	O	|	|	|	|	1.68
5.750	0.00	0.20	0.609	O	|	|	|	|	1.68
5.833	0.00	0.19	0.608	O	|	|	|	|	1.68
5.917	0.00	0.19	0.606	O	|	|	|	|	1.68
6.000	0.00	0.19	0.605	O	|	|	|	|	1.67
6.083	0.00	0.19	0.604	O	|	|	|	|	1.67
6.167	0.00	0.19	0.602	O	|	|	|	|	1.67
6.250	0.00	0.19	0.601	O	|	|	|	|	1.66
6.333	0.00	0.19	0.600	O	|	|	|	|	1.66

6.417	0.00	0.19	0.598	O	|	|	|	|	1.66
6.500	0.00	0.19	0.597	O	|	|	|	|	1.66
6.583	0.00	0.19	0.596	O	|	|	|	|	1.65
6.667	0.00	0.19	0.594	O	|	|	|	|	1.65
6.750	0.00	0.19	0.593	O	|	|	|	|	1.65
6.833	0.00	0.18	0.592	O	|	|	|	|	1.65
6.917	0.00	0.18	0.591	O	|	|	|	|	1.64
7.000	0.00	0.18	0.589	O	|	|	|	|	1.64
7.083	0.00	0.18	0.588	O	|	|	|	|	1.64
7.167	0.00	0.18	0.587	O	|	|	|	|	1.64
7.250	0.00	0.18	0.586	O	|	|	|	|	1.63
7.333	0.00	0.18	0.584	O	|	|	|	|	1.63
7.417	0.00	0.18	0.583	O	|	|	|	|	1.63
7.500	0.00	0.18	0.582	O	|	|	|	|	1.63
7.583	0.00	0.18	0.581	O	|	|	|	|	1.62
7.667	0.00	0.18	0.579	O	|	|	|	|	1.62
7.750	0.00	0.18	0.578	O	|	|	|	|	1.62
7.833	0.00	0.18	0.577	O	|	|	|	|	1.62
7.917	0.00	0.17	0.576	O	|	|	|	|	1.61
8.000	0.00	0.17	0.575	O	|	|	|	|	1.61
8.083	0.00	0.17	0.573	O	|	|	|	|	1.61
8.167	0.00	0.17	0.572	O	|	|	|	|	1.61
8.250	0.00	0.17	0.571	O	|	|	|	|	1.60
8.333	0.00	0.17	0.570	O	|	|	|	|	1.60
8.417	0.00	0.17	0.569	O	|	|	|	|	1.60
8.500	0.00	0.17	0.568	O	|	|	|	|	1.60
8.583	0.00	0.17	0.566	O	|	|	|	|	1.59
8.667	0.00	0.17	0.565	O	|	|	|	|	1.59
8.750	0.00	0.17	0.564	O	|	|	|	|	

1.59

8.833	0.00	0.17	0.563	O	|	|	|	1.59
8.917	0.00	0.17	0.562	O	|	|	|	1.58
9.000	0.00	0.16	0.561	O	|	|	|	1.58
9.083	0.00	0.16	0.560	O	|	|	|	1.58
9.167	0.00	0.16	0.558	O	|	|	|	1.58
9.250	0.00	0.16	0.557	O	|	|	|	1.58
9.333	0.00	0.16	0.556	O	|	|	|	1.57
9.417	0.00	0.16	0.555	O	|	|	|	1.57
9.500	0.00	0.16	0.554	O	|	|	|	1.57
9.583	0.00	0.16	0.553	O	|	|	|	1.57
9.667	0.00	0.16	0.552	O	|	|	|	1.56
9.750	0.00	0.16	0.551	O	|	|	|	1.56
9.833	0.00	0.16	0.550	O	|	|	|	1.56
9.917	0.00	0.16	0.549	O	|	|	|	1.56
10.000	0.00	0.16	0.547	O	|	|	|	1.56
10.083	0.00	0.16	0.546	O	|	|	|	1.55
10.167	0.00	0.15	0.545	O	|	|	|	1.55
10.250	0.00	0.15	0.544	O	|	|	|	1.55
10.333	0.00	0.15	0.543	O	|	|	|	1.55
10.417	0.00	0.15	0.542	O	|	|	|	1.54
10.500	0.00	0.15	0.541	O	|	|	|	1.54
10.583	0.00	0.15	0.540	O	|	|	|	1.54
10.667	0.00	0.15	0.539	O	|	|	|	1.54
10.750	0.00	0.15	0.538	O	|	|	|	1.54
10.833	0.00	0.15	0.537	O	|	|	|	1.53
10.917	0.00	0.15	0.536	O	|	|	|	1.53
11.000	0.00	0.15	0.535	O	|	|	|	1.53
11.083	0.00	0.15	0.534	O	|	|	|	1.53

11.167	0.00	0.15	0.533	O	|	|	|	|	1.53
11.250	0.00	0.15	0.532	O	|	|	|	|	1.52
11.333	0.00	0.15	0.531	O	|	|	|	|	1.52
11.417	0.00	0.14	0.530	O	|	|	|	|	1.52
11.500	0.00	0.14	0.529	O	|	|	|	|	1.52
11.583	0.00	0.14	0.528	O	|	|	|	|	1.52
11.667	0.00	0.14	0.527	O	|	|	|	|	1.51
11.750	0.00	0.14	0.526	O	|	|	|	|	1.51
11.833	0.00	0.14	0.525	O	|	|	|	|	1.51
11.917	0.00	0.14	0.524	O	|	|	|	|	1.51
12.000	0.00	0.14	0.523	O	|	|	|	|	1.51
12.083	0.00	0.14	0.522	O	|	|	|	|	1.50
12.167	0.00	0.14	0.521	O	|	|	|	|	1.50
12.250	0.00	0.14	0.520	O	|	|	|	|	1.50
12.333	0.00	0.14	0.519	O	|	|	|	|	1.50
12.417	0.00	0.14	0.518	O	|	|	|	|	1.50
12.500	0.00	0.14	0.517	O	|	|	|	|	1.49
12.583	0.00	0.14	0.516	O	|	|	|	|	1.49
12.667	0.00	0.14	0.515	O	|	|	|	|	1.49
12.750	0.00	0.14	0.514	O	|	|	|	|	1.49
12.833	0.00	0.14	0.514	O	|	|	|	|	1.49
12.917	0.00	0.14	0.513	O	|	|	|	|	1.48
13.000	0.00	0.14	0.512	O	|	|	|	|	1.48
13.083	0.00	0.13	0.511	O	|	|	|	|	1.48
13.167	0.00	0.13	0.510	O	|	|	|	|	1.48
13.250	0.00	0.13	0.509	O	|	|	|	|	1.48
13.333	0.00	0.13	0.508	O	|	|	|	|	1.47
13.417	0.00	0.13	0.507	O	|	|	|	|	1.47
13.500	0.00	0.13	0.506	O	|	|	|	|	

1.47

13.583	0.00	0.13	0.505	O	|	|	|	1.47
13.667	0.00	0.13	0.504	O	|	|	|	1.47
13.750	0.00	0.13	0.503	O	|	|	|	1.46
13.833	0.00	0.13	0.502	O	|	|	|	1.46
13.917	0.00	0.13	0.502	O	|	|	|	1.46
14.000	0.00	0.13	0.501	O	|	|	|	1.46
14.083	0.00	0.13	0.500	O	|	|	|	1.46
14.167	0.00	0.13	0.499	O	|	|	|	1.45
14.250	0.00	0.13	0.498	O	|	|	|	1.45
14.333	0.00	0.13	0.497	O	|	|	|	1.45
14.417	0.00	0.13	0.496	O	|	|	|	1.45
14.500	0.00	0.13	0.495	O	|	|	|	1.45
14.583	0.00	0.13	0.494	O	|	|	|	1.45
14.667	0.00	0.13	0.494	O	|	|	|	1.44
14.750	0.00	0.13	0.493	O	|	|	|	1.44
14.833	0.00	0.13	0.492	O	|	|	|	1.44
14.917	0.00	0.13	0.491	O	|	|	|	1.44
15.000	0.00	0.13	0.490	O	|	|	|	1.44
15.083	0.00	0.13	0.489	O	|	|	|	1.43
15.167	0.00	0.13	0.488	O	|	|	|	1.43
15.250	0.00	0.13	0.487	O	|	|	|	1.43
15.333	0.00	0.13	0.486	O	|	|	|	1.43
15.417	0.00	0.13	0.486	O	|	|	|	1.43
15.500	0.00	0.13	0.485	O	|	|	|	1.42
15.583	0.00	0.13	0.484	O	|	|	|	1.42
15.667	0.00	0.13	0.483	O	|	|	|	1.42
15.750	0.00	0.12	0.482	O	|	|	|	1.42
15.833	0.00	0.12	0.481	O	|	|	|	1.42

15.917	0.00	0.12	0.480	O	|	|	|	|	1.42
16.000	0.00	0.12	0.480	O	|	|	|	|	1.41
16.083	0.00	0.12	0.479	O	|	|	|	|	1.41
16.167	0.00	0.12	0.478	O	|	|	|	|	1.41
16.250	0.00	0.12	0.477	O	|	|	|	|	1.41
16.333	0.00	0.12	0.476	O	|	|	|	|	1.41
16.417	0.00	0.12	0.475	O	|	|	|	|	1.40
16.500	0.00	0.12	0.475	O	|	|	|	|	1.40
16.583	0.00	0.12	0.474	O	|	|	|	|	1.40
16.667	0.00	0.12	0.473	O	|	|	|	|	1.40
16.750	0.00	0.12	0.472	O	|	|	|	|	1.40
16.833	0.00	0.12	0.471	O	|	|	|	|	1.40
16.917	0.00	0.12	0.470	O	|	|	|	|	1.39
17.000	0.00	0.12	0.470	O	|	|	|	|	1.39
17.083	0.00	0.12	0.469	O	|	|	|	|	1.39
17.167	0.00	0.12	0.468	O	|	|	|	|	1.39
17.250	0.00	0.12	0.467	O	|	|	|	|	1.39
17.333	0.00	0.12	0.466	O	|	|	|	|	1.39
17.417	0.00	0.12	0.465	O	|	|	|	|	1.38
17.500	0.00	0.12	0.465	O	|	|	|	|	1.38
17.583	0.00	0.12	0.464	O	|	|	|	|	1.38
17.667	0.00	0.12	0.463	O	|	|	|	|	1.38
17.750	0.00	0.12	0.462	O	|	|	|	|	1.38
17.833	0.00	0.12	0.461	O	|	|	|	|	1.37
17.917	0.00	0.12	0.461	O	|	|	|	|	1.37
18.000	0.00	0.12	0.460	O	|	|	|	|	1.37
18.083	0.00	0.12	0.459	O	|	|	|	|	1.37
18.167	0.00	0.12	0.458	O	|	|	|	|	1.37
18.250	0.00	0.12	0.457	O	|	|	|	|	

1.37

18.333	0.00	0.12	0.456	O	|	|	|	1.36
18.417	0.00	0.12	0.456	O	|	|	|	1.36
18.500	0.00	0.12	0.455	O	|	|	|	1.36
18.583	0.00	0.11	0.454	O	|	|	|	1.36
18.667	0.00	0.11	0.453	O	|	|	|	1.36
18.750	0.00	0.11	0.453	O	|	|	|	1.36
18.833	0.00	0.11	0.452	O	|	|	|	1.35
18.917	0.00	0.11	0.451	O	|	|	|	1.35
19.000	0.00	0.11	0.450	O	|	|	|	1.35
19.083	0.00	0.11	0.449	O	|	|	|	1.35
19.167	0.00	0.11	0.449	O	|	|	|	1.35
19.250	0.00	0.11	0.448	O	|	|	|	1.35
19.333	0.00	0.11	0.447	O	|	|	|	1.34
19.417	0.00	0.11	0.446	O	|	|	|	1.34
19.500	0.00	0.11	0.446	O	|	|	|	1.34
19.583	0.00	0.11	0.445	O	|	|	|	1.34
19.667	0.00	0.11	0.444	O	|	|	|	1.34
19.750	0.00	0.11	0.443	O	|	|	|	1.34
19.833	0.00	0.11	0.442	O	|	|	|	1.33
19.917	0.00	0.11	0.442	O	|	|	|	1.33
20.000	0.00	0.11	0.441	O	|	|	|	1.33
20.083	0.00	0.11	0.440	O	|	|	|	1.33
20.167	0.00	0.11	0.439	O	|	|	|	1.33
20.250	0.00	0.11	0.439	O	|	|	|	1.33
20.333	0.00	0.11	0.438	O	|	|	|	1.32
20.417	0.00	0.11	0.437	O	|	|	|	1.32
20.500	0.00	0.11	0.436	O	|	|	|	1.32
20.583	0.00	0.11	0.436	O	|	|	|	1.32

20.667	0.00	0.11	0.435	O	|	|	|	|	1.32
20.750	0.00	0.11	0.434	O	|	|	|	|	1.32
20.833	0.00	0.11	0.433	O	|	|	|	|	1.32
20.917	0.00	0.11	0.433	O	|	|	|	|	1.31
21.000	0.00	0.11	0.432	O	|	|	|	|	1.31
21.083	0.00	0.11	0.431	O	|	|	|	|	1.31
21.167	0.00	0.11	0.430	O	|	|	|	|	1.31
21.250	0.00	0.11	0.430	O	|	|	|	|	1.31
21.333	0.00	0.11	0.429	O	|	|	|	|	1.31
21.417	0.00	0.11	0.428	O	|	|	|	|	1.30
21.500	0.00	0.11	0.428	O	|	|	|	|	1.30
21.583	0.00	0.11	0.427	O	|	|	|	|	1.30
21.667	0.00	0.11	0.426	O	|	|	|	|	1.30
21.750	0.00	0.10	0.425	O	|	|	|	|	1.30
21.833	0.00	0.10	0.425	O	|	|	|	|	1.30
21.917	0.00	0.10	0.424	O	|	|	|	|	1.29
22.000	0.00	0.10	0.423	O	|	|	|	|	1.29
22.083	0.00	0.10	0.423	O	|	|	|	|	1.29
22.167	0.00	0.10	0.422	O	|	|	|	|	1.29
22.250	0.00	0.10	0.421	O	|	|	|	|	1.29
22.333	0.00	0.10	0.420	O	|	|	|	|	1.29
22.417	0.00	0.10	0.420	O	|	|	|	|	1.29
22.500	0.00	0.10	0.419	O	|	|	|	|	1.28
22.583	0.00	0.10	0.418	O	|	|	|	|	1.28
22.667	0.00	0.10	0.418	O	|	|	|	|	1.28
22.750	0.00	0.10	0.417	O	|	|	|	|	1.28
22.833	0.00	0.10	0.416	O	|	|	|	|	1.28
22.917	0.00	0.10	0.415	O	|	|	|	|	1.28
23.000	0.00	0.10	0.415	O	|	|	|	|	

1.28

23.083	0.00	0.10	0.414	O	|	|	|	1.27
23.167	0.00	0.10	0.413	O	|	|	|	1.27
23.250	0.00	0.10	0.413	O	|	|	|	1.27
23.333	0.00	0.10	0.412	O	|	|	|	1.27
23.417	0.00	0.10	0.411	O	|	|	|	1.27
23.500	0.00	0.10	0.411	O	|	|	|	1.27
23.583	0.00	0.10	0.410	O	|	|	|	1.26
23.667	0.00	0.10	0.409	O	|	|	|	1.26
23.750	0.00	0.10	0.409	O	|	|	|	1.26
23.833	0.00	0.10	0.408	O	|	|	|	1.26
23.917	0.00	0.10	0.407	O	|	|	|	1.26
24.000	0.00	0.10	0.407	O	|	|	|	1.26
24.083	0.00	0.10	0.406	O	|	|	|	1.26
24.167	0.00	0.10	0.405	O	|	|	|	1.25
24.250	0.00	0.10	0.404	O	|	|	|	1.25
24.333	0.00	0.10	0.404	O	|	|	|	1.25
24.417	0.00	0.10	0.403	O	|	|	|	1.25
24.500	0.00	0.10	0.402	O	|	|	|	1.25
24.583	0.00	0.10	0.402	O	|	|	|	1.25
24.667	0.00	0.10	0.401	O	|	|	|	1.25
24.750	0.00	0.09	0.401	O	|	|	|	1.24
24.833	0.00	0.09	0.400	O	|	|	|	1.24
24.917	0.00	0.09	0.399	O	|	|	|	1.24
25.000	0.00	0.09	0.399	O	|	|	|	1.24
25.083	0.00	0.09	0.398	O	|	|	|	1.24
25.167	0.00	0.09	0.397	O	|	|	|	1.24
25.250	0.00	0.09	0.397	O	|	|	|	1.24
25.333	0.00	0.09	0.396	O	|	|	|	1.23

25.417	0.00	0.09	0.395	O	|	|	|	|	1.23
25.500	0.00	0.09	0.395	O	|	|	|	|	1.23
25.583	0.00	0.09	0.394	O	|	|	|	|	1.23
25.667	0.00	0.09	0.394	O	|	|	|	|	1.23
25.750	0.00	0.09	0.393	O	|	|	|	|	1.23
25.833	0.00	0.09	0.392	O	|	|	|	|	1.23
25.917	0.00	0.09	0.392	O	|	|	|	|	1.22
26.000	0.00	0.09	0.391	O	|	|	|	|	1.22
26.083	0.00	0.09	0.391	O	|	|	|	|	1.22
26.167	0.00	0.09	0.390	O	|	|	|	|	1.22
26.250	0.00	0.08	0.389	O	|	|	|	|	1.22
26.333	0.00	0.08	0.389	O	|	|	|	|	1.22
26.417	0.00	0.08	0.388	O	|	|	|	|	1.22
26.500	0.00	0.08	0.388	O	|	|	|	|	1.21
26.583	0.00	0.08	0.387	O	|	|	|	|	1.21
26.667	0.00	0.08	0.386	O	|	|	|	|	1.21
26.750	0.00	0.08	0.386	O	|	|	|	|	1.21
26.833	0.00	0.08	0.385	O	|	|	|	|	1.21
26.917	0.00	0.08	0.385	O	|	|	|	|	1.21
27.000	0.00	0.08	0.384	O	|	|	|	|	1.21
27.083	0.00	0.08	0.384	O	|	|	|	|	1.21
27.167	0.00	0.08	0.383	O	|	|	|	|	1.20
27.250	0.00	0.08	0.383	O	|	|	|	|	1.20
27.333	0.00	0.08	0.382	O	|	|	|	|	1.20
27.417	0.00	0.08	0.382	O	|	|	|	|	1.20
27.500	0.00	0.08	0.381	O	|	|	|	|	1.20
27.583	0.00	0.08	0.380	O	|	|	|	|	1.20
27.667	0.00	0.08	0.380	O	|	|	|	|	1.20
27.750	0.00	0.08	0.379	O	|	|	|	|	

1.20

27.833	0.00	0.08	0.379	O	|	|	|	1.19
27.917	0.00	0.08	0.378	O	|	|	|	1.19
28.000	0.00	0.07	0.378	O	|	|	|	1.19
28.083	0.00	0.07	0.377	O	|	|	|	1.19
28.167	0.00	0.07	0.377	O	|	|	|	1.19
28.250	0.00	0.07	0.376	O	|	|	|	1.19
28.333	0.00	0.07	0.376	O	|	|	|	1.19
28.417	0.00	0.07	0.375	O	|	|	|	1.19
28.500	0.00	0.07	0.375	O	|	|	|	1.19
28.583	0.00	0.07	0.374	O	|	|	|	1.18
28.667	0.00	0.07	0.374	O	|	|	|	1.18
28.750	0.00	0.07	0.373	O	|	|	|	1.18
28.833	0.00	0.07	0.373	O	|	|	|	1.18
28.917	0.00	0.07	0.372	O	|	|	|	1.18
29.000	0.00	0.07	0.372	O	|	|	|	1.18
29.083	0.00	0.07	0.371	O	|	|	|	1.18
29.167	0.00	0.07	0.371	O	|	|	|	1.18
29.250	0.00	0.07	0.370	O	|	|	|	1.18
29.333	0.00	0.07	0.370	O	|	|	|	1.17
29.417	0.00	0.07	0.370	O	|	|	|	1.17
29.500	0.00	0.07	0.369	O	|	|	|	1.17
29.583	0.00	0.07	0.369	O	|	|	|	1.17
29.667	0.00	0.07	0.368	O	|	|	|	1.17
29.750	0.00	0.07	0.368	O	|	|	|	1.17
29.833	0.00	0.07	0.367	O	|	|	|	1.17
29.917	0.00	0.07	0.367	O	|	|	|	1.17
30.000	0.00	0.06	0.366	O	|	|	|	1.17
30.083	0.00	0.06	0.366	O	|	|	|	1.16

30.167	0.00	0.06	0.365	O	|	|	|	|	1.16
30.250	0.00	0.06	0.365	O	|	|	|	|	1.16
30.333	0.00	0.06	0.365	O	|	|	|	|	1.16
30.417	0.00	0.06	0.364	O	|	|	|	|	1.16
30.500	0.00	0.06	0.364	O	|	|	|	|	1.16
30.583	0.00	0.06	0.363	O	|	|	|	|	1.16
30.667	0.00	0.06	0.363	O	|	|	|	|	1.16
30.750	0.00	0.06	0.362	O	|	|	|	|	1.16
30.833	0.00	0.06	0.362	O	|	|	|	|	1.16
30.917	0.00	0.06	0.362	O	|	|	|	|	1.15
31.000	0.00	0.06	0.361	O	|	|	|	|	1.15
31.083	0.00	0.06	0.361	O	|	|	|	|	1.15
31.167	0.00	0.06	0.360	O	|	|	|	|	1.15
31.250	0.00	0.06	0.360	O	|	|	|	|	1.15
31.333	0.00	0.06	0.360	O	|	|	|	|	1.15
31.417	0.00	0.06	0.359	O	|	|	|	|	1.15
31.500	0.00	0.06	0.359	O	|	|	|	|	1.15
31.583	0.00	0.06	0.358	O	|	|	|	|	1.15
31.667	0.00	0.06	0.358	O	|	|	|	|	1.15
31.750	0.00	0.06	0.358	O	|	|	|	|	1.15
31.833	0.00	0.06	0.357	O	|	|	|	|	1.14
31.917	0.00	0.06	0.357	O	|	|	|	|	1.14
32.000	0.00	0.06	0.356	O	|	|	|	|	1.14
32.083	0.00	0.06	0.356	O	|	|	|	|	1.14
32.167	0.00	0.06	0.356	O	|	|	|	|	1.14
32.250	0.00	0.05	0.355	O	|	|	|	|	1.14
32.333	0.00	0.05	0.355	O	|	|	|	|	1.14
32.417	0.00	0.05	0.354	O	|	|	|	|	1.14
32.500	0.00	0.05	0.354	O	|	|	|	|	

1.14

32.583	0.00	0.05	0.354	O	|	|	|	|	1.14
32.667	0.00	0.05	0.353	O	|	|	|	|	1.14
32.750	0.00	0.05	0.353	O	|	|	|	|	1.14
32.833	0.00	0.05	0.353	O	|	|	|	|	1.13
32.917	0.00	0.05	0.352	O	|	|	|	|	1.13
33.000	0.00	0.05	0.352	O	|	|	|	|	1.13
33.083	0.00	0.05	0.352	O	|	|	|	|	1.13
33.167	0.00	0.05	0.351	O	|	|	|	|	1.13
33.250	0.00	0.05	0.351	O	|	|	|	|	1.13
33.333	0.00	0.05	0.350	O	|	|	|	|	1.13
33.417	0.00	0.05	0.350	O	|	|	|	|	1.13
33.500	0.00	0.05	0.350	O	|	|	|	|	1.13
33.583	0.00	0.05	0.349	O	|	|	|	|	1.13
33.667	0.00	0.05	0.349	O	|	|	|	|	1.13
33.750	0.00	0.05	0.349	O	|	|	|	|	1.13
33.833	0.00	0.05	0.348	O	|	|	|	|	1.12
33.917	0.00	0.05	0.348	O	|	|	|	|	1.12
34.000	0.00	0.05	0.348	O	|	|	|	|	1.12
34.083	0.00	0.05	0.347	O	|	|	|	|	1.12
34.167	0.00	0.05	0.347	O	|	|	|	|	1.12
34.250	0.00	0.05	0.347	O	|	|	|	|	1.12
34.333	0.00	0.05	0.346	O	|	|	|	|	1.12
34.417	0.00	0.05	0.346	O	|	|	|	|	1.12
34.500	0.00	0.05	0.346	O	|	|	|	|	1.12
34.583	0.00	0.05	0.345	O	|	|	|	|	1.12
34.667	0.00	0.05	0.345	O	|	|	|	|	1.12
34.750	0.00	0.05	0.345	O	|	|	|	|	1.12
34.833	0.00	0.05	0.345	O	|	|	|	|	1.12

34.917	0.00	0.05	0.344	O	|	|	|	|	1.12
35.000	0.00	0.04	0.344	O	|	|	|	|	1.11
35.083	0.00	0.04	0.344	O	|	|	|	|	1.11
35.167	0.00	0.04	0.343	O	|	|	|	|	1.11
35.250	0.00	0.04	0.343	O	|	|	|	|	1.11
35.333	0.00	0.04	0.343	O	|	|	|	|	1.11
35.417	0.00	0.04	0.342	O	|	|	|	|	1.11
35.500	0.00	0.04	0.342	O	|	|	|	|	1.11
35.583	0.00	0.04	0.342	O	|	|	|	|	1.11
35.667	0.00	0.04	0.341	O	|	|	|	|	1.11
35.750	0.00	0.04	0.341	O	|	|	|	|	1.11
35.833	0.00	0.04	0.341	O	|	|	|	|	1.11
35.917	0.00	0.04	0.341	O	|	|	|	|	1.11
36.000	0.00	0.04	0.340	O	|	|	|	|	1.11
36.083	0.00	0.04	0.340	O	|	|	|	|	1.11
36.167	0.00	0.04	0.340	O	|	|	|	|	1.10
36.250	0.00	0.04	0.339	O	|	|	|	|	1.10
36.333	0.00	0.04	0.339	O	|	|	|	|	1.10
36.417	0.00	0.04	0.339	O	|	|	|	|	1.10
36.500	0.00	0.04	0.339	O	|	|	|	|	1.10
36.583	0.00	0.04	0.338	O	|	|	|	|	1.10
36.667	0.00	0.04	0.338	O	|	|	|	|	1.10
36.750	0.00	0.04	0.338	O	|	|	|	|	1.10
36.833	0.00	0.04	0.338	O	|	|	|	|	1.10
36.917	0.00	0.04	0.337	O	|	|	|	|	1.10
37.000	0.00	0.04	0.337	O	|	|	|	|	1.10
37.083	0.00	0.04	0.337	O	|	|	|	|	1.10
37.167	0.00	0.04	0.336	O	|	|	|	|	1.10
37.250	0.00	0.04	0.336	O	|	|	|	|	

1.10

37.333	0.00	0.04	0.336	O	|	|	|	|	1.10
37.417	0.00	0.04	0.336	O	|	|	|	|	1.10
37.500	0.00	0.04	0.335	O	|	|	|	|	1.09
37.583	0.00	0.04	0.335	O	|	|	|	|	1.09
37.667	0.00	0.04	0.335	O	|	|	|	|	1.09
37.750	0.00	0.04	0.335	O	|	|	|	|	1.09
37.833	0.00	0.04	0.334	O	|	|	|	|	1.09
37.917	0.00	0.04	0.334	O	|	|	|	|	1.09
38.000	0.00	0.04	0.334	O	|	|	|	|	1.09
38.083	0.00	0.04	0.334	O	|	|	|	|	1.09
38.167	0.00	0.04	0.333	O	|	|	|	|	1.09
38.250	0.00	0.04	0.333	O	|	|	|	|	1.09
38.333	0.00	0.04	0.333	O	|	|	|	|	1.09
38.417	0.00	0.04	0.333	O	|	|	|	|	1.09
38.500	0.00	0.03	0.332	O	|	|	|	|	1.09
38.583	0.00	0.03	0.332	O	|	|	|	|	1.09
38.667	0.00	0.03	0.332	O	|	|	|	|	1.09
38.750	0.00	0.03	0.332	O	|	|	|	|	1.09
38.833	0.00	0.03	0.331	O	|	|	|	|	1.09
38.917	0.00	0.03	0.331	O	|	|	|	|	1.09
39.000	0.00	0.03	0.331	O	|	|	|	|	1.08
39.083	0.00	0.03	0.331	O	|	|	|	|	1.08
39.167	0.00	0.03	0.331	O	|	|	|	|	1.08
39.250	0.00	0.03	0.330	O	|	|	|	|	1.08
39.333	0.00	0.03	0.330	O	|	|	|	|	1.08
39.417	0.00	0.03	0.330	O	|	|	|	|	1.08
39.500	0.00	0.03	0.330	O	|	|	|	|	1.08
39.583	0.00	0.03	0.329	O	|	|	|	|	1.08

39.667	0.00	0.03	0.329	O	|	|	|	|	1.08
39.750	0.00	0.03	0.329	O	|	|	|	|	1.08
39.833	0.00	0.03	0.329	O	|	|	|	|	1.08
39.917	0.00	0.03	0.329	O	|	|	|	|	1.08
40.000	0.00	0.03	0.328	O	|	|	|	|	1.08
40.083	0.00	0.03	0.328	O	|	|	|	|	1.08
40.167	0.00	0.03	0.328	O	|	|	|	|	1.08
40.250	0.00	0.03	0.328	O	|	|	|	|	1.08
40.333	0.00	0.03	0.327	O	|	|	|	|	1.08
40.417	0.00	0.03	0.327	O	|	|	|	|	1.08
40.500	0.00	0.03	0.327	O	|	|	|	|	1.08
40.583	0.00	0.03	0.327	O	|	|	|	|	1.08
40.667	0.00	0.03	0.327	O	|	|	|	|	1.07
40.750	0.00	0.03	0.326	O	|	|	|	|	1.07
40.833	0.00	0.03	0.326	O	|	|	|	|	1.07
40.917	0.00	0.03	0.326	O	|	|	|	|	1.07
41.000	0.00	0.03	0.326	O	|	|	|	|	1.07
41.083	0.00	0.03	0.326	O	|	|	|	|	1.07
41.167	0.00	0.03	0.325	O	|	|	|	|	1.07
41.250	0.00	0.03	0.325	O	|	|	|	|	1.07
41.333	0.00	0.03	0.325	O	|	|	|	|	1.07
41.417	0.00	0.03	0.325	O	|	|	|	|	1.07
41.500	0.00	0.03	0.325	O	|	|	|	|	1.07
41.583	0.00	0.03	0.324	O	|	|	|	|	1.07
41.667	0.00	0.03	0.324	O	|	|	|	|	1.07
41.750	0.00	0.03	0.324	O	|	|	|	|	1.07
41.833	0.00	0.03	0.324	O	|	|	|	|	1.07
41.917	0.00	0.03	0.324	O	|	|	|	|	1.07
42.000	0.00	0.03	0.324	O	|	|	|	|	

1.07

42.083	0.00	0.03	0.323	O	|	|	|	1.07
42.167	0.00	0.03	0.323	O	|	|	|	1.07
42.250	0.00	0.03	0.323	O	|	|	|	1.07
42.333	0.00	0.03	0.323	O	|	|	|	1.07
42.417	0.00	0.03	0.323	O	|	|	|	1.07
42.500	0.00	0.03	0.322	O	|	|	|	1.07
42.583	0.00	0.03	0.322	O	|	|	|	1.06
42.667	0.00	0.03	0.322	O	|	|	|	1.06
42.750	0.00	0.03	0.322	O	|	|	|	1.06
42.833	0.00	0.03	0.322	O	|	|	|	1.06
42.917	0.00	0.03	0.322	O	|	|	|	1.06
43.000	0.00	0.03	0.321	O	|	|	|	1.06
43.083	0.00	0.02	0.321	O	|	|	|	1.06
43.167	0.00	0.02	0.321	O	|	|	|	1.06
43.250	0.00	0.02	0.321	O	|	|	|	1.06
43.333	0.00	0.02	0.321	O	|	|	|	1.06
43.417	0.00	0.02	0.321	O	|	|	|	1.06
43.500	0.00	0.02	0.320	O	|	|	|	1.06
43.583	0.00	0.02	0.320	O	|	|	|	1.06
43.667	0.00	0.02	0.320	O	|	|	|	1.06
43.750	0.00	0.02	0.320	O	|	|	|	1.06
43.833	0.00	0.02	0.320	O	|	|	|	1.06
43.917	0.00	0.02	0.320	O	|	|	|	1.06
44.000	0.00	0.02	0.319	O	|	|	|	1.06
44.083	0.00	0.02	0.319	O	|	|	|	1.06
44.167	0.00	0.02	0.319	O	|	|	|	1.06
44.250	0.00	0.02	0.319	O	|	|	|	1.06
44.333	0.00	0.02	0.319	O	|	|	|	1.06

44.417	0.00	0.02	0.319	O	|	|	|	|	1.06
44.500	0.00	0.02	0.318	O	|	|	|	|	1.06
44.583	0.00	0.02	0.318	O	|	|	|	|	1.06
44.667	0.00	0.02	0.318	O	|	|	|	|	1.06
44.750	0.00	0.02	0.318	O	|	|	|	|	1.05
44.833	0.00	0.02	0.318	O	|	|	|	|	1.05
44.917	0.00	0.02	0.318	O	|	|	|	|	1.05
45.000	0.00	0.02	0.318	O	|	|	|	|	1.05
45.083	0.00	0.02	0.317	O	|	|	|	|	1.05
45.167	0.00	0.02	0.317	O	|	|	|	|	1.05
45.250	0.00	0.02	0.317	O	|	|	|	|	1.05
45.333	0.00	0.02	0.317	O	|	|	|	|	1.05
45.417	0.00	0.02	0.317	O	|	|	|	|	1.05
45.500	0.00	0.02	0.317	O	|	|	|	|	1.05
45.583	0.00	0.02	0.316	O	|	|	|	|	1.05
45.667	0.00	0.02	0.316	O	|	|	|	|	1.05
45.750	0.00	0.02	0.316	O	|	|	|	|	1.05
45.833	0.00	0.02	0.316	O	|	|	|	|	1.05
45.917	0.00	0.02	0.316	O	|	|	|	|	1.05
46.000	0.00	0.02	0.316	O	|	|	|	|	1.05
46.083	0.00	0.02	0.316	O	|	|	|	|	1.05
46.167	0.00	0.02	0.316	O	|	|	|	|	1.05
46.250	0.00	0.02	0.315	O	|	|	|	|	1.05
46.333	0.00	0.02	0.315	O	|	|	|	|	1.05
46.417	0.00	0.02	0.315	O	|	|	|	|	1.05
46.500	0.00	0.02	0.315	O	|	|	|	|	1.05
46.583	0.00	0.02	0.315	O	|	|	|	|	1.05
46.667	0.00	0.02	0.315	O	|	|	|	|	1.05
46.750	0.00	0.02	0.315	O	|	|	|	|	

1.05

46.833	0.00	0.02	0.314	O	|	|	|	1.05
46.917	0.00	0.02	0.314	O	|	|	|	1.05
47.000	0.00	0.02	0.314	O	|	|	|	1.05
47.083	0.00	0.02	0.314	O	|	|	|	1.05
47.167	0.00	0.02	0.314	O	|	|	|	1.05
47.250	0.00	0.02	0.314	O	|	|	|	1.05
47.333	0.00	0.02	0.314	O	|	|	|	1.05
47.417	0.00	0.02	0.314	O	|	|	|	1.04
47.500	0.00	0.02	0.313	O	|	|	|	1.04
47.583	0.00	0.02	0.313	O	|	|	|	1.04
47.667	0.00	0.02	0.313	O	|	|	|	1.04
47.750	0.00	0.02	0.313	O	|	|	|	1.04
47.833	0.00	0.02	0.313	O	|	|	|	1.04
47.917	0.00	0.02	0.313	O	|	|	|	1.04
48.000	0.00	0.02	0.313	O	|	|	|	1.04
48.083	0.00	0.02	0.313	O	|	|	|	1.04
48.167	0.00	0.02	0.312	O	|	|	|	1.04
48.250	0.00	0.02	0.312	O	|	|	|	1.04
48.333	0.00	0.02	0.312	O	|	|	|	1.04
48.417	0.00	0.02	0.312	O	|	|	|	1.04
48.500	0.00	0.02	0.312	O	|	|	|	1.04
48.583	0.00	0.02	0.312	O	|	|	|	1.04
48.667	0.00	0.02	0.312	O	|	|	|	1.04
48.750	0.00	0.02	0.312	O	|	|	|	1.04
48.833	0.00	0.02	0.312	O	|	|	|	1.04
48.917	0.00	0.02	0.311	O	|	|	|	1.04
49.000	0.00	0.02	0.311	O	|	|	|	1.04
49.083	0.00	0.02	0.311	O	|	|	|	1.04

49.167	0.00	0.02	0.311	O	|	|	|	|	1.04
49.250	0.00	0.02	0.311	O	|	|	|	|	1.04
49.333	0.00	0.02	0.311	O	|	|	|	|	1.04
49.417	0.00	0.02	0.311	O	|	|	|	|	1.04
49.500	0.00	0.02	0.311	O	|	|	|	|	1.04
49.583	0.00	0.02	0.311	O	|	|	|	|	1.04
49.667	0.00	0.02	0.310	O	|	|	|	|	1.04
49.750	0.00	0.02	0.310	O	|	|	|	|	1.04
49.833	0.00	0.02	0.310	O	|	|	|	|	1.04
49.917	0.00	0.02	0.310	O	|	|	|	|	1.04
50.000	0.00	0.02	0.310	O	|	|	|	|	1.04
50.083	0.00	0.01	0.310	O	|	|	|	|	1.04
50.167	0.00	0.01	0.310	O	|	|	|	|	1.04
50.250	0.00	0.01	0.310	O	|	|	|	|	1.04
50.333	0.00	0.01	0.310	O	|	|	|	|	1.04
50.417	0.00	0.01	0.309	O	|	|	|	|	1.04
50.500	0.00	0.01	0.309	O	|	|	|	|	1.04
50.583	0.00	0.01	0.309	O	|	|	|	|	1.04
50.667	0.00	0.01	0.309	O	|	|	|	|	1.03
50.750	0.00	0.01	0.309	O	|	|	|	|	1.03
50.833	0.00	0.01	0.309	O	|	|	|	|	1.03
50.917	0.00	0.01	0.309	O	|	|	|	|	1.03
51.000	0.00	0.01	0.309	O	|	|	|	|	1.03
51.083	0.00	0.01	0.309	O	|	|	|	|	1.03
51.167	0.00	0.01	0.309	O	|	|	|	|	1.03
51.250	0.00	0.01	0.309	O	|	|	|	|	1.03
51.333	0.00	0.01	0.308	O	|	|	|	|	1.03
51.417	0.00	0.01	0.308	O	|	|	|	|	1.03
51.500	0.00	0.01	0.308	O	|	|	|	|	

1.03

51.583	0.00	0.01	0.308	O	|	|	|	|	1.03
51.667	0.00	0.01	0.308	O	|	|	|	|	1.03
51.750	0.00	0.01	0.308	O	|	|	|	|	1.03
51.833	0.00	0.01	0.308	O	|	|	|	|	1.03
51.917	0.00	0.01	0.308	O	|	|	|	|	1.03
52.000	0.00	0.01	0.308	O	|	|	|	|	1.03
52.083	0.00	0.01	0.308	O	|	|	|	|	1.03
52.167	0.00	0.01	0.307	O	|	|	|	|	1.03
52.250	0.00	0.01	0.307	O	|	|	|	|	1.03
52.333	0.00	0.01	0.307	O	|	|	|	|	1.03
52.417	0.00	0.01	0.307	O	|	|	|	|	1.03
52.500	0.00	0.01	0.307	O	|	|	|	|	1.03
52.583	0.00	0.01	0.307	O	|	|	|	|	1.03
52.667	0.00	0.01	0.307	O	|	|	|	|	1.03
52.750	0.00	0.01	0.307	O	|	|	|	|	1.03
52.833	0.00	0.01	0.307	O	|	|	|	|	1.03
52.917	0.00	0.01	0.307	O	|	|	|	|	1.03
53.000	0.00	0.01	0.307	O	|	|	|	|	1.03
53.083	0.00	0.01	0.307	O	|	|	|	|	1.03
53.167	0.00	0.01	0.306	O	|	|	|	|	1.03
53.250	0.00	0.01	0.306	O	|	|	|	|	1.03
53.333	0.00	0.01	0.306	O	|	|	|	|	1.03
53.417	0.00	0.01	0.306	O	|	|	|	|	1.03
53.500	0.00	0.01	0.306	O	|	|	|	|	1.03
53.583	0.00	0.01	0.306	O	|	|	|	|	1.03
53.667	0.00	0.01	0.306	O	|	|	|	|	1.03
53.750	0.00	0.01	0.306	O	|	|	|	|	1.03
53.833	0.00	0.01	0.306	O	|	|	|	|	1.03

53.917	0.00	0.01	0.306	O	|	|	|	|	1.03
54.000	0.00	0.01	0.306	O	|	|	|	|	1.03
54.083	0.00	0.01	0.306	O	|	|	|	|	1.03
54.167	0.00	0.01	0.306	O	|	|	|	|	1.03
54.250	0.00	0.01	0.305	O	|	|	|	|	1.03
54.333	0.00	0.01	0.305	O	|	|	|	|	1.03
54.417	0.00	0.01	0.305	O	|	|	|	|	1.03
54.500	0.00	0.01	0.305	O	|	|	|	|	1.03
54.583	0.00	0.01	0.305	O	|	|	|	|	1.03
54.667	0.00	0.01	0.305	O	|	|	|	|	1.03
54.750	0.00	0.01	0.305	O	|	|	|	|	1.03
54.833	0.00	0.01	0.305	O	|	|	|	|	1.03
54.917	0.00	0.01	0.305	O	|	|	|	|	1.02
55.000	0.00	0.01	0.305	O	|	|	|	|	1.02
55.083	0.00	0.01	0.305	O	|	|	|	|	1.02
55.167	0.00	0.01	0.305	O	|	|	|	|	1.02
55.250	0.00	0.01	0.305	O	|	|	|	|	1.02
55.333	0.00	0.01	0.304	O	|	|	|	|	1.02
55.417	0.00	0.01	0.304	O	|	|	|	|	1.02
55.500	0.00	0.01	0.304	O	|	|	|	|	1.02
55.583	0.00	0.01	0.304	O	|	|	|	|	1.02
55.667	0.00	0.01	0.304	O	|	|	|	|	1.02
55.750	0.00	0.01	0.304	O	|	|	|	|	1.02
55.833	0.00	0.01	0.304	O	|	|	|	|	1.02
55.917	0.00	0.01	0.304	O	|	|	|	|	1.02
56.000	0.00	0.01	0.304	O	|	|	|	|	1.02
56.083	0.00	0.01	0.304	O	|	|	|	|	1.02
56.167	0.00	0.01	0.304	O	|	|	|	|	1.02
56.250	0.00	0.01	0.304	O	|	|	|	|	

1.02

56.333	0.00	0.01	0.304	O	|	|	|	|	1.02
56.417	0.00	0.01	0.304	O	|	|	|	|	1.02
56.500	0.00	0.01	0.304	O	|	|	|	|	1.02
56.583	0.00	0.01	0.303	O	|	|	|	|	1.02
56.667	0.00	0.01	0.303	O	|	|	|	|	1.02
56.750	0.00	0.01	0.303	O	|	|	|	|	1.02
56.833	0.00	0.01	0.303	O	|	|	|	|	1.02
56.917	0.00	0.01	0.303	O	|	|	|	|	1.02
57.000	0.00	0.01	0.303	O	|	|	|	|	1.02
57.083	0.00	0.01	0.303	O	|	|	|	|	1.02
57.167	0.00	0.01	0.303	O	|	|	|	|	1.02
57.250	0.00	0.01	0.303	O	|	|	|	|	1.02
57.333	0.00	0.01	0.303	O	|	|	|	|	1.02
57.417	0.00	0.01	0.303	O	|	|	|	|	1.02
57.500	0.00	0.01	0.303	O	|	|	|	|	1.02
57.583	0.00	0.01	0.303	O	|	|	|	|	1.02
57.667	0.00	0.01	0.303	O	|	|	|	|	1.02
57.750	0.00	0.01	0.303	O	|	|	|	|	1.02
57.833	0.00	0.01	0.303	O	|	|	|	|	1.02
57.917	0.00	0.01	0.302	O	|	|	|	|	1.02
58.000	0.00	0.01	0.302	O	|	|	|	|	1.02
58.083	0.00	0.01	0.302	O	|	|	|	|	1.02
58.167	0.00	0.01	0.302	O	|	|	|	|	1.02
58.250	0.00	0.01	0.302	O	|	|	|	|	1.02
58.333	0.00	0.01	0.302	O	|	|	|	|	1.02
58.417	0.00	0.01	0.302	O	|	|	|	|	1.02
58.500	0.00	0.01	0.302	O	|	|	|	|	1.02
58.583	0.00	0.01	0.302	O	|	|	|	|	1.02

58.667	0.00	0.01	0.302	O	|	|	|	|	1.02
58.750	0.00	0.01	0.302	O	|	|	|	|	1.02
58.833	0.00	0.01	0.302	O	|	|	|	|	1.02
58.917	0.00	0.01	0.302	O	|	|	|	|	1.02
59.000	0.00	0.01	0.302	O	|	|	|	|	1.02
59.083	0.00	0.01	0.302	O	|	|	|	|	1.02
59.167	0.00	0.01	0.302	O	|	|	|	|	1.02
59.250	0.00	0.01	0.302	O	|	|	|	|	1.02
59.333	0.00	0.01	0.302	O	|	|	|	|	1.02
59.417	0.00	0.01	0.301	O	|	|	|	|	1.02
59.500	0.00	0.01	0.301	O	|	|	|	|	1.02
59.583	0.00	0.01	0.301	O	|	|	|	|	1.02
59.667	0.00	0.01	0.301	O	|	|	|	|	1.02
59.750	0.00	0.01	0.301	O	|	|	|	|	1.02
59.833	0.00	0.01	0.301	O	|	|	|	|	1.02
59.917	0.00	0.01	0.301	O	|	|	|	|	1.02
60.000	0.00	0.01	0.301	O	|	|	|	|	1.02
60.083	0.00	0.01	0.301	O	|	|	|	|	1.02
60.167	0.00	0.01	0.301	O	|	|	|	|	1.02
60.250	0.00	0.01	0.301	O	|	|	|	|	1.02
60.333	0.00	0.01	0.301	O	|	|	|	|	1.02
60.417	0.00	0.01	0.301	O	|	|	|	|	1.02
60.500	0.00	0.01	0.301	O	|	|	|	|	1.02
60.583	0.00	0.01	0.301	O	|	|	|	|	1.02
60.667	0.00	0.01	0.301	O	|	|	|	|	1.02
60.750	0.00	0.01	0.301	O	|	|	|	|	1.02
60.833	0.00	0.01	0.301	O	|	|	|	|	1.02
60.917	0.00	0.01	0.301	O	|	|	|	|	1.02
61.000	0.00	0.01	0.301	O	|	|	|	|	

1.02

61.083	0.00	0.01	0.301	O	|	|	|	|	1.01
61.167	0.00	0.01	0.300	O	|	|	|	|	1.01
61.250	0.00	0.01	0.300	O	|	|	|	|	1.01
61.333	0.00	0.01	0.300	O	|	|	|	|	1.01
61.417	0.00	0.01	0.300	O	|	|	|	|	1.01
61.500	0.00	0.01	0.300	O	|	|	|	|	1.01
61.583	0.00	0.01	0.300	O	|	|	|	|	1.01
61.667	0.00	0.01	0.300	O	|	|	|	|	1.01
61.750	0.00	0.01	0.300	O	|	|	|	|	1.01
61.833	0.00	0.01	0.300	O	|	|	|	|	1.01
61.917	0.00	0.01	0.300	O	|	|	|	|	1.01
62.000	0.00	0.01	0.300	O	|	|	|	|	1.01
62.083	0.00	0.01	0.300	O	|	|	|	|	1.01
62.167	0.00	0.01	0.300	O	|	|	|	|	1.01
62.250	0.00	0.01	0.300	O	|	|	|	|	1.01
62.333	0.00	0.01	0.300	O	|	|	|	|	1.01
62.417	0.00	0.01	0.300	O	|	|	|	|	1.01
62.500	0.00	0.01	0.300	O	|	|	|	|	1.01
62.583	0.00	0.01	0.300	O	|	|	|	|	1.01
62.667	0.00	0.01	0.300	O	|	|	|	|	1.01
62.750	0.00	0.01	0.300	O	|	|	|	|	1.01
62.833	0.00	0.01	0.300	O	|	|	|	|	1.01
62.917	0.00	0.01	0.300	O	|	|	|	|	1.01
63.000	0.00	0.01	0.300	O	|	|	|	|	1.01
63.083	0.00	0.01	0.299	O	|	|	|	|	1.01
63.167	0.00	0.01	0.299	O	|	|	|	|	1.01
63.250	0.00	0.01	0.299	O	|	|	|	|	1.01
63.333	0.00	0.01	0.299	O	|	|	|	|	1.01

63.417	0.00	0.01	0.299	O	|	|	|	|	1.01
63.500	0.00	0.01	0.299	O	|	|	|	|	1.01
63.583	0.00	0.01	0.299	O	|	|	|	|	1.01
63.667	0.00	0.01	0.299	O	|	|	|	|	1.01
63.750	0.00	0.01	0.299	O	|	|	|	|	1.01
63.833	0.00	0.01	0.299	O	|	|	|	|	1.01
63.917	0.00	0.01	0.299	O	|	|	|	|	1.01
64.000	0.00	0.01	0.299	O	|	|	|	|	1.01
64.083	0.00	0.01	0.299	O	|	|	|	|	1.01
64.167	0.00	0.01	0.299	O	|	|	|	|	1.01
64.250	0.00	0.01	0.299	O	|	|	|	|	1.01
64.333	0.00	0.01	0.299	O	|	|	|	|	1.01
64.417	0.00	0.01	0.299	O	|	|	|	|	1.01
64.500	0.00	0.01	0.299	O	|	|	|	|	1.01
64.583	0.00	0.01	0.299	O	|	|	|	|	1.01
64.667	0.00	0.01	0.299	O	|	|	|	|	1.01
64.750	0.00	0.01	0.299	O	|	|	|	|	1.01
64.833	0.00	0.01	0.299	O	|	|	|	|	1.01
64.917	0.00	0.01	0.299	O	|	|	|	|	1.01
65.000	0.00	0.01	0.299	O	|	|	|	|	1.01
65.083	0.00	0.01	0.299	O	|	|	|	|	1.01
65.167	0.00	0.01	0.299	O	|	|	|	|	1.01
65.250	0.00	0.00	0.299	O	|	|	|	|	1.01
65.333	0.00	0.00	0.298	O	|	|	|	|	1.01
65.417	0.00	0.00	0.298	O	|	|	|	|	1.01
65.500	0.00	0.00	0.298	O	|	|	|	|	1.01
65.583	0.00	0.00	0.298	O	|	|	|	|	1.01
65.667	0.00	0.00	0.298	O	|	|	|	|	1.01
65.750	0.00	0.00	0.298	O	|	|	|	|	

1.01

65.833	0.00	0.00	0.298	O	|	|	|	1.01
65.917	0.00	0.00	0.298	O	|	|	|	1.01
66.000	0.00	0.00	0.298	O	|	|	|	1.01
66.083	0.00	0.00	0.298	O	|	|	|	1.01
66.167	0.00	0.00	0.298	O	|	|	|	1.01
66.250	0.00	0.00	0.298	O	|	|	|	1.01
66.333	0.00	0.00	0.298	O	|	|	|	1.01
66.417	0.00	0.00	0.298	O	|	|	|	1.01
66.500	0.00	0.00	0.298	O	|	|	|	1.01
66.583	0.00	0.00	0.298	O	|	|	|	1.01
66.667	0.00	0.00	0.298	O	|	|	|	1.01
66.750	0.00	0.00	0.298	O	|	|	|	1.01
66.833	0.00	0.00	0.298	O	|	|	|	1.01
66.917	0.00	0.00	0.298	O	|	|	|	1.01
67.000	0.00	0.00	0.298	O	|	|	|	1.01
67.083	0.00	0.00	0.298	O	|	|	|	1.01
67.167	0.00	0.00	0.298	O	|	|	|	1.01
67.250	0.00	0.00	0.298	O	|	|	|	1.01
67.333	0.00	0.00	0.298	O	|	|	|	1.01
67.417	0.00	0.00	0.298	O	|	|	|	1.01
67.500	0.00	0.00	0.298	O	|	|	|	1.01
67.583	0.00	0.00	0.298	O	|	|	|	1.01
67.667	0.00	0.00	0.298	O	|	|	|	1.01
67.750	0.00	0.00	0.298	O	|	|	|	1.01
67.833	0.00	0.00	0.298	O	|	|	|	1.01
67.917	0.00	0.00	0.298	O	|	|	|	1.01
68.000	0.00	0.00	0.297	O	|	|	|	1.01
68.083	0.00	0.00	0.297	O	|	|	|	1.01

68.167	0.00	0.00	0.297	O	|	|	|	|	1.01
68.250	0.00	0.00	0.297	O	|	|	|	|	1.01
68.333	0.00	0.00	0.297	O	|	|	|	|	1.01
68.417	0.00	0.00	0.297	O	|	|	|	|	1.01
68.500	0.00	0.00	0.297	O	|	|	|	|	1.01
68.583	0.00	0.00	0.297	O	|	|	|	|	1.01
68.667	0.00	0.00	0.297	O	|	|	|	|	1.01
68.750	0.00	0.00	0.297	O	|	|	|	|	1.01
68.833	0.00	0.00	0.297	O	|	|	|	|	1.01
68.917	0.00	0.00	0.297	O	|	|	|	|	1.01
69.000	0.00	0.00	0.297	O	|	|	|	|	1.01
69.083	0.00	0.00	0.297	O	|	|	|	|	1.01
69.167	0.00	0.00	0.297	O	|	|	|	|	1.01
69.250	0.00	0.00	0.297	O	|	|	|	|	1.01
69.333	0.00	0.00	0.297	O	|	|	|	|	1.01
69.417	0.00	0.00	0.297	O	|	|	|	|	1.01
69.500	0.00	0.00	0.297	O	|	|	|	|	1.01
69.583	0.00	0.00	0.297	O	|	|	|	|	1.01
69.667	0.00	0.00	0.297	O	|	|	|	|	1.01
69.750	0.00	0.00	0.297	O	|	|	|	|	1.01
69.833	0.00	0.00	0.297	O	|	|	|	|	1.01
69.917	0.00	0.00	0.297	O	|	|	|	|	1.01
70.000	0.00	0.00	0.297	O	|	|	|	|	1.01
70.083	0.00	0.00	0.297	O	|	|	|	|	1.01
70.167	0.00	0.00	0.297	O	|	|	|	|	1.01
70.250	0.00	0.00	0.297	O	|	|	|	|	1.01
70.333	0.00	0.00	0.297	O	|	|	|	|	1.01
70.417	0.00	0.00	0.297	O	|	|	|	|	1.01
70.500	0.00	0.00	0.297	O	|	|	|	|	

1.01

70.583	0.00	0.00	0.297	O	|	|	|	1.01
70.667	0.00	0.00	0.297	O	|	|	|	1.01
70.750	0.00	0.00	0.297	O	|	|	|	1.01
70.833	0.00	0.00	0.297	O	|	|	|	1.01
70.917	0.00	0.00	0.297	O	|	|	|	1.01
71.000	0.00	0.00	0.297	O	|	|	|	1.01
71.083	0.00	0.00	0.297	O	|	|	|	1.01
71.167	0.00	0.00	0.297	O	|	|	|	1.01
71.250	0.00	0.00	0.297	O	|	|	|	1.01
71.333	0.00	0.00	0.296	O	|	|	|	1.01
71.417	0.00	0.00	0.296	O	|	|	|	1.01
71.500	0.00	0.00	0.296	O	|	|	|	1.01
71.583	0.00	0.00	0.296	O	|	|	|	1.01
71.667	0.00	0.00	0.296	O	|	|	|	1.01
71.750	0.00	0.00	0.296	O	|	|	|	1.01
71.833	0.00	0.00	0.296	O	|	|	|	1.01
71.917	0.00	0.00	0.296	O	|	|	|	1.01
72.000	0.00	0.00	0.296	O	|	|	|	1.01
72.083	0.00	0.00	0.296	O	|	|	|	1.01
72.167	0.00	0.00	0.296	O	|	|	|	1.01
72.250	0.00	0.00	0.296	O	|	|	|	1.01
72.333	0.00	0.00	0.296	O	|	|	|	1.01
72.417	0.00	0.00	0.296	O	|	|	|	1.01
72.500	0.00	0.00	0.296	O	|	|	|	1.01
72.583	0.00	0.00	0.296	O	|	|	|	1.00
72.667	0.00	0.00	0.296	O	|	|	|	1.00
72.750	0.00	0.00	0.296	O	|	|	|	1.00
72.833	0.00	0.00	0.296	O	|	|	|	1.00

72.917	0.00	0.00	0.296	O	|	|	|	|	1.00
73.000	0.00	0.00	0.296	O	|	|	|	|	1.00
73.083	0.00	0.00	0.296	O	|	|	|	|	1.00
73.167	0.00	0.00	0.296	O	|	|	|	|	1.00
73.250	0.00	0.00	0.296	O	|	|	|	|	1.00
73.333	0.00	0.00	0.296	O	|	|	|	|	1.00
73.417	0.00	0.00	0.296	O	|	|	|	|	1.00
73.500	0.00	0.00	0.296	O	|	|	|	|	1.00
73.583	0.00	0.00	0.296	O	|	|	|	|	1.00
73.667	0.00	0.00	0.296	O	|	|	|	|	1.00
73.750	0.00	0.00	0.296	O	|	|	|	|	1.00
73.833	0.00	0.00	0.296	O	|	|	|	|	1.00
73.917	0.00	0.00	0.296	O	|	|	|	|	1.00
74.000	0.00	0.00	0.296	O	|	|	|	|	1.00
74.083	0.00	0.00	0.296	O	|	|	|	|	1.00
74.167	0.00	0.00	0.296	O	|	|	|	|	1.00
74.250	0.00	0.00	0.296	O	|	|	|	|	1.00
74.333	0.00	0.00	0.296	O	|	|	|	|	1.00
74.417	0.00	0.00	0.296	O	|	|	|	|	1.00
74.500	0.00	0.00	0.296	O	|	|	|	|	1.00
74.583	0.00	0.00	0.296	O	|	|	|	|	1.00
74.667	0.00	0.00	0.296	O	|	|	|	|	1.00
74.750	0.00	0.00	0.296	O	|	|	|	|	1.00
74.833	0.00	0.00	0.296	O	|	|	|	|	1.00
74.917	0.00	0.00	0.296	O	|	|	|	|	1.00
75.000	0.00	0.00	0.296	O	|	|	|	|	1.00
75.083	0.00	0.00	0.296	O	|	|	|	|	1.00
75.167	0.00	0.00	0.296	O	|	|	|	|	1.00
75.250	0.00	0.00	0.296	O	|	|	|	|	

1.00

75.333	0.00	0.00	0.296	O	|	|	|	1.00
75.417	0.00	0.00	0.296	O	|	|	|	1.00
75.500	0.00	0.00	0.296	O	|	|	|	1.00
75.583	0.00	0.00	0.296	O	|	|	|	1.00
75.667	0.00	0.00	0.296	O	|	|	|	1.00
75.750	0.00	0.00	0.295	O	|	|	|	1.00
75.833	0.00	0.00	0.295	O	|	|	|	1.00
75.917	0.00	0.00	0.295	O	|	|	|	1.00
76.000	0.00	0.00	0.295	O	|	|	|	1.00
76.083	0.00	0.00	0.295	O	|	|	|	1.00
76.167	0.00	0.00	0.295	O	|	|	|	1.00
76.250	0.00	0.00	0.295	O	|	|	|	1.00
76.333	0.00	0.00	0.295	O	|	|	|	1.00
76.417	0.00	0.00	0.295	O	|	|	|	1.00
76.500	0.00	0.00	0.295	O	|	|	|	1.00
76.583	0.00	0.00	0.295	O	|	|	|	1.00
76.667	0.00	0.00	0.295	O	|	|	|	1.00
76.750	0.00	0.00	0.295	O	|	|	|	1.00
76.833	0.00	0.00	0.295	O	|	|	|	1.00
76.917	0.00	0.00	0.295	O	|	|	|	1.00
77.000	0.00	0.00	0.295	O	|	|	|	1.00
77.083	0.00	0.00	0.295	O	|	|	|	1.00
77.167	0.00	0.00	0.295	O	|	|	|	1.00
77.250	0.00	0.00	0.295	O	|	|	|	1.00
77.333	0.00	0.00	0.295	O	|	|	|	1.00
77.417	0.00	0.00	0.295	O	|	|	|	1.00
77.500	0.00	0.00	0.295	O	|	|	|	1.00
77.583	0.00	0.00	0.295	O	|	|	|	1.00

77.667	0.00	0.00	0.295	O	|	|	|	|	1.00
77.750	0.00	0.00	0.295	O	|	|	|	|	1.00
77.833	0.00	0.00	0.295	O	|	|	|	|	1.00
77.917	0.00	0.00	0.295	O	|	|	|	|	1.00
78.000	0.00	0.00	0.295	O	|	|	|	|	1.00
78.083	0.00	0.00	0.295	O	|	|	|	|	1.00
78.167	0.00	0.00	0.295	O	|	|	|	|	1.00
78.250	0.00	0.00	0.295	O	|	|	|	|	1.00
78.333	0.00	0.00	0.295	O	|	|	|	|	1.00
78.417	0.00	0.00	0.295	O	|	|	|	|	1.00
78.500	0.00	0.00	0.295	O	|	|	|	|	1.00
78.583	0.00	0.00	0.295	O	|	|	|	|	1.00
78.667	0.00	0.00	0.295	O	|	|	|	|	1.00
78.750	0.00	0.00	0.295	O	|	|	|	|	1.00
78.833	0.00	0.00	0.295	O	|	|	|	|	1.00
78.917	0.00	0.00	0.295	O	|	|	|	|	1.00
79.000	0.00	0.00	0.295	O	|	|	|	|	1.00
79.083	0.00	0.00	0.295	O	|	|	|	|	1.00
79.167	0.00	0.00	0.295	O	|	|	|	|	1.00
79.250	0.00	0.00	0.295	O	|	|	|	|	1.00
79.333	0.00	0.00	0.295	O	|	|	|	|	1.00
79.417	0.00	0.00	0.295	O	|	|	|	|	1.00
79.500	0.00	0.00	0.295	O	|	|	|	|	1.00
79.583	0.00	0.00	0.295	O	|	|	|	|	1.00
79.667	0.00	0.00	0.295	O	|	|	|	|	1.00
79.750	0.00	0.00	0.295	O	|	|	|	|	1.00
79.833	0.00	0.00	0.295	O	|	|	|	|	1.00
79.917	0.00	0.00	0.295	O	|	|	|	|	1.00
80.000	0.00	0.00	0.295	O	|	|	|	|	

1.00

80.083	0.00	0.00	0.295	O	|	|	|	|	1.00
80.167	0.00	0.00	0.295	O	|	|	|	|	1.00
80.250	0.00	0.00	0.295	O	|	|	|	|	1.00
80.333	0.00	0.00	0.295	O	|	|	|	|	1.00
80.417	0.00	0.00	0.295	O	|	|	|	|	1.00
80.500	0.00	0.00	0.295	O	|	|	|	|	1.00
80.583	0.00	0.00	0.295	O	|	|	|	|	1.00
80.667	0.00	0.00	0.295	O	|	|	|	|	1.00
80.750	0.00	0.00	0.295	O	|	|	|	|	1.00
80.833	0.00	0.00	0.295	O	|	|	|	|	1.00
80.917	0.00	0.00	0.295	O	|	|	|	|	1.00
81.000	0.00	0.00	0.295	O	|	|	|	|	1.00
81.083	0.00	0.00	0.295	O	|	|	|	|	1.00
81.167	0.00	0.00	0.295	O	|	|	|	|	1.00
81.250	0.00	0.00	0.295	O	|	|	|	|	1.00
81.333	0.00	0.00	0.295	O	|	|	|	|	1.00
81.417	0.00	0.00	0.295	O	|	|	|	|	1.00
81.500	0.00	0.00	0.295	O	|	|	|	|	1.00
81.583	0.00	0.00	0.295	O	|	|	|	|	1.00
81.667	0.00	0.00	0.295	O	|	|	|	|	1.00
81.750	0.00	0.00	0.295	O	|	|	|	|	1.00
81.833	0.00	0.00	0.295	O	|	|	|	|	1.00
81.917	0.00	0.00	0.295	O	|	|	|	|	1.00
82.000	0.00	0.00	0.295	O	|	|	|	|	1.00
82.083	0.00	0.00	0.295	O	|	|	|	|	1.00
82.167	0.00	0.00	0.295	O	|	|	|	|	1.00
82.250	0.00	0.00	0.295	O	|	|	|	|	1.00
82.333	0.00	0.00	0.294	O	|	|	|	|	1.00

82.417	0.00	0.00	0.294	O	|	|	|	|	1.00
82.500	0.00	0.00	0.294	O	|	|	|	|	1.00
82.583	0.00	0.00	0.294	O	|	|	|	|	1.00
82.667	0.00	0.00	0.294	O	|	|	|	|	1.00
82.750	0.00	0.00	0.294	O	|	|	|	|	1.00
82.833	0.00	0.00	0.294	O	|	|	|	|	1.00
82.917	0.00	0.00	0.294	O	|	|	|	|	1.00
83.000	0.00	0.00	0.294	O	|	|	|	|	1.00
83.083	0.00	0.00	0.294	O	|	|	|	|	1.00
83.167	0.00	0.00	0.294	O	|	|	|	|	1.00
83.250	0.00	0.00	0.294	O	|	|	|	|	1.00
83.333	0.00	0.00	0.294	O	|	|	|	|	1.00
83.417	0.00	0.00	0.294	O	|	|	|	|	1.00
83.500	0.00	0.00	0.294	O	|	|	|	|	1.00
83.583	0.00	0.00	0.294	O	|	|	|	|	1.00
83.667	0.00	0.00	0.294	O	|	|	|	|	1.00
83.750	0.00	0.00	0.294	O	|	|	|	|	1.00
83.833	0.00	0.00	0.294	O	|	|	|	|	1.00
83.917	0.00	0.00	0.294	O	|	|	|	|	1.00
84.000	0.00	0.00	0.294	O	|	|	|	|	1.00
84.083	0.00	0.00	0.294	O	|	|	|	|	1.00
84.167	0.00	0.00	0.294	O	|	|	|	|	1.00
84.250	0.00	0.00	0.294	O	|	|	|	|	1.00
84.333	0.00	0.00	0.294	O	|	|	|	|	1.00
84.417	0.00	0.00	0.294	O	|	|	|	|	1.00
84.500	0.00	0.00	0.294	O	|	|	|	|	1.00
84.583	0.00	0.00	0.294	O	|	|	|	|	1.00
84.667	0.00	0.00	0.294	O	|	|	|	|	1.00
84.750	0.00	0.00	0.294	O	|	|	|	|	

1.00

84.833	0.00	0.00	0.294	O	|	|	|	|	1.00
84.917	0.00	0.00	0.294	O	|	|	|	|	1.00
85.000	0.00	0.00	0.294	O	|	|	|	|	1.00
85.083	0.00	0.00	0.294	O	|	|	|	|	1.00
85.167	0.00	0.00	0.294	O	|	|	|	|	1.00
85.250	0.00	0.00	0.294	O	|	|	|	|	1.00
85.333	0.00	0.00	0.294	O	|	|	|	|	1.00
85.417	0.00	0.00	0.294	O	|	|	|	|	1.00
85.500	0.00	0.00	0.294	O	|	|	|	|	1.00
85.583	0.00	0.00	0.294	O	|	|	|	|	1.00
85.667	0.00	0.00	0.294	O	|	|	|	|	1.00
85.750	0.00	0.00	0.294	O	|	|	|	|	1.00
85.833	0.00	0.00	0.294	O	|	|	|	|	1.00
85.917	0.00	0.00	0.294	O	|	|	|	|	1.00
86.000	0.00	0.00	0.294	O	|	|	|	|	1.00
86.083	0.00	0.00	0.294	O	|	|	|	|	1.00
86.167	0.00	0.00	0.294	O	|	|	|	|	1.00
86.250	0.00	0.00	0.294	O	|	|	|	|	1.00
86.333	0.00	0.00	0.294	O	|	|	|	|	1.00
86.417	0.00	0.00	0.294	O	|	|	|	|	1.00
86.500	0.00	0.00	0.294	O	|	|	|	|	1.00
86.583	0.00	0.00	0.294	O	|	|	|	|	1.00
86.667	0.00	0.00	0.294	O	|	|	|	|	1.00
86.750	0.00	0.00	0.294	O	|	|	|	|	1.00
86.833	0.00	0.00	0.294	O	|	|	|	|	1.00
86.917	0.00	0.00	0.294	O	|	|	|	|	1.00
87.000	0.00	0.00	0.294	O	|	|	|	|	1.00
87.083	0.00	0.00	0.294	O	|	|	|	|	1.00

87.167	0.00	0.00	0.294	O	|	|	|	|	1.00
87.250	0.00	0.00	0.294	O	|	|	|	|	1.00
87.333	0.00	0.00	0.294	O	|	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1048
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.235 (CFS)
Total volume = 0.404 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
100 YR - 3 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP3100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 38
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 12.464 (CFS)
Total volume = 1.032 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 38
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 3.1 6.23 9.35 12.46	Depth (Ft.)
0.083	1.07	0.00	0.004	O I | | | |	0.01
0.167	1.78	0.00	0.013	O I | | | |	0.05
0.250	1.73	0.00	0.026	O I | | | |	0.09
0.333	1.95	0.00	0.038	O I | | | |	0.13
0.417	2.15	0.00	0.052	O I | | | |	0.18
0.500	2.43	0.00	0.068	O I | | | |	0.23
0.583	2.35	0.00	0.085	O I | | | |	0.29
0.667	2.46	0.00	0.101	O I | | | |	0.34
0.750	2.59	0.00	0.119	O I | | | |	0.40
0.833	2.37	0.00	0.136	O I | | | |	0.46
0.917	2.29	0.00	0.152	O I | | | |	0.52
1.000	2.49	0.00	0.168	O I | | | |	0.57
1.083	2.93	0.00	0.187	O I| | | |	0.64
1.167	3.17	0.00	0.208	O I | | | |	0.71
1.250	3.20	0.00	0.230	O I | | | |	0.78
1.333	3.04	0.00	0.251	O I| | | |	0.85
1.417	3.43	0.00	0.274	O I | | | |	0.93
1.500	3.81	0.00	0.298	O |I | | |	1.01
1.583	3.68	0.03	0.324	O |I | | |	1.07
1.667	3.77	0.05	0.349	O |I | | |	

1.13

1.750	4.40	0.07	0.377	O	|	I |	|	|	1.19
1.833	4.59	0.10	0.408	O	|	I |	|	|	1.26
1.917	4.37	0.11	0.438	O	|	I |	|	|	1.32
2.000	4.32	0.12	0.467	O	|	I |	|	|	1.39
2.083	4.44	0.13	0.496	O	|	I |	|	|	1.45
2.167	5.48	0.14	0.529	O	|	I |	|	|	1.52
2.250	6.91	0.17	0.571	O	|	|I	|	|	1.60
2.333	6.11	0.20	0.614	O	|	I|	|	|	1.69
2.417	8.46	0.23	0.663	O	|	| I	|	|	1.79
2.500	10.90	0.25	0.728	O	|	|	| I	|	1.92
2.583	12.46	0.27	0.807	O	|	|	|	I	2.07
2.667	10.84	0.30	0.885	O	|	|	| I	|	2.22
2.750	5.89	0.31	0.941	O	|	I|	|	|	2.33
2.833	3.14	0.32	0.970	O	I	|	|	|	2.38
2.917	2.64	0.32	0.987	O	I |	|	|	|	2.42
3.000	1.63	0.33	1.000	O	I |	|	|	|	2.44
3.083	0.49	0.33	1.005	OI	|	|	|	|	2.45
3.167	0.05	0.33	1.004	O	|	|	|	|	2.45
3.250	0.00	0.33	1.002	O	|	|	|	|	2.45
3.333	0.00	0.33	1.000	O	|	|	|	|	2.44
3.417	0.00	0.33	0.998	O	|	|	|	|	2.44
3.500	0.00	0.33	0.996	O	|	|	|	|	2.43
3.583	0.00	0.33	0.993	O	|	|	|	|	2.43
3.667	0.00	0.33	0.991	O	|	|	|	|	2.42
3.750	0.00	0.33	0.989	O	|	|	|	|	2.42
3.833	0.00	0.32	0.987	O	|	|	|	|	2.42
3.917	0.00	0.32	0.984	O	|	|	|	|	2.41
4.000	0.00	0.32	0.982	O	|	|	|	|	2.41
4.083	0.00	0.32	0.980	O	|	|	|	|	2.40

4.167	0.00	0.32	0.978	O	|	|	|	|	2.40
4.250	0.00	0.32	0.975	O	|	|	|	|	2.39
4.333	0.00	0.32	0.973	O	|	|	|	|	2.39
4.417	0.00	0.32	0.971	O	|	|	|	|	2.39
4.500	0.00	0.32	0.969	O	|	|	|	|	2.38
4.583	0.00	0.32	0.967	O	|	|	|	|	2.38
4.667	0.00	0.32	0.964	O	|	|	|	|	2.37
4.750	0.00	0.32	0.962	O	|	|	|	|	2.37
4.833	0.00	0.32	0.960	O	|	|	|	|	2.36
4.917	0.00	0.32	0.958	O	|	|	|	|	2.36
5.000	0.00	0.32	0.956	O	|	|	|	|	2.36
5.083	0.00	0.32	0.953	O	|	|	|	|	2.35
5.167	0.00	0.32	0.951	O	|	|	|	|	2.35
5.250	0.00	0.31	0.949	O	|	|	|	|	2.34
5.333	0.00	0.31	0.947	O	|	|	|	|	2.34
5.417	0.00	0.31	0.945	O	|	|	|	|	2.34
5.500	0.00	0.31	0.943	O	|	|	|	|	2.33
5.583	0.00	0.31	0.941	O	|	|	|	|	2.33
5.667	0.00	0.31	0.938	O	|	|	|	|	2.32
5.750	0.00	0.31	0.936	O	|	|	|	|	2.32
5.833	0.00	0.31	0.934	O	|	|	|	|	2.32
5.917	0.00	0.31	0.932	O	|	|	|	|	2.31
6.000	0.00	0.31	0.930	O	|	|	|	|	2.31
6.083	0.00	0.31	0.928	O	|	|	|	|	2.30
6.167	0.00	0.31	0.926	O	|	|	|	|	2.30
6.250	0.00	0.31	0.923	O	|	|	|	|	2.29
6.333	0.00	0.31	0.921	O	|	|	|	|	2.29
6.417	0.00	0.31	0.919	O	|	|	|	|	2.29
6.500	0.00	0.31	0.917	O	|	|	|	|	

2.28

6.583	0.00	0.31	0.915	O	|	|	|	2.28
6.667	0.00	0.31	0.913	O	|	|	|	2.27
6.750	0.00	0.30	0.911	O	|	|	|	2.27
6.833	0.00	0.30	0.909	O	|	|	|	2.27
6.917	0.00	0.30	0.907	O	|	|	|	2.26
7.000	0.00	0.30	0.904	O	|	|	|	2.26
7.083	0.00	0.30	0.902	O	|	|	|	2.25
7.167	0.00	0.30	0.900	O	|	|	|	2.25
7.250	0.00	0.30	0.898	O	|	|	|	2.25
7.333	0.00	0.30	0.896	O	|	|	|	2.24
7.417	0.00	0.30	0.894	O	|	|	|	2.24
7.500	0.00	0.30	0.892	O	|	|	|	2.23
7.583	0.00	0.30	0.890	O	|	|	|	2.23
7.667	0.00	0.30	0.888	O	|	|	|	2.23
7.750	0.00	0.30	0.886	O	|	|	|	2.22
7.833	0.00	0.30	0.884	O	|	|	|	2.22
7.917	0.00	0.30	0.882	O	|	|	|	2.21
8.000	0.00	0.30	0.880	O	|	|	|	2.21
8.083	0.00	0.30	0.878	O	|	|	|	2.21
8.167	0.00	0.29	0.876	O	|	|	|	2.20
8.250	0.00	0.29	0.874	O	|	|	|	2.20
8.333	0.00	0.29	0.872	O	|	|	|	2.20
8.417	0.00	0.29	0.870	O	|	|	|	2.19
8.500	0.00	0.29	0.868	O	|	|	|	2.19
8.583	0.00	0.29	0.866	O	|	|	|	2.18
8.667	0.00	0.29	0.864	O	|	|	|	2.18
8.750	0.00	0.29	0.862	O	|	|	|	2.18
8.833	0.00	0.29	0.860	O	|	|	|	2.17

8.917	0.00	0.29	0.858	O	|	|	|	2.17
9.000	0.00	0.29	0.856	O	|	|	|	2.16
9.083	0.00	0.29	0.854	O	|	|	|	2.16
9.167	0.00	0.29	0.852	O	|	|	|	2.16
9.250	0.00	0.29	0.850	O	|	|	|	2.15
9.333	0.00	0.29	0.848	O	|	|	|	2.15
9.417	0.00	0.29	0.846	O	|	|	|	2.15
9.500	0.00	0.29	0.844	O	|	|	|	2.14
9.583	0.00	0.28	0.842	O	|	|	|	2.14
9.667	0.00	0.28	0.840	O	|	|	|	2.13
9.750	0.00	0.28	0.838	O	|	|	|	2.13
9.833	0.00	0.28	0.836	O	|	|	|	2.13
9.917	0.00	0.28	0.834	O	|	|	|	2.12
10.000	0.00	0.28	0.832	O	|	|	|	2.12
10.083	0.00	0.28	0.830	O	|	|	|	2.12
10.167	0.00	0.28	0.828	O	|	|	|	2.11
10.250	0.00	0.28	0.826	O	|	|	|	2.11
10.333	0.00	0.28	0.824	O	|	|	|	2.10
10.417	0.00	0.28	0.822	O	|	|	|	2.10
10.500	0.00	0.28	0.820	O	|	|	|	2.10
10.583	0.00	0.28	0.818	O	|	|	|	2.09
10.667	0.00	0.28	0.817	O	|	|	|	2.09
10.750	0.00	0.28	0.815	O	|	|	|	2.09
10.833	0.00	0.28	0.813	O	|	|	|	2.08
10.917	0.00	0.28	0.811	O	|	|	|	2.08
11.000	0.00	0.28	0.809	O	|	|	|	2.07
11.083	0.00	0.27	0.807	O	|	|	|	2.07
11.167	0.00	0.27	0.805	O	|	|	|	2.07
11.250	0.00	0.27	0.803	O	|	|	|	

2.06

11.333	0.00	0.27	0.801	O	|	|	|	2.06
11.417	0.00	0.27	0.799	O	|	|	|	2.06
11.500	0.00	0.27	0.798	O	|	|	|	2.05
11.583	0.00	0.27	0.796	O	|	|	|	2.05
11.667	0.00	0.27	0.794	O	|	|	|	2.05
11.750	0.00	0.27	0.792	O	|	|	|	2.04
11.833	0.00	0.27	0.790	O	|	|	|	2.04
11.917	0.00	0.27	0.788	O	|	|	|	2.04
12.000	0.00	0.27	0.786	O	|	|	|	2.03
12.083	0.00	0.27	0.785	O	|	|	|	2.03
12.167	0.00	0.27	0.783	O	|	|	|	2.02
12.250	0.00	0.27	0.781	O	|	|	|	2.02
12.333	0.00	0.27	0.779	O	|	|	|	2.02
12.417	0.00	0.27	0.777	O	|	|	|	2.01
12.500	0.00	0.27	0.775	O	|	|	|	2.01
12.583	0.00	0.27	0.774	O	|	|	|	2.01
12.667	0.00	0.26	0.772	O	|	|	|	2.00
12.750	0.00	0.26	0.770	O	|	|	|	2.00
12.833	0.00	0.26	0.768	O	|	|	|	2.00
12.917	0.00	0.26	0.766	O	|	|	|	1.99
13.000	0.00	0.26	0.764	O	|	|	|	1.99
13.083	0.00	0.26	0.763	O	|	|	|	1.99
13.167	0.00	0.26	0.761	O	|	|	|	1.98
13.250	0.00	0.26	0.759	O	|	|	|	1.98
13.333	0.00	0.26	0.757	O	|	|	|	1.97
13.417	0.00	0.26	0.756	O	|	|	|	1.97
13.500	0.00	0.26	0.754	O	|	|	|	1.97
13.583	0.00	0.26	0.752	O	|	|	|	1.96

13.667	0.00	0.26	0.750	O	|	|	|	|	1.96
13.750	0.00	0.26	0.748	O	|	|	|	|	1.96
13.833	0.00	0.26	0.747	O	|	|	|	|	1.95
13.917	0.00	0.25	0.745	O	|	|	|	|	1.95
14.000	0.00	0.25	0.743	O	|	|	|	|	1.95
14.083	0.00	0.25	0.741	O	|	|	|	|	1.94
14.167	0.00	0.25	0.740	O	|	|	|	|	1.94
14.250	0.00	0.25	0.738	O	|	|	|	|	1.94
14.333	0.00	0.25	0.736	O	|	|	|	|	1.93
14.417	0.00	0.25	0.734	O	|	|	|	|	1.93
14.500	0.00	0.25	0.733	O	|	|	|	|	1.93
14.583	0.00	0.25	0.731	O	|	|	|	|	1.92
14.667	0.00	0.25	0.729	O	|	|	|	|	1.92
14.750	0.00	0.25	0.728	O	|	|	|	|	1.92
14.833	0.00	0.25	0.726	O	|	|	|	|	1.91
14.917	0.00	0.25	0.724	O	|	|	|	|	1.91
15.000	0.00	0.25	0.722	O	|	|	|	|	1.91
15.083	0.00	0.25	0.721	O	|	|	|	|	1.90
15.167	0.00	0.25	0.719	O	|	|	|	|	1.90
15.250	0.00	0.24	0.717	O	|	|	|	|	1.90
15.333	0.00	0.24	0.716	O	|	|	|	|	1.89
15.417	0.00	0.24	0.714	O	|	|	|	|	1.89
15.500	0.00	0.24	0.712	O	|	|	|	|	1.89
15.583	0.00	0.24	0.711	O	|	|	|	|	1.88
15.667	0.00	0.24	0.709	O	|	|	|	|	1.88
15.750	0.00	0.24	0.707	O	|	|	|	|	1.88
15.833	0.00	0.24	0.706	O	|	|	|	|	1.87
15.917	0.00	0.24	0.704	O	|	|	|	|	1.87
16.000	0.00	0.24	0.702	O	|	|	|	|	

1.87

16.083	0.00	0.24	0.701	O	|	|	|	|	1.86
16.167	0.00	0.24	0.699	O	|	|	|	|	1.86
16.250	0.00	0.24	0.697	O	|	|	|	|	1.86
16.333	0.00	0.24	0.696	O	|	|	|	|	1.85
16.417	0.00	0.24	0.694	O	|	|	|	|	1.85
16.500	0.00	0.24	0.693	O	|	|	|	|	1.85
16.583	0.00	0.24	0.691	O	|	|	|	|	1.84
16.667	0.00	0.23	0.689	O	|	|	|	|	1.84
16.750	0.00	0.23	0.688	O	|	|	|	|	1.84
16.833	0.00	0.23	0.686	O	|	|	|	|	1.83
16.917	0.00	0.23	0.684	O	|	|	|	|	1.83
17.000	0.00	0.23	0.683	O	|	|	|	|	1.83
17.083	0.00	0.23	0.681	O	|	|	|	|	1.83
17.167	0.00	0.23	0.680	O	|	|	|	|	1.82
17.250	0.00	0.23	0.678	O	|	|	|	|	1.82
17.333	0.00	0.23	0.676	O	|	|	|	|	1.82
17.417	0.00	0.23	0.675	O	|	|	|	|	1.81
17.500	0.00	0.23	0.673	O	|	|	|	|	1.81
17.583	0.00	0.23	0.672	O	|	|	|	|	1.81
17.667	0.00	0.23	0.670	O	|	|	|	|	1.80
17.750	0.00	0.23	0.669	O	|	|	|	|	1.80
17.833	0.00	0.23	0.667	O	|	|	|	|	1.80
17.917	0.00	0.23	0.665	O	|	|	|	|	1.79
18.000	0.00	0.23	0.664	O	|	|	|	|	1.79
18.083	0.00	0.23	0.662	O	|	|	|	|	1.79
18.167	0.00	0.22	0.661	O	|	|	|	|	1.79
18.250	0.00	0.22	0.659	O	|	|	|	|	1.78
18.333	0.00	0.22	0.658	O	|	|	|	|	1.78

18.417	0.00	0.22	0.656	O	|	|	|	|	1.78
18.500	0.00	0.22	0.655	O	|	|	|	|	1.77
18.583	0.00	0.22	0.653	O	|	|	|	|	1.77
18.667	0.00	0.22	0.652	O	|	|	|	|	1.77
18.750	0.00	0.22	0.650	O	|	|	|	|	1.76
18.833	0.00	0.22	0.649	O	|	|	|	|	1.76
18.917	0.00	0.22	0.647	O	|	|	|	|	1.76
19.000	0.00	0.22	0.646	O	|	|	|	|	1.76
19.083	0.00	0.22	0.644	O	|	|	|	|	1.75
19.167	0.00	0.22	0.643	O	|	|	|	|	1.75
19.250	0.00	0.22	0.641	O	|	|	|	|	1.75
19.333	0.00	0.22	0.640	O	|	|	|	|	1.74
19.417	0.00	0.21	0.638	O	|	|	|	|	1.74
19.500	0.00	0.21	0.637	O	|	|	|	|	1.74
19.583	0.00	0.21	0.635	O	|	|	|	|	1.73
19.667	0.00	0.21	0.634	O	|	|	|	|	1.73
19.750	0.00	0.21	0.632	O	|	|	|	|	1.73
19.833	0.00	0.21	0.631	O	|	|	|	|	1.73
19.917	0.00	0.21	0.629	O	|	|	|	|	1.72
20.000	0.00	0.21	0.628	O	|	|	|	|	1.72
20.083	0.00	0.21	0.626	O	|	|	|	|	1.72
20.167	0.00	0.21	0.625	O	|	|	|	|	1.71
20.250	0.00	0.21	0.624	O	|	|	|	|	1.71
20.333	0.00	0.20	0.622	O	|	|	|	|	1.71
20.417	0.00	0.20	0.621	O	|	|	|	|	1.70
20.500	0.00	0.20	0.619	O	|	|	|	|	1.70
20.583	0.00	0.20	0.618	O	|	|	|	|	1.70
20.667	0.00	0.20	0.617	O	|	|	|	|	1.70
20.750	0.00	0.20	0.615	O	|	|	|	|	

1.69

20.833	0.00	0.20	0.614	O	|	|	|	|	1.69
20.917	0.00	0.20	0.612	O	|	|	|	|	1.69
21.000	0.00	0.20	0.611	O	|	|	|	|	1.69
21.083	0.00	0.20	0.610	O	|	|	|	|	1.68
21.167	0.00	0.20	0.608	O	|	|	|	|	1.68
21.250	0.00	0.19	0.607	O	|	|	|	|	1.68
21.333	0.00	0.19	0.606	O	|	|	|	|	1.67
21.417	0.00	0.19	0.604	O	|	|	|	|	1.67
21.500	0.00	0.19	0.603	O	|	|	|	|	1.67
21.583	0.00	0.19	0.602	O	|	|	|	|	1.67
21.667	0.00	0.19	0.600	O	|	|	|	|	1.66
21.750	0.00	0.19	0.599	O	|	|	|	|	1.66
21.833	0.00	0.19	0.598	O	|	|	|	|	1.66
21.917	0.00	0.19	0.597	O	|	|	|	|	1.66
22.000	0.00	0.19	0.595	O	|	|	|	|	1.65
22.083	0.00	0.19	0.594	O	|	|	|	|	1.65
22.167	0.00	0.19	0.593	O	|	|	|	|	1.65
22.250	0.00	0.18	0.591	O	|	|	|	|	1.65
22.333	0.00	0.18	0.590	O	|	|	|	|	1.64
22.417	0.00	0.18	0.589	O	|	|	|	|	1.64
22.500	0.00	0.18	0.588	O	|	|	|	|	1.64
22.583	0.00	0.18	0.586	O	|	|	|	|	1.63
22.667	0.00	0.18	0.585	O	|	|	|	|	1.63
22.750	0.00	0.18	0.584	O	|	|	|	|	1.63
22.833	0.00	0.18	0.583	O	|	|	|	|	1.63
22.917	0.00	0.18	0.581	O	|	|	|	|	1.62
23.000	0.00	0.18	0.580	O	|	|	|	|	1.62
23.083	0.00	0.18	0.579	O	|	|	|	|	1.62

23.167	0.00	0.18	0.578	O	|	|	|	|	1.62
23.250	0.00	0.17	0.577	O	|	|	|	|	1.62
23.333	0.00	0.17	0.575	O	|	|	|	|	1.61
23.417	0.00	0.17	0.574	O	|	|	|	|	1.61
23.500	0.00	0.17	0.573	O	|	|	|	|	1.61
23.583	0.00	0.17	0.572	O	|	|	|	|	1.61
23.667	0.00	0.17	0.571	O	|	|	|	|	1.60
23.750	0.00	0.17	0.569	O	|	|	|	|	1.60
23.833	0.00	0.17	0.568	O	|	|	|	|	1.60
23.917	0.00	0.17	0.567	O	|	|	|	|	1.60
24.000	0.00	0.17	0.566	O	|	|	|	|	1.59
24.083	0.00	0.17	0.565	O	|	|	|	|	1.59
24.167	0.00	0.17	0.564	O	|	|	|	|	1.59
24.250	0.00	0.17	0.563	O	|	|	|	|	1.59
24.333	0.00	0.16	0.561	O	|	|	|	|	1.58
24.417	0.00	0.16	0.560	O	|	|	|	|	1.58
24.500	0.00	0.16	0.559	O	|	|	|	|	1.58
24.583	0.00	0.16	0.558	O	|	|	|	|	1.58
24.667	0.00	0.16	0.557	O	|	|	|	|	1.57
24.750	0.00	0.16	0.556	O	|	|	|	|	1.57
24.833	0.00	0.16	0.555	O	|	|	|	|	1.57
24.917	0.00	0.16	0.554	O	|	|	|	|	1.57
25.000	0.00	0.16	0.552	O	|	|	|	|	1.57
25.083	0.00	0.16	0.551	O	|	|	|	|	1.56
25.167	0.00	0.16	0.550	O	|	|	|	|	1.56
25.250	0.00	0.16	0.549	O	|	|	|	|	1.56
25.333	0.00	0.16	0.548	O	|	|	|	|	1.56
25.417	0.00	0.16	0.547	O	|	|	|	|	1.55
25.500	0.00	0.15	0.546	O	|	|	|	|	

1.55

25.583	0.00	0.15	0.545	O	|	|	|	1.55
25.667	0.00	0.15	0.544	O	|	|	|	1.55
25.750	0.00	0.15	0.543	O	|	|	|	1.55
25.833	0.00	0.15	0.542	O	|	|	|	1.54
25.917	0.00	0.15	0.541	O	|	|	|	1.54
26.000	0.00	0.15	0.540	O	|	|	|	1.54
26.083	0.00	0.15	0.539	O	|	|	|	1.54
26.167	0.00	0.15	0.538	O	|	|	|	1.54
26.250	0.00	0.15	0.537	O	|	|	|	1.53
26.333	0.00	0.15	0.536	O	|	|	|	1.53
26.417	0.00	0.15	0.535	O	|	|	|	1.53
26.500	0.00	0.15	0.534	O	|	|	|	1.53
26.583	0.00	0.15	0.532	O	|	|	|	1.53
26.667	0.00	0.15	0.531	O	|	|	|	1.52
26.750	0.00	0.14	0.530	O	|	|	|	1.52
26.833	0.00	0.14	0.529	O	|	|	|	1.52
26.917	0.00	0.14	0.529	O	|	|	|	1.52
27.000	0.00	0.14	0.528	O	|	|	|	1.52
27.083	0.00	0.14	0.527	O	|	|	|	1.51
27.167	0.00	0.14	0.526	O	|	|	|	1.51
27.250	0.00	0.14	0.525	O	|	|	|	1.51
27.333	0.00	0.14	0.524	O	|	|	|	1.51
27.417	0.00	0.14	0.523	O	|	|	|	1.51
27.500	0.00	0.14	0.522	O	|	|	|	1.50
27.583	0.00	0.14	0.521	O	|	|	|	1.50
27.667	0.00	0.14	0.520	O	|	|	|	1.50
27.750	0.00	0.14	0.519	O	|	|	|	1.50
27.833	0.00	0.14	0.518	O	|	|	|	1.50

27.917	0.00	0.14	0.517	O	|	|	|	|	1.49
28.000	0.00	0.14	0.516	O	|	|	|	|	1.49
28.083	0.00	0.14	0.515	O	|	|	|	|	1.49
28.167	0.00	0.14	0.514	O	|	|	|	|	1.49
28.250	0.00	0.14	0.513	O	|	|	|	|	1.49
28.333	0.00	0.14	0.512	O	|	|	|	|	1.48
28.417	0.00	0.13	0.511	O	|	|	|	|	1.48
28.500	0.00	0.13	0.510	O	|	|	|	|	1.48
28.583	0.00	0.13	0.509	O	|	|	|	|	1.48
28.667	0.00	0.13	0.509	O	|	|	|	|	1.48
28.750	0.00	0.13	0.508	O	|	|	|	|	1.47
28.833	0.00	0.13	0.507	O	|	|	|	|	1.47
28.917	0.00	0.13	0.506	O	|	|	|	|	1.47
29.000	0.00	0.13	0.505	O	|	|	|	|	1.47
29.083	0.00	0.13	0.504	O	|	|	|	|	1.47
29.167	0.00	0.13	0.503	O	|	|	|	|	1.46
29.250	0.00	0.13	0.502	O	|	|	|	|	1.46
29.333	0.00	0.13	0.501	O	|	|	|	|	1.46
29.417	0.00	0.13	0.500	O	|	|	|	|	1.46
29.500	0.00	0.13	0.499	O	|	|	|	|	1.46
29.583	0.00	0.13	0.499	O	|	|	|	|	1.45
29.667	0.00	0.13	0.498	O	|	|	|	|	1.45
29.750	0.00	0.13	0.497	O	|	|	|	|	1.45
29.833	0.00	0.13	0.496	O	|	|	|	|	1.45
29.917	0.00	0.13	0.495	O	|	|	|	|	1.45
30.000	0.00	0.13	0.494	O	|	|	|	|	1.44
30.083	0.00	0.13	0.493	O	|	|	|	|	1.44
30.167	0.00	0.13	0.492	O	|	|	|	|	1.44
30.250	0.00	0.13	0.491	O	|	|	|	|	

1.44

30.333	0.00	0.13	0.491	O	|	|	|	|	1.44
30.417	0.00	0.13	0.490	O	|	|	|	|	1.44
30.500	0.00	0.13	0.489	O	|	|	|	|	1.43
30.583	0.00	0.13	0.488	O	|	|	|	|	1.43
30.667	0.00	0.13	0.487	O	|	|	|	|	1.43
30.750	0.00	0.13	0.486	O	|	|	|	|	1.43
30.833	0.00	0.13	0.485	O	|	|	|	|	1.43
30.917	0.00	0.13	0.484	O	|	|	|	|	1.42
31.000	0.00	0.13	0.484	O	|	|	|	|	1.42
31.083	0.00	0.12	0.483	O	|	|	|	|	1.42
31.167	0.00	0.12	0.482	O	|	|	|	|	1.42
31.250	0.00	0.12	0.481	O	|	|	|	|	1.42
31.333	0.00	0.12	0.480	O	|	|	|	|	1.41
31.417	0.00	0.12	0.479	O	|	|	|	|	1.41
31.500	0.00	0.12	0.478	O	|	|	|	|	1.41
31.583	0.00	0.12	0.478	O	|	|	|	|	1.41
31.667	0.00	0.12	0.477	O	|	|	|	|	1.41
31.750	0.00	0.12	0.476	O	|	|	|	|	1.41
31.833	0.00	0.12	0.475	O	|	|	|	|	1.40
31.917	0.00	0.12	0.474	O	|	|	|	|	1.40
32.000	0.00	0.12	0.473	O	|	|	|	|	1.40
32.083	0.00	0.12	0.473	O	|	|	|	|	1.40
32.167	0.00	0.12	0.472	O	|	|	|	|	1.40
32.250	0.00	0.12	0.471	O	|	|	|	|	1.40
32.333	0.00	0.12	0.470	O	|	|	|	|	1.39
32.417	0.00	0.12	0.469	O	|	|	|	|	1.39
32.500	0.00	0.12	0.468	O	|	|	|	|	1.39
32.583	0.00	0.12	0.468	O	|	|	|	|	1.39

32.667	0.00	0.12	0.467	O	|	|	|	|	1.39
32.750	0.00	0.12	0.466	O	|	|	|	|	1.38
32.833	0.00	0.12	0.465	O	|	|	|	|	1.38
32.917	0.00	0.12	0.464	O	|	|	|	|	1.38
33.000	0.00	0.12	0.463	O	|	|	|	|	1.38
33.083	0.00	0.12	0.463	O	|	|	|	|	1.38
33.167	0.00	0.12	0.462	O	|	|	|	|	1.38
33.250	0.00	0.12	0.461	O	|	|	|	|	1.37
33.333	0.00	0.12	0.460	O	|	|	|	|	1.37
33.417	0.00	0.12	0.459	O	|	|	|	|	1.37
33.500	0.00	0.12	0.459	O	|	|	|	|	1.37
33.583	0.00	0.12	0.458	O	|	|	|	|	1.37
33.667	0.00	0.12	0.457	O	|	|	|	|	1.37
33.750	0.00	0.12	0.456	O	|	|	|	|	1.36
33.833	0.00	0.12	0.455	O	|	|	|	|	1.36
33.917	0.00	0.12	0.455	O	|	|	|	|	1.36
34.000	0.00	0.11	0.454	O	|	|	|	|	1.36
34.083	0.00	0.11	0.453	O	|	|	|	|	1.36
34.167	0.00	0.11	0.452	O	|	|	|	|	1.36
34.250	0.00	0.11	0.451	O	|	|	|	|	1.35
34.333	0.00	0.11	0.451	O	|	|	|	|	1.35
34.417	0.00	0.11	0.450	O	|	|	|	|	1.35
34.500	0.00	0.11	0.449	O	|	|	|	|	1.35
34.583	0.00	0.11	0.448	O	|	|	|	|	1.35
34.667	0.00	0.11	0.448	O	|	|	|	|	1.35
34.750	0.00	0.11	0.447	O	|	|	|	|	1.34
34.833	0.00	0.11	0.446	O	|	|	|	|	1.34
34.917	0.00	0.11	0.445	O	|	|	|	|	1.34
35.000	0.00	0.11	0.444	O	|	|	|	|	

1.34

35.083	0.00	0.11	0.444	O	|	|	|	|	1.34
35.167	0.00	0.11	0.443	O	|	|	|	|	1.34
35.250	0.00	0.11	0.442	O	|	|	|	|	1.33
35.333	0.00	0.11	0.441	O	|	|	|	|	1.33
35.417	0.00	0.11	0.441	O	|	|	|	|	1.33
35.500	0.00	0.11	0.440	O	|	|	|	|	1.33
35.583	0.00	0.11	0.439	O	|	|	|	|	1.33
35.667	0.00	0.11	0.438	O	|	|	|	|	1.33
35.750	0.00	0.11	0.438	O	|	|	|	|	1.32
35.833	0.00	0.11	0.437	O	|	|	|	|	1.32
35.917	0.00	0.11	0.436	O	|	|	|	|	1.32
36.000	0.00	0.11	0.435	O	|	|	|	|	1.32
36.083	0.00	0.11	0.435	O	|	|	|	|	1.32
36.167	0.00	0.11	0.434	O	|	|	|	|	1.32
36.250	0.00	0.11	0.433	O	|	|	|	|	1.31
36.333	0.00	0.11	0.432	O	|	|	|	|	1.31
36.417	0.00	0.11	0.432	O	|	|	|	|	1.31
36.500	0.00	0.11	0.431	O	|	|	|	|	1.31
36.583	0.00	0.11	0.430	O	|	|	|	|	1.31
36.667	0.00	0.11	0.429	O	|	|	|	|	1.31
36.750	0.00	0.11	0.429	O	|	|	|	|	1.31
36.833	0.00	0.11	0.428	O	|	|	|	|	1.30
36.917	0.00	0.11	0.427	O	|	|	|	|	1.30
37.000	0.00	0.11	0.427	O	|	|	|	|	1.30
37.083	0.00	0.11	0.426	O	|	|	|	|	1.30
37.167	0.00	0.10	0.425	O	|	|	|	|	1.30
37.250	0.00	0.10	0.424	O	|	|	|	|	1.30
37.333	0.00	0.10	0.424	O	|	|	|	|	1.29

37.417	0.00	0.10	0.423	O	|	|	|	|	1.29
37.500	0.00	0.10	0.422	O	|	|	|	|	1.29
37.583	0.00	0.10	0.422	O	|	|	|	|	1.29
37.667	0.00	0.10	0.421	O	|	|	|	|	1.29
37.750	0.00	0.10	0.420	O	|	|	|	|	1.29
37.833	0.00	0.10	0.419	O	|	|	|	|	1.29
37.917	0.00	0.10	0.419	O	|	|	|	|	1.28
38.000	0.00	0.10	0.418	O	|	|	|	|	1.28
38.083	0.00	0.10	0.417	O	|	|	|	|	1.28
38.167	0.00	0.10	0.417	O	|	|	|	|	1.28
38.250	0.00	0.10	0.416	O	|	|	|	|	1.28
38.333	0.00	0.10	0.415	O	|	|	|	|	1.28
38.417	0.00	0.10	0.414	O	|	|	|	|	1.27
38.500	0.00	0.10	0.414	O	|	|	|	|	1.27
38.583	0.00	0.10	0.413	O	|	|	|	|	1.27
38.667	0.00	0.10	0.412	O	|	|	|	|	1.27
38.750	0.00	0.10	0.412	O	|	|	|	|	1.27
38.833	0.00	0.10	0.411	O	|	|	|	|	1.27
38.917	0.00	0.10	0.410	O	|	|	|	|	1.27
39.000	0.00	0.10	0.410	O	|	|	|	|	1.26
39.083	0.00	0.10	0.409	O	|	|	|	|	1.26
39.167	0.00	0.10	0.408	O	|	|	|	|	1.26
39.250	0.00	0.10	0.408	O	|	|	|	|	1.26
39.333	0.00	0.10	0.407	O	|	|	|	|	1.26
39.417	0.00	0.10	0.406	O	|	|	|	|	1.26
39.500	0.00	0.10	0.406	O	|	|	|	|	1.26
39.583	0.00	0.10	0.405	O	|	|	|	|	1.25
39.667	0.00	0.10	0.404	O	|	|	|	|	1.25
39.750	0.00	0.10	0.404	O	|	|	|	|	

1.25

39.833	0.00	0.10	0.403	O	|	|	|	1.25
39.917	0.00	0.10	0.402	O	|	|	|	1.25
40.000	0.00	0.10	0.402	O	|	|	|	1.25
40.083	0.00	0.10	0.401	O	|	|	|	1.25
40.167	0.00	0.09	0.400	O	|	|	|	1.24
40.250	0.00	0.09	0.400	O	|	|	|	1.24
40.333	0.00	0.09	0.399	O	|	|	|	1.24
40.417	0.00	0.09	0.398	O	|	|	|	1.24
40.500	0.00	0.09	0.398	O	|	|	|	1.24
40.583	0.00	0.09	0.397	O	|	|	|	1.24
40.667	0.00	0.09	0.396	O	|	|	|	1.23
40.750	0.00	0.09	0.396	O	|	|	|	1.23
40.833	0.00	0.09	0.395	O	|	|	|	1.23
40.917	0.00	0.09	0.395	O	|	|	|	1.23
41.000	0.00	0.09	0.394	O	|	|	|	1.23
41.083	0.00	0.09	0.393	O	|	|	|	1.23
41.167	0.00	0.09	0.393	O	|	|	|	1.23
41.250	0.00	0.09	0.392	O	|	|	|	1.23
41.333	0.00	0.09	0.392	O	|	|	|	1.22
41.417	0.00	0.09	0.391	O	|	|	|	1.22
41.500	0.00	0.09	0.390	O	|	|	|	1.22
41.583	0.00	0.09	0.390	O	|	|	|	1.22
41.667	0.00	0.08	0.389	O	|	|	|	1.22
41.750	0.00	0.08	0.389	O	|	|	|	1.22
41.833	0.00	0.08	0.388	O	|	|	|	1.22
41.917	0.00	0.08	0.387	O	|	|	|	1.21
42.000	0.00	0.08	0.387	O	|	|	|	1.21
42.083	0.00	0.08	0.386	O	|	|	|	1.21

42.167	0.00	0.08	0.386	O	|	|	|	|	1.21
42.250	0.00	0.08	0.385	O	|	|	|	|	1.21
42.333	0.00	0.08	0.385	O	|	|	|	|	1.21
42.417	0.00	0.08	0.384	O	|	|	|	|	1.21
42.500	0.00	0.08	0.383	O	|	|	|	|	1.21
42.583	0.00	0.08	0.383	O	|	|	|	|	1.20
42.667	0.00	0.08	0.382	O	|	|	|	|	1.20
42.750	0.00	0.08	0.382	O	|	|	|	|	1.20
42.833	0.00	0.08	0.381	O	|	|	|	|	1.20
42.917	0.00	0.08	0.381	O	|	|	|	|	1.20
43.000	0.00	0.08	0.380	O	|	|	|	|	1.20
43.083	0.00	0.08	0.380	O	|	|	|	|	1.20
43.167	0.00	0.08	0.379	O	|	|	|	|	1.20
43.250	0.00	0.08	0.379	O	|	|	|	|	1.19
43.333	0.00	0.08	0.378	O	|	|	|	|	1.19
43.417	0.00	0.07	0.378	O	|	|	|	|	1.19
43.500	0.00	0.07	0.377	O	|	|	|	|	1.19
43.583	0.00	0.07	0.377	O	|	|	|	|	1.19
43.667	0.00	0.07	0.376	O	|	|	|	|	1.19
43.750	0.00	0.07	0.376	O	|	|	|	|	1.19
43.833	0.00	0.07	0.375	O	|	|	|	|	1.19
43.917	0.00	0.07	0.375	O	|	|	|	|	1.18
44.000	0.00	0.07	0.374	O	|	|	|	|	1.18
44.083	0.00	0.07	0.374	O	|	|	|	|	1.18
44.167	0.00	0.07	0.373	O	|	|	|	|	1.18
44.250	0.00	0.07	0.373	O	|	|	|	|	1.18
44.333	0.00	0.07	0.372	O	|	|	|	|	1.18
44.417	0.00	0.07	0.372	O	|	|	|	|	1.18
44.500	0.00	0.07	0.371	O	|	|	|	|	

1.18

44.583	0.00	0.07	0.371	O	|	|	|	1.18
44.667	0.00	0.07	0.370	O	|	|	|	1.17
44.750	0.00	0.07	0.370	O	|	|	|	1.17
44.833	0.00	0.07	0.369	O	|	|	|	1.17
44.917	0.00	0.07	0.369	O	|	|	|	1.17
45.000	0.00	0.07	0.368	O	|	|	|	1.17
45.083	0.00	0.07	0.368	O	|	|	|	1.17
45.167	0.00	0.07	0.367	O	|	|	|	1.17
45.250	0.00	0.07	0.367	O	|	|	|	1.17
45.333	0.00	0.06	0.367	O	|	|	|	1.17
45.417	0.00	0.06	0.366	O	|	|	|	1.17
45.500	0.00	0.06	0.366	O	|	|	|	1.16
45.583	0.00	0.06	0.365	O	|	|	|	1.16
45.667	0.00	0.06	0.365	O	|	|	|	1.16
45.750	0.00	0.06	0.364	O	|	|	|	1.16
45.833	0.00	0.06	0.364	O	|	|	|	1.16
45.917	0.00	0.06	0.364	O	|	|	|	1.16
46.000	0.00	0.06	0.363	O	|	|	|	1.16
46.083	0.00	0.06	0.363	O	|	|	|	1.16
46.167	0.00	0.06	0.362	O	|	|	|	1.16
46.250	0.00	0.06	0.362	O	|	|	|	1.16
46.333	0.00	0.06	0.361	O	|	|	|	1.15
46.417	0.00	0.06	0.361	O	|	|	|	1.15
46.500	0.00	0.06	0.361	O	|	|	|	1.15
46.583	0.00	0.06	0.360	O	|	|	|	1.15
46.667	0.00	0.06	0.360	O	|	|	|	1.15
46.750	0.00	0.06	0.359	O	|	|	|	1.15
46.833	0.00	0.06	0.359	O	|	|	|	1.15

46.917	0.00	0.06	0.359	O	|	|	|	|	1.15
47.000	0.00	0.06	0.358	O	|	|	|	|	1.15
47.083	0.00	0.06	0.358	O	|	|	|	|	1.15
47.167	0.00	0.06	0.357	O	|	|	|	|	1.15
47.250	0.00	0.06	0.357	O	|	|	|	|	1.14
47.333	0.00	0.06	0.357	O	|	|	|	|	1.14
47.417	0.00	0.06	0.356	O	|	|	|	|	1.14
47.500	0.00	0.06	0.356	O	|	|	|	|	1.14
47.583	0.00	0.06	0.355	O	|	|	|	|	1.14
47.667	0.00	0.05	0.355	O	|	|	|	|	1.14
47.750	0.00	0.05	0.355	O	|	|	|	|	1.14
47.833	0.00	0.05	0.354	O	|	|	|	|	1.14
47.917	0.00	0.05	0.354	O	|	|	|	|	1.14
48.000	0.00	0.05	0.354	O	|	|	|	|	1.14
48.083	0.00	0.05	0.353	O	|	|	|	|	1.14
48.167	0.00	0.05	0.353	O	|	|	|	|	1.13
48.250	0.00	0.05	0.352	O	|	|	|	|	1.13
48.333	0.00	0.05	0.352	O	|	|	|	|	1.13
48.417	0.00	0.05	0.352	O	|	|	|	|	1.13
48.500	0.00	0.05	0.351	O	|	|	|	|	1.13
48.583	0.00	0.05	0.351	O	|	|	|	|	1.13
48.667	0.00	0.05	0.351	O	|	|	|	|	1.13
48.750	0.00	0.05	0.350	O	|	|	|	|	1.13
48.833	0.00	0.05	0.350	O	|	|	|	|	1.13
48.917	0.00	0.05	0.350	O	|	|	|	|	1.13
49.000	0.00	0.05	0.349	O	|	|	|	|	1.13
49.083	0.00	0.05	0.349	O	|	|	|	|	1.13
49.167	0.00	0.05	0.349	O	|	|	|	|	1.13
49.250	0.00	0.05	0.348	O	|	|	|	|	

1.12

49.333	0.00	0.05	0.348	O	|	|	|	|	1.12
49.417	0.00	0.05	0.348	O	|	|	|	|	1.12
49.500	0.00	0.05	0.347	O	|	|	|	|	1.12
49.583	0.00	0.05	0.347	O	|	|	|	|	1.12
49.667	0.00	0.05	0.347	O	|	|	|	|	1.12
49.750	0.00	0.05	0.346	O	|	|	|	|	1.12
49.833	0.00	0.05	0.346	O	|	|	|	|	1.12
49.917	0.00	0.05	0.346	O	|	|	|	|	1.12
50.000	0.00	0.05	0.345	O	|	|	|	|	1.12
50.083	0.00	0.05	0.345	O	|	|	|	|	1.12
50.167	0.00	0.05	0.345	O	|	|	|	|	1.12
50.250	0.00	0.05	0.344	O	|	|	|	|	1.12
50.333	0.00	0.05	0.344	O	|	|	|	|	1.11
50.417	0.00	0.04	0.344	O	|	|	|	|	1.11
50.500	0.00	0.04	0.343	O	|	|	|	|	1.11
50.583	0.00	0.04	0.343	O	|	|	|	|	1.11
50.667	0.00	0.04	0.343	O	|	|	|	|	1.11
50.750	0.00	0.04	0.343	O	|	|	|	|	1.11
50.833	0.00	0.04	0.342	O	|	|	|	|	1.11
50.917	0.00	0.04	0.342	O	|	|	|	|	1.11
51.000	0.00	0.04	0.342	O	|	|	|	|	1.11
51.083	0.00	0.04	0.341	O	|	|	|	|	1.11
51.167	0.00	0.04	0.341	O	|	|	|	|	1.11
51.250	0.00	0.04	0.341	O	|	|	|	|	1.11
51.333	0.00	0.04	0.341	O	|	|	|	|	1.11
51.417	0.00	0.04	0.340	O	|	|	|	|	1.11
51.500	0.00	0.04	0.340	O	|	|	|	|	1.11
51.583	0.00	0.04	0.340	O	|	|	|	|	1.10

51.667	0.00	0.04	0.339	O	|	|	|	|	1.10
51.750	0.00	0.04	0.339	O	|	|	|	|	1.10
51.833	0.00	0.04	0.339	O	|	|	|	|	1.10
51.917	0.00	0.04	0.339	O	|	|	|	|	1.10
52.000	0.00	0.04	0.338	O	|	|	|	|	1.10
52.083	0.00	0.04	0.338	O	|	|	|	|	1.10
52.167	0.00	0.04	0.338	O	|	|	|	|	1.10
52.250	0.00	0.04	0.337	O	|	|	|	|	1.10
52.333	0.00	0.04	0.337	O	|	|	|	|	1.10
52.417	0.00	0.04	0.337	O	|	|	|	|	1.10
52.500	0.00	0.04	0.337	O	|	|	|	|	1.10
52.583	0.00	0.04	0.336	O	|	|	|	|	1.10
52.667	0.00	0.04	0.336	O	|	|	|	|	1.10
52.750	0.00	0.04	0.336	O	|	|	|	|	1.10
52.833	0.00	0.04	0.336	O	|	|	|	|	1.10
52.917	0.00	0.04	0.335	O	|	|	|	|	1.09
53.000	0.00	0.04	0.335	O	|	|	|	|	1.09
53.083	0.00	0.04	0.335	O	|	|	|	|	1.09
53.167	0.00	0.04	0.335	O	|	|	|	|	1.09
53.250	0.00	0.04	0.334	O	|	|	|	|	1.09
53.333	0.00	0.04	0.334	O	|	|	|	|	1.09
53.417	0.00	0.04	0.334	O	|	|	|	|	1.09
53.500	0.00	0.04	0.334	O	|	|	|	|	1.09
53.583	0.00	0.04	0.333	O	|	|	|	|	1.09
53.667	0.00	0.04	0.333	O	|	|	|	|	1.09
53.750	0.00	0.04	0.333	O	|	|	|	|	1.09
53.833	0.00	0.03	0.333	O	|	|	|	|	1.09
53.917	0.00	0.03	0.332	O	|	|	|	|	1.09
54.000	0.00	0.03	0.332	O	|	|	|	|	

1.09

54.083	0.00	0.03	0.332	O	|	|	|	1.09
54.167	0.00	0.03	0.332	O	|	|	|	1.09
54.250	0.00	0.03	0.331	O	|	|	|	1.09
54.333	0.00	0.03	0.331	O	|	|	|	1.09
54.417	0.00	0.03	0.331	O	|	|	|	1.08
54.500	0.00	0.03	0.331	O	|	|	|	1.08
54.583	0.00	0.03	0.330	O	|	|	|	1.08
54.667	0.00	0.03	0.330	O	|	|	|	1.08
54.750	0.00	0.03	0.330	O	|	|	|	1.08
54.833	0.00	0.03	0.330	O	|	|	|	1.08
54.917	0.00	0.03	0.330	O	|	|	|	1.08
55.000	0.00	0.03	0.329	O	|	|	|	1.08
55.083	0.00	0.03	0.329	O	|	|	|	1.08
55.167	0.00	0.03	0.329	O	|	|	|	1.08
55.250	0.00	0.03	0.329	O	|	|	|	1.08
55.333	0.00	0.03	0.328	O	|	|	|	1.08
55.417	0.00	0.03	0.328	O	|	|	|	1.08
55.500	0.00	0.03	0.328	O	|	|	|	1.08
55.583	0.00	0.03	0.328	O	|	|	|	1.08
55.667	0.00	0.03	0.328	O	|	|	|	1.08
55.750	0.00	0.03	0.327	O	|	|	|	1.08
55.833	0.00	0.03	0.327	O	|	|	|	1.08
55.917	0.00	0.03	0.327	O	|	|	|	1.08
56.000	0.00	0.03	0.327	O	|	|	|	1.08
56.083	0.00	0.03	0.327	O	|	|	|	1.07
56.167	0.00	0.03	0.326	O	|	|	|	1.07
56.250	0.00	0.03	0.326	O	|	|	|	1.07
56.333	0.00	0.03	0.326	O	|	|	|	1.07

56.417	0.00	0.03	0.326	O	|	|	|	|	1.07
56.500	0.00	0.03	0.326	O	|	|	|	|	1.07
56.583	0.00	0.03	0.325	O	|	|	|	|	1.07
56.667	0.00	0.03	0.325	O	|	|	|	|	1.07
56.750	0.00	0.03	0.325	O	|	|	|	|	1.07
56.833	0.00	0.03	0.325	O	|	|	|	|	1.07
56.917	0.00	0.03	0.325	O	|	|	|	|	1.07
57.000	0.00	0.03	0.324	O	|	|	|	|	1.07
57.083	0.00	0.03	0.324	O	|	|	|	|	1.07
57.167	0.00	0.03	0.324	O	|	|	|	|	1.07
57.250	0.00	0.03	0.324	O	|	|	|	|	1.07
57.333	0.00	0.03	0.324	O	|	|	|	|	1.07
57.417	0.00	0.03	0.323	O	|	|	|	|	1.07
57.500	0.00	0.03	0.323	O	|	|	|	|	1.07
57.583	0.00	0.03	0.323	O	|	|	|	|	1.07
57.667	0.00	0.03	0.323	O	|	|	|	|	1.07
57.750	0.00	0.03	0.323	O	|	|	|	|	1.07
57.833	0.00	0.03	0.323	O	|	|	|	|	1.07
57.917	0.00	0.03	0.322	O	|	|	|	|	1.07
58.000	0.00	0.03	0.322	O	|	|	|	|	1.06
58.083	0.00	0.03	0.322	O	|	|	|	|	1.06
58.167	0.00	0.03	0.322	O	|	|	|	|	1.06
58.250	0.00	0.03	0.322	O	|	|	|	|	1.06
58.333	0.00	0.03	0.321	O	|	|	|	|	1.06
58.417	0.00	0.03	0.321	O	|	|	|	|	1.06
58.500	0.00	0.02	0.321	O	|	|	|	|	1.06
58.583	0.00	0.02	0.321	O	|	|	|	|	1.06
58.667	0.00	0.02	0.321	O	|	|	|	|	1.06
58.750	0.00	0.02	0.321	O	|	|	|	|	

1.06

58.833	0.00	0.02	0.320	O	|	|	|	|	1.06
58.917	0.00	0.02	0.320	O	|	|	|	|	1.06
59.000	0.00	0.02	0.320	O	|	|	|	|	1.06
59.083	0.00	0.02	0.320	O	|	|	|	|	1.06
59.167	0.00	0.02	0.320	O	|	|	|	|	1.06
59.250	0.00	0.02	0.320	O	|	|	|	|	1.06
59.333	0.00	0.02	0.319	O	|	|	|	|	1.06
59.417	0.00	0.02	0.319	O	|	|	|	|	1.06
59.500	0.00	0.02	0.319	O	|	|	|	|	1.06
59.583	0.00	0.02	0.319	O	|	|	|	|	1.06
59.667	0.00	0.02	0.319	O	|	|	|	|	1.06
59.750	0.00	0.02	0.319	O	|	|	|	|	1.06
59.833	0.00	0.02	0.319	O	|	|	|	|	1.06
59.917	0.00	0.02	0.318	O	|	|	|	|	1.06
60.000	0.00	0.02	0.318	O	|	|	|	|	1.06
60.083	0.00	0.02	0.318	O	|	|	|	|	1.06
60.167	0.00	0.02	0.318	O	|	|	|	|	1.05
60.250	0.00	0.02	0.318	O	|	|	|	|	1.05
60.333	0.00	0.02	0.318	O	|	|	|	|	1.05
60.417	0.00	0.02	0.317	O	|	|	|	|	1.05
60.500	0.00	0.02	0.317	O	|	|	|	|	1.05
60.583	0.00	0.02	0.317	O	|	|	|	|	1.05
60.667	0.00	0.02	0.317	O	|	|	|	|	1.05
60.750	0.00	0.02	0.317	O	|	|	|	|	1.05
60.833	0.00	0.02	0.317	O	|	|	|	|	1.05
60.917	0.00	0.02	0.317	O	|	|	|	|	1.05
61.000	0.00	0.02	0.316	O	|	|	|	|	1.05
61.083	0.00	0.02	0.316	O	|	|	|	|	1.05

61.167	0.00	0.02	0.316	O	|	|	|	|	1.05
61.250	0.00	0.02	0.316	O	|	|	|	|	1.05
61.333	0.00	0.02	0.316	O	|	|	|	|	1.05
61.417	0.00	0.02	0.316	O	|	|	|	|	1.05
61.500	0.00	0.02	0.316	O	|	|	|	|	1.05
61.583	0.00	0.02	0.315	O	|	|	|	|	1.05
61.667	0.00	0.02	0.315	O	|	|	|	|	1.05
61.750	0.00	0.02	0.315	O	|	|	|	|	1.05
61.833	0.00	0.02	0.315	O	|	|	|	|	1.05
61.917	0.00	0.02	0.315	O	|	|	|	|	1.05
62.000	0.00	0.02	0.315	O	|	|	|	|	1.05
62.083	0.00	0.02	0.315	O	|	|	|	|	1.05
62.167	0.00	0.02	0.315	O	|	|	|	|	1.05
62.250	0.00	0.02	0.314	O	|	|	|	|	1.05
62.333	0.00	0.02	0.314	O	|	|	|	|	1.05
62.417	0.00	0.02	0.314	O	|	|	|	|	1.05
62.500	0.00	0.02	0.314	O	|	|	|	|	1.05
62.583	0.00	0.02	0.314	O	|	|	|	|	1.05
62.667	0.00	0.02	0.314	O	|	|	|	|	1.05
62.750	0.00	0.02	0.314	O	|	|	|	|	1.04
62.833	0.00	0.02	0.313	O	|	|	|	|	1.04
62.917	0.00	0.02	0.313	O	|	|	|	|	1.04
63.000	0.00	0.02	0.313	O	|	|	|	|	1.04
63.083	0.00	0.02	0.313	O	|	|	|	|	1.04
63.167	0.00	0.02	0.313	O	|	|	|	|	1.04
63.250	0.00	0.02	0.313	O	|	|	|	|	1.04
63.333	0.00	0.02	0.313	O	|	|	|	|	1.04
63.417	0.00	0.02	0.313	O	|	|	|	|	1.04
63.500	0.00	0.02	0.313	O	|	|	|	|	

1.04

63.583	0.00	0.02	0.312	O	|	|	|	|	1.04
63.667	0.00	0.02	0.312	O	|	|	|	|	1.04
63.750	0.00	0.02	0.312	O	|	|	|	|	1.04
63.833	0.00	0.02	0.312	O	|	|	|	|	1.04
63.917	0.00	0.02	0.312	O	|	|	|	|	1.04
64.000	0.00	0.02	0.312	O	|	|	|	|	1.04
64.083	0.00	0.02	0.312	O	|	|	|	|	1.04
64.167	0.00	0.02	0.312	O	|	|	|	|	1.04
64.250	0.00	0.02	0.311	O	|	|	|	|	1.04
64.333	0.00	0.02	0.311	O	|	|	|	|	1.04
64.417	0.00	0.02	0.311	O	|	|	|	|	1.04
64.500	0.00	0.02	0.311	O	|	|	|	|	1.04
64.583	0.00	0.02	0.311	O	|	|	|	|	1.04
64.667	0.00	0.02	0.311	O	|	|	|	|	1.04
64.750	0.00	0.02	0.311	O	|	|	|	|	1.04
64.833	0.00	0.02	0.311	O	|	|	|	|	1.04
64.917	0.00	0.02	0.311	O	|	|	|	|	1.04
65.000	0.00	0.02	0.310	O	|	|	|	|	1.04
65.083	0.00	0.02	0.310	O	|	|	|	|	1.04
65.167	0.00	0.02	0.310	O	|	|	|	|	1.04
65.250	0.00	0.02	0.310	O	|	|	|	|	1.04
65.333	0.00	0.02	0.310	O	|	|	|	|	1.04
65.417	0.00	0.02	0.310	O	|	|	|	|	1.04
65.500	0.00	0.01	0.310	O	|	|	|	|	1.04
65.583	0.00	0.01	0.310	O	|	|	|	|	1.04
65.667	0.00	0.01	0.310	O	|	|	|	|	1.04
65.750	0.00	0.01	0.310	O	|	|	|	|	1.04
65.833	0.00	0.01	0.309	O	|	|	|	|	1.04

65.917	0.00	0.01	0.309	O	|	|	|	|	1.04
66.000	0.00	0.01	0.309	O	|	|	|	|	1.03
66.083	0.00	0.01	0.309	O	|	|	|	|	1.03
66.167	0.00	0.01	0.309	O	|	|	|	|	1.03
66.250	0.00	0.01	0.309	O	|	|	|	|	1.03
66.333	0.00	0.01	0.309	O	|	|	|	|	1.03
66.417	0.00	0.01	0.309	O	|	|	|	|	1.03
66.500	0.00	0.01	0.309	O	|	|	|	|	1.03
66.583	0.00	0.01	0.309	O	|	|	|	|	1.03
66.667	0.00	0.01	0.308	O	|	|	|	|	1.03
66.750	0.00	0.01	0.308	O	|	|	|	|	1.03
66.833	0.00	0.01	0.308	O	|	|	|	|	1.03
66.917	0.00	0.01	0.308	O	|	|	|	|	1.03
67.000	0.00	0.01	0.308	O	|	|	|	|	1.03
67.083	0.00	0.01	0.308	O	|	|	|	|	1.03
67.167	0.00	0.01	0.308	O	|	|	|	|	1.03
67.250	0.00	0.01	0.308	O	|	|	|	|	1.03
67.333	0.00	0.01	0.308	O	|	|	|	|	1.03
67.417	0.00	0.01	0.308	O	|	|	|	|	1.03
67.500	0.00	0.01	0.308	O	|	|	|	|	1.03
67.583	0.00	0.01	0.307	O	|	|	|	|	1.03
67.667	0.00	0.01	0.307	O	|	|	|	|	1.03
67.750	0.00	0.01	0.307	O	|	|	|	|	1.03
67.833	0.00	0.01	0.307	O	|	|	|	|	1.03
67.917	0.00	0.01	0.307	O	|	|	|	|	1.03
68.000	0.00	0.01	0.307	O	|	|	|	|	1.03
68.083	0.00	0.01	0.307	O	|	|	|	|	1.03
68.167	0.00	0.01	0.307	O	|	|	|	|	1.03
68.250	0.00	0.01	0.307	O	|	|	|	|	

1.03

68.333	0.00	0.01	0.307	O	|	|	|	|	1.03
68.417	0.00	0.01	0.307	O	|	|	|	|	1.03
68.500	0.00	0.01	0.307	O	|	|	|	|	1.03
68.583	0.00	0.01	0.306	O	|	|	|	|	1.03
68.667	0.00	0.01	0.306	O	|	|	|	|	1.03
68.750	0.00	0.01	0.306	O	|	|	|	|	1.03
68.833	0.00	0.01	0.306	O	|	|	|	|	1.03
68.917	0.00	0.01	0.306	O	|	|	|	|	1.03
69.000	0.00	0.01	0.306	O	|	|	|	|	1.03
69.083	0.00	0.01	0.306	O	|	|	|	|	1.03
69.167	0.00	0.01	0.306	O	|	|	|	|	1.03
69.250	0.00	0.01	0.306	O	|	|	|	|	1.03
69.333	0.00	0.01	0.306	O	|	|	|	|	1.03
69.417	0.00	0.01	0.306	O	|	|	|	|	1.03
69.500	0.00	0.01	0.306	O	|	|	|	|	1.03
69.583	0.00	0.01	0.305	O	|	|	|	|	1.03
69.667	0.00	0.01	0.305	O	|	|	|	|	1.03
69.750	0.00	0.01	0.305	O	|	|	|	|	1.03
69.833	0.00	0.01	0.305	O	|	|	|	|	1.03
69.917	0.00	0.01	0.305	O	|	|	|	|	1.03
70.000	0.00	0.01	0.305	O	|	|	|	|	1.03
70.083	0.00	0.01	0.305	O	|	|	|	|	1.03
70.167	0.00	0.01	0.305	O	|	|	|	|	1.03
70.250	0.00	0.01	0.305	O	|	|	|	|	1.02
70.333	0.00	0.01	0.305	O	|	|	|	|	1.02
70.417	0.00	0.01	0.305	O	|	|	|	|	1.02
70.500	0.00	0.01	0.305	O	|	|	|	|	1.02
70.583	0.00	0.01	0.305	O	|	|	|	|	1.02

70.667	0.00	0.01	0.305	O	|	|	|	|	1.02
70.750	0.00	0.01	0.304	O	|	|	|	|	1.02
70.833	0.00	0.01	0.304	O	|	|	|	|	1.02
70.917	0.00	0.01	0.304	O	|	|	|	|	1.02
71.000	0.00	0.01	0.304	O	|	|	|	|	1.02
71.083	0.00	0.01	0.304	O	|	|	|	|	1.02
71.167	0.00	0.01	0.304	O	|	|	|	|	1.02
71.250	0.00	0.01	0.304	O	|	|	|	|	1.02
71.333	0.00	0.01	0.304	O	|	|	|	|	1.02
71.417	0.00	0.01	0.304	O	|	|	|	|	1.02
71.500	0.00	0.01	0.304	O	|	|	|	|	1.02
71.583	0.00	0.01	0.304	O	|	|	|	|	1.02
71.667	0.00	0.01	0.304	O	|	|	|	|	1.02
71.750	0.00	0.01	0.304	O	|	|	|	|	1.02
71.833	0.00	0.01	0.304	O	|	|	|	|	1.02
71.917	0.00	0.01	0.304	O	|	|	|	|	1.02
72.000	0.00	0.01	0.303	O	|	|	|	|	1.02
72.083	0.00	0.01	0.303	O	|	|	|	|	1.02
72.167	0.00	0.01	0.303	O	|	|	|	|	1.02
72.250	0.00	0.01	0.303	O	|	|	|	|	1.02
72.333	0.00	0.01	0.303	O	|	|	|	|	1.02
72.417	0.00	0.01	0.303	O	|	|	|	|	1.02
72.500	0.00	0.01	0.303	O	|	|	|	|	1.02
72.583	0.00	0.01	0.303	O	|	|	|	|	1.02
72.667	0.00	0.01	0.303	O	|	|	|	|	1.02
72.750	0.00	0.01	0.303	O	|	|	|	|	1.02
72.833	0.00	0.01	0.303	O	|	|	|	|	1.02
72.917	0.00	0.01	0.303	O	|	|	|	|	1.02
73.000	0.00	0.01	0.303	O	|	|	|	|	

1.02

73.083	0.00	0.01	0.303	O	|	|	|	1.02
73.167	0.00	0.01	0.303	O	|	|	|	1.02
73.250	0.00	0.01	0.303	O	|	|	|	1.02
73.333	0.00	0.01	0.302	O	|	|	|	1.02
73.417	0.00	0.01	0.302	O	|	|	|	1.02
73.500	0.00	0.01	0.302	O	|	|	|	1.02
73.583	0.00	0.01	0.302	O	|	|	|	1.02
73.667	0.00	0.01	0.302	O	|	|	|	1.02
73.750	0.00	0.01	0.302	O	|	|	|	1.02
73.833	0.00	0.01	0.302	O	|	|	|	1.02
73.917	0.00	0.01	0.302	O	|	|	|	1.02
74.000	0.00	0.01	0.302	O	|	|	|	1.02
74.083	0.00	0.01	0.302	O	|	|	|	1.02
74.167	0.00	0.01	0.302	O	|	|	|	1.02
74.250	0.00	0.01	0.302	O	|	|	|	1.02
74.333	0.00	0.01	0.302	O	|	|	|	1.02
74.417	0.00	0.01	0.302	O	|	|	|	1.02
74.500	0.00	0.01	0.302	O	|	|	|	1.02
74.583	0.00	0.01	0.302	O	|	|	|	1.02
74.667	0.00	0.01	0.302	O	|	|	|	1.02
74.750	0.00	0.01	0.302	O	|	|	|	1.02
74.833	0.00	0.01	0.301	O	|	|	|	1.02
74.917	0.00	0.01	0.301	O	|	|	|	1.02
75.000	0.00	0.01	0.301	O	|	|	|	1.02
75.083	0.00	0.01	0.301	O	|	|	|	1.02
75.167	0.00	0.01	0.301	O	|	|	|	1.02
75.250	0.00	0.01	0.301	O	|	|	|	1.02
75.333	0.00	0.01	0.301	O	|	|	|	1.02

75.417	0.00	0.01	0.301	O	|	|	|	|	1.02
75.500	0.00	0.01	0.301	O	|	|	|	|	1.02
75.583	0.00	0.01	0.301	O	|	|	|	|	1.02
75.667	0.00	0.01	0.301	O	|	|	|	|	1.02
75.750	0.00	0.01	0.301	O	|	|	|	|	1.02
75.833	0.00	0.01	0.301	O	|	|	|	|	1.02
75.917	0.00	0.01	0.301	O	|	|	|	|	1.02
76.000	0.00	0.01	0.301	O	|	|	|	|	1.02
76.083	0.00	0.01	0.301	O	|	|	|	|	1.02
76.167	0.00	0.01	0.301	O	|	|	|	|	1.02
76.250	0.00	0.01	0.301	O	|	|	|	|	1.02
76.333	0.00	0.01	0.301	O	|	|	|	|	1.02
76.417	0.00	0.01	0.301	O	|	|	|	|	1.01
76.500	0.00	0.01	0.300	O	|	|	|	|	1.01
76.583	0.00	0.01	0.300	O	|	|	|	|	1.01
76.667	0.00	0.01	0.300	O	|	|	|	|	1.01
76.750	0.00	0.01	0.300	O	|	|	|	|	1.01
76.833	0.00	0.01	0.300	O	|	|	|	|	1.01
76.917	0.00	0.01	0.300	O	|	|	|	|	1.01
77.000	0.00	0.01	0.300	O	|	|	|	|	1.01
77.083	0.00	0.01	0.300	O	|	|	|	|	1.01
77.167	0.00	0.01	0.300	O	|	|	|	|	1.01
77.250	0.00	0.01	0.300	O	|	|	|	|	1.01
77.333	0.00	0.01	0.300	O	|	|	|	|	1.01
77.417	0.00	0.01	0.300	O	|	|	|	|	1.01
77.500	0.00	0.01	0.300	O	|	|	|	|	1.01
77.583	0.00	0.01	0.300	O	|	|	|	|	1.01
77.667	0.00	0.01	0.300	O	|	|	|	|	1.01
77.750	0.00	0.01	0.300	O	|	|	|	|	

1.01

77.833	0.00	0.01	0.300	O	|	|	|	|	1.01
77.917	0.00	0.01	0.300	O	|	|	|	|	1.01
78.000	0.00	0.01	0.300	O	|	|	|	|	1.01
78.083	0.00	0.01	0.300	O	|	|	|	|	1.01
78.167	0.00	0.01	0.300	O	|	|	|	|	1.01
78.250	0.00	0.01	0.300	O	|	|	|	|	1.01
78.333	0.00	0.01	0.300	O	|	|	|	|	1.01
78.417	0.00	0.01	0.299	O	|	|	|	|	1.01
78.500	0.00	0.01	0.299	O	|	|	|	|	1.01
78.583	0.00	0.01	0.299	O	|	|	|	|	1.01
78.667	0.00	0.01	0.299	O	|	|	|	|	1.01
78.750	0.00	0.01	0.299	O	|	|	|	|	1.01
78.833	0.00	0.01	0.299	O	|	|	|	|	1.01
78.917	0.00	0.01	0.299	O	|	|	|	|	1.01
79.000	0.00	0.01	0.299	O	|	|	|	|	1.01
79.083	0.00	0.01	0.299	O	|	|	|	|	1.01
79.167	0.00	0.01	0.299	O	|	|	|	|	1.01
79.250	0.00	0.01	0.299	O	|	|	|	|	1.01
79.333	0.00	0.01	0.299	O	|	|	|	|	1.01
79.417	0.00	0.01	0.299	O	|	|	|	|	1.01
79.500	0.00	0.01	0.299	O	|	|	|	|	1.01
79.583	0.00	0.01	0.299	O	|	|	|	|	1.01
79.667	0.00	0.01	0.299	O	|	|	|	|	1.01
79.750	0.00	0.01	0.299	O	|	|	|	|	1.01
79.833	0.00	0.01	0.299	O	|	|	|	|	1.01
79.917	0.00	0.01	0.299	O	|	|	|	|	1.01
80.000	0.00	0.01	0.299	O	|	|	|	|	1.01
80.083	0.00	0.01	0.299	O	|	|	|	|	1.01

80.167	0.00	0.01	0.299	O	|	|	|	|	1.01
80.250	0.00	0.01	0.299	O	|	|	|	|	1.01
80.333	0.00	0.01	0.299	O	|	|	|	|	1.01
80.417	0.00	0.01	0.299	O	|	|	|	|	1.01
80.500	0.00	0.01	0.299	O	|	|	|	|	1.01
80.583	0.00	0.00	0.299	O	|	|	|	|	1.01
80.667	0.00	0.00	0.298	O	|	|	|	|	1.01
80.750	0.00	0.00	0.298	O	|	|	|	|	1.01
80.833	0.00	0.00	0.298	O	|	|	|	|	1.01
80.917	0.00	0.00	0.298	O	|	|	|	|	1.01
81.000	0.00	0.00	0.298	O	|	|	|	|	1.01
81.083	0.00	0.00	0.298	O	|	|	|	|	1.01
81.167	0.00	0.00	0.298	O	|	|	|	|	1.01
81.250	0.00	0.00	0.298	O	|	|	|	|	1.01
81.333	0.00	0.00	0.298	O	|	|	|	|	1.01
81.417	0.00	0.00	0.298	O	|	|	|	|	1.01
81.500	0.00	0.00	0.298	O	|	|	|	|	1.01
81.583	0.00	0.00	0.298	O	|	|	|	|	1.01
81.667	0.00	0.00	0.298	O	|	|	|	|	1.01
81.750	0.00	0.00	0.298	O	|	|	|	|	1.01
81.833	0.00	0.00	0.298	O	|	|	|	|	1.01
81.917	0.00	0.00	0.298	O	|	|	|	|	1.01
82.000	0.00	0.00	0.298	O	|	|	|	|	1.01
82.083	0.00	0.00	0.298	O	|	|	|	|	1.01
82.167	0.00	0.00	0.298	O	|	|	|	|	1.01
82.250	0.00	0.00	0.298	O	|	|	|	|	1.01
82.333	0.00	0.00	0.298	O	|	|	|	|	1.01
82.417	0.00	0.00	0.298	O	|	|	|	|	1.01
82.500	0.00	0.00	0.298	O	|	|	|	|	

1.01

82.583	0.00	0.00	0.298	O	|	|	|	|	1.01
82.667	0.00	0.00	0.298	O	|	|	|	|	1.01
82.750	0.00	0.00	0.298	O	|	|	|	|	1.01
82.833	0.00	0.00	0.298	O	|	|	|	|	1.01
82.917	0.00	0.00	0.298	O	|	|	|	|	1.01
83.000	0.00	0.00	0.298	O	|	|	|	|	1.01
83.083	0.00	0.00	0.298	O	|	|	|	|	1.01
83.167	0.00	0.00	0.298	O	|	|	|	|	1.01
83.250	0.00	0.00	0.298	O	|	|	|	|	1.01
83.333	0.00	0.00	0.298	O	|	|	|	|	1.01
83.417	0.00	0.00	0.297	O	|	|	|	|	1.01
83.500	0.00	0.00	0.297	O	|	|	|	|	1.01
83.583	0.00	0.00	0.297	O	|	|	|	|	1.01
83.667	0.00	0.00	0.297	O	|	|	|	|	1.01
83.750	0.00	0.00	0.297	O	|	|	|	|	1.01
83.833	0.00	0.00	0.297	O	|	|	|	|	1.01
83.917	0.00	0.00	0.297	O	|	|	|	|	1.01
84.000	0.00	0.00	0.297	O	|	|	|	|	1.01
84.083	0.00	0.00	0.297	O	|	|	|	|	1.01
84.167	0.00	0.00	0.297	O	|	|	|	|	1.01
84.250	0.00	0.00	0.297	O	|	|	|	|	1.01
84.333	0.00	0.00	0.297	O	|	|	|	|	1.01
84.417	0.00	0.00	0.297	O	|	|	|	|	1.01
84.500	0.00	0.00	0.297	O	|	|	|	|	1.01
84.583	0.00	0.00	0.297	O	|	|	|	|	1.01
84.667	0.00	0.00	0.297	O	|	|	|	|	1.01
84.750	0.00	0.00	0.297	O	|	|	|	|	1.01
84.833	0.00	0.00	0.297	O	|	|	|	|	1.01

84.917	0.00	0.00	0.297	O	|	|	|	|	1.01
85.000	0.00	0.00	0.297	O	|	|	|	|	1.01
85.083	0.00	0.00	0.297	O	|	|	|	|	1.01
85.167	0.00	0.00	0.297	O	|	|	|	|	1.01
85.250	0.00	0.00	0.297	O	|	|	|	|	1.01
85.333	0.00	0.00	0.297	O	|	|	|	|	1.01
85.417	0.00	0.00	0.297	O	|	|	|	|	1.01
85.500	0.00	0.00	0.297	O	|	|	|	|	1.01
85.583	0.00	0.00	0.297	O	|	|	|	|	1.01
85.667	0.00	0.00	0.297	O	|	|	|	|	1.01
85.750	0.00	0.00	0.297	O	|	|	|	|	1.01
85.833	0.00	0.00	0.297	O	|	|	|	|	1.01
85.917	0.00	0.00	0.297	O	|	|	|	|	1.01
86.000	0.00	0.00	0.297	O	|	|	|	|	1.01
86.083	0.00	0.00	0.297	O	|	|	|	|	1.01
86.167	0.00	0.00	0.297	O	|	|	|	|	1.01
86.250	0.00	0.00	0.297	O	|	|	|	|	1.01
86.333	0.00	0.00	0.297	O	|	|	|	|	1.01
86.417	0.00	0.00	0.297	O	|	|	|	|	1.01
86.500	0.00	0.00	0.297	O	|	|	|	|	1.01
86.583	0.00	0.00	0.297	O	|	|	|	|	1.01
86.667	0.00	0.00	0.297	O	|	|	|	|	1.01
86.750	0.00	0.00	0.296	O	|	|	|	|	1.01
86.833	0.00	0.00	0.296	O	|	|	|	|	1.01
86.917	0.00	0.00	0.296	O	|	|	|	|	1.01
87.000	0.00	0.00	0.296	O	|	|	|	|	1.01
87.083	0.00	0.00	0.296	O	|	|	|	|	1.01
87.167	0.00	0.00	0.296	O	|	|	|	|	1.01
87.250	0.00	0.00	0.296	O	|	|	|	|	

1.01

87.333	0.00	0.00	0.296	O	|	|	|	|	1.01
87.417	0.00	0.00	0.296	O	|	|	|	|	1.01
87.500	0.00	0.00	0.296	O	|	|	|	|	1.01
87.583	0.00	0.00	0.296	O	|	|	|	|	1.01
87.667	0.00	0.00	0.296	O	|	|	|	|	1.01
87.750	0.00	0.00	0.296	O	|	|	|	|	1.01
87.833	0.00	0.00	0.296	O	|	|	|	|	1.01
87.917	0.00	0.00	0.296	O	|	|	|	|	1.01
88.000	0.00	0.00	0.296	O	|	|	|	|	1.00
88.083	0.00	0.00	0.296	O	|	|	|	|	1.00
88.167	0.00	0.00	0.296	O	|	|	|	|	1.00
88.250	0.00	0.00	0.296	O	|	|	|	|	1.00
88.333	0.00	0.00	0.296	O	|	|	|	|	1.00
88.417	0.00	0.00	0.296	O	|	|	|	|	1.00
88.500	0.00	0.00	0.296	O	|	|	|	|	1.00
88.583	0.00	0.00	0.296	O	|	|	|	|	1.00
88.667	0.00	0.00	0.296	O	|	|	|	|	1.00
88.750	0.00	0.00	0.296	O	|	|	|	|	1.00
88.833	0.00	0.00	0.296	O	|	|	|	|	1.00
88.917	0.00	0.00	0.296	O	|	|	|	|	1.00
89.000	0.00	0.00	0.296	O	|	|	|	|	1.00
89.083	0.00	0.00	0.296	O	|	|	|	|	1.00
89.167	0.00	0.00	0.296	O	|	|	|	|	1.00
89.250	0.00	0.00	0.296	O	|	|	|	|	1.00
89.333	0.00	0.00	0.296	O	|	|	|	|	1.00
89.417	0.00	0.00	0.296	O	|	|	|	|	1.00
89.500	0.00	0.00	0.296	O	|	|	|	|	1.00
89.583	0.00	0.00	0.296	O	|	|	|	|	1.00

89.667	0.00	0.00	0.296	O	|	|	|	|	1.00
89.750	0.00	0.00	0.296	O	|	|	|	|	1.00
89.833	0.00	0.00	0.296	O	|	|	|	|	1.00
89.917	0.00	0.00	0.296	O	|	|	|	|	1.00
90.000	0.00	0.00	0.296	O	|	|	|	|	1.00
90.083	0.00	0.00	0.296	O	|	|	|	|	1.00
90.167	0.00	0.00	0.296	O	|	|	|	|	1.00
90.250	0.00	0.00	0.296	O	|	|	|	|	1.00
90.333	0.00	0.00	0.296	O	|	|	|	|	1.00
90.417	0.00	0.00	0.296	O	|	|	|	|	1.00
90.500	0.00	0.00	0.296	O	|	|	|	|	1.00
90.583	0.00	0.00	0.296	O	|	|	|	|	1.00
90.667	0.00	0.00	0.296	O	|	|	|	|	1.00
90.750	0.00	0.00	0.296	O	|	|	|	|	1.00
90.833	0.00	0.00	0.296	O	|	|	|	|	1.00
90.917	0.00	0.00	0.296	O	|	|	|	|	1.00
91.000	0.00	0.00	0.296	O	|	|	|	|	1.00
91.083	0.00	0.00	0.296	O	|	|	|	|	1.00
91.167	0.00	0.00	0.295	O	|	|	|	|	1.00
91.250	0.00	0.00	0.295	O	|	|	|	|	1.00
91.333	0.00	0.00	0.295	O	|	|	|	|	1.00
91.417	0.00	0.00	0.295	O	|	|	|	|	1.00
91.500	0.00	0.00	0.295	O	|	|	|	|	1.00
91.583	0.00	0.00	0.295	O	|	|	|	|	1.00
91.667	0.00	0.00	0.295	O	|	|	|	|	1.00
91.750	0.00	0.00	0.295	O	|	|	|	|	1.00
91.833	0.00	0.00	0.295	O	|	|	|	|	1.00
91.917	0.00	0.00	0.295	O	|	|	|	|	1.00
92.000	0.00	0.00	0.295	O	|	|	|	|	

1.00

92.083	0.00	0.00	0.295	O	|	|	|	|	1.00
92.167	0.00	0.00	0.295	O	|	|	|	|	1.00
92.250	0.00	0.00	0.295	O	|	|	|	|	1.00
92.333	0.00	0.00	0.295	O	|	|	|	|	1.00
92.417	0.00	0.00	0.295	O	|	|	|	|	1.00
92.500	0.00	0.00	0.295	O	|	|	|	|	1.00
92.583	0.00	0.00	0.295	O	|	|	|	|	1.00
92.667	0.00	0.00	0.295	O	|	|	|	|	1.00
92.750	0.00	0.00	0.295	O	|	|	|	|	1.00
92.833	0.00	0.00	0.295	O	|	|	|	|	1.00
92.917	0.00	0.00	0.295	O	|	|	|	|	1.00
93.000	0.00	0.00	0.295	O	|	|	|	|	1.00
93.083	0.00	0.00	0.295	O	|	|	|	|	1.00
93.167	0.00	0.00	0.295	O	|	|	|	|	1.00
93.250	0.00	0.00	0.295	O	|	|	|	|	1.00
93.333	0.00	0.00	0.295	O	|	|	|	|	1.00
93.417	0.00	0.00	0.295	O	|	|	|	|	1.00
93.500	0.00	0.00	0.295	O	|	|	|	|	1.00
93.583	0.00	0.00	0.295	O	|	|	|	|	1.00
93.667	0.00	0.00	0.295	O	|	|	|	|	1.00
93.750	0.00	0.00	0.295	O	|	|	|	|	1.00
93.833	0.00	0.00	0.295	O	|	|	|	|	1.00
93.917	0.00	0.00	0.295	O	|	|	|	|	1.00
94.000	0.00	0.00	0.295	O	|	|	|	|	1.00
94.083	0.00	0.00	0.295	O	|	|	|	|	1.00
94.167	0.00	0.00	0.295	O	|	|	|	|	1.00
94.250	0.00	0.00	0.295	O	|	|	|	|	1.00
94.333	0.00	0.00	0.295	O	|	|	|	|	1.00

94.417	0.00	0.00	0.295	O	|	|	|	|	1.00
94.500	0.00	0.00	0.295	O	|	|	|	|	1.00
94.583	0.00	0.00	0.295	O	|	|	|	|	1.00
94.667	0.00	0.00	0.295	O	|	|	|	|	1.00
94.750	0.00	0.00	0.295	O	|	|	|	|	1.00
94.833	0.00	0.00	0.295	O	|	|	|	|	1.00
94.917	0.00	0.00	0.295	O	|	|	|	|	1.00
95.000	0.00	0.00	0.295	O	|	|	|	|	1.00
95.083	0.00	0.00	0.295	O	|	|	|	|	1.00
95.167	0.00	0.00	0.295	O	|	|	|	|	1.00
95.250	0.00	0.00	0.295	O	|	|	|	|	1.00
95.333	0.00	0.00	0.295	O	|	|	|	|	1.00
95.417	0.00	0.00	0.295	O	|	|	|	|	1.00
95.500	0.00	0.00	0.295	O	|	|	|	|	1.00
95.583	0.00	0.00	0.295	O	|	|	|	|	1.00
95.667	0.00	0.00	0.295	O	|	|	|	|	1.00
95.750	0.00	0.00	0.295	O	|	|	|	|	1.00
95.833	0.00	0.00	0.295	O	|	|	|	|	1.00
95.917	0.00	0.00	0.295	O	|	|	|	|	1.00
96.000	0.00	0.00	0.295	O	|	|	|	|	1.00
96.083	0.00	0.00	0.295	O	|	|	|	|	1.00
96.167	0.00	0.00	0.295	O	|	|	|	|	1.00
96.250	0.00	0.00	0.295	O	|	|	|	|	1.00
96.333	0.00	0.00	0.295	O	|	|	|	|	1.00
96.417	0.00	0.00	0.295	O	|	|	|	|	1.00
96.500	0.00	0.00	0.295	O	|	|	|	|	1.00
96.583	0.00	0.00	0.295	O	|	|	|	|	1.00
96.667	0.00	0.00	0.295	O	|	|	|	|	1.00
96.750	0.00	0.00	0.295	O	|	|	|	|	

1.00

96.833	0.00	0.00	0.295	O	|	|	|	1.00
96.917	0.00	0.00	0.295	O	|	|	|	1.00
97.000	0.00	0.00	0.295	O	|	|	|	1.00
97.083	0.00	0.00	0.295	O	|	|	|	1.00
97.167	0.00	0.00	0.295	O	|	|	|	1.00
97.250	0.00	0.00	0.295	O	|	|	|	1.00
97.333	0.00	0.00	0.295	O	|	|	|	1.00
97.417	0.00	0.00	0.295	O	|	|	|	1.00
97.500	0.00	0.00	0.295	O	|	|	|	1.00
97.583	0.00	0.00	0.295	O	|	|	|	1.00
97.667	0.00	0.00	0.294	O	|	|	|	1.00
97.750	0.00	0.00	0.294	O	|	|	|	1.00
97.833	0.00	0.00	0.294	O	|	|	|	1.00
97.917	0.00	0.00	0.294	O	|	|	|	1.00
98.000	0.00	0.00	0.294	O	|	|	|	1.00
98.083	0.00	0.00	0.294	O	|	|	|	1.00
98.167	0.00	0.00	0.294	O	|	|	|	1.00
98.250	0.00	0.00	0.294	O	|	|	|	1.00
98.333	0.00	0.00	0.294	O	|	|	|	1.00
98.417	0.00	0.00	0.294	O	|	|	|	1.00
98.500	0.00	0.00	0.294	O	|	|	|	1.00
98.583	0.00	0.00	0.294	O	|	|	|	1.00
98.667	0.00	0.00	0.294	O	|	|	|	1.00
98.750	0.00	0.00	0.294	O	|	|	|	1.00
98.833	0.00	0.00	0.294	O	|	|	|	1.00
98.917	0.00	0.00	0.294	O	|	|	|	1.00
99.000	0.00	0.00	0.294	O	|	|	|	1.00
99.083	0.00	0.00	0.294	O	|	|	|	1.00

99.167	0.00	0.00	0.294	O	|	|	|	|	1.00
99.250	0.00	0.00	0.294	O	|	|	|	|	1.00
99.333	0.00	0.00	0.294	O	|	|	|	|	1.00
99.417	0.00	0.00	0.294	O	|	|	|	|	1.00
99.500	0.00	0.00	0.294	O	|	|	|	|	1.00
99.583	0.00	0.00	0.294	O	|	|	|	|	1.00
99.667	0.00	0.00	0.294	O	|	|	|	|	1.00
99.750	0.00	0.00	0.294	O	|	|	|	|	1.00
99.833	0.00	0.00	0.294	O	|	|	|	|	1.00
99.917	0.00	0.00	0.294	O	|	|	|	|	1.00
100.000	0.00	0.00	0.294	O	|	|	|	|	1.00
100.083	0.00	0.00	0.294	O	|	|	|	|	1.00
100.167	0.00	0.00	0.294	O	|	|	|	|	1.00
100.250	0.00	0.00	0.294	O	|	|	|	|	1.00
100.333	0.00	0.00	0.294	O	|	|	|	|	1.00
100.417	0.00	0.00	0.294	O	|	|	|	|	1.00
100.500	0.00	0.00	0.294	O	|	|	|	|	1.00
100.583	0.00	0.00	0.294	O	|	|	|	|	1.00
100.667	0.00	0.00	0.294	O	|	|	|	|	1.00
100.750	0.00	0.00	0.294	O	|	|	|	|	1.00
100.833	0.00	0.00	0.294	O	|	|	|	|	1.00
100.917	0.00	0.00	0.294	O	|	|	|	|	1.00
101.000	0.00	0.00	0.294	O	|	|	|	|	1.00
101.083	0.00	0.00	0.294	O	|	|	|	|	1.00
101.167	0.00	0.00	0.294	O	|	|	|	|	1.00
101.250	0.00	0.00	0.294	O	|	|	|	|	1.00
101.333	0.00	0.00	0.294	O	|	|	|	|	1.00
101.417	0.00	0.00	0.294	O	|	|	|	|	1.00
101.500	0.00	0.00	0.294	O	|	|	|	|	

1.00

101.583	0.00	0.00	0.294	O	|	|	|	1.00
101.667	0.00	0.00	0.294	O	|	|	|	1.00
101.750	0.00	0.00	0.294	O	|	|	|	1.00
101.833	0.00	0.00	0.294	O	|	|	|	1.00
101.917	0.00	0.00	0.294	O	|	|	|	1.00
102.000	0.00	0.00	0.294	O	|	|	|	1.00
102.083	0.00	0.00	0.294	O	|	|	|	1.00
102.167	0.00	0.00	0.294	O	|	|	|	1.00
102.250	0.00	0.00	0.294	O	|	|	|	1.00
102.333	0.00	0.00	0.294	O	|	|	|	1.00
102.417	0.00	0.00	0.294	O	|	|	|	1.00
102.500	0.00	0.00	0.294	O	|	|	|	1.00
102.583	0.00	0.00	0.294	O	|	|	|	1.00
102.667	0.00	0.00	0.294	O	|	|	|	1.00
102.750	0.00	0.00	0.294	O	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1233
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.329 (CFS)
Total volume = 0.738 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2012
Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
100 YR - 6 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP6100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 74
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 11.994 (CFS)
Total volume = 1.481 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 74
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	3.0	6.00	9.00	11.99	Depth (Ft.)
0.083	0.60	0.00	0.002	OI	|	|	|	|	0.01
0.167	1.11	0.00	0.008	O I	|	|	|	|	0.03
0.250	1.25	0.00	0.016	O I	|	|	|	|	0.05
0.333	1.27	0.00	0.025	O I	|	|	|	|	0.08
0.417	1.27	0.00	0.033	O I	|	|	|	|	0.11
0.500	1.39	0.00	0.043	O I	|	|	|	|	0.14
0.583	1.47	0.00	0.052	O I	|	|	|	|	0.18
0.667	1.48	0.00	0.063	O I	|	|	|	|	0.21
0.750	1.48	0.00	0.073	O I	|	|	|	|	0.25
0.833	1.48	0.00	0.083	O I	|	|	|	|	0.28
0.917	1.48	0.00	0.093	O I	|	|	|	|	0.32
1.000	1.60	0.00	0.104	O I	|	|	|	|	0.35
1.083	1.68	0.00	0.115	O I	|	|	|	|	0.39
1.167	1.69	0.00	0.127	O I	|	|	|	|	0.43
1.250	1.69	0.00	0.138	O I	|	|	|	|	0.47
1.333	1.69	0.00	0.150	O I	|	|	|	|	0.51
1.417	1.69	0.00	0.161	O I	|	|	|	|	

0.55

1.500	1.69	0.00	0.173	O	I	|	|	|	0.59
1.583	1.69	0.00	0.185	O	I	|	|	|	0.63
1.667	1.69	0.00	0.196	O	I	|	|	|	0.67
1.750	1.69	0.00	0.208	O	I	|	|	|	0.71
1.833	1.69	0.00	0.220	O	I	|	|	|	0.75
1.917	1.69	0.00	0.231	O	I	|	|	|	0.79
2.000	1.81	0.00	0.243	O	I	|	|	|	0.83
2.083	1.77	0.00	0.256	O	I	|	|	|	0.87
2.167	1.82	0.00	0.268	O	I	|	|	|	0.91
2.250	1.89	0.00	0.281	O	I	|	|	|	0.95
2.333	1.90	0.00	0.294	O	I	|	|	|	1.00
2.417	1.90	0.01	0.307	O	I	|	|	|	1.03
2.500	1.90	0.02	0.320	O	I	|	|	|	1.06
2.583	1.90	0.04	0.333	O	I	|	|	|	1.09
2.667	1.90	0.05	0.345	O	I	|	|	|	1.12
2.750	2.02	0.06	0.359	O	I	|	|	|	1.15
2.833	2.10	0.07	0.372	O	I	|	|	|	1.18
2.917	2.11	0.08	0.386	O	I	|	|	|	1.21
3.000	2.11	0.09	0.400	O	I	|	|	|	1.24
3.083	2.11	0.10	0.414	O	I	|	|	|	1.27
3.167	2.23	0.11	0.428	O	I	|	|	|	1.30
3.250	2.31	0.11	0.443	O	I	|	|	|	1.34
3.333	2.32	0.12	0.458	O	I	|	|	|	1.37
3.417	2.44	0.12	0.474	O	I	|	|	|	1.40
3.500	2.64	0.13	0.491	O	I	|	|	|	1.44
3.583	2.85	0.13	0.509	O	I	|	|	|	1.48
3.667	2.94	0.14	0.528	O	I	|	|	|	1.52
3.750	3.08	0.16	0.547	O	I	|	|	|	1.56
3.833	3.15	0.17	0.568	O	I	|	|	|	1.60
3.917	3.29	0.18	0.589	O	I	|	|	|	

1.64

4.000	3.37	0.20	0.610	O	I	|	|	|	1.68
4.083	3.50	0.21	0.633	O	|I	|	|	|	1.73
4.167	3.70	0.22	0.656	O	|I	|	|	|	1.78
4.250	3.91	0.23	0.680	O	| I	|	|	|	1.82
4.333	4.12	0.24	0.706	O	| I	|	|	|	1.87
4.417	4.33	0.25	0.734	O	| I	|	|	|	1.93
4.500	4.42	0.26	0.762	O	| I	|	|	|	1.98
4.583	4.55	0.27	0.791	O	| I	|	|	|	2.04
4.667	4.75	0.28	0.822	O	| I	|	|	|	2.10
4.750	4.96	0.29	0.853	O	| I	|	|	|	2.16
4.833	5.06	0.30	0.886	O	| I	|	|	|	2.22
4.917	5.19	0.31	0.919	O	| I	|	|	|	2.29
5.000	5.39	0.32	0.953	O	| I	|	|	|	2.35
5.083	6.19	0.33	0.991	O	| I	|	|	|	2.42
5.167	7.38	0.34	1.035	O	| | I	|	|	|	2.51
5.250	8.36	0.35	1.087	O	| | I	|	|	|	2.61
5.333	9.15	0.36	1.145	O	| | I	|	|	|	2.72
5.417	10.19	0.38	1.209	|O	|	|	| I	|	2.84
5.500	11.99	0.39	1.283	|O	|	|	|	I	2.98
5.583	7.80	0.41	1.348	|O	|	| I	|	|	3.11
5.667	3.39	0.41	1.384	|O	|I	|	|	|	3.18
5.750	1.67	0.42	1.398	|O I	|	|	|	|	3.21
5.833	1.19	0.42	1.405	|O I	|	|	|	|	3.22
5.917	0.83	0.42	1.409	|OI	|	|	|	|	3.23
6.000	0.54	0.42	1.411	|O	|	|	|	|	3.23
6.083	0.20	0.42	1.411	IO	|	|	|	|	3.23
6.167	0.03	0.42	1.409	IO	|	|	|	|	3.23
6.250	0.00	0.42	1.406	IO	|	|	|	|	3.22
6.333	0.00	0.42	1.403	IO	|	|	|	|	3.22
6.417	0.00	0.42	1.400	IO	|	|	|	|	3.21
6.500	0.00	0.42	1.397	IO	|	|	|	|	

3.21

6.583	0.00	0.42	1.394	IO				3.20
6.667	0.00	0.42	1.391	IO				3.20
6.750	0.00	0.41	1.389	IO				3.19
6.833	0.00	0.41	1.386	IO				3.18
6.917	0.00	0.41	1.383	IO				3.18
7.000	0.00	0.41	1.380	IO				3.17
7.083	0.00	0.41	1.377	IO				3.17
7.167	0.00	0.41	1.374	IO				3.16
7.250	0.00	0.41	1.372	IO				3.16
7.333	0.00	0.41	1.369	IO				3.15
7.417	0.00	0.41	1.366	IO				3.15
7.500	0.00	0.41	1.363	IO				3.14
7.583	0.00	0.41	1.360	IO				3.13
7.667	0.00	0.41	1.357	IO				3.13
7.750	0.00	0.41	1.355	IO				3.12
7.833	0.00	0.41	1.352	IO				3.12
7.917	0.00	0.41	1.349	IO				3.11
8.000	0.00	0.41	1.346	IO				3.11
8.083	0.00	0.41	1.343	IO				3.10
8.167	0.00	0.40	1.341	IO				3.10
8.250	0.00	0.40	1.338	IO				3.09
8.333	0.00	0.40	1.335	IO				3.08
8.417	0.00	0.40	1.332	IO				3.08
8.500	0.00	0.40	1.329	IO				3.07
8.583	0.00	0.40	1.327	IO				3.07
8.667	0.00	0.40	1.324	IO				3.06
8.750	0.00	0.40	1.321	IO				3.06
8.833	0.00	0.40	1.318	IO				3.05

8.917	0.00	0.40	1.316	IO	|	|	|	|	3.05
9.000	0.00	0.40	1.313	IO	|	|	|	|	3.04
9.083	0.00	0.40	1.310	IO	|	|	|	|	3.04
9.167	0.00	0.40	1.307	IO	|	|	|	|	3.03
9.250	0.00	0.40	1.305	IO	|	|	|	|	3.02
9.333	0.00	0.40	1.302	IO	|	|	|	|	3.02
9.417	0.00	0.40	1.299	IO	|	|	|	|	3.01
9.500	0.00	0.40	1.296	IO	|	|	|	|	3.01
9.583	0.00	0.40	1.294	IO	|	|	|	|	3.00
9.667	0.00	0.39	1.291	IO	|	|	|	|	3.00
9.750	0.00	0.39	1.288	IO	|	|	|	|	2.99
9.833	0.00	0.39	1.286	IO	|	|	|	|	2.99
9.917	0.00	0.39	1.283	IO	|	|	|	|	2.98
10.000	0.00	0.39	1.280	IO	|	|	|	|	2.98
10.083	0.00	0.39	1.278	IO	|	|	|	|	2.97
10.167	0.00	0.39	1.275	IO	|	|	|	|	2.97
10.250	0.00	0.39	1.272	IO	|	|	|	|	2.96
10.333	0.00	0.39	1.269	IO	|	|	|	|	2.96
10.417	0.00	0.39	1.267	IO	|	|	|	|	2.95
10.500	0.00	0.39	1.264	IO	|	|	|	|	2.95
10.583	0.00	0.39	1.261	IO	|	|	|	|	2.94
10.667	0.00	0.39	1.259	IO	|	|	|	|	2.94
10.750	0.00	0.39	1.256	IO	|	|	|	|	2.93
10.833	0.00	0.39	1.253	IO	|	|	|	|	2.93
10.917	0.00	0.39	1.251	IO	|	|	|	|	2.92
11.000	0.00	0.39	1.248	IO	|	|	|	|	2.91
11.083	0.00	0.38	1.245	IO	|	|	|	|	2.91
11.167	0.00	0.38	1.243	IO	|	|	|	|	2.90
11.250	0.00	0.38	1.240	IO	|	|	|	|	

2.90

11.333	0.00	0.38	1.237	IO	|	|	|	2.89
11.417	0.00	0.38	1.235	IO	|	|	|	2.89
11.500	0.00	0.38	1.232	IO	|	|	|	2.88
11.583	0.00	0.38	1.230	IO	|	|	|	2.88
11.667	0.00	0.38	1.227	IO	|	|	|	2.87
11.750	0.00	0.38	1.224	IO	|	|	|	2.87
11.833	0.00	0.38	1.222	IO	|	|	|	2.86
11.917	0.00	0.38	1.219	IO	|	|	|	2.86
12.000	0.00	0.38	1.216	IO	|	|	|	2.85
12.083	0.00	0.38	1.214	IO	|	|	|	2.85
12.167	0.00	0.38	1.211	IO	|	|	|	2.84
12.250	0.00	0.38	1.209	IO	|	|	|	2.84
12.333	0.00	0.38	1.206	IO	|	|	|	2.83
12.417	0.00	0.38	1.204	IO	|	|	|	2.83
12.500	0.00	0.38	1.201	IO	|	|	|	2.82
12.583	0.00	0.37	1.198	O	|	|	|	2.82
12.667	0.00	0.37	1.196	O	|	|	|	2.81
12.750	0.00	0.37	1.193	O	|	|	|	2.81
12.833	0.00	0.37	1.191	O	|	|	|	2.80
12.917	0.00	0.37	1.188	O	|	|	|	2.80
13.000	0.00	0.37	1.185	O	|	|	|	2.79
13.083	0.00	0.37	1.183	O	|	|	|	2.79
13.167	0.00	0.37	1.180	O	|	|	|	2.78
13.250	0.00	0.37	1.178	O	|	|	|	2.78
13.333	0.00	0.37	1.175	O	|	|	|	2.77
13.417	0.00	0.37	1.173	O	|	|	|	2.77
13.500	0.00	0.37	1.170	O	|	|	|	2.76
13.583	0.00	0.37	1.168	O	|	|	|	2.76

13.667	0.00	0.37	1.165	O	|	|	|	|	2.75
13.750	0.00	0.37	1.163	O	|	|	|	|	2.75
13.833	0.00	0.37	1.160	O	|	|	|	|	2.74
13.917	0.00	0.37	1.158	O	|	|	|	|	2.74
14.000	0.00	0.37	1.155	O	|	|	|	|	2.73
14.083	0.00	0.36	1.153	O	|	|	|	|	2.73
14.167	0.00	0.36	1.150	O	|	|	|	|	2.73
14.250	0.00	0.36	1.147	O	|	|	|	|	2.72
14.333	0.00	0.36	1.145	O	|	|	|	|	2.72
14.417	0.00	0.36	1.142	O	|	|	|	|	2.71
14.500	0.00	0.36	1.140	O	|	|	|	|	2.71
14.583	0.00	0.36	1.138	O	|	|	|	|	2.70
14.667	0.00	0.36	1.135	O	|	|	|	|	2.70
14.750	0.00	0.36	1.133	O	|	|	|	|	2.69
14.833	0.00	0.36	1.130	O	|	|	|	|	2.69
14.917	0.00	0.36	1.128	O	|	|	|	|	2.68
15.000	0.00	0.36	1.125	O	|	|	|	|	2.68
15.083	0.00	0.36	1.123	O	|	|	|	|	2.67
15.167	0.00	0.36	1.120	O	|	|	|	|	2.67
15.250	0.00	0.36	1.118	O	|	|	|	|	2.66
15.333	0.00	0.36	1.115	O	|	|	|	|	2.66
15.417	0.00	0.36	1.113	O	|	|	|	|	2.66
15.500	0.00	0.35	1.110	O	|	|	|	|	2.65
15.583	0.00	0.35	1.108	O	|	|	|	|	2.65
15.667	0.00	0.35	1.106	O	|	|	|	|	2.64
15.750	0.00	0.35	1.103	O	|	|	|	|	2.64
15.833	0.00	0.35	1.101	O	|	|	|	|	2.63
15.917	0.00	0.35	1.098	O	|	|	|	|	2.63
16.000	0.00	0.35	1.096	O	|	|	|	|	

2.62

16.083	0.00	0.35	1.093	O	|	|	|	|	2.62
16.167	0.00	0.35	1.091	O	|	|	|	|	2.61
16.250	0.00	0.35	1.089	O	|	|	|	|	2.61
16.333	0.00	0.35	1.086	O	|	|	|	|	2.60
16.417	0.00	0.35	1.084	O	|	|	|	|	2.60
16.500	0.00	0.35	1.081	O	|	|	|	|	2.60
16.583	0.00	0.35	1.079	O	|	|	|	|	2.59
16.667	0.00	0.35	1.077	O	|	|	|	|	2.59
16.750	0.00	0.35	1.074	O	|	|	|	|	2.58
16.833	0.00	0.35	1.072	O	|	|	|	|	2.58
16.917	0.00	0.35	1.069	O	|	|	|	|	2.57
17.000	0.00	0.34	1.067	O	|	|	|	|	2.57
17.083	0.00	0.34	1.065	O	|	|	|	|	2.56
17.167	0.00	0.34	1.062	O	|	|	|	|	2.56
17.250	0.00	0.34	1.060	O	|	|	|	|	2.55
17.333	0.00	0.34	1.058	O	|	|	|	|	2.55
17.417	0.00	0.34	1.055	O	|	|	|	|	2.55
17.500	0.00	0.34	1.053	O	|	|	|	|	2.54
17.583	0.00	0.34	1.051	O	|	|	|	|	2.54
17.667	0.00	0.34	1.048	O	|	|	|	|	2.53
17.750	0.00	0.34	1.046	O	|	|	|	|	2.53
17.833	0.00	0.34	1.044	O	|	|	|	|	2.52
17.917	0.00	0.34	1.041	O	|	|	|	|	2.52
18.000	0.00	0.34	1.039	O	|	|	|	|	2.51
18.083	0.00	0.34	1.037	O	|	|	|	|	2.51
18.167	0.00	0.34	1.034	O	|	|	|	|	2.51
18.250	0.00	0.34	1.032	O	|	|	|	|	2.50
18.333	0.00	0.34	1.030	O	|	|	|	|	2.50

18.417	0.00	0.34	1.027	O	|	|	|	|	2.49
18.500	0.00	0.33	1.025	O	|	|	|	|	2.49
18.583	0.00	0.33	1.023	O	|	|	|	|	2.48
18.667	0.00	0.33	1.020	O	|	|	|	|	2.48
18.750	0.00	0.33	1.018	O	|	|	|	|	2.48
18.833	0.00	0.33	1.016	O	|	|	|	|	2.47
18.917	0.00	0.33	1.014	O	|	|	|	|	2.47
19.000	0.00	0.33	1.011	O	|	|	|	|	2.46
19.083	0.00	0.33	1.009	O	|	|	|	|	2.46
19.167	0.00	0.33	1.007	O	|	|	|	|	2.45
19.250	0.00	0.33	1.004	O	|	|	|	|	2.45
19.333	0.00	0.33	1.002	O	|	|	|	|	2.44
19.417	0.00	0.33	1.000	O	|	|	|	|	2.44
19.500	0.00	0.33	0.998	O	|	|	|	|	2.44
19.583	0.00	0.33	0.995	O	|	|	|	|	2.43
19.667	0.00	0.33	0.993	O	|	|	|	|	2.43
19.750	0.00	0.33	0.991	O	|	|	|	|	2.42
19.833	0.00	0.33	0.989	O	|	|	|	|	2.42
19.917	0.00	0.32	0.986	O	|	|	|	|	2.41
20.000	0.00	0.32	0.984	O	|	|	|	|	2.41
20.083	0.00	0.32	0.982	O	|	|	|	|	2.41
20.167	0.00	0.32	0.980	O	|	|	|	|	2.40
20.250	0.00	0.32	0.978	O	|	|	|	|	2.40
20.333	0.00	0.32	0.975	O	|	|	|	|	2.39
20.417	0.00	0.32	0.973	O	|	|	|	|	2.39
20.500	0.00	0.32	0.971	O	|	|	|	|	2.39
20.583	0.00	0.32	0.969	O	|	|	|	|	2.38
20.667	0.00	0.32	0.966	O	|	|	|	|	2.38
20.750	0.00	0.32	0.964	O	|	|	|	|	

2.37

20.833	0.00	0.32	0.962	O	|	|	|	2.37
20.917	0.00	0.32	0.960	O	|	|	|	2.36
21.000	0.00	0.32	0.958	O	|	|	|	2.36
21.083	0.00	0.32	0.956	O	|	|	|	2.36
21.167	0.00	0.32	0.953	O	|	|	|	2.35
21.250	0.00	0.32	0.951	O	|	|	|	2.35
21.333	0.00	0.31	0.949	O	|	|	|	2.34
21.417	0.00	0.31	0.947	O	|	|	|	2.34
21.500	0.00	0.31	0.945	O	|	|	|	2.34
21.583	0.00	0.31	0.943	O	|	|	|	2.33
21.667	0.00	0.31	0.940	O	|	|	|	2.33
21.750	0.00	0.31	0.938	O	|	|	|	2.32
21.833	0.00	0.31	0.936	O	|	|	|	2.32
21.917	0.00	0.31	0.934	O	|	|	|	2.31
22.000	0.00	0.31	0.932	O	|	|	|	2.31
22.083	0.00	0.31	0.930	O	|	|	|	2.31
22.167	0.00	0.31	0.928	O	|	|	|	2.30
22.250	0.00	0.31	0.925	O	|	|	|	2.30
22.333	0.00	0.31	0.923	O	|	|	|	2.29
22.417	0.00	0.31	0.921	O	|	|	|	2.29
22.500	0.00	0.31	0.919	O	|	|	|	2.29
22.583	0.00	0.31	0.917	O	|	|	|	2.28
22.667	0.00	0.31	0.915	O	|	|	|	2.28
22.750	0.00	0.31	0.913	O	|	|	|	2.27
22.833	0.00	0.30	0.911	O	|	|	|	2.27
22.917	0.00	0.30	0.909	O	|	|	|	2.27
23.000	0.00	0.30	0.906	O	|	|	|	2.26
23.083	0.00	0.30	0.904	O	|	|	|	2.26

23.167	0.00	0.30	0.902	O	|	|	|	|	2.25
23.250	0.00	0.30	0.900	O	|	|	|	|	2.25
23.333	0.00	0.30	0.898	O	|	|	|	|	2.25
23.417	0.00	0.30	0.896	O	|	|	|	|	2.24
23.500	0.00	0.30	0.894	O	|	|	|	|	2.24
23.583	0.00	0.30	0.892	O	|	|	|	|	2.23
23.667	0.00	0.30	0.890	O	|	|	|	|	2.23
23.750	0.00	0.30	0.888	O	|	|	|	|	2.23
23.833	0.00	0.30	0.886	O	|	|	|	|	2.22
23.917	0.00	0.30	0.884	O	|	|	|	|	2.22
24.000	0.00	0.30	0.882	O	|	|	|	|	2.21
24.083	0.00	0.30	0.880	O	|	|	|	|	2.21
24.167	0.00	0.30	0.878	O	|	|	|	|	2.21
24.250	0.00	0.29	0.876	O	|	|	|	|	2.20
24.333	0.00	0.29	0.873	O	|	|	|	|	2.20
24.417	0.00	0.29	0.871	O	|	|	|	|	2.20
24.500	0.00	0.29	0.869	O	|	|	|	|	2.19
24.583	0.00	0.29	0.867	O	|	|	|	|	2.19
24.667	0.00	0.29	0.865	O	|	|	|	|	2.18
24.750	0.00	0.29	0.863	O	|	|	|	|	2.18
24.833	0.00	0.29	0.861	O	|	|	|	|	2.18
24.917	0.00	0.29	0.859	O	|	|	|	|	2.17
25.000	0.00	0.29	0.857	O	|	|	|	|	2.17
25.083	0.00	0.29	0.855	O	|	|	|	|	2.16
25.167	0.00	0.29	0.853	O	|	|	|	|	2.16
25.250	0.00	0.29	0.851	O	|	|	|	|	2.16
25.333	0.00	0.29	0.849	O	|	|	|	|	2.15
25.417	0.00	0.29	0.847	O	|	|	|	|	2.15
25.500	0.00	0.29	0.846	O	|	|	|	|	

2.15

25.583	0.00	0.29	0.844	O	|	|	|	2.14
25.667	0.00	0.28	0.842	O	|	|	|	2.14
25.750	0.00	0.28	0.840	O	|	|	|	2.13
25.833	0.00	0.28	0.838	O	|	|	|	2.13
25.917	0.00	0.28	0.836	O	|	|	|	2.13
26.000	0.00	0.28	0.834	O	|	|	|	2.12
26.083	0.00	0.28	0.832	O	|	|	|	2.12
26.167	0.00	0.28	0.830	O	|	|	|	2.12
26.250	0.00	0.28	0.828	O	|	|	|	2.11
26.333	0.00	0.28	0.826	O	|	|	|	2.11
26.417	0.00	0.28	0.824	O	|	|	|	2.10
26.500	0.00	0.28	0.822	O	|	|	|	2.10
26.583	0.00	0.28	0.820	O	|	|	|	2.10
26.667	0.00	0.28	0.818	O	|	|	|	2.09
26.750	0.00	0.28	0.816	O	|	|	|	2.09
26.833	0.00	0.28	0.814	O	|	|	|	2.09
26.917	0.00	0.28	0.813	O	|	|	|	2.08
27.000	0.00	0.28	0.811	O	|	|	|	2.08
27.083	0.00	0.28	0.809	O	|	|	|	2.07
27.167	0.00	0.27	0.807	O	|	|	|	2.07
27.250	0.00	0.27	0.805	O	|	|	|	2.07
27.333	0.00	0.27	0.803	O	|	|	|	2.06
27.417	0.00	0.27	0.801	O	|	|	|	2.06
27.500	0.00	0.27	0.799	O	|	|	|	2.06
27.583	0.00	0.27	0.797	O	|	|	|	2.05
27.667	0.00	0.27	0.796	O	|	|	|	2.05
27.750	0.00	0.27	0.794	O	|	|	|	2.05
27.833	0.00	0.27	0.792	O	|	|	|	2.04

27.917	0.00	0.27	0.790	O	|	|	|	|	2.04
28.000	0.00	0.27	0.788	O	|	|	|	|	2.03
28.083	0.00	0.27	0.786	O	|	|	|	|	2.03
28.167	0.00	0.27	0.784	O	|	|	|	|	2.03
28.250	0.00	0.27	0.783	O	|	|	|	|	2.02
28.333	0.00	0.27	0.781	O	|	|	|	|	2.02
28.417	0.00	0.27	0.779	O	|	|	|	|	2.02
28.500	0.00	0.27	0.777	O	|	|	|	|	2.01
28.583	0.00	0.27	0.775	O	|	|	|	|	2.01
28.667	0.00	0.27	0.773	O	|	|	|	|	2.01
28.750	0.00	0.26	0.772	O	|	|	|	|	2.00
28.833	0.00	0.26	0.770	O	|	|	|	|	2.00
28.917	0.00	0.26	0.768	O	|	|	|	|	2.00
29.000	0.00	0.26	0.766	O	|	|	|	|	1.99
29.083	0.00	0.26	0.764	O	|	|	|	|	1.99
29.167	0.00	0.26	0.763	O	|	|	|	|	1.99
29.250	0.00	0.26	0.761	O	|	|	|	|	1.98
29.333	0.00	0.26	0.759	O	|	|	|	|	1.98
29.417	0.00	0.26	0.757	O	|	|	|	|	1.97
29.500	0.00	0.26	0.755	O	|	|	|	|	1.97
29.583	0.00	0.26	0.754	O	|	|	|	|	1.97
29.667	0.00	0.26	0.752	O	|	|	|	|	1.96
29.750	0.00	0.26	0.750	O	|	|	|	|	1.96
29.833	0.00	0.26	0.748	O	|	|	|	|	1.96
29.917	0.00	0.26	0.747	O	|	|	|	|	1.95
30.000	0.00	0.25	0.745	O	|	|	|	|	1.95
30.083	0.00	0.25	0.743	O	|	|	|	|	1.95
30.167	0.00	0.25	0.741	O	|	|	|	|	1.94
30.250	0.00	0.25	0.740	O	|	|	|	|	

1.94

30.333	0.00	0.25	0.738	O	|	|	|	1.94
30.417	0.00	0.25	0.736	O	|	|	|	1.93
30.500	0.00	0.25	0.734	O	|	|	|	1.93
30.583	0.00	0.25	0.733	O	|	|	|	1.93
30.667	0.00	0.25	0.731	O	|	|	|	1.92
30.750	0.00	0.25	0.729	O	|	|	|	1.92
30.833	0.00	0.25	0.727	O	|	|	|	1.92
30.917	0.00	0.25	0.726	O	|	|	|	1.91
31.000	0.00	0.25	0.724	O	|	|	|	1.91
31.083	0.00	0.25	0.722	O	|	|	|	1.91
31.167	0.00	0.25	0.721	O	|	|	|	1.90
31.250	0.00	0.25	0.719	O	|	|	|	1.90
31.333	0.00	0.24	0.717	O	|	|	|	1.90
31.417	0.00	0.24	0.716	O	|	|	|	1.89
31.500	0.00	0.24	0.714	O	|	|	|	1.89
31.583	0.00	0.24	0.712	O	|	|	|	1.89
31.667	0.00	0.24	0.711	O	|	|	|	1.88
31.750	0.00	0.24	0.709	O	|	|	|	1.88
31.833	0.00	0.24	0.707	O	|	|	|	1.88
31.917	0.00	0.24	0.706	O	|	|	|	1.87
32.000	0.00	0.24	0.704	O	|	|	|	1.87
32.083	0.00	0.24	0.702	O	|	|	|	1.87
32.167	0.00	0.24	0.701	O	|	|	|	1.86
32.250	0.00	0.24	0.699	O	|	|	|	1.86
32.333	0.00	0.24	0.697	O	|	|	|	1.86
32.417	0.00	0.24	0.696	O	|	|	|	1.85
32.500	0.00	0.24	0.694	O	|	|	|	1.85
32.583	0.00	0.24	0.692	O	|	|	|	1.85

32.667	0.00	0.24	0.691	O	|	|	|	|	1.84
32.750	0.00	0.23	0.689	O	|	|	|	|	1.84
32.833	0.00	0.23	0.688	O	|	|	|	|	1.84
32.917	0.00	0.23	0.686	O	|	|	|	|	1.83
33.000	0.00	0.23	0.684	O	|	|	|	|	1.83
33.083	0.00	0.23	0.683	O	|	|	|	|	1.83
33.167	0.00	0.23	0.681	O	|	|	|	|	1.83
33.250	0.00	0.23	0.680	O	|	|	|	|	1.82
33.333	0.00	0.23	0.678	O	|	|	|	|	1.82
33.417	0.00	0.23	0.676	O	|	|	|	|	1.82
33.500	0.00	0.23	0.675	O	|	|	|	|	1.81
33.583	0.00	0.23	0.673	O	|	|	|	|	1.81
33.667	0.00	0.23	0.672	O	|	|	|	|	1.81
33.750	0.00	0.23	0.670	O	|	|	|	|	1.80
33.833	0.00	0.23	0.668	O	|	|	|	|	1.80
33.917	0.00	0.23	0.667	O	|	|	|	|	1.80
34.000	0.00	0.23	0.665	O	|	|	|	|	1.79
34.083	0.00	0.23	0.664	O	|	|	|	|	1.79
34.167	0.00	0.22	0.662	O	|	|	|	|	1.79
34.250	0.00	0.22	0.661	O	|	|	|	|	1.78
34.333	0.00	0.22	0.659	O	|	|	|	|	1.78
34.417	0.00	0.22	0.658	O	|	|	|	|	1.78
34.500	0.00	0.22	0.656	O	|	|	|	|	1.78
34.583	0.00	0.22	0.655	O	|	|	|	|	1.77
34.667	0.00	0.22	0.653	O	|	|	|	|	1.77
34.750	0.00	0.22	0.652	O	|	|	|	|	1.77
34.833	0.00	0.22	0.650	O	|	|	|	|	1.76
34.917	0.00	0.22	0.648	O	|	|	|	|	1.76
35.000	0.00	0.22	0.647	O	|	|	|	|	

1.76

35.083	0.00	0.22	0.645	O	|	|	|	|	1.75
35.167	0.00	0.22	0.644	O	|	|	|	|	1.75
35.250	0.00	0.22	0.642	O	|	|	|	|	1.75
35.333	0.00	0.22	0.641	O	|	|	|	|	1.75
35.417	0.00	0.22	0.639	O	|	|	|	|	1.74
35.500	0.00	0.21	0.638	O	|	|	|	|	1.74
35.583	0.00	0.21	0.637	O	|	|	|	|	1.74
35.667	0.00	0.21	0.635	O	|	|	|	|	1.73
35.750	0.00	0.21	0.634	O	|	|	|	|	1.73
35.833	0.00	0.21	0.632	O	|	|	|	|	1.73
35.917	0.00	0.21	0.631	O	|	|	|	|	1.72
36.000	0.00	0.21	0.629	O	|	|	|	|	1.72
36.083	0.00	0.21	0.628	O	|	|	|	|	1.72
36.167	0.00	0.21	0.626	O	|	|	|	|	1.72
36.250	0.00	0.21	0.625	O	|	|	|	|	1.71
36.333	0.00	0.21	0.624	O	|	|	|	|	1.71
36.417	0.00	0.20	0.622	O	|	|	|	|	1.71
36.500	0.00	0.20	0.621	O	|	|	|	|	1.70
36.583	0.00	0.20	0.619	O	|	|	|	|	1.70
36.667	0.00	0.20	0.618	O	|	|	|	|	1.70
36.750	0.00	0.20	0.617	O	|	|	|	|	1.70
36.833	0.00	0.20	0.615	O	|	|	|	|	1.69
36.917	0.00	0.20	0.614	O	|	|	|	|	1.69
37.000	0.00	0.20	0.612	O	|	|	|	|	1.69
37.083	0.00	0.20	0.611	O	|	|	|	|	1.69
37.167	0.00	0.20	0.610	O	|	|	|	|	1.68
37.250	0.00	0.20	0.608	O	|	|	|	|	1.68
37.333	0.00	0.19	0.607	O	|	|	|	|	1.68

37.417	0.00	0.19	0.606	O	|	|	|	|	1.67
37.500	0.00	0.19	0.604	O	|	|	|	|	1.67
37.583	0.00	0.19	0.603	O	|	|	|	|	1.67
37.667	0.00	0.19	0.602	O	|	|	|	|	1.67
37.750	0.00	0.19	0.600	O	|	|	|	|	1.66
37.833	0.00	0.19	0.599	O	|	|	|	|	1.66
37.917	0.00	0.19	0.598	O	|	|	|	|	1.66
38.000	0.00	0.19	0.596	O	|	|	|	|	1.66
38.083	0.00	0.19	0.595	O	|	|	|	|	1.65
38.167	0.00	0.19	0.594	O	|	|	|	|	1.65
38.250	0.00	0.19	0.593	O	|	|	|	|	1.65
38.333	0.00	0.18	0.591	O	|	|	|	|	1.65
38.417	0.00	0.18	0.590	O	|	|	|	|	1.64
38.500	0.00	0.18	0.589	O	|	|	|	|	1.64
38.583	0.00	0.18	0.588	O	|	|	|	|	1.64
38.667	0.00	0.18	0.586	O	|	|	|	|	1.63
38.750	0.00	0.18	0.585	O	|	|	|	|	1.63
38.833	0.00	0.18	0.584	O	|	|	|	|	1.63
38.917	0.00	0.18	0.583	O	|	|	|	|	1.63
39.000	0.00	0.18	0.581	O	|	|	|	|	1.62
39.083	0.00	0.18	0.580	O	|	|	|	|	1.62
39.167	0.00	0.18	0.579	O	|	|	|	|	1.62
39.250	0.00	0.18	0.578	O	|	|	|	|	1.62
39.333	0.00	0.17	0.577	O	|	|	|	|	1.61
39.417	0.00	0.17	0.575	O	|	|	|	|	1.61
39.500	0.00	0.17	0.574	O	|	|	|	|	1.61
39.583	0.00	0.17	0.573	O	|	|	|	|	1.61
39.667	0.00	0.17	0.572	O	|	|	|	|	1.61
39.750	0.00	0.17	0.571	O	|	|	|	|	

1.60

39.833	0.00	0.17	0.569	O	|	|	|	|	1.60
39.917	0.00	0.17	0.568	O	|	|	|	|	1.60
40.000	0.00	0.17	0.567	O	|	|	|	|	1.60
40.083	0.00	0.17	0.566	O	|	|	|	|	1.59
40.167	0.00	0.17	0.565	O	|	|	|	|	1.59
40.250	0.00	0.17	0.564	O	|	|	|	|	1.59
40.333	0.00	0.17	0.562	O	|	|	|	|	1.59
40.417	0.00	0.16	0.561	O	|	|	|	|	1.58
40.500	0.00	0.16	0.560	O	|	|	|	|	1.58
40.583	0.00	0.16	0.559	O	|	|	|	|	1.58
40.667	0.00	0.16	0.558	O	|	|	|	|	1.58
40.750	0.00	0.16	0.557	O	|	|	|	|	1.57
40.833	0.00	0.16	0.556	O	|	|	|	|	1.57
40.917	0.00	0.16	0.555	O	|	|	|	|	1.57
41.000	0.00	0.16	0.553	O	|	|	|	|	1.57
41.083	0.00	0.16	0.552	O	|	|	|	|	1.57
41.167	0.00	0.16	0.551	O	|	|	|	|	1.56
41.250	0.00	0.16	0.550	O	|	|	|	|	1.56
41.333	0.00	0.16	0.549	O	|	|	|	|	1.56
41.417	0.00	0.16	0.548	O	|	|	|	|	1.56
41.500	0.00	0.16	0.547	O	|	|	|	|	1.55
41.583	0.00	0.15	0.546	O	|	|	|	|	1.55
41.667	0.00	0.15	0.545	O	|	|	|	|	1.55
41.750	0.00	0.15	0.544	O	|	|	|	|	1.55
41.833	0.00	0.15	0.543	O	|	|	|	|	1.55
41.917	0.00	0.15	0.542	O	|	|	|	|	1.54
42.000	0.00	0.15	0.541	O	|	|	|	|	1.54
42.083	0.00	0.15	0.540	O	|	|	|	|	1.54

42.167	0.00	0.15	0.539	O	|	|	|	|	1.54
42.250	0.00	0.15	0.538	O	|	|	|	|	1.54
42.333	0.00	0.15	0.536	O	|	|	|	|	1.53
42.417	0.00	0.15	0.535	O	|	|	|	|	1.53
42.500	0.00	0.15	0.534	O	|	|	|	|	1.53
42.583	0.00	0.15	0.533	O	|	|	|	|	1.53
42.667	0.00	0.15	0.532	O	|	|	|	|	1.53
42.750	0.00	0.15	0.531	O	|	|	|	|	1.52
42.833	0.00	0.14	0.530	O	|	|	|	|	1.52
42.917	0.00	0.14	0.529	O	|	|	|	|	1.52
43.000	0.00	0.14	0.528	O	|	|	|	|	1.52
43.083	0.00	0.14	0.527	O	|	|	|	|	1.52
43.167	0.00	0.14	0.526	O	|	|	|	|	1.51
43.250	0.00	0.14	0.525	O	|	|	|	|	1.51
43.333	0.00	0.14	0.525	O	|	|	|	|	1.51
43.417	0.00	0.14	0.524	O	|	|	|	|	1.51
43.500	0.00	0.14	0.523	O	|	|	|	|	1.51
43.583	0.00	0.14	0.522	O	|	|	|	|	1.50
43.667	0.00	0.14	0.521	O	|	|	|	|	1.50
43.750	0.00	0.14	0.520	O	|	|	|	|	1.50
43.833	0.00	0.14	0.519	O	|	|	|	|	1.50
43.917	0.00	0.14	0.518	O	|	|	|	|	1.50
44.000	0.00	0.14	0.517	O	|	|	|	|	1.49
44.083	0.00	0.14	0.516	O	|	|	|	|	1.49
44.167	0.00	0.14	0.515	O	|	|	|	|	1.49
44.250	0.00	0.14	0.514	O	|	|	|	|	1.49
44.333	0.00	0.14	0.513	O	|	|	|	|	1.49
44.417	0.00	0.14	0.512	O	|	|	|	|	1.48
44.500	0.00	0.13	0.511	O	|	|	|	|	

1.48

44.583	0.00	0.13	0.510	O	|	|	|	1.48
44.667	0.00	0.13	0.509	O	|	|	|	1.48
44.750	0.00	0.13	0.508	O	|	|	|	1.48
44.833	0.00	0.13	0.508	O	|	|	|	1.47
44.917	0.00	0.13	0.507	O	|	|	|	1.47
45.000	0.00	0.13	0.506	O	|	|	|	1.47
45.083	0.00	0.13	0.505	O	|	|	|	1.47
45.167	0.00	0.13	0.504	O	|	|	|	1.47
45.250	0.00	0.13	0.503	O	|	|	|	1.46
45.333	0.00	0.13	0.502	O	|	|	|	1.46
45.417	0.00	0.13	0.501	O	|	|	|	1.46
45.500	0.00	0.13	0.500	O	|	|	|	1.46
45.583	0.00	0.13	0.499	O	|	|	|	1.46
45.667	0.00	0.13	0.498	O	|	|	|	1.45
45.750	0.00	0.13	0.498	O	|	|	|	1.45
45.833	0.00	0.13	0.497	O	|	|	|	1.45
45.917	0.00	0.13	0.496	O	|	|	|	1.45
46.000	0.00	0.13	0.495	O	|	|	|	1.45
46.083	0.00	0.13	0.494	O	|	|	|	1.44
46.167	0.00	0.13	0.493	O	|	|	|	1.44
46.250	0.00	0.13	0.492	O	|	|	|	1.44
46.333	0.00	0.13	0.491	O	|	|	|	1.44
46.417	0.00	0.13	0.490	O	|	|	|	1.44
46.500	0.00	0.13	0.490	O	|	|	|	1.44
46.583	0.00	0.13	0.489	O	|	|	|	1.43
46.667	0.00	0.13	0.488	O	|	|	|	1.43
46.750	0.00	0.13	0.487	O	|	|	|	1.43
46.833	0.00	0.13	0.486	O	|	|	|	1.43

46.917	0.00	0.13	0.485	O	|	|	|	|	1.43
47.000	0.00	0.13	0.484	O	|	|	|	|	1.42
47.083	0.00	0.13	0.484	O	|	|	|	|	1.42
47.167	0.00	0.12	0.483	O	|	|	|	|	1.42
47.250	0.00	0.12	0.482	O	|	|	|	|	1.42
47.333	0.00	0.12	0.481	O	|	|	|	|	1.42
47.417	0.00	0.12	0.480	O	|	|	|	|	1.41
47.500	0.00	0.12	0.479	O	|	|	|	|	1.41
47.583	0.00	0.12	0.478	O	|	|	|	|	1.41
47.667	0.00	0.12	0.478	O	|	|	|	|	1.41
47.750	0.00	0.12	0.477	O	|	|	|	|	1.41
47.833	0.00	0.12	0.476	O	|	|	|	|	1.41
47.917	0.00	0.12	0.475	O	|	|	|	|	1.40
48.000	0.00	0.12	0.474	O	|	|	|	|	1.40
48.083	0.00	0.12	0.473	O	|	|	|	|	1.40
48.167	0.00	0.12	0.472	O	|	|	|	|	1.40
48.250	0.00	0.12	0.472	O	|	|	|	|	1.40
48.333	0.00	0.12	0.471	O	|	|	|	|	1.39
48.417	0.00	0.12	0.470	O	|	|	|	|	1.39
48.500	0.00	0.12	0.469	O	|	|	|	|	1.39
48.583	0.00	0.12	0.468	O	|	|	|	|	1.39
48.667	0.00	0.12	0.467	O	|	|	|	|	1.39
48.750	0.00	0.12	0.467	O	|	|	|	|	1.39
48.833	0.00	0.12	0.466	O	|	|	|	|	1.38
48.917	0.00	0.12	0.465	O	|	|	|	|	1.38
49.000	0.00	0.12	0.464	O	|	|	|	|	1.38
49.083	0.00	0.12	0.463	O	|	|	|	|	1.38
49.167	0.00	0.12	0.463	O	|	|	|	|	1.38
49.250	0.00	0.12	0.462	O	|	|	|	|	

1.38

49.333	0.00	0.12	0.461	O	|	|	|	|	1.37
49.417	0.00	0.12	0.460	O	|	|	|	|	1.37
49.500	0.00	0.12	0.459	O	|	|	|	|	1.37
49.583	0.00	0.12	0.459	O	|	|	|	|	1.37
49.667	0.00	0.12	0.458	O	|	|	|	|	1.37
49.750	0.00	0.12	0.457	O	|	|	|	|	1.37
49.833	0.00	0.12	0.456	O	|	|	|	|	1.36
49.917	0.00	0.12	0.455	O	|	|	|	|	1.36
50.000	0.00	0.12	0.455	O	|	|	|	|	1.36
50.083	0.00	0.11	0.454	O	|	|	|	|	1.36
50.167	0.00	0.11	0.453	O	|	|	|	|	1.36
50.250	0.00	0.11	0.452	O	|	|	|	|	1.36
50.333	0.00	0.11	0.451	O	|	|	|	|	1.35
50.417	0.00	0.11	0.451	O	|	|	|	|	1.35
50.500	0.00	0.11	0.450	O	|	|	|	|	1.35
50.583	0.00	0.11	0.449	O	|	|	|	|	1.35
50.667	0.00	0.11	0.448	O	|	|	|	|	1.35
50.750	0.00	0.11	0.448	O	|	|	|	|	1.35
50.833	0.00	0.11	0.447	O	|	|	|	|	1.34
50.917	0.00	0.11	0.446	O	|	|	|	|	1.34
51.000	0.00	0.11	0.445	O	|	|	|	|	1.34
51.083	0.00	0.11	0.444	O	|	|	|	|	1.34
51.167	0.00	0.11	0.444	O	|	|	|	|	1.34
51.250	0.00	0.11	0.443	O	|	|	|	|	1.34
51.333	0.00	0.11	0.442	O	|	|	|	|	1.33
51.417	0.00	0.11	0.441	O	|	|	|	|	1.33
51.500	0.00	0.11	0.441	O	|	|	|	|	1.33
51.583	0.00	0.11	0.440	O	|	|	|	|	1.33

51.667	0.00	0.11	0.439	O	|	|	|	|	1.33
51.750	0.00	0.11	0.438	O	|	|	|	|	1.33
51.833	0.00	0.11	0.438	O	|	|	|	|	1.32
51.917	0.00	0.11	0.437	O	|	|	|	|	1.32
52.000	0.00	0.11	0.436	O	|	|	|	|	1.32
52.083	0.00	0.11	0.435	O	|	|	|	|	1.32
52.167	0.00	0.11	0.435	O	|	|	|	|	1.32
52.250	0.00	0.11	0.434	O	|	|	|	|	1.32
52.333	0.00	0.11	0.433	O	|	|	|	|	1.31
52.417	0.00	0.11	0.432	O	|	|	|	|	1.31
52.500	0.00	0.11	0.432	O	|	|	|	|	1.31
52.583	0.00	0.11	0.431	O	|	|	|	|	1.31
52.667	0.00	0.11	0.430	O	|	|	|	|	1.31
52.750	0.00	0.11	0.429	O	|	|	|	|	1.31
52.833	0.00	0.11	0.429	O	|	|	|	|	1.30
52.917	0.00	0.11	0.428	O	|	|	|	|	1.30
53.000	0.00	0.11	0.427	O	|	|	|	|	1.30
53.083	0.00	0.11	0.427	O	|	|	|	|	1.30
53.167	0.00	0.10	0.426	O	|	|	|	|	1.30
53.250	0.00	0.10	0.425	O	|	|	|	|	1.30
53.333	0.00	0.10	0.424	O	|	|	|	|	1.30
53.417	0.00	0.10	0.424	O	|	|	|	|	1.29
53.500	0.00	0.10	0.423	O	|	|	|	|	1.29
53.583	0.00	0.10	0.422	O	|	|	|	|	1.29
53.667	0.00	0.10	0.421	O	|	|	|	|	1.29
53.750	0.00	0.10	0.421	O	|	|	|	|	1.29
53.833	0.00	0.10	0.420	O	|	|	|	|	1.29
53.917	0.00	0.10	0.419	O	|	|	|	|	1.28
54.000	0.00	0.10	0.419	O	|	|	|	|	

1.28

54.083	0.00	0.10	0.418	O	|	|	|	1.28
54.167	0.00	0.10	0.417	O	|	|	|	1.28
54.250	0.00	0.10	0.417	O	|	|	|	1.28
54.333	0.00	0.10	0.416	O	|	|	|	1.28
54.417	0.00	0.10	0.415	O	|	|	|	1.28
54.500	0.00	0.10	0.414	O	|	|	|	1.27
54.583	0.00	0.10	0.414	O	|	|	|	1.27
54.667	0.00	0.10	0.413	O	|	|	|	1.27
54.750	0.00	0.10	0.412	O	|	|	|	1.27
54.833	0.00	0.10	0.412	O	|	|	|	1.27
54.917	0.00	0.10	0.411	O	|	|	|	1.27
55.000	0.00	0.10	0.410	O	|	|	|	1.27
55.083	0.00	0.10	0.410	O	|	|	|	1.26
55.167	0.00	0.10	0.409	O	|	|	|	1.26
55.250	0.00	0.10	0.408	O	|	|	|	1.26
55.333	0.00	0.10	0.408	O	|	|	|	1.26
55.417	0.00	0.10	0.407	O	|	|	|	1.26
55.500	0.00	0.10	0.406	O	|	|	|	1.26
55.583	0.00	0.10	0.406	O	|	|	|	1.26
55.667	0.00	0.10	0.405	O	|	|	|	1.25
55.750	0.00	0.10	0.404	O	|	|	|	1.25
55.833	0.00	0.10	0.404	O	|	|	|	1.25
55.917	0.00	0.10	0.403	O	|	|	|	1.25
56.000	0.00	0.10	0.402	O	|	|	|	1.25
56.083	0.00	0.10	0.402	O	|	|	|	1.25
56.167	0.00	0.10	0.401	O	|	|	|	1.25
56.250	0.00	0.09	0.400	O	|	|	|	1.24
56.333	0.00	0.09	0.400	O	|	|	|	1.24

56.417	0.00	0.09	0.399	O	|	|	|	|	1.24
56.500	0.00	0.09	0.398	O	|	|	|	|	1.24
56.583	0.00	0.09	0.398	O	|	|	|	|	1.24
56.667	0.00	0.09	0.397	O	|	|	|	|	1.24
56.750	0.00	0.09	0.396	O	|	|	|	|	1.23
56.833	0.00	0.09	0.396	O	|	|	|	|	1.23
56.917	0.00	0.09	0.395	O	|	|	|	|	1.23
57.000	0.00	0.09	0.395	O	|	|	|	|	1.23
57.083	0.00	0.09	0.394	O	|	|	|	|	1.23
57.167	0.00	0.09	0.393	O	|	|	|	|	1.23
57.250	0.00	0.09	0.393	O	|	|	|	|	1.23
57.333	0.00	0.09	0.392	O	|	|	|	|	1.22
57.417	0.00	0.09	0.391	O	|	|	|	|	1.22
57.500	0.00	0.09	0.391	O	|	|	|	|	1.22
57.583	0.00	0.09	0.390	O	|	|	|	|	1.22
57.667	0.00	0.09	0.390	O	|	|	|	|	1.22
57.750	0.00	0.08	0.389	O	|	|	|	|	1.22
57.833	0.00	0.08	0.389	O	|	|	|	|	1.22
57.917	0.00	0.08	0.388	O	|	|	|	|	1.22
58.000	0.00	0.08	0.387	O	|	|	|	|	1.21
58.083	0.00	0.08	0.387	O	|	|	|	|	1.21
58.167	0.00	0.08	0.386	O	|	|	|	|	1.21
58.250	0.00	0.08	0.386	O	|	|	|	|	1.21
58.333	0.00	0.08	0.385	O	|	|	|	|	1.21
58.417	0.00	0.08	0.385	O	|	|	|	|	1.21
58.500	0.00	0.08	0.384	O	|	|	|	|	1.21
58.583	0.00	0.08	0.383	O	|	|	|	|	1.21
58.667	0.00	0.08	0.383	O	|	|	|	|	1.20
58.750	0.00	0.08	0.382	O	|	|	|	|	

1.20

58.833	0.00	0.08	0.382	O	|	|	|	1.20
58.917	0.00	0.08	0.381	O	|	|	|	1.20
59.000	0.00	0.08	0.381	O	|	|	|	1.20
59.083	0.00	0.08	0.380	O	|	|	|	1.20
59.167	0.00	0.08	0.380	O	|	|	|	1.20
59.250	0.00	0.08	0.379	O	|	|	|	1.20
59.333	0.00	0.08	0.379	O	|	|	|	1.19
59.417	0.00	0.08	0.378	O	|	|	|	1.19
59.500	0.00	0.07	0.378	O	|	|	|	1.19
59.583	0.00	0.07	0.377	O	|	|	|	1.19
59.667	0.00	0.07	0.377	O	|	|	|	1.19
59.750	0.00	0.07	0.376	O	|	|	|	1.19
59.833	0.00	0.07	0.376	O	|	|	|	1.19
59.917	0.00	0.07	0.375	O	|	|	|	1.19
60.000	0.00	0.07	0.375	O	|	|	|	1.18
60.083	0.00	0.07	0.374	O	|	|	|	1.18
60.167	0.00	0.07	0.374	O	|	|	|	1.18
60.250	0.00	0.07	0.373	O	|	|	|	1.18
60.333	0.00	0.07	0.373	O	|	|	|	1.18
60.417	0.00	0.07	0.372	O	|	|	|	1.18
60.500	0.00	0.07	0.372	O	|	|	|	1.18
60.583	0.00	0.07	0.371	O	|	|	|	1.18
60.667	0.00	0.07	0.371	O	|	|	|	1.18
60.750	0.00	0.07	0.370	O	|	|	|	1.17
60.833	0.00	0.07	0.370	O	|	|	|	1.17
60.917	0.00	0.07	0.369	O	|	|	|	1.17
61.000	0.00	0.07	0.369	O	|	|	|	1.17
61.083	0.00	0.07	0.368	O	|	|	|	1.17

61.167	0.00	0.07	0.368	O	|	|	|	|	1.17
61.250	0.00	0.07	0.367	O	|	|	|	|	1.17
61.333	0.00	0.07	0.367	O	|	|	|	|	1.17
61.417	0.00	0.06	0.367	O	|	|	|	|	1.17
61.500	0.00	0.06	0.366	O	|	|	|	|	1.17
61.583	0.00	0.06	0.366	O	|	|	|	|	1.16
61.667	0.00	0.06	0.365	O	|	|	|	|	1.16
61.750	0.00	0.06	0.365	O	|	|	|	|	1.16
61.833	0.00	0.06	0.364	O	|	|	|	|	1.16
61.917	0.00	0.06	0.364	O	|	|	|	|	1.16
62.000	0.00	0.06	0.364	O	|	|	|	|	1.16
62.083	0.00	0.06	0.363	O	|	|	|	|	1.16
62.167	0.00	0.06	0.363	O	|	|	|	|	1.16
62.250	0.00	0.06	0.362	O	|	|	|	|	1.16
62.333	0.00	0.06	0.362	O	|	|	|	|	1.16
62.417	0.00	0.06	0.361	O	|	|	|	|	1.15
62.500	0.00	0.06	0.361	O	|	|	|	|	1.15
62.583	0.00	0.06	0.361	O	|	|	|	|	1.15
62.667	0.00	0.06	0.360	O	|	|	|	|	1.15
62.750	0.00	0.06	0.360	O	|	|	|	|	1.15
62.833	0.00	0.06	0.359	O	|	|	|	|	1.15
62.917	0.00	0.06	0.359	O	|	|	|	|	1.15
63.000	0.00	0.06	0.359	O	|	|	|	|	1.15
63.083	0.00	0.06	0.358	O	|	|	|	|	1.15
63.167	0.00	0.06	0.358	O	|	|	|	|	1.15
63.250	0.00	0.06	0.357	O	|	|	|	|	1.15
63.333	0.00	0.06	0.357	O	|	|	|	|	1.14
63.417	0.00	0.06	0.357	O	|	|	|	|	1.14
63.500	0.00	0.06	0.356	O	|	|	|	|	

1.14

63.583	0.00	0.06	0.356	O	|	|	|	|	1.14
63.667	0.00	0.06	0.355	O	|	|	|	|	1.14
63.750	0.00	0.05	0.355	O	|	|	|	|	1.14
63.833	0.00	0.05	0.355	O	|	|	|	|	1.14
63.917	0.00	0.05	0.354	O	|	|	|	|	1.14
64.000	0.00	0.05	0.354	O	|	|	|	|	1.14
64.083	0.00	0.05	0.354	O	|	|	|	|	1.14
64.167	0.00	0.05	0.353	O	|	|	|	|	1.14
64.250	0.00	0.05	0.353	O	|	|	|	|	1.13
64.333	0.00	0.05	0.352	O	|	|	|	|	1.13
64.417	0.00	0.05	0.352	O	|	|	|	|	1.13
64.500	0.00	0.05	0.352	O	|	|	|	|	1.13
64.583	0.00	0.05	0.351	O	|	|	|	|	1.13
64.667	0.00	0.05	0.351	O	|	|	|	|	1.13
64.750	0.00	0.05	0.351	O	|	|	|	|	1.13
64.833	0.00	0.05	0.350	O	|	|	|	|	1.13
64.917	0.00	0.05	0.350	O	|	|	|	|	1.13
65.000	0.00	0.05	0.350	O	|	|	|	|	1.13
65.083	0.00	0.05	0.349	O	|	|	|	|	1.13
65.167	0.00	0.05	0.349	O	|	|	|	|	1.13
65.250	0.00	0.05	0.349	O	|	|	|	|	1.13
65.333	0.00	0.05	0.348	O	|	|	|	|	1.12
65.417	0.00	0.05	0.348	O	|	|	|	|	1.12
65.500	0.00	0.05	0.348	O	|	|	|	|	1.12
65.583	0.00	0.05	0.347	O	|	|	|	|	1.12
65.667	0.00	0.05	0.347	O	|	|	|	|	1.12
65.750	0.00	0.05	0.347	O	|	|	|	|	1.12
65.833	0.00	0.05	0.346	O	|	|	|	|	1.12

65.917	0.00	0.05	0.346	O	|	|	|	|	1.12
66.000	0.00	0.05	0.346	O	|	|	|	|	1.12
66.083	0.00	0.05	0.345	O	|	|	|	|	1.12
66.167	0.00	0.05	0.345	O	|	|	|	|	1.12
66.250	0.00	0.05	0.345	O	|	|	|	|	1.12
66.333	0.00	0.05	0.344	O	|	|	|	|	1.12
66.417	0.00	0.05	0.344	O	|	|	|	|	1.11
66.500	0.00	0.04	0.344	O	|	|	|	|	1.11
66.583	0.00	0.04	0.343	O	|	|	|	|	1.11
66.667	0.00	0.04	0.343	O	|	|	|	|	1.11
66.750	0.00	0.04	0.343	O	|	|	|	|	1.11
66.833	0.00	0.04	0.343	O	|	|	|	|	1.11
66.917	0.00	0.04	0.342	O	|	|	|	|	1.11
67.000	0.00	0.04	0.342	O	|	|	|	|	1.11
67.083	0.00	0.04	0.342	O	|	|	|	|	1.11
67.167	0.00	0.04	0.341	O	|	|	|	|	1.11
67.250	0.00	0.04	0.341	O	|	|	|	|	1.11
67.333	0.00	0.04	0.341	O	|	|	|	|	1.11
67.417	0.00	0.04	0.340	O	|	|	|	|	1.11
67.500	0.00	0.04	0.340	O	|	|	|	|	1.11
67.583	0.00	0.04	0.340	O	|	|	|	|	1.11
67.667	0.00	0.04	0.340	O	|	|	|	|	1.10
67.750	0.00	0.04	0.339	O	|	|	|	|	1.10
67.833	0.00	0.04	0.339	O	|	|	|	|	1.10
67.917	0.00	0.04	0.339	O	|	|	|	|	1.10
68.000	0.00	0.04	0.339	O	|	|	|	|	1.10
68.083	0.00	0.04	0.338	O	|	|	|	|	1.10
68.167	0.00	0.04	0.338	O	|	|	|	|	1.10
68.250	0.00	0.04	0.338	O	|	|	|	|	

1.10

68.333	0.00	0.04	0.337	O	|	|	|	|	1.10
68.417	0.00	0.04	0.337	O	|	|	|	|	1.10
68.500	0.00	0.04	0.337	O	|	|	|	|	1.10
68.583	0.00	0.04	0.337	O	|	|	|	|	1.10
68.667	0.00	0.04	0.336	O	|	|	|	|	1.10
68.750	0.00	0.04	0.336	O	|	|	|	|	1.10
68.833	0.00	0.04	0.336	O	|	|	|	|	1.10
68.917	0.00	0.04	0.336	O	|	|	|	|	1.10
69.000	0.00	0.04	0.335	O	|	|	|	|	1.09
69.083	0.00	0.04	0.335	O	|	|	|	|	1.09
69.167	0.00	0.04	0.335	O	|	|	|	|	1.09
69.250	0.00	0.04	0.335	O	|	|	|	|	1.09
69.333	0.00	0.04	0.334	O	|	|	|	|	1.09
69.417	0.00	0.04	0.334	O	|	|	|	|	1.09
69.500	0.00	0.04	0.334	O	|	|	|	|	1.09
69.583	0.00	0.04	0.334	O	|	|	|	|	1.09
69.667	0.00	0.04	0.333	O	|	|	|	|	1.09
69.750	0.00	0.04	0.333	O	|	|	|	|	1.09
69.833	0.00	0.04	0.333	O	|	|	|	|	1.09
69.917	0.00	0.03	0.333	O	|	|	|	|	1.09
70.000	0.00	0.03	0.332	O	|	|	|	|	1.09
70.083	0.00	0.03	0.332	O	|	|	|	|	1.09
70.167	0.00	0.03	0.332	O	|	|	|	|	1.09
70.250	0.00	0.03	0.332	O	|	|	|	|	1.09
70.333	0.00	0.03	0.331	O	|	|	|	|	1.09
70.417	0.00	0.03	0.331	O	|	|	|	|	1.09
70.500	0.00	0.03	0.331	O	|	|	|	|	1.08
70.583	0.00	0.03	0.331	O	|	|	|	|	1.08

70.667	0.00	0.03	0.330	O	|	|	|	|	1.08
70.750	0.00	0.03	0.330	O	|	|	|	|	1.08
70.833	0.00	0.03	0.330	O	|	|	|	|	1.08
70.917	0.00	0.03	0.330	O	|	|	|	|	1.08
71.000	0.00	0.03	0.330	O	|	|	|	|	1.08
71.083	0.00	0.03	0.329	O	|	|	|	|	1.08
71.167	0.00	0.03	0.329	O	|	|	|	|	1.08
71.250	0.00	0.03	0.329	O	|	|	|	|	1.08
71.333	0.00	0.03	0.329	O	|	|	|	|	1.08
71.417	0.00	0.03	0.328	O	|	|	|	|	1.08
71.500	0.00	0.03	0.328	O	|	|	|	|	1.08
71.583	0.00	0.03	0.328	O	|	|	|	|	1.08
71.667	0.00	0.03	0.328	O	|	|	|	|	1.08
71.750	0.00	0.03	0.328	O	|	|	|	|	1.08
71.833	0.00	0.03	0.327	O	|	|	|	|	1.08
71.917	0.00	0.03	0.327	O	|	|	|	|	1.08
72.000	0.00	0.03	0.327	O	|	|	|	|	1.08
72.083	0.00	0.03	0.327	O	|	|	|	|	1.08
72.167	0.00	0.03	0.327	O	|	|	|	|	1.07
72.250	0.00	0.03	0.326	O	|	|	|	|	1.07
72.333	0.00	0.03	0.326	O	|	|	|	|	1.07
72.417	0.00	0.03	0.326	O	|	|	|	|	1.07
72.500	0.00	0.03	0.326	O	|	|	|	|	1.07
72.583	0.00	0.03	0.326	O	|	|	|	|	1.07
72.667	0.00	0.03	0.325	O	|	|	|	|	1.07
72.750	0.00	0.03	0.325	O	|	|	|	|	1.07
72.833	0.00	0.03	0.325	O	|	|	|	|	1.07
72.917	0.00	0.03	0.325	O	|	|	|	|	1.07
73.000	0.00	0.03	0.325	O	|	|	|	|	

1.07

73.083	0.00	0.03	0.324	O	|	|	|	|	1.07
73.167	0.00	0.03	0.324	O	|	|	|	|	1.07
73.250	0.00	0.03	0.324	O	|	|	|	|	1.07
73.333	0.00	0.03	0.324	O	|	|	|	|	1.07
73.417	0.00	0.03	0.324	O	|	|	|	|	1.07
73.500	0.00	0.03	0.323	O	|	|	|	|	1.07
73.583	0.00	0.03	0.323	O	|	|	|	|	1.07
73.667	0.00	0.03	0.323	O	|	|	|	|	1.07
73.750	0.00	0.03	0.323	O	|	|	|	|	1.07
73.833	0.00	0.03	0.323	O	|	|	|	|	1.07
73.917	0.00	0.03	0.323	O	|	|	|	|	1.07
74.000	0.00	0.03	0.322	O	|	|	|	|	1.07
74.083	0.00	0.03	0.322	O	|	|	|	|	1.06
74.167	0.00	0.03	0.322	O	|	|	|	|	1.06
74.250	0.00	0.03	0.322	O	|	|	|	|	1.06
74.333	0.00	0.03	0.322	O	|	|	|	|	1.06
74.417	0.00	0.03	0.321	O	|	|	|	|	1.06
74.500	0.00	0.03	0.321	O	|	|	|	|	1.06
74.583	0.00	0.02	0.321	O	|	|	|	|	1.06
74.667	0.00	0.02	0.321	O	|	|	|	|	1.06
74.750	0.00	0.02	0.321	O	|	|	|	|	1.06
74.833	0.00	0.02	0.321	O	|	|	|	|	1.06
74.917	0.00	0.02	0.320	O	|	|	|	|	1.06
75.000	0.00	0.02	0.320	O	|	|	|	|	1.06
75.083	0.00	0.02	0.320	O	|	|	|	|	1.06
75.167	0.00	0.02	0.320	O	|	|	|	|	1.06
75.250	0.00	0.02	0.320	O	|	|	|	|	1.06
75.333	0.00	0.02	0.320	O	|	|	|	|	1.06

75.417	0.00	0.02	0.319	O	|	|	|	|	1.06
75.500	0.00	0.02	0.319	O	|	|	|	|	1.06
75.583	0.00	0.02	0.319	O	|	|	|	|	1.06
75.667	0.00	0.02	0.319	O	|	|	|	|	1.06
75.750	0.00	0.02	0.319	O	|	|	|	|	1.06
75.833	0.00	0.02	0.319	O	|	|	|	|	1.06
75.917	0.00	0.02	0.319	O	|	|	|	|	1.06
76.000	0.00	0.02	0.318	O	|	|	|	|	1.06
76.083	0.00	0.02	0.318	O	|	|	|	|	1.06
76.167	0.00	0.02	0.318	O	|	|	|	|	1.06
76.250	0.00	0.02	0.318	O	|	|	|	|	1.05
76.333	0.00	0.02	0.318	O	|	|	|	|	1.05
76.417	0.00	0.02	0.318	O	|	|	|	|	1.05
76.500	0.00	0.02	0.317	O	|	|	|	|	1.05
76.583	0.00	0.02	0.317	O	|	|	|	|	1.05
76.667	0.00	0.02	0.317	O	|	|	|	|	1.05
76.750	0.00	0.02	0.317	O	|	|	|	|	1.05
76.833	0.00	0.02	0.317	O	|	|	|	|	1.05
76.917	0.00	0.02	0.317	O	|	|	|	|	1.05
77.000	0.00	0.02	0.317	O	|	|	|	|	1.05
77.083	0.00	0.02	0.316	O	|	|	|	|	1.05
77.167	0.00	0.02	0.316	O	|	|	|	|	1.05
77.250	0.00	0.02	0.316	O	|	|	|	|	1.05
77.333	0.00	0.02	0.316	O	|	|	|	|	1.05
77.417	0.00	0.02	0.316	O	|	|	|	|	1.05
77.500	0.00	0.02	0.316	O	|	|	|	|	1.05
77.583	0.00	0.02	0.316	O	|	|	|	|	1.05
77.667	0.00	0.02	0.315	O	|	|	|	|	1.05
77.750	0.00	0.02	0.315	O	|	|	|	|	

1.05

77.833	0.00	0.02	0.315	O	|	|	|	|	1.05
77.917	0.00	0.02	0.315	O	|	|	|	|	1.05
78.000	0.00	0.02	0.315	O	|	|	|	|	1.05
78.083	0.00	0.02	0.315	O	|	|	|	|	1.05
78.167	0.00	0.02	0.315	O	|	|	|	|	1.05
78.250	0.00	0.02	0.315	O	|	|	|	|	1.05
78.333	0.00	0.02	0.314	O	|	|	|	|	1.05
78.417	0.00	0.02	0.314	O	|	|	|	|	1.05
78.500	0.00	0.02	0.314	O	|	|	|	|	1.05
78.583	0.00	0.02	0.314	O	|	|	|	|	1.05
78.667	0.00	0.02	0.314	O	|	|	|	|	1.05
78.750	0.00	0.02	0.314	O	|	|	|	|	1.05
78.833	0.00	0.02	0.314	O	|	|	|	|	1.04
78.917	0.00	0.02	0.313	O	|	|	|	|	1.04
79.000	0.00	0.02	0.313	O	|	|	|	|	1.04
79.083	0.00	0.02	0.313	O	|	|	|	|	1.04
79.167	0.00	0.02	0.313	O	|	|	|	|	1.04
79.250	0.00	0.02	0.313	O	|	|	|	|	1.04
79.333	0.00	0.02	0.313	O	|	|	|	|	1.04
79.417	0.00	0.02	0.313	O	|	|	|	|	1.04
79.500	0.00	0.02	0.313	O	|	|	|	|	1.04
79.583	0.00	0.02	0.313	O	|	|	|	|	1.04
79.667	0.00	0.02	0.312	O	|	|	|	|	1.04
79.750	0.00	0.02	0.312	O	|	|	|	|	1.04
79.833	0.00	0.02	0.312	O	|	|	|	|	1.04
79.917	0.00	0.02	0.312	O	|	|	|	|	1.04
80.000	0.00	0.02	0.312	O	|	|	|	|	1.04
80.083	0.00	0.02	0.312	O	|	|	|	|	1.04

80.167	0.00	0.02	0.312	O	|	|	|	|	1.04
80.250	0.00	0.02	0.312	O	|	|	|	|	1.04
80.333	0.00	0.02	0.311	O	|	|	|	|	1.04
80.417	0.00	0.02	0.311	O	|	|	|	|	1.04
80.500	0.00	0.02	0.311	O	|	|	|	|	1.04
80.583	0.00	0.02	0.311	O	|	|	|	|	1.04
80.667	0.00	0.02	0.311	O	|	|	|	|	1.04
80.750	0.00	0.02	0.311	O	|	|	|	|	1.04
80.833	0.00	0.02	0.311	O	|	|	|	|	1.04
80.917	0.00	0.02	0.311	O	|	|	|	|	1.04
81.000	0.00	0.02	0.311	O	|	|	|	|	1.04
81.083	0.00	0.02	0.310	O	|	|	|	|	1.04
81.167	0.00	0.02	0.310	O	|	|	|	|	1.04
81.250	0.00	0.02	0.310	O	|	|	|	|	1.04
81.333	0.00	0.02	0.310	O	|	|	|	|	1.04
81.417	0.00	0.02	0.310	O	|	|	|	|	1.04
81.500	0.00	0.02	0.310	O	|	|	|	|	1.04
81.583	0.00	0.01	0.310	O	|	|	|	|	1.04
81.667	0.00	0.01	0.310	O	|	|	|	|	1.04
81.750	0.00	0.01	0.310	O	|	|	|	|	1.04
81.833	0.00	0.01	0.310	O	|	|	|	|	1.04
81.917	0.00	0.01	0.309	O	|	|	|	|	1.04
82.000	0.00	0.01	0.309	O	|	|	|	|	1.04
82.083	0.00	0.01	0.309	O	|	|	|	|	1.03
82.167	0.00	0.01	0.309	O	|	|	|	|	1.03
82.250	0.00	0.01	0.309	O	|	|	|	|	1.03
82.333	0.00	0.01	0.309	O	|	|	|	|	1.03
82.417	0.00	0.01	0.309	O	|	|	|	|	1.03
82.500	0.00	0.01	0.309	O	|	|	|	|	

1.03

82.583	0.00	0.01	0.309	O	|	|	|	|	1.03
82.667	0.00	0.01	0.309	O	|	|	|	|	1.03
82.750	0.00	0.01	0.308	O	|	|	|	|	1.03
82.833	0.00	0.01	0.308	O	|	|	|	|	1.03
82.917	0.00	0.01	0.308	O	|	|	|	|	1.03
83.000	0.00	0.01	0.308	O	|	|	|	|	1.03
83.083	0.00	0.01	0.308	O	|	|	|	|	1.03
83.167	0.00	0.01	0.308	O	|	|	|	|	1.03
83.250	0.00	0.01	0.308	O	|	|	|	|	1.03
83.333	0.00	0.01	0.308	O	|	|	|	|	1.03
83.417	0.00	0.01	0.308	O	|	|	|	|	1.03
83.500	0.00	0.01	0.308	O	|	|	|	|	1.03
83.583	0.00	0.01	0.308	O	|	|	|	|	1.03
83.667	0.00	0.01	0.307	O	|	|	|	|	1.03
83.750	0.00	0.01	0.307	O	|	|	|	|	1.03
83.833	0.00	0.01	0.307	O	|	|	|	|	1.03
83.917	0.00	0.01	0.307	O	|	|	|	|	1.03
84.000	0.00	0.01	0.307	O	|	|	|	|	1.03
84.083	0.00	0.01	0.307	O	|	|	|	|	1.03
84.167	0.00	0.01	0.307	O	|	|	|	|	1.03
84.250	0.00	0.01	0.307	O	|	|	|	|	1.03
84.333	0.00	0.01	0.307	O	|	|	|	|	1.03
84.417	0.00	0.01	0.307	O	|	|	|	|	1.03
84.500	0.00	0.01	0.307	O	|	|	|	|	1.03
84.583	0.00	0.01	0.307	O	|	|	|	|	1.03
84.667	0.00	0.01	0.306	O	|	|	|	|	1.03
84.750	0.00	0.01	0.306	O	|	|	|	|	1.03
84.833	0.00	0.01	0.306	O	|	|	|	|	1.03

84.917	0.00	0.01	0.306	O	|	|	|	|	1.03
85.000	0.00	0.01	0.306	O	|	|	|	|	1.03
85.083	0.00	0.01	0.306	O	|	|	|	|	1.03
85.167	0.00	0.01	0.306	O	|	|	|	|	1.03
85.250	0.00	0.01	0.306	O	|	|	|	|	1.03
85.333	0.00	0.01	0.306	O	|	|	|	|	1.03
85.417	0.00	0.01	0.306	O	|	|	|	|	1.03
85.500	0.00	0.01	0.306	O	|	|	|	|	1.03
85.583	0.00	0.01	0.306	O	|	|	|	|	1.03
85.667	0.00	0.01	0.305	O	|	|	|	|	1.03
85.750	0.00	0.01	0.305	O	|	|	|	|	1.03
85.833	0.00	0.01	0.305	O	|	|	|	|	1.03
85.917	0.00	0.01	0.305	O	|	|	|	|	1.03
86.000	0.00	0.01	0.305	O	|	|	|	|	1.03
86.083	0.00	0.01	0.305	O	|	|	|	|	1.03
86.167	0.00	0.01	0.305	O	|	|	|	|	1.03
86.250	0.00	0.01	0.305	O	|	|	|	|	1.03
86.333	0.00	0.01	0.305	O	|	|	|	|	1.02
86.417	0.00	0.01	0.305	O	|	|	|	|	1.02
86.500	0.00	0.01	0.305	O	|	|	|	|	1.02
86.583	0.00	0.01	0.305	O	|	|	|	|	1.02
86.667	0.00	0.01	0.305	O	|	|	|	|	1.02
86.750	0.00	0.01	0.305	O	|	|	|	|	1.02
86.833	0.00	0.01	0.304	O	|	|	|	|	1.02
86.917	0.00	0.01	0.304	O	|	|	|	|	1.02
87.000	0.00	0.01	0.304	O	|	|	|	|	1.02
87.083	0.00	0.01	0.304	O	|	|	|	|	1.02
87.167	0.00	0.01	0.304	O	|	|	|	|	1.02
87.250	0.00	0.01	0.304	O	|	|	|	|	

1.02

87.333	0.00	0.01	0.304	O	|	|	|	|	1.02
87.417	0.00	0.01	0.304	O	|	|	|	|	1.02
87.500	0.00	0.01	0.304	O	|	|	|	|	1.02
87.583	0.00	0.01	0.304	O	|	|	|	|	1.02
87.667	0.00	0.01	0.304	O	|	|	|	|	1.02
87.750	0.00	0.01	0.304	O	|	|	|	|	1.02
87.833	0.00	0.01	0.304	O	|	|	|	|	1.02
87.917	0.00	0.01	0.304	O	|	|	|	|	1.02
88.000	0.00	0.01	0.304	O	|	|	|	|	1.02
88.083	0.00	0.01	0.303	O	|	|	|	|	1.02
88.167	0.00	0.01	0.303	O	|	|	|	|	1.02
88.250	0.00	0.01	0.303	O	|	|	|	|	1.02
88.333	0.00	0.01	0.303	O	|	|	|	|	1.02
88.417	0.00	0.01	0.303	O	|	|	|	|	1.02
88.500	0.00	0.01	0.303	O	|	|	|	|	1.02
88.583	0.00	0.01	0.303	O	|	|	|	|	1.02
88.667	0.00	0.01	0.303	O	|	|	|	|	1.02
88.750	0.00	0.01	0.303	O	|	|	|	|	1.02
88.833	0.00	0.01	0.303	O	|	|	|	|	1.02
88.917	0.00	0.01	0.303	O	|	|	|	|	1.02
89.000	0.00	0.01	0.303	O	|	|	|	|	1.02
89.083	0.00	0.01	0.303	O	|	|	|	|	1.02
89.167	0.00	0.01	0.303	O	|	|	|	|	1.02
89.250	0.00	0.01	0.303	O	|	|	|	|	1.02
89.333	0.00	0.01	0.303	O	|	|	|	|	1.02
89.417	0.00	0.01	0.302	O	|	|	|	|	1.02
89.500	0.00	0.01	0.302	O	|	|	|	|	1.02
89.583	0.00	0.01	0.302	O	|	|	|	|	1.02

89.667	0.00	0.01	0.302	O	|	|	|	|	1.02
89.750	0.00	0.01	0.302	O	|	|	|	|	1.02
89.833	0.00	0.01	0.302	O	|	|	|	|	1.02
89.917	0.00	0.01	0.302	O	|	|	|	|	1.02
90.000	0.00	0.01	0.302	O	|	|	|	|	1.02
90.083	0.00	0.01	0.302	O	|	|	|	|	1.02
90.167	0.00	0.01	0.302	O	|	|	|	|	1.02
90.250	0.00	0.01	0.302	O	|	|	|	|	1.02
90.333	0.00	0.01	0.302	O	|	|	|	|	1.02
90.417	0.00	0.01	0.302	O	|	|	|	|	1.02
90.500	0.00	0.01	0.302	O	|	|	|	|	1.02
90.583	0.00	0.01	0.302	O	|	|	|	|	1.02
90.667	0.00	0.01	0.302	O	|	|	|	|	1.02
90.750	0.00	0.01	0.302	O	|	|	|	|	1.02
90.833	0.00	0.01	0.302	O	|	|	|	|	1.02
90.917	0.00	0.01	0.301	O	|	|	|	|	1.02
91.000	0.00	0.01	0.301	O	|	|	|	|	1.02
91.083	0.00	0.01	0.301	O	|	|	|	|	1.02
91.167	0.00	0.01	0.301	O	|	|	|	|	1.02
91.250	0.00	0.01	0.301	O	|	|	|	|	1.02
91.333	0.00	0.01	0.301	O	|	|	|	|	1.02
91.417	0.00	0.01	0.301	O	|	|	|	|	1.02
91.500	0.00	0.01	0.301	O	|	|	|	|	1.02
91.583	0.00	0.01	0.301	O	|	|	|	|	1.02
91.667	0.00	0.01	0.301	O	|	|	|	|	1.02
91.750	0.00	0.01	0.301	O	|	|	|	|	1.02
91.833	0.00	0.01	0.301	O	|	|	|	|	1.02
91.917	0.00	0.01	0.301	O	|	|	|	|	1.02
92.000	0.00	0.01	0.301	O	|	|	|	|	

1.02

92.083	0.00	0.01	0.301	O	|	|	|	|	1.02
92.167	0.00	0.01	0.301	O	|	|	|	|	1.02
92.250	0.00	0.01	0.301	O	|	|	|	|	1.02
92.333	0.00	0.01	0.301	O	|	|	|	|	1.02
92.417	0.00	0.01	0.301	O	|	|	|	|	1.02
92.500	0.00	0.01	0.301	O	|	|	|	|	1.01
92.583	0.00	0.01	0.300	O	|	|	|	|	1.01
92.667	0.00	0.01	0.300	O	|	|	|	|	1.01
92.750	0.00	0.01	0.300	O	|	|	|	|	1.01
92.833	0.00	0.01	0.300	O	|	|	|	|	1.01
92.917	0.00	0.01	0.300	O	|	|	|	|	1.01
93.000	0.00	0.01	0.300	O	|	|	|	|	1.01
93.083	0.00	0.01	0.300	O	|	|	|	|	1.01
93.167	0.00	0.01	0.300	O	|	|	|	|	1.01
93.250	0.00	0.01	0.300	O	|	|	|	|	1.01
93.333	0.00	0.01	0.300	O	|	|	|	|	1.01
93.417	0.00	0.01	0.300	O	|	|	|	|	1.01
93.500	0.00	0.01	0.300	O	|	|	|	|	1.01
93.583	0.00	0.01	0.300	O	|	|	|	|	1.01
93.667	0.00	0.01	0.300	O	|	|	|	|	1.01
93.750	0.00	0.01	0.300	O	|	|	|	|	1.01
93.833	0.00	0.01	0.300	O	|	|	|	|	1.01
93.917	0.00	0.01	0.300	O	|	|	|	|	1.01
94.000	0.00	0.01	0.300	O	|	|	|	|	1.01
94.083	0.00	0.01	0.300	O	|	|	|	|	1.01
94.167	0.00	0.01	0.300	O	|	|	|	|	1.01
94.250	0.00	0.01	0.300	O	|	|	|	|	1.01
94.333	0.00	0.01	0.300	O	|	|	|	|	1.01

94.417	0.00	0.01	0.300	O	|	|	|	|	1.01
94.500	0.00	0.01	0.299	O	|	|	|	|	1.01
94.583	0.00	0.01	0.299	O	|	|	|	|	1.01
94.667	0.00	0.01	0.299	O	|	|	|	|	1.01
94.750	0.00	0.01	0.299	O	|	|	|	|	1.01
94.833	0.00	0.01	0.299	O	|	|	|	|	1.01
94.917	0.00	0.01	0.299	O	|	|	|	|	1.01
95.000	0.00	0.01	0.299	O	|	|	|	|	1.01
95.083	0.00	0.01	0.299	O	|	|	|	|	1.01
95.167	0.00	0.01	0.299	O	|	|	|	|	1.01
95.250	0.00	0.01	0.299	O	|	|	|	|	1.01
95.333	0.00	0.01	0.299	O	|	|	|	|	1.01
95.417	0.00	0.01	0.299	O	|	|	|	|	1.01
95.500	0.00	0.01	0.299	O	|	|	|	|	1.01
95.583	0.00	0.01	0.299	O	|	|	|	|	1.01
95.667	0.00	0.01	0.299	O	|	|	|	|	1.01
95.750	0.00	0.01	0.299	O	|	|	|	|	1.01
95.833	0.00	0.01	0.299	O	|	|	|	|	1.01
95.917	0.00	0.01	0.299	O	|	|	|	|	1.01
96.000	0.00	0.01	0.299	O	|	|	|	|	1.01
96.083	0.00	0.01	0.299	O	|	|	|	|	1.01
96.167	0.00	0.01	0.299	O	|	|	|	|	1.01
96.250	0.00	0.01	0.299	O	|	|	|	|	1.01
96.333	0.00	0.01	0.299	O	|	|	|	|	1.01
96.417	0.00	0.01	0.299	O	|	|	|	|	1.01
96.500	0.00	0.01	0.299	O	|	|	|	|	1.01
96.583	0.00	0.01	0.299	O	|	|	|	|	1.01
96.667	0.00	0.00	0.299	O	|	|	|	|	1.01
96.750	0.00	0.00	0.298	O	|	|	|	|	

1.01

96.833	0.00	0.00	0.298	O	|	|	|	|	1.01
96.917	0.00	0.00	0.298	O	|	|	|	|	1.01
97.000	0.00	0.00	0.298	O	|	|	|	|	1.01
97.083	0.00	0.00	0.298	O	|	|	|	|	1.01
97.167	0.00	0.00	0.298	O	|	|	|	|	1.01
97.250	0.00	0.00	0.298	O	|	|	|	|	1.01
97.333	0.00	0.00	0.298	O	|	|	|	|	1.01
97.417	0.00	0.00	0.298	O	|	|	|	|	1.01
97.500	0.00	0.00	0.298	O	|	|	|	|	1.01
97.583	0.00	0.00	0.298	O	|	|	|	|	1.01
97.667	0.00	0.00	0.298	O	|	|	|	|	1.01
97.750	0.00	0.00	0.298	O	|	|	|	|	1.01
97.833	0.00	0.00	0.298	O	|	|	|	|	1.01
97.917	0.00	0.00	0.298	O	|	|	|	|	1.01
98.000	0.00	0.00	0.298	O	|	|	|	|	1.01
98.083	0.00	0.00	0.298	O	|	|	|	|	1.01
98.167	0.00	0.00	0.298	O	|	|	|	|	1.01
98.250	0.00	0.00	0.298	O	|	|	|	|	1.01
98.333	0.00	0.00	0.298	O	|	|	|	|	1.01
98.417	0.00	0.00	0.298	O	|	|	|	|	1.01
98.500	0.00	0.00	0.298	O	|	|	|	|	1.01
98.583	0.00	0.00	0.298	O	|	|	|	|	1.01
98.667	0.00	0.00	0.298	O	|	|	|	|	1.01
98.750	0.00	0.00	0.298	O	|	|	|	|	1.01
98.833	0.00	0.00	0.298	O	|	|	|	|	1.01
98.917	0.00	0.00	0.298	O	|	|	|	|	1.01
99.000	0.00	0.00	0.298	O	|	|	|	|	1.01
99.083	0.00	0.00	0.298	O	|	|	|	|	1.01

99.167	0.00	0.00	0.298	O	|	|	|	|	1.01
99.250	0.00	0.00	0.298	O	|	|	|	|	1.01
99.333	0.00	0.00	0.298	O	|	|	|	|	1.01
99.417	0.00	0.00	0.298	O	|	|	|	|	1.01
99.500	0.00	0.00	0.297	O	|	|	|	|	1.01
99.583	0.00	0.00	0.297	O	|	|	|	|	1.01
99.667	0.00	0.00	0.297	O	|	|	|	|	1.01
99.750	0.00	0.00	0.297	O	|	|	|	|	1.01
99.833	0.00	0.00	0.297	O	|	|	|	|	1.01
99.917	0.00	0.00	0.297	O	|	|	|	|	1.01
100.000	0.00	0.00	0.297	O	|	|	|	|	1.01
100.083	0.00	0.00	0.297	O	|	|	|	|	1.01
100.167	0.00	0.00	0.297	O	|	|	|	|	1.01
100.250	0.00	0.00	0.297	O	|	|	|	|	1.01
100.333	0.00	0.00	0.297	O	|	|	|	|	1.01
100.417	0.00	0.00	0.297	O	|	|	|	|	1.01
100.500	0.00	0.00	0.297	O	|	|	|	|	1.01
100.583	0.00	0.00	0.297	O	|	|	|	|	1.01
100.667	0.00	0.00	0.297	O	|	|	|	|	1.01
100.750	0.00	0.00	0.297	O	|	|	|	|	1.01
100.833	0.00	0.00	0.297	O	|	|	|	|	1.01
100.917	0.00	0.00	0.297	O	|	|	|	|	1.01
101.000	0.00	0.00	0.297	O	|	|	|	|	1.01
101.083	0.00	0.00	0.297	O	|	|	|	|	1.01
101.167	0.00	0.00	0.297	O	|	|	|	|	1.01
101.250	0.00	0.00	0.297	O	|	|	|	|	1.01
101.333	0.00	0.00	0.297	O	|	|	|	|	1.01
101.417	0.00	0.00	0.297	O	|	|	|	|	1.01
101.500	0.00	0.00	0.297	O	|	|	|	|	

1.01

101.583	0.00	0.00	0.297	O	|	|	|	|	1.01
101.667	0.00	0.00	0.297	O	|	|	|	|	1.01
101.750	0.00	0.00	0.297	O	|	|	|	|	1.01
101.833	0.00	0.00	0.297	O	|	|	|	|	1.01
101.917	0.00	0.00	0.297	O	|	|	|	|	1.01
102.000	0.00	0.00	0.297	O	|	|	|	|	1.01
102.083	0.00	0.00	0.297	O	|	|	|	|	1.01
102.167	0.00	0.00	0.297	O	|	|	|	|	1.01
102.250	0.00	0.00	0.297	O	|	|	|	|	1.01
102.333	0.00	0.00	0.297	O	|	|	|	|	1.01
102.417	0.00	0.00	0.297	O	|	|	|	|	1.01
102.500	0.00	0.00	0.297	O	|	|	|	|	1.01
102.583	0.00	0.00	0.297	O	|	|	|	|	1.01
102.667	0.00	0.00	0.297	O	|	|	|	|	1.01
102.750	0.00	0.00	0.297	O	|	|	|	|	1.01
102.833	0.00	0.00	0.296	O	|	|	|	|	1.01
102.917	0.00	0.00	0.296	O	|	|	|	|	1.01
103.000	0.00	0.00	0.296	O	|	|	|	|	1.01
103.083	0.00	0.00	0.296	O	|	|	|	|	1.01
103.167	0.00	0.00	0.296	O	|	|	|	|	1.01
103.250	0.00	0.00	0.296	O	|	|	|	|	1.01
103.333	0.00	0.00	0.296	O	|	|	|	|	1.01
103.417	0.00	0.00	0.296	O	|	|	|	|	1.01
103.500	0.00	0.00	0.296	O	|	|	|	|	1.01
103.583	0.00	0.00	0.296	O	|	|	|	|	1.01
103.667	0.00	0.00	0.296	O	|	|	|	|	1.01
103.750	0.00	0.00	0.296	O	|	|	|	|	1.01
103.833	0.00	0.00	0.296	O	|	|	|	|	1.01

103.917	0.00	0.00	0.296	O	|	|	|	|	1.01
104.000	0.00	0.00	0.296	O	|	|	|	|	1.01
104.083	0.00	0.00	0.296	O	|	|	|	|	1.00
104.167	0.00	0.00	0.296	O	|	|	|	|	1.00
104.250	0.00	0.00	0.296	O	|	|	|	|	1.00
104.333	0.00	0.00	0.296	O	|	|	|	|	1.00
104.417	0.00	0.00	0.296	O	|	|	|	|	1.00
104.500	0.00	0.00	0.296	O	|	|	|	|	1.00
104.583	0.00	0.00	0.296	O	|	|	|	|	1.00
104.667	0.00	0.00	0.296	O	|	|	|	|	1.00
104.750	0.00	0.00	0.296	O	|	|	|	|	1.00
104.833	0.00	0.00	0.296	O	|	|	|	|	1.00
104.917	0.00	0.00	0.296	O	|	|	|	|	1.00
105.000	0.00	0.00	0.296	O	|	|	|	|	1.00
105.083	0.00	0.00	0.296	O	|	|	|	|	1.00
105.167	0.00	0.00	0.296	O	|	|	|	|	1.00
105.250	0.00	0.00	0.296	O	|	|	|	|	1.00
105.333	0.00	0.00	0.296	O	|	|	|	|	1.00
105.417	0.00	0.00	0.296	O	|	|	|	|	1.00
105.500	0.00	0.00	0.296	O	|	|	|	|	1.00
105.583	0.00	0.00	0.296	O	|	|	|	|	1.00
105.667	0.00	0.00	0.296	O	|	|	|	|	1.00
105.750	0.00	0.00	0.296	O	|	|	|	|	1.00
105.833	0.00	0.00	0.296	O	|	|	|	|	1.00
105.917	0.00	0.00	0.296	O	|	|	|	|	1.00
106.000	0.00	0.00	0.296	O	|	|	|	|	1.00
106.083	0.00	0.00	0.296	O	|	|	|	|	1.00
106.167	0.00	0.00	0.296	O	|	|	|	|	1.00
106.250	0.00	0.00	0.296	O	|	|	|	|	

1.00

106.333	0.00	0.00	0.296	O	|	|	|	1.00
106.417	0.00	0.00	0.296	O	|	|	|	1.00
106.500	0.00	0.00	0.296	O	|	|	|	1.00
106.583	0.00	0.00	0.296	O	|	|	|	1.00
106.667	0.00	0.00	0.296	O	|	|	|	1.00
106.750	0.00	0.00	0.296	O	|	|	|	1.00
106.833	0.00	0.00	0.296	O	|	|	|	1.00
106.917	0.00	0.00	0.296	O	|	|	|	1.00
107.000	0.00	0.00	0.296	O	|	|	|	1.00
107.083	0.00	0.00	0.296	O	|	|	|	1.00
107.167	0.00	0.00	0.296	O	|	|	|	1.00
107.250	0.00	0.00	0.295	O	|	|	|	1.00
107.333	0.00	0.00	0.295	O	|	|	|	1.00
107.417	0.00	0.00	0.295	O	|	|	|	1.00
107.500	0.00	0.00	0.295	O	|	|	|	1.00
107.583	0.00	0.00	0.295	O	|	|	|	1.00
107.667	0.00	0.00	0.295	O	|	|	|	1.00
107.750	0.00	0.00	0.295	O	|	|	|	1.00
107.833	0.00	0.00	0.295	O	|	|	|	1.00
107.917	0.00	0.00	0.295	O	|	|	|	1.00
108.000	0.00	0.00	0.295	O	|	|	|	1.00
108.083	0.00	0.00	0.295	O	|	|	|	1.00
108.167	0.00	0.00	0.295	O	|	|	|	1.00
108.250	0.00	0.00	0.295	O	|	|	|	1.00
108.333	0.00	0.00	0.295	O	|	|	|	1.00
108.417	0.00	0.00	0.295	O	|	|	|	1.00
108.500	0.00	0.00	0.295	O	|	|	|	1.00
108.583	0.00	0.00	0.295	O	|	|	|	1.00

108.667	0.00	0.00	0.295	O	|	|	|	|	1.00
108.750	0.00	0.00	0.295	O	|	|	|	|	1.00
108.833	0.00	0.00	0.295	O	|	|	|	|	1.00
108.917	0.00	0.00	0.295	O	|	|	|	|	1.00
109.000	0.00	0.00	0.295	O	|	|	|	|	1.00
109.083	0.00	0.00	0.295	O	|	|	|	|	1.00
109.167	0.00	0.00	0.295	O	|	|	|	|	1.00
109.250	0.00	0.00	0.295	O	|	|	|	|	1.00
109.333	0.00	0.00	0.295	O	|	|	|	|	1.00
109.417	0.00	0.00	0.295	O	|	|	|	|	1.00
109.500	0.00	0.00	0.295	O	|	|	|	|	1.00
109.583	0.00	0.00	0.295	O	|	|	|	|	1.00
109.667	0.00	0.00	0.295	O	|	|	|	|	1.00
109.750	0.00	0.00	0.295	O	|	|	|	|	1.00
109.833	0.00	0.00	0.295	O	|	|	|	|	1.00
109.917	0.00	0.00	0.295	O	|	|	|	|	1.00
110.000	0.00	0.00	0.295	O	|	|	|	|	1.00
110.083	0.00	0.00	0.295	O	|	|	|	|	1.00
110.167	0.00	0.00	0.295	O	|	|	|	|	1.00
110.250	0.00	0.00	0.295	O	|	|	|	|	1.00
110.333	0.00	0.00	0.295	O	|	|	|	|	1.00
110.417	0.00	0.00	0.295	O	|	|	|	|	1.00
110.500	0.00	0.00	0.295	O	|	|	|	|	1.00
110.583	0.00	0.00	0.295	O	|	|	|	|	1.00
110.667	0.00	0.00	0.295	O	|	|	|	|	1.00
110.750	0.00	0.00	0.295	O	|	|	|	|	1.00
110.833	0.00	0.00	0.295	O	|	|	|	|	1.00
110.917	0.00	0.00	0.295	O	|	|	|	|	1.00
111.000	0.00	0.00	0.295	O	|	|	|	|	

1.00

111.083	0.00	0.00	0.295	O	|	|	|	1.00
111.167	0.00	0.00	0.295	O	|	|	|	1.00
111.250	0.00	0.00	0.295	O	|	|	|	1.00
111.333	0.00	0.00	0.295	O	|	|	|	1.00
111.417	0.00	0.00	0.295	O	|	|	|	1.00
111.500	0.00	0.00	0.295	O	|	|	|	1.00
111.583	0.00	0.00	0.295	O	|	|	|	1.00
111.667	0.00	0.00	0.295	O	|	|	|	1.00
111.750	0.00	0.00	0.295	O	|	|	|	1.00
111.833	0.00	0.00	0.295	O	|	|	|	1.00
111.917	0.00	0.00	0.295	O	|	|	|	1.00
112.000	0.00	0.00	0.295	O	|	|	|	1.00
112.083	0.00	0.00	0.295	O	|	|	|	1.00
112.167	0.00	0.00	0.295	O	|	|	|	1.00
112.250	0.00	0.00	0.295	O	|	|	|	1.00
112.333	0.00	0.00	0.295	O	|	|	|	1.00
112.417	0.00	0.00	0.295	O	|	|	|	1.00
112.500	0.00	0.00	0.295	O	|	|	|	1.00
112.583	0.00	0.00	0.295	O	|	|	|	1.00
112.667	0.00	0.00	0.295	O	|	|	|	1.00
112.750	0.00	0.00	0.295	O	|	|	|	1.00
112.833	0.00	0.00	0.295	O	|	|	|	1.00
112.917	0.00	0.00	0.295	O	|	|	|	1.00
113.000	0.00	0.00	0.295	O	|	|	|	1.00
113.083	0.00	0.00	0.295	O	|	|	|	1.00
113.167	0.00	0.00	0.295	O	|	|	|	1.00
113.250	0.00	0.00	0.295	O	|	|	|	1.00
113.333	0.00	0.00	0.295	O	|	|	|	1.00

113.417	0.00	0.00	0.295	O	|	|	|	|	1.00
113.500	0.00	0.00	0.295	O	|	|	|	|	1.00
113.583	0.00	0.00	0.295	O	|	|	|	|	1.00
113.667	0.00	0.00	0.295	O	|	|	|	|	1.00
113.750	0.00	0.00	0.294	O	|	|	|	|	1.00
113.833	0.00	0.00	0.294	O	|	|	|	|	1.00
113.917	0.00	0.00	0.294	O	|	|	|	|	1.00
114.000	0.00	0.00	0.294	O	|	|	|	|	1.00
114.083	0.00	0.00	0.294	O	|	|	|	|	1.00
114.167	0.00	0.00	0.294	O	|	|	|	|	1.00
114.250	0.00	0.00	0.294	O	|	|	|	|	1.00
114.333	0.00	0.00	0.294	O	|	|	|	|	1.00
114.417	0.00	0.00	0.294	O	|	|	|	|	1.00
114.500	0.00	0.00	0.294	O	|	|	|	|	1.00
114.583	0.00	0.00	0.294	O	|	|	|	|	1.00
114.667	0.00	0.00	0.294	O	|	|	|	|	1.00
114.750	0.00	0.00	0.294	O	|	|	|	|	1.00
114.833	0.00	0.00	0.294	O	|	|	|	|	1.00
114.917	0.00	0.00	0.294	O	|	|	|	|	1.00
115.000	0.00	0.00	0.294	O	|	|	|	|	1.00
115.083	0.00	0.00	0.294	O	|	|	|	|	1.00
115.167	0.00	0.00	0.294	O	|	|	|	|	1.00
115.250	0.00	0.00	0.294	O	|	|	|	|	1.00
115.333	0.00	0.00	0.294	O	|	|	|	|	1.00
115.417	0.00	0.00	0.294	O	|	|	|	|	1.00
115.500	0.00	0.00	0.294	O	|	|	|	|	1.00
115.583	0.00	0.00	0.294	O	|	|	|	|	1.00
115.667	0.00	0.00	0.294	O	|	|	|	|	1.00
115.750	0.00	0.00	0.294	O	|	|	|	|	

1.00

115.833	0.00	0.00	0.294	O	|	|	|	|	1.00
115.917	0.00	0.00	0.294	O	|	|	|	|	1.00
116.000	0.00	0.00	0.294	O	|	|	|	|	1.00
116.083	0.00	0.00	0.294	O	|	|	|	|	1.00
116.167	0.00	0.00	0.294	O	|	|	|	|	1.00
116.250	0.00	0.00	0.294	O	|	|	|	|	1.00
116.333	0.00	0.00	0.294	O	|	|	|	|	1.00
116.417	0.00	0.00	0.294	O	|	|	|	|	1.00
116.500	0.00	0.00	0.294	O	|	|	|	|	1.00
116.583	0.00	0.00	0.294	O	|	|	|	|	1.00
116.667	0.00	0.00	0.294	O	|	|	|	|	1.00
116.750	0.00	0.00	0.294	O	|	|	|	|	1.00
116.833	0.00	0.00	0.294	O	|	|	|	|	1.00
116.917	0.00	0.00	0.294	O	|	|	|	|	1.00
117.000	0.00	0.00	0.294	O	|	|	|	|	1.00
117.083	0.00	0.00	0.294	O	|	|	|	|	1.00
117.167	0.00	0.00	0.294	O	|	|	|	|	1.00
117.250	0.00	0.00	0.294	O	|	|	|	|	1.00
117.333	0.00	0.00	0.294	O	|	|	|	|	1.00
117.417	0.00	0.00	0.294	O	|	|	|	|	1.00
117.500	0.00	0.00	0.294	O	|	|	|	|	1.00
117.583	0.00	0.00	0.294	O	|	|	|	|	1.00
117.667	0.00	0.00	0.294	O	|	|	|	|	1.00
117.750	0.00	0.00	0.294	O	|	|	|	|	1.00
117.833	0.00	0.00	0.294	O	|	|	|	|	1.00
117.917	0.00	0.00	0.294	O	|	|	|	|	1.00
118.000	0.00	0.00	0.294	O	|	|	|	|	1.00
118.083	0.00	0.00	0.294	O	|	|	|	|	1.00

118.167	0.00	0.00	0.294	O	|	|	|	| 1.00
118.250	0.00	0.00	0.294	O	|	|	|	| 1.00
118.333	0.00	0.00	0.294	O	|	|	|	| 1.00
118.417	0.00	0.00	0.294	O	|	|	|	| 1.00
118.500	0.00	0.00	0.294	O	|	|	|	| 1.00
118.583	0.00	0.00	0.294	O	|	|	|	| 1.00
118.667	0.00	0.00	0.294	O	|	|	|	| 1.00
118.750	0.00	0.00	0.294	O	|	|	|	| 1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1425
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.419 (CFS)
Total volume = 1.187 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 12/01/23

2177 PERRIS NORTH DEVELOPMENT
DETENTION ROUTING ANALYSIS
100 YR - 24 HR STORM

Program License Serial Number 6313

********** HYDROGRAPH INFORMATION **********

From study/file name: 2177UHP24100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 290
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 4.892 (CFS)
Total volume = 2.960 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 100.000 to Point/Station 110.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 290
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

1.000	0.294	0.001	0.294	0.294
1.250	0.403	0.097	0.403	0.403
1.500	0.520	0.138	0.520	0.520
1.750	0.643	0.218	0.642	0.644
2.000	0.770	0.264	0.769	0.771
2.250	0.900	0.302	0.899	0.901
2.500	1.031	0.336	1.030	1.032
2.750	1.163	0.367	1.162	1.164
3.000	1.292	0.395	1.291	1.293
3.250	1.419	0.421	1.418	1.420
3.500	1.542	0.446	1.540	1.544
3.750	1.659	1.552	1.654	1.664
4.000	1.769	3.553	1.757	1.781
4.250	1.869	6.138	1.848	1.890
4.500	1.956	9.039	1.925	1.987
4.750	2.024	10.062	1.989	2.059
5.000	2.063	10.989	2.025	2.101

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.2	2.45	3.67	4.89 (Ft.)	Depth
0.083	0.16	0.00	0.001	OI	|	|	|	|	0.00
0.167	0.27	0.00	0.002	OI	|	|	|	|	0.01
0.250	0.29	0.00	0.004	OI	|	|	|	|	0.01
0.333	0.37	0.00	0.006	O I	|	|	|	|	0.02
0.417	0.42	0.00	0.009	O I	|	|	|	|	0.03
0.500	0.43	0.00	0.012	O I	|	|	|	|	0.04
0.583	0.43	0.00	0.015	O I	|	|	|	|	0.05
0.667	0.43	0.00	0.018	O I	|	|	|	|	0.06
0.750	0.43	0.00	0.021	O I	|	|	|	|	0.07
0.833	0.51	0.00	0.024	O I	|	|	|	|	0.08
0.917	0.56	0.00	0.028	O I	|	|	|	|	0.09
1.000	0.57	0.00	0.032	O I	|	|	|	|	0.11
1.083	0.49	0.00	0.035	O I	|	|	|	|	0.12
1.167	0.44	0.00	0.038	O I	|	|	|	|	0.13
1.250	0.43	0.00	0.041	O I	|	|	|	|	0.14
1.333	0.43	0.00	0.044	O I	|	|	|	|	0.15
1.417	0.43	0.00	0.047	O I	|	|	|	|	0.16
1.500	0.43	0.00	0.050	O I	|	|	|	|	0.17
1.583	0.43	0.00	0.053	O I	|	|	|	|	0.18
1.667	0.43	0.00	0.056	O I	|	|	|	|	0.19
1.750	0.43	0.00	0.059	O I	|	|	|	|	0.20
1.833	0.51	0.00	0.062	O I	|	|	|	|	0.21
1.917	0.56	0.00	0.066	O I	|	|	|	|	0.22

2.000	0.57	0.00	0.070	O	I	|	|	|	0.24
2.083	0.57	0.00	0.074	O	I	|	|	|	0.25
2.167	0.57	0.00	0.078	O	I	|	|	|	0.27
2.250	0.57	0.00	0.082	O	I	|	|	|	0.28
2.333	0.57	0.00	0.086	O	I	|	|	|	0.29
2.417	0.57	0.00	0.090	O	I	|	|	|	0.31
2.500	0.57	0.00	0.094	O	I	|	|	|	0.32
2.583	0.65	0.00	0.098	O	I	|	|	|	0.33
2.667	0.71	0.00	0.103	O	I	|	|	|	0.35
2.750	0.72	0.00	0.108	O	I	|	|	|	0.37
2.833	0.72	0.00	0.112	O	I	|	|	|	0.38
2.917	0.72	0.00	0.117	O	I	|	|	|	0.40
3.000	0.72	0.00	0.122	O	I	|	|	|	0.42
3.083	0.72	0.00	0.127	O	I	|	|	|	0.43
3.167	0.72	0.00	0.132	O	I	|	|	|	0.45
3.250	0.72	0.00	0.137	O	I	|	|	|	0.47
3.333	0.72	0.00	0.142	O	I	|	|	|	0.48
3.417	0.72	0.00	0.147	O	I	|	|	|	0.50
3.500	0.72	0.00	0.152	O	I	|	|	|	0.52
3.583	0.72	0.00	0.157	O	I	|	|	|	0.53
3.667	0.72	0.00	0.162	O	I	|	|	|	0.55
3.750	0.72	0.00	0.167	O	I	|	|	|	0.57
3.833	0.80	0.00	0.172	O	I	|	|	|	0.58
3.917	0.85	0.00	0.178	O	I	|	|	|	0.60
4.000	0.86	0.00	0.183	O	I	|	|	|	0.62
4.083	0.86	0.00	0.189	O	I	|	|	|	0.64
4.167	0.86	0.00	0.195	O	I	|	|	|	0.66
4.250	0.86	0.00	0.201	O	I	|	|	|	0.68
4.333	0.94	0.00	0.207	O	I	|	|	|	0.71

4.417	0.99	0.00	0.214	O	I |	|	|	|	0.73
4.500	1.00	0.00	0.221	O	I |	|	|	|	0.75
4.583	1.00	0.00	0.228	O	I |	|	|	|	0.77
4.667	1.00	0.00	0.235	O	I |	|	|	|	0.80
4.750	1.00	0.00	0.242	O	I |	|	|	|	0.82
4.833	1.08	0.00	0.249	O	I|	|	|	|	0.85
4.917	1.14	0.00	0.256	O	I|	|	|	|	0.87
5.000	1.15	0.00	0.264	O	I|	|	|	|	0.90
5.083	0.98	0.00	0.272	O	I |	|	|	|	0.92
5.167	0.88	0.00	0.278	O	I |	|	|	|	0.95
5.250	0.86	0.00	0.284	O	I |	|	|	|	0.97
5.333	0.94	0.00	0.290	O	I |	|	|	|	0.99
5.417	0.99	0.00	0.297	O	I |	|	|	|	1.01
5.500	1.00	0.01	0.304	O	I |	|	|	|	1.02
5.583	1.08	0.02	0.311	O	I|	|	|	|	1.04
5.667	1.14	0.02	0.318	O	I|	|	|	|	1.06
5.750	1.15	0.03	0.326	O	I|	|	|	|	1.07
5.833	1.15	0.04	0.334	O	I|	|	|	|	1.09
5.917	1.15	0.04	0.341	O	I|	|	|	|	1.11
6.000	1.15	0.05	0.349	O	I|	|	|	|	1.13
6.083	1.23	0.06	0.357	O	I	|	|	|	1.14
6.167	1.28	0.06	0.365	O	I	|	|	|	1.16
6.250	1.29	0.07	0.373	O	I	|	|	|	1.18
6.333	1.29	0.08	0.382	O	I	|	|	|	1.20
6.417	1.29	0.09	0.390	O	I	|	|	|	1.22
6.500	1.29	0.09	0.398	O	I	|	|	|	1.24
6.583	1.37	0.10	0.407	O	I	|	|	|	1.26
6.667	1.42	0.10	0.416	O	|I	|	|	|	1.28
6.750	1.43	0.10	0.425	O	|I	|	|	|	1.30
6.833	1.43	0.11	0.434	O	|I	|	|	|	1.32
6.917	1.43	0.11	0.443	O	|I	|	|	|	1.34
7.000	1.43	0.11	0.452	O	|I	|	|	|	1.35
7.083	1.43	0.12	0.461	O	|I	|	|	|	1.37

7.167	1.43	0.12	0.470	O	|I	|	|	1.39
7.250	1.43	0.12	0.479	O	|I	|	|	1.41
7.333	1.51	0.13	0.488	O	|I	|	|	1.43
7.417	1.57	0.13	0.498	O	| I	|	|	1.45
7.500	1.58	0.13	0.508	O	| I	|	|	1.47
7.583	1.66	0.14	0.518	O	| I	|	|	1.50
7.667	1.71	0.14	0.529	O	| I	|	|	1.52
7.750	1.72	0.15	0.540	O	| I	|	|	1.54
7.833	1.80	0.16	0.551	|O	| I	|	|	1.56
7.917	1.85	0.17	0.562	|O	| I	|	|	1.59
8.000	1.86	0.17	0.574	|O	| I	|	|	1.61
8.083	2.02	0.18	0.586	|O	| I	|	|	1.63
8.167	2.13	0.19	0.599	|O	| I	|	|	1.66
8.250	2.15	0.20	0.612	|O	| I |		|	1.69
8.333	2.15	0.21	0.626	|O	| I |		|	1.72
8.417	2.15	0.22	0.639	|O	| I |		|	1.74
8.500	2.15	0.22	0.652	|O	| I |		|	1.77
8.583	2.23	0.23	0.666	|O	| I |		|	1.80
8.667	2.28	0.23	0.680	|O	| I |		|	1.82
8.750	2.29	0.24	0.694	|O	| I |		|	1.85
8.833	2.37	0.24	0.709	|O	| I|		|	1.88
8.917	2.43	0.25	0.723	|O	| I|		|	1.91
9.000	2.43	0.25	0.738	|O	| I|		|	1.94
9.083	2.60	0.26	0.754	|O	| I	|	|	1.97
9.167	2.70	0.26	0.770	|O	| |I	|	|	2.00
9.250	2.72	0.27	0.787	|O	| |I	|	|	2.03
9.333	2.80	0.27	0.804	|O	| | I	|	|	2.07
9.417	2.86	0.28	0.822	|O	| | I	|	|	2.10
9.500	2.86	0.28	0.840	|O	| | I	|	|	2.13
9.583	2.95	0.29	0.858	|O	| | I	|	|	2.17
9.667	3.00	0.30	0.876	|O	| | I	|	|	2.20
9.750	3.01	0.30	0.895	|O	| | I	|	|	2.24
9.833	3.09	0.31	0.914	|O	| | I	|	|	2.28
9.917	3.14	0.31	0.933	| O	| | I	|	|	2.31
10.000	3.15	0.32	0.953	| O	| | I	|	|	2.35
10.083	2.58	0.32	0.970	| O	| I	|	|	2.38
10.167	2.21	0.32	0.984	| O	| I |		|	2.41

10.250	2.15	0.33	0.997	O		I		2.44
10.333	2.15	0.33	1.010	O		I		2.46
10.417	2.15	0.33	1.022	O		I		2.48
10.500	2.15	0.34	1.035	O		I		2.51
10.583	2.55	0.34	1.049	O		I		2.53
10.667	2.82	0.34	1.065	O		I		2.56
10.750	2.86	0.35	1.082	O		I		2.60
10.833	2.86	0.35	1.099	O		I		2.63
10.917	2.86	0.36	1.117	O		I		2.66
11.000	2.86	0.36	1.134	O		I		2.69
11.083	2.78	0.36	1.151	O		I		2.73
11.167	2.73	0.37	1.167	O		I		2.76
11.250	2.72	0.37	1.183	O		I		2.79
11.333	2.72	0.37	1.200	O		I		2.82
11.417	2.72	0.38	1.216	O		I		2.85
11.500	2.72	0.38	1.232	O		I		2.88
11.583	2.56	0.39	1.247	O		I		2.91
11.667	2.45	0.39	1.262	O		I		2.94
11.750	2.43	0.39	1.276	O		I		2.97
11.833	2.52	0.39	1.291	O		I		3.00
11.917	2.57	0.40	1.305	O		I		3.03
12.000	2.58	0.40	1.320	O		I		3.06
12.083	3.15	0.40	1.337	O		I		3.09
12.167	3.52	0.41	1.357	O		I		3.13
12.250	3.58	0.41	1.379	O		I		3.17
12.333	3.66	0.42	1.401	O		I		3.21
12.417	3.72	0.42	1.424	O		I		3.26
12.500	3.72	0.43	1.446	O		I		3.31
12.583	3.89	0.43	1.470	O		I		3.35
12.667	3.99	0.44	1.494	O		I		3.40
12.750	4.01	0.44	1.518	O		I		3.45
12.833	4.09	0.46	1.543	O		I		3.50
12.917	4.14	0.69	1.567	O		I		3.55
13.000	4.15	0.91	1.591	O		I		3.60
13.083	4.56	1.12	1.614	O		I		3.65
13.167	4.83	1.35	1.637	O		I		3.70
13.250	4.88	1.58	1.661	O		I		3.75
13.333	4.88	1.97	1.682	O		I		3.80
13.417	4.89	2.32	1.701	O		I		3.85
13.500	4.89	2.62	1.718	O		I		3.88
13.583	3.99	2.83	1.729	O		I		3.91
13.667	3.39	2.94	1.735	O		I		3.92
13.750	3.29	2.98	1.738	O		I		3.93
13.833	3.29	3.02	1.740	O		I		3.93
13.917	3.29	3.05	1.741	O		I		3.94
14.000	3.29	3.08	1.743	O		I		3.94
14.083	3.62	3.13	1.745	O		I		3.95
14.167	3.83	3.20	1.749	O		I		

3.96

14.250	3.87	3.27	1.754	|	|	|	O |I	|	3.97
14.333	3.79	3.34	1.757	|	|	|	O I	|	3.97
14.417	3.73	3.39	1.760	|	|	|	O I	|	3.98
14.500	3.72	3.43	1.762	|	|	|	O I	|	3.98
14.583	3.72	3.46	1.764	|	|	|	O I	|	3.99
14.667	3.72	3.49	1.766	|	|	|	O I	|	3.99
14.750	3.72	3.52	1.767	|	|	|	OI	|	4.00
14.833	3.64	3.54	1.768	|	|	|	O|	|	4.00
14.917	3.59	3.55	1.769	|	|	|	O|	|	4.00
15.000	3.58	3.55	1.769	|	|	|	O|	|	4.00
15.083	3.50	3.55	1.769	|	|	|	IO|	|	4.00
15.167	3.45	3.54	1.768	|	|	|	IO|	|	4.00
15.250	3.44	3.53	1.768	|	|	|	IO|	|	4.00
15.333	3.36	3.51	1.767	|	|	|	IO |	|	4.00
15.417	3.30	3.49	1.766	|	|	|	IO |	|	3.99
15.500	3.29	3.47	1.764	|	|	|	IO |	|	3.99
15.583	2.97	3.43	1.762	|	|	| I O |	|	3.98
15.667	2.76	3.36	1.759	|	|	| I O |	|	3.98
15.750	2.72	3.29	1.755	|	|	|I O |	|	3.97
15.833	2.72	3.22	1.751	|	|	|I O |	|	3.96
15.917	2.72	3.16	1.748	|	|	|I O |	|	3.95
16.000	2.72	3.11	1.745	|	|	|I O |	|	3.94
16.083	1.51	2.99	1.738	|	|I	| O |	|	3.93
16.167	0.71	2.77	1.726	| I |	|	| O |	|	3.90
16.250	0.57	2.52	1.712	| I |	|	O |	|	3.87
16.333	0.57	2.29	1.700	| I |	| O |	|	|	3.84
16.417	0.57	2.09	1.688	| I |	| O |	|	|	3.82
16.500	0.57	1.91	1.679	| I |	| O |	|	|	3.79
16.583	0.49	1.75	1.670	| I |	| O |	|	|	3.77
16.667	0.44	1.60	1.661	| I |	| O |	|	|	3.76
16.750	0.43	1.50	1.654	| I |	|O |	|	|	3.74
16.833	0.43	1.43	1.647	| I |	|O |	|	|	3.72
16.917	0.43	1.37	1.640	| I |	O |	|	|	3.71
17.000	0.43	1.31	1.634	| I |	O |	|	|	3.70
17.083	0.59	1.26	1.628	| I |	O |	|	|	3.68
17.167	0.70	1.22	1.624	| I O|	|	|	|	3.68

17.250	0.72	1.19	1.621	| I O|	|	|	|	3.67
17.333	0.72	1.16	1.618	| I O|	|	|	|	3.66
17.417	0.72	1.13	1.615	| I O|	|	|	|	3.66
17.500	0.72	1.11	1.612	| I O|	|	|	|	3.65
17.583	0.72	1.08	1.609	| I O|	|	|	|	3.64
17.667	0.72	1.06	1.607	| I O |	|	|	|	3.64
17.750	0.72	1.04	1.604	| I O |	|	|	|	3.63
17.833	0.64	1.01	1.602	| I O |	|	|	|	3.63
17.917	0.58	0.99	1.599	| I O |	|	|	|	3.62
18.000	0.57	0.96	1.597	| I O |	|	|	|	3.62
18.083	0.57	0.94	1.594	| I O |	|	|	|	3.61
18.167	0.57	0.91	1.592	| I O |	|	|	|	3.61
18.250	0.57	0.89	1.589	| I O |	|	|	|	3.60
18.333	0.57	0.87	1.587	| I O |	|	|	|	3.60
18.417	0.57	0.85	1.585	| I O |	|	|	|	3.59
18.500	0.57	0.84	1.583	| I O |	|	|	|	3.59
18.583	0.49	0.82	1.581	| I O |	|	|	|	3.58
18.667	0.44	0.80	1.579	| I O |	|	|	|	3.58
18.750	0.43	0.77	1.577	| I O |	|	|	|	3.57
18.833	0.35	0.75	1.574	| I O |	|	|	|	3.57
18.917	0.30	0.72	1.571	|I O |	|	|	|	3.56
19.000	0.29	0.69	1.568	|I O |	|	|	|	3.56
19.083	0.37	0.67	1.566	| I O |	|	|	|	3.55
19.167	0.42	0.65	1.564	| I O |	|	|	|	3.55
19.250	0.43	0.64	1.562	| I O |	|	|	|	3.54
19.333	0.51	0.63	1.561	| IO |	|	|	|	3.54
19.417	0.56	0.62	1.561	| IO |	|	|	|	3.54
19.500	0.57	0.62	1.560	| IO |	|	|	|	3.54
19.583	0.49	0.61	1.560	| IO |	|	|	|	3.54
19.667	0.44	0.60	1.559	| IO |	|	|	|	3.54
19.750	0.43	0.59	1.558	| IO |	|	|	|	3.53
19.833	0.35	0.58	1.556	| IO |	|	|	|	3.53
19.917	0.30	0.56	1.555	|I O |	|	|	|	3.53
20.000	0.29	0.55	1.553	|I O |	|	|	|	3.52
20.083	0.37	0.53	1.551	| IO |	|	|	|	3.52
20.167	0.42	0.52	1.550	| IO |	|	|	|	3.52
20.250	0.43	0.52	1.550	| IO |	|	|	|	3.52
20.333	0.43	0.51	1.549	| IO |	|	|	|	3.52
20.417	0.43	0.51	1.549	| IO |	|	|	|	3.51
20.500	0.43	0.50	1.548	| IO |	|	|	|	3.51
20.583	0.43	0.50	1.548	| IO |	|	|	|	3.51
20.667	0.43	0.49	1.547	| IO |	|	|	|	3.51
20.750	0.43	0.49	1.547	| IO |	|	|	|	3.51
20.833	0.35	0.48	1.546	| IO |	|	|	|	3.51
20.917	0.30	0.47	1.545	|I O |	|	|	|	3.51
21.000	0.29	0.46	1.544	|I O |	|	|	|	3.50

21.083	0.37	0.45	1.543	O				3.50
21.167	0.42	0.45	1.542	O				3.50
21.250	0.43	0.45	1.542	O				3.50
21.333	0.35	0.45	1.542	O				3.50
21.417	0.30	0.45	1.541	IO				3.50
21.500	0.29	0.45	1.540	IO				3.50
21.583	0.37	0.45	1.539	O				3.49
21.667	0.42	0.45	1.539	O				3.49
21.750	0.43	0.45	1.539	O				3.49
21.833	0.35	0.45	1.538	O				3.49
21.917	0.30	0.45	1.537	IO				3.49
22.000	0.29	0.44	1.536	IO				3.49
22.083	0.37	0.44	1.535	O				3.49
22.167	0.42	0.44	1.535	O				3.49
22.250	0.43	0.44	1.535	O				3.49
22.333	0.35	0.44	1.535	O				3.48
22.417	0.30	0.44	1.534	IO				3.48
22.500	0.29	0.44	1.533	IO				3.48
22.583	0.29	0.44	1.532	IO				3.48
22.667	0.29	0.44	1.531	IO				3.48
22.750	0.29	0.44	1.529	IO				3.47
22.833	0.29	0.44	1.528	IO				3.47
22.917	0.29	0.44	1.527	IO				3.47
23.000	0.29	0.44	1.526	IO				3.47
23.083	0.29	0.44	1.525	IO				3.47
23.167	0.29	0.44	1.524	IO				3.46
23.250	0.29	0.44	1.523	IO				3.46
23.333	0.29	0.44	1.522	IO				3.46
23.417	0.29	0.44	1.521	IO				3.46
23.500	0.29	0.44	1.520	IO				3.45
23.583	0.29	0.44	1.519	IO				3.45
23.667	0.29	0.44	1.518	IO				3.45
23.750	0.29	0.44	1.517	IO				3.45
23.833	0.29	0.44	1.516	IO				3.45
23.917	0.29	0.44	1.514	IO				

3.44

24.000	0.29	0.44	1.513	IO				3.44
24.083	0.12	0.44	1.512	I O				3.44
24.167	0.02	0.44	1.509	I O				3.43
24.250	0.00	0.44	1.506	I O				3.43
24.333	0.00	0.44	1.503	I O				3.42
24.417	0.00	0.44	1.500	I O				3.42
24.500	0.00	0.44	1.497	I O				3.41
24.583	0.00	0.44	1.494	I O				3.40
24.667	0.00	0.44	1.491	I O				3.40
24.750	0.00	0.44	1.488	I O				3.39
24.833	0.00	0.43	1.485	I O				3.38
24.917	0.00	0.43	1.482	I O				3.38
25.000	0.00	0.43	1.479	I O				3.37
25.083	0.00	0.43	1.476	I O				3.37
25.167	0.00	0.43	1.473	I O				3.36
25.250	0.00	0.43	1.470	I O				3.35
25.333	0.00	0.43	1.467	I O				3.35
25.417	0.00	0.43	1.464	I O				3.34
25.500	0.00	0.43	1.461	I O				3.34
25.583	0.00	0.43	1.458	I O				3.33
25.667	0.00	0.43	1.456	I O				3.32
25.750	0.00	0.43	1.453	I O				3.32
25.833	0.00	0.43	1.450	I O				3.31
25.917	0.00	0.43	1.447	I O				3.31
26.000	0.00	0.43	1.444	I O				3.30
26.083	0.00	0.43	1.441	I O				3.29
26.167	0.00	0.42	1.438	I O				3.29
26.250	0.00	0.42	1.435	I O				3.28
26.333	0.00	0.42	1.432	I O				3.28
26.417	0.00	0.42	1.429	I O				3.27
26.500	0.00	0.42	1.426	I O				3.26
26.583	0.00	0.42	1.423	I O				3.26
26.667	0.00	0.42	1.420	I O				3.25
26.750	0.00	0.42	1.418	I O				3.25
26.833	0.00	0.42	1.415	I O				3.24
26.917	0.00	0.42	1.412	I O				3.24
27.000	0.00	0.42	1.409	I O				3.23
27.083	0.00	0.42	1.406	I O				3.22
27.167	0.00	0.42	1.403	I O				3.22
27.250	0.00	0.42	1.400	I O				3.21
27.333	0.00	0.42	1.397	I O				3.21
27.417	0.00	0.42	1.394	I O				3.20
27.500	0.00	0.42	1.392	I O				3.20
27.583	0.00	0.41	1.389	I O				3.19
27.667	0.00	0.41	1.386	I O				3.18
27.750	0.00	0.41	1.383	I O				3.18
27.833	0.00	0.41	1.380	I O				3.17
27.917	0.00	0.41	1.377	I O				3.17
28.000	0.00	0.41	1.375	I O				3.16
28.083	0.00	0.41	1.372	I O				3.16
28.167	0.00	0.41	1.369	I O				3.15
28.250	0.00	0.41	1.366	I O				3.15
28.333	0.00	0.41	1.363	I O				3.14
28.417	0.00	0.41	1.360	I O				3.13
28.500	0.00	0.41	1.358	I O				3.13

28.583	0.00	0.41	1.355	I	O	|	|	|	3.12
28.667	0.00	0.41	1.352	I	O	|	|	|	3.12
28.750	0.00	0.41	1.349	I	O	|	|	|	3.11
28.833	0.00	0.41	1.346	I	O	|	|	|	3.11
28.917	0.00	0.41	1.344	I	O	|	|	|	3.10
29.000	0.00	0.40	1.341	I	O	|	|	|	3.10
29.083	0.00	0.40	1.338	I	O	|	|	|	3.09
29.167	0.00	0.40	1.335	I	O	|	|	|	3.09
29.250	0.00	0.40	1.332	I	O	|	|	|	3.08
29.333	0.00	0.40	1.330	I	O	|	|	|	3.07
29.417	0.00	0.40	1.327	I	O	|	|	|	3.07
29.500	0.00	0.40	1.324	I	O	|	|	|	3.06
29.583	0.00	0.40	1.321	I	O	|	|	|	3.06
29.667	0.00	0.40	1.319	I	O	|	|	|	3.05
29.750	0.00	0.40	1.316	I	O	|	|	|	3.05
29.833	0.00	0.40	1.313	I	O	|	|	|	3.04
29.917	0.00	0.40	1.310	I	O	|	|	|	3.04
30.000	0.00	0.40	1.308	I	O	|	|	|	3.03
30.083	0.00	0.40	1.305	I	O	|	|	|	3.03
30.167	0.00	0.40	1.302	I	O	|	|	|	3.02
30.250	0.00	0.40	1.299	I	O	|	|	|	3.01
30.333	0.00	0.40	1.297	I	O	|	|	|	3.01
30.417	0.00	0.40	1.294	I	O	|	|	|	3.00
30.500	0.00	0.39	1.291	I	O	|	|	|	3.00
30.583	0.00	0.39	1.288	I	O	|	|	|	2.99
30.667	0.00	0.39	1.286	I	O	|	|	|	2.99
30.750	0.00	0.39	1.283	I	O	|	|	|	2.98
30.833	0.00	0.39	1.280	I	O	|	|	|	2.98
30.917	0.00	0.39	1.278	I	O	|	|	|	2.97
31.000	0.00	0.39	1.275	I	O	|	|	|	2.97
31.083	0.00	0.39	1.272	I	O	|	|	|	2.96
31.167	0.00	0.39	1.270	I	O	|	|	|	2.96
31.250	0.00	0.39	1.267	I	O	|	|	|	2.95
31.333	0.00	0.39	1.264	I	O	|	|	|	2.95
31.417	0.00	0.39	1.262	I	O	|	|	|	2.94
31.500	0.00	0.39	1.259	I	O	|	|	|	2.94
31.583	0.00	0.39	1.256	I	O	|	|	|	2.93
31.667	0.00	0.39	1.254	I	O	|	|	|	2.93
31.750	0.00	0.39	1.251	I	O	|	|	|	2.92
31.833	0.00	0.39	1.248	I	O	|	|	|	2.92
31.917	0.00	0.38	1.246	I	O	|	|	|	2.91
32.000	0.00	0.38	1.243	I	O	|	|	|	2.90
32.083	0.00	0.38	1.240	I	O	|	|	|	2.90
32.167	0.00	0.38	1.238	I	O	|	|	|	2.89
32.250	0.00	0.38	1.235	I	O	|	|	|	2.89
32.333	0.00	0.38	1.232	I	O	|	|	|	2.88
32.417	0.00	0.38	1.230	I	O	|	|	|	2.88
32.500	0.00	0.38	1.227	I	O	|	|	|	2.87
32.583	0.00	0.38	1.224	I	O	|	|	|	2.87
32.667	0.00	0.38	1.222	I	O	|	|	|	2.86
32.750	0.00	0.38	1.219	I	O	|	|	|	2.86
32.833	0.00	0.38	1.217	I	O	|	|	|	2.85
32.917	0.00	0.38	1.214	I	O	|	|	|	2.85
33.000	0.00	0.38	1.211	I	O	|	|	|	2.84
33.083	0.00	0.38	1.209	I	O	|	|	|	2.84
33.167	0.00	0.38	1.206	I	O	|	|	|	2.83
33.250	0.00	0.38	1.204	I	O	|	|	|	2.83

33.333	0.00	0.38	1.201	I	O	|	|	|	| 2.82
33.417	0.00	0.37	1.198	I	O	|	|	|	| 2.82
33.500	0.00	0.37	1.196	I	O	|	|	|	| 2.81
33.583	0.00	0.37	1.193	I	O	|	|	|	| 2.81
33.667	0.00	0.37	1.191	I	O	|	|	|	| 2.80
33.750	0.00	0.37	1.188	I	O	|	|	|	| 2.80
33.833	0.00	0.37	1.186	I	O	|	|	|	| 2.79
33.917	0.00	0.37	1.183	I	O	|	|	|	| 2.79
34.000	0.00	0.37	1.181	I	O	|	|	|	| 2.78
34.083	0.00	0.37	1.178	I	O	|	|	|	| 2.78
34.167	0.00	0.37	1.175	I	O	|	|	|	| 2.77
34.250	0.00	0.37	1.173	I	O	|	|	|	| 2.77
34.333	0.00	0.37	1.170	I	O	|	|	|	| 2.76
34.417	0.00	0.37	1.168	I	O	|	|	|	| 2.76
34.500	0.00	0.37	1.165	I	O	|	|	|	| 2.75
34.583	0.00	0.37	1.163	I	O	|	|	|	| 2.75
34.667	0.00	0.37	1.160	I	O	|	|	|	| 2.74
34.750	0.00	0.37	1.158	I	O	|	|	|	| 2.74
34.833	0.00	0.37	1.155	I	O	|	|	|	| 2.74
34.917	0.00	0.36	1.153	I	O	|	|	|	| 2.73
35.000	0.00	0.36	1.150	I	O	|	|	|	| 2.73
35.083	0.00	0.36	1.148	I	O	|	|	|	| 2.72
35.167	0.00	0.36	1.145	I	O	|	|	|	| 2.72
35.250	0.00	0.36	1.143	I	O	|	|	|	| 2.71
35.333	0.00	0.36	1.140	I	O	|	|	|	| 2.71
35.417	0.00	0.36	1.138	I	O	|	|	|	| 2.70
35.500	0.00	0.36	1.135	I	O	|	|	|	| 2.70
35.583	0.00	0.36	1.133	I	O	|	|	|	| 2.69
35.667	0.00	0.36	1.130	I	O	|	|	|	| 2.69
35.750	0.00	0.36	1.128	I	O	|	|	|	| 2.68
35.833	0.00	0.36	1.125	I	O	|	|	|	| 2.68
35.917	0.00	0.36	1.123	I	O	|	|	|	| 2.67
36.000	0.00	0.36	1.120	I	O	|	|	|	| 2.67
36.083	0.00	0.36	1.118	I	O	|	|	|	| 2.66
36.167	0.00	0.36	1.115	I	O	|	|	|	| 2.66
36.250	0.00	0.36	1.113	I	O	|	|	|	| 2.66
36.333	0.00	0.35	1.111	I	O	|	|	|	| 2.65
36.417	0.00	0.35	1.108	I	O	|	|	|	| 2.65
36.500	0.00	0.35	1.106	I	O	|	|	|	| 2.64
36.583	0.00	0.35	1.103	I	O	|	|	|	| 2.64
36.667	0.00	0.35	1.101	I	O	|	|	|	| 2.63
36.750	0.00	0.35	1.098	I	O	|	|	|	| 2.63
36.833	0.00	0.35	1.096	I	O	|	|	|	| 2.62
36.917	0.00	0.35	1.094	I	O	|	|	|	| 2.62
37.000	0.00	0.35	1.091	I	O	|	|	|	| 2.61
37.083	0.00	0.35	1.089	I	O	|	|	|	| 2.61
37.167	0.00	0.35	1.086	I	O	|	|	|	| 2.60
37.250	0.00	0.35	1.084	I	O	|	|	|	| 2.60
37.333	0.00	0.35	1.082	I	O	|	|	|	| 2.60
37.417	0.00	0.35	1.079	I	O	|	|	|	| 2.59
37.500	0.00	0.35	1.077	I	O	|	|	|	| 2.59
37.583	0.00	0.35	1.074	I	O	|	|	|	| 2.58
37.667	0.00	0.35	1.072	I	O	|	|	|	| 2.58
37.750	0.00	0.35	1.070	I	O	|	|	|	| 2.57
37.833	0.00	0.34	1.067	I	O	|	|	|	| 2.57
37.917	0.00	0.34	1.065	I	O	|	|	|	| 2.56
38.000	0.00	0.34	1.062	I	O	|	|	|	| 2.56

38.083	0.00	0.34	1.060	I	O	|	|	|	2.56
38.167	0.00	0.34	1.058	I	O	|	|	|	2.55
38.250	0.00	0.34	1.055	I	O	|	|	|	2.55
38.333	0.00	0.34	1.053	I	O	|	|	|	2.54
38.417	0.00	0.34	1.051	I	O	|	|	|	2.54
38.500	0.00	0.34	1.048	I	O	|	|	|	2.53
38.583	0.00	0.34	1.046	I	O	|	|	|	2.53
38.667	0.00	0.34	1.044	I	O	|	|	|	2.52
38.750	0.00	0.34	1.041	I	O	|	|	|	2.52
38.833	0.00	0.34	1.039	I	O	|	|	|	2.52
38.917	0.00	0.34	1.037	I	O	|	|	|	2.51
39.000	0.00	0.34	1.034	I	O	|	|	|	2.51
39.083	0.00	0.34	1.032	I	O	|	|	|	2.50
39.167	0.00	0.34	1.030	I	O	|	|	|	2.50
39.250	0.00	0.34	1.027	I	O	|	|	|	2.49
39.333	0.00	0.33	1.025	I	O	|	|	|	2.49
39.417	0.00	0.33	1.023	I	O	|	|	|	2.48
39.500	0.00	0.33	1.021	I	O	|	|	|	2.48
39.583	0.00	0.33	1.018	I	O	|	|	|	2.48
39.667	0.00	0.33	1.016	I	O	|	|	|	2.47
39.750	0.00	0.33	1.014	I	O	|	|	|	2.47
39.833	0.00	0.33	1.011	I	O	|	|	|	2.46
39.917	0.00	0.33	1.009	I	O	|	|	|	2.46
40.000	0.00	0.33	1.007	I	O	|	|	|	2.45
40.083	0.00	0.33	1.005	I	O	|	|	|	2.45
40.167	0.00	0.33	1.002	I	O	|	|	|	2.45
40.250	0.00	0.33	1.000	I	O	|	|	|	2.44
40.333	0.00	0.33	0.998	I	O	|	|	|	2.44
40.417	0.00	0.33	0.996	I	O	|	|	|	2.43
40.500	0.00	0.33	0.993	I	O	|	|	|	2.43
40.583	0.00	0.33	0.991	I	O	|	|	|	2.42
40.667	0.00	0.33	0.989	I	O	|	|	|	2.42
40.750	0.00	0.32	0.987	I	O	|	|	|	2.42
40.833	0.00	0.32	0.984	I	O	|	|	|	2.41
40.917	0.00	0.32	0.982	I	O	|	|	|	2.41
41.000	0.00	0.32	0.980	I	O	|	|	|	2.40
41.083	0.00	0.32	0.978	I	O	|	|	|	2.40
41.167	0.00	0.32	0.975	I	O	|	|	|	2.39
41.250	0.00	0.32	0.973	I	O	|	|	|	2.39
41.333	0.00	0.32	0.971	I	O	|	|	|	2.39
41.417	0.00	0.32	0.969	I	O	|	|	|	2.38
41.500	0.00	0.32	0.967	I	O	|	|	|	2.38
41.583	0.00	0.32	0.964	I	O	|	|	|	2.37
41.667	0.00	0.32	0.962	I	O	|	|	|	2.37
41.750	0.00	0.32	0.960	I	O	|	|	|	2.36
41.833	0.00	0.32	0.958	I	O	|	|	|	2.36
41.917	0.00	0.32	0.956	I	O	|	|	|	2.36
42.000	0.00	0.32	0.953	I	O	|	|	|	2.35
42.083	0.00	0.32	0.951	I	O	|	|	|	2.35
42.167	0.00	0.31	0.949	I	O	|	|	|	2.34
42.250	0.00	0.31	0.947	I	O	|	|	|	2.34
42.333	0.00	0.31	0.945	I	O	|	|	|	2.34
42.417	0.00	0.31	0.943	I	O	|	|	|	2.33
42.500	0.00	0.31	0.940	I	O	|	|	|	2.33
42.583	0.00	0.31	0.938	I	O	|	|	|	2.32
42.667	0.00	0.31	0.936	I	O	|	|	|	2.32
42.750	0.00	0.31	0.934	I	O	|	|	|	2.31

42.833	0.00	0.31	0.932	I O	|	|	|	2.31
42.917	0.00	0.31	0.930	I O	|	|	|	2.31
43.000	0.00	0.31	0.928	I O	|	|	|	2.30
43.083	0.00	0.31	0.926	I O	|	|	|	2.30
43.167	0.00	0.31	0.923	I O	|	|	|	2.29
43.250	0.00	0.31	0.921	I O	|	|	|	2.29
43.333	0.00	0.31	0.919	I O	|	|	|	2.29
43.417	0.00	0.31	0.917	I O	|	|	|	2.28
43.500	0.00	0.31	0.915	I O	|	|	|	2.28
43.583	0.00	0.31	0.913	IO	|	|	|	2.27
43.667	0.00	0.30	0.911	IO	|	|	|	2.27
43.750	0.00	0.30	0.909	IO	|	|	|	2.27
43.833	0.00	0.30	0.907	IO	|	|	|	2.26
43.917	0.00	0.30	0.904	IO	|	|	|	2.26
44.000	0.00	0.30	0.902	IO	|	|	|	2.25
44.083	0.00	0.30	0.900	IO	|	|	|	2.25
44.167	0.00	0.30	0.898	IO	|	|	|	2.25
44.250	0.00	0.30	0.896	IO	|	|	|	2.24
44.333	0.00	0.30	0.894	IO	|	|	|	2.24
44.417	0.00	0.30	0.892	IO	|	|	|	2.23
44.500	0.00	0.30	0.890	IO	|	|	|	2.23
44.583	0.00	0.30	0.888	IO	|	|	|	2.23
44.667	0.00	0.30	0.886	IO	|	|	|	2.22
44.750	0.00	0.30	0.884	IO	|	|	|	2.22
44.833	0.00	0.30	0.882	IO	|	|	|	2.21
44.917	0.00	0.30	0.880	IO	|	|	|	2.21
45.000	0.00	0.30	0.878	IO	|	|	|	2.21
45.083	0.00	0.29	0.876	IO	|	|	|	2.20
45.167	0.00	0.29	0.874	IO	|	|	|	2.20
45.250	0.00	0.29	0.872	IO	|	|	|	2.20
45.333	0.00	0.29	0.870	IO	|	|	|	2.19
45.417	0.00	0.29	0.868	IO	|	|	|	2.19
45.500	0.00	0.29	0.866	IO	|	|	|	2.18

45.583	0.00	0.29	0.864	IO	|	|	|	2.18
45.667	0.00	0.29	0.862	IO	|	|	|	2.18
45.750	0.00	0.29	0.860	IO	|	|	|	2.17
45.833	0.00	0.29	0.858	IO	|	|	|	2.17
45.917	0.00	0.29	0.856	IO	|	|	|	2.16
46.000	0.00	0.29	0.854	IO	|	|	|	2.16
46.083	0.00	0.29	0.852	IO	|	|	|	2.16
46.167	0.00	0.29	0.850	IO	|	|	|	2.15
46.250	0.00	0.29	0.848	IO	|	|	|	2.15
46.333	0.00	0.29	0.846	IO	|	|	|	2.15
46.417	0.00	0.29	0.844	IO	|	|	|	2.14
46.500	0.00	0.28	0.842	IO	|	|	|	2.14
46.583	0.00	0.28	0.840	IO	|	|	|	2.13
46.667	0.00	0.28	0.838	IO	|	|	|	2.13
46.750	0.00	0.28	0.836	IO	|	|	|	2.13
46.833	0.00	0.28	0.834	IO	|	|	|	2.12
46.917	0.00	0.28	0.832	IO	|	|	|	2.12
47.000	0.00	0.28	0.830	IO	|	|	|	2.12
47.083	0.00	0.28	0.828	IO	|	|	|	2.11
47.167	0.00	0.28	0.826	IO	|	|	|	2.11
47.250	0.00	0.28	0.824	IO	|	|	|	2.10
47.333	0.00	0.28	0.822	IO	|	|	|	2.10
47.417	0.00	0.28	0.820	IO	|	|	|	2.10
47.500	0.00	0.28	0.818	IO	|	|	|	2.09
47.583	0.00	0.28	0.816	IO	|	|	|	2.09
47.667	0.00	0.28	0.815	IO	|	|	|	2.09
47.750	0.00	0.28	0.813	IO	|	|	|	2.08
47.833	0.00	0.28	0.811	IO	|	|	|	2.08
47.917	0.00	0.28	0.809	IO	|	|	|	

2.07

48.000	0.00	0.27	0.807	IO				2.07
48.083	0.00	0.27	0.805	IO				2.07
48.167	0.00	0.27	0.803	IO				2.06
48.250	0.00	0.27	0.801	IO				2.06
48.333	0.00	0.27	0.799	IO				2.06
48.417	0.00	0.27	0.798	IO				2.05
48.500	0.00	0.27	0.796	IO				2.05
48.583	0.00	0.27	0.794	IO				2.05
48.667	0.00	0.27	0.792	IO				2.04
48.750	0.00	0.27	0.790	IO				2.04
48.833	0.00	0.27	0.788	IO				2.04
48.917	0.00	0.27	0.786	IO				2.03
49.000	0.00	0.27	0.785	IO				2.03
49.083	0.00	0.27	0.783	IO				2.02
49.167	0.00	0.27	0.781	IO				2.02
49.250	0.00	0.27	0.779	IO				2.02
49.333	0.00	0.27	0.777	IO				2.01
49.417	0.00	0.27	0.775	IO				2.01
49.500	0.00	0.27	0.774	IO				2.01
49.583	0.00	0.26	0.772	IO				2.00
49.667	0.00	0.26	0.770	IO				2.00
49.750	0.00	0.26	0.768	IO				2.00
49.833	0.00	0.26	0.766	IO				1.99
49.917	0.00	0.26	0.764	IO				1.99
50.000	0.00	0.26	0.763	IO				1.99
50.083	0.00	0.26	0.761	IO				1.98
50.167	0.00	0.26	0.759	IO				1.98
50.250	0.00	0.26	0.757	IO				1.97

50.333	0.00	0.26	0.755	IO	|	|	|	1.97
50.417	0.00	0.26	0.754	IO	|	|	|	1.97
50.500	0.00	0.26	0.752	IO	|	|	|	1.96
50.583	0.00	0.26	0.750	IO	|	|	|	1.96
50.667	0.00	0.26	0.748	IO	|	|	|	1.96
50.750	0.00	0.26	0.747	IO	|	|	|	1.95
50.833	0.00	0.25	0.745	IO	|	|	|	1.95
50.917	0.00	0.25	0.743	IO	|	|	|	1.95
51.000	0.00	0.25	0.741	IO	|	|	|	1.94
51.083	0.00	0.25	0.740	IO	|	|	|	1.94
51.167	0.00	0.25	0.738	IO	|	|	|	1.94
51.250	0.00	0.25	0.736	IO	|	|	|	1.93
51.333	0.00	0.25	0.734	IO	|	|	|	1.93
51.417	0.00	0.25	0.733	IO	|	|	|	1.93
51.500	0.00	0.25	0.731	IO	|	|	|	1.92
51.583	0.00	0.25	0.729	IO	|	|	|	1.92
51.667	0.00	0.25	0.728	IO	|	|	|	1.92
51.750	0.00	0.25	0.726	IO	|	|	|	1.91
51.833	0.00	0.25	0.724	IO	|	|	|	1.91
51.917	0.00	0.25	0.722	IO	|	|	|	1.91
52.000	0.00	0.25	0.721	IO	|	|	|	1.90
52.083	0.00	0.25	0.719	IO	|	|	|	1.90
52.167	0.00	0.24	0.717	IO	|	|	|	1.90
52.250	0.00	0.24	0.716	IO	|	|	|	1.89
52.333	0.00	0.24	0.714	IO	|	|	|	1.89
52.417	0.00	0.24	0.712	IO	|	|	|	1.89
52.500	0.00	0.24	0.711	IO	|	|	|	1.88
52.583	0.00	0.24	0.709	IO	|	|	|	1.88
52.667	0.00	0.24	0.707	IO	|	|	|	

1.88

52.750	0.00	0.24	0.706	IO	|	|	|	1.87
52.833	0.00	0.24	0.704	IO	|	|	|	1.87
52.917	0.00	0.24	0.702	IO	|	|	|	1.87
53.000	0.00	0.24	0.701	IO	|	|	|	1.86
53.083	0.00	0.24	0.699	IO	|	|	|	1.86
53.167	0.00	0.24	0.697	IO	|	|	|	1.86
53.250	0.00	0.24	0.696	IO	|	|	|	1.85
53.333	0.00	0.24	0.694	IO	|	|	|	1.85
53.417	0.00	0.24	0.693	IO	|	|	|	1.85
53.500	0.00	0.24	0.691	IO	|	|	|	1.84
53.583	0.00	0.23	0.689	IO	|	|	|	1.84
53.667	0.00	0.23	0.688	IO	|	|	|	1.84
53.750	0.00	0.23	0.686	IO	|	|	|	1.83
53.833	0.00	0.23	0.684	IO	|	|	|	1.83
53.917	0.00	0.23	0.683	IO	|	|	|	1.83
54.000	0.00	0.23	0.681	IO	|	|	|	1.83
54.083	0.00	0.23	0.680	IO	|	|	|	1.82
54.167	0.00	0.23	0.678	IO	|	|	|	1.82
54.250	0.00	0.23	0.676	IO	|	|	|	1.82
54.333	0.00	0.23	0.675	IO	|	|	|	1.81
54.417	0.00	0.23	0.673	IO	|	|	|	1.81
54.500	0.00	0.23	0.672	IO	|	|	|	1.81
54.583	0.00	0.23	0.670	IO	|	|	|	1.80
54.667	0.00	0.23	0.669	IO	|	|	|	1.80
54.750	0.00	0.23	0.667	IO	|	|	|	1.80
54.833	0.00	0.23	0.665	IO	|	|	|	1.79
54.917	0.00	0.23	0.664	IO	|	|	|	1.79
55.000	0.00	0.23	0.662	IO	|	|	|	1.79

55.083	0.00	0.22	0.661	IO	|	|	|	1.79
55.167	0.00	0.22	0.659	IO	|	|	|	1.78
55.250	0.00	0.22	0.658	IO	|	|	|	1.78
55.333	0.00	0.22	0.656	IO	|	|	|	1.78
55.417	0.00	0.22	0.655	IO	|	|	|	1.77
55.500	0.00	0.22	0.653	IO	|	|	|	1.77
55.583	0.00	0.22	0.652	IO	|	|	|	1.77
55.667	0.00	0.22	0.650	IO	|	|	|	1.76
55.750	0.00	0.22	0.649	IO	|	|	|	1.76
55.833	0.00	0.22	0.647	IO	|	|	|	1.76
55.917	0.00	0.22	0.646	IO	|	|	|	1.75
56.000	0.00	0.22	0.644	IO	|	|	|	1.75
56.083	0.00	0.22	0.643	IO	|	|	|	1.75
56.167	0.00	0.22	0.641	IO	|	|	|	1.75
56.250	0.00	0.22	0.640	IO	|	|	|	1.74
56.333	0.00	0.21	0.638	IO	|	|	|	1.74
56.417	0.00	0.21	0.637	IO	|	|	|	1.74
56.500	0.00	0.21	0.635	IO	|	|	|	1.73
56.583	0.00	0.21	0.634	IO	|	|	|	1.73
56.667	0.00	0.21	0.632	IO	|	|	|	1.73
56.750	0.00	0.21	0.631	IO	|	|	|	1.73
56.833	0.00	0.21	0.629	IO	|	|	|	1.72
56.917	0.00	0.21	0.628	IO	|	|	|	1.72
57.000	0.00	0.21	0.626	IO	|	|	|	1.72
57.083	0.00	0.21	0.625	IO	|	|	|	1.71
57.167	0.00	0.21	0.624	IO	|	|	|	1.71
57.250	0.00	0.20	0.622	IO	|	|	|	1.71
57.333	0.00	0.20	0.621	IO	|	|	|	1.70
57.417	0.00	0.20	0.619	IO	|	|	|	

1.70

57.500	0.00	0.20	0.618	IO	|	|	|	1.70
57.583	0.00	0.20	0.617	IO	|	|	|	1.70
57.667	0.00	0.20	0.615	IO	|	|	|	1.69
57.750	0.00	0.20	0.614	IO	|	|	|	1.69
57.833	0.00	0.20	0.612	IO	|	|	|	1.69
57.917	0.00	0.20	0.611	IO	|	|	|	1.69
58.000	0.00	0.20	0.610	IO	|	|	|	1.68
58.083	0.00	0.20	0.608	IO	|	|	|	1.68
58.167	0.00	0.19	0.607	IO	|	|	|	1.68
58.250	0.00	0.19	0.606	IO	|	|	|	1.67
58.333	0.00	0.19	0.604	IO	|	|	|	1.67
58.417	0.00	0.19	0.603	IO	|	|	|	1.67
58.500	0.00	0.19	0.602	IO	|	|	|	1.67
58.583	0.00	0.19	0.600	IO	|	|	|	1.66
58.667	0.00	0.19	0.599	IO	|	|	|	1.66
58.750	0.00	0.19	0.598	IO	|	|	|	1.66
58.833	0.00	0.19	0.597	IO	|	|	|	1.66
58.917	0.00	0.19	0.595	IO	|	|	|	1.65
59.000	0.00	0.19	0.594	IO	|	|	|	1.65
59.083	0.00	0.19	0.593	IO	|	|	|	1.65
59.167	0.00	0.18	0.591	IO	|	|	|	1.65
59.250	0.00	0.18	0.590	IO	|	|	|	1.64
59.333	0.00	0.18	0.589	IO	|	|	|	1.64
59.417	0.00	0.18	0.588	IO	|	|	|	1.64
59.500	0.00	0.18	0.586	IO	|	|	|	1.63
59.583	0.00	0.18	0.585	IO	|	|	|	1.63
59.667	0.00	0.18	0.584	IO	|	|	|	1.63
59.750	0.00	0.18	0.583	IO	|	|	|	1.63

59.833	0.00	0.18	0.581	IO	|	|	|	| 1.62
59.917	0.00	0.18	0.580	IO	|	|	|	| 1.62
60.000	0.00	0.18	0.579	IO	|	|	|	| 1.62
60.083	0.00	0.18	0.578	IO	|	|	|	| 1.62
60.167	0.00	0.17	0.577	IO	|	|	|	| 1.61
60.250	0.00	0.17	0.575	IO	|	|	|	| 1.61
60.333	0.00	0.17	0.574	IO	|	|	|	| 1.61
60.417	0.00	0.17	0.573	IO	|	|	|	| 1.61
60.500	0.00	0.17	0.572	IO	|	|	|	| 1.61
60.583	0.00	0.17	0.571	IO	|	|	|	| 1.60
60.667	0.00	0.17	0.569	IO	|	|	|	| 1.60
60.750	0.00	0.17	0.568	IO	|	|	|	| 1.60
60.833	0.00	0.17	0.567	IO	|	|	|	| 1.60
60.917	0.00	0.17	0.566	IO	|	|	|	| 1.59
61.000	0.00	0.17	0.565	IO	|	|	|	| 1.59
61.083	0.00	0.17	0.564	IO	|	|	|	| 1.59
61.167	0.00	0.17	0.563	IO	|	|	|	| 1.59
61.250	0.00	0.16	0.561	IO	|	|	|	| 1.58
61.333	0.00	0.16	0.560	IO	|	|	|	| 1.58
61.417	0.00	0.16	0.559	IO	|	|	|	| 1.58
61.500	0.00	0.16	0.558	IO	|	|	|	| 1.58
61.583	0.00	0.16	0.557	IO	|	|	|	| 1.57
61.667	0.00	0.16	0.556	IO	|	|	|	| 1.57
61.750	0.00	0.16	0.555	IO	|	|	|	| 1.57
61.833	0.00	0.16	0.554	IO	|	|	|	| 1.57
61.917	0.00	0.16	0.552	IO	|	|	|	| 1.57
62.000	0.00	0.16	0.551	IO	|	|	|	| 1.56
62.083	0.00	0.16	0.550	IO	|	|	|	| 1.56
62.167	0.00	0.16	0.549	IO	|	|	|	|

1.56

62.250	0.00	0.16	0.548	IO	|	|	|	|	1.56
62.333	0.00	0.16	0.547	IO	|	|	|	|	1.55
62.417	0.00	0.15	0.546	IO	|	|	|	|	1.55
62.500	0.00	0.15	0.545	IO	|	|	|	|	1.55
62.583	0.00	0.15	0.544	IO	|	|	|	|	1.55
62.667	0.00	0.15	0.543	O	|	|	|	|	1.55
62.750	0.00	0.15	0.542	O	|	|	|	|	1.54
62.833	0.00	0.15	0.541	O	|	|	|	|	1.54
62.917	0.00	0.15	0.540	O	|	|	|	|	1.54
63.000	0.00	0.15	0.539	O	|	|	|	|	1.54
63.083	0.00	0.15	0.538	O	|	|	|	|	1.54
63.167	0.00	0.15	0.537	O	|	|	|	|	1.53
63.250	0.00	0.15	0.536	O	|	|	|	|	1.53
63.333	0.00	0.15	0.535	O	|	|	|	|	1.53
63.417	0.00	0.15	0.533	O	|	|	|	|	1.53
63.500	0.00	0.15	0.532	O	|	|	|	|	1.53
63.583	0.00	0.15	0.531	O	|	|	|	|	1.52
63.667	0.00	0.14	0.530	O	|	|	|	|	1.52
63.750	0.00	0.14	0.529	O	|	|	|	|	1.52
63.833	0.00	0.14	0.528	O	|	|	|	|	1.52
63.917	0.00	0.14	0.528	O	|	|	|	|	1.52
64.000	0.00	0.14	0.527	O	|	|	|	|	1.51
64.083	0.00	0.14	0.526	O	|	|	|	|	1.51
64.167	0.00	0.14	0.525	O	|	|	|	|	1.51
64.250	0.00	0.14	0.524	O	|	|	|	|	1.51
64.333	0.00	0.14	0.523	O	|	|	|	|	1.51
64.417	0.00	0.14	0.522	O	|	|	|	|	1.50
64.500	0.00	0.14	0.521	O	|	|	|	|	1.50

64.583	0.00	0.14	0.520	O	|	|	|	|	1.50
64.667	0.00	0.14	0.519	O	|	|	|	|	1.50
64.750	0.00	0.14	0.518	O	|	|	|	|	1.50
64.833	0.00	0.14	0.517	O	|	|	|	|	1.49
64.917	0.00	0.14	0.516	O	|	|	|	|	1.49
65.000	0.00	0.14	0.515	O	|	|	|	|	1.49
65.083	0.00	0.14	0.514	O	|	|	|	|	1.49
65.167	0.00	0.14	0.513	O	|	|	|	|	1.49
65.250	0.00	0.14	0.512	O	|	|	|	|	1.48
65.333	0.00	0.13	0.511	O	|	|	|	|	1.48
65.417	0.00	0.13	0.510	O	|	|	|	|	1.48
65.500	0.00	0.13	0.509	O	|	|	|	|	1.48
65.583	0.00	0.13	0.509	O	|	|	|	|	1.48
65.667	0.00	0.13	0.508	O	|	|	|	|	1.47
65.750	0.00	0.13	0.507	O	|	|	|	|	1.47
65.833	0.00	0.13	0.506	O	|	|	|	|	1.47
65.917	0.00	0.13	0.505	O	|	|	|	|	1.47
66.000	0.00	0.13	0.504	O	|	|	|	|	1.47
66.083	0.00	0.13	0.503	O	|	|	|	|	1.46
66.167	0.00	0.13	0.502	O	|	|	|	|	1.46
66.250	0.00	0.13	0.501	O	|	|	|	|	1.46
66.333	0.00	0.13	0.500	O	|	|	|	|	1.46
66.417	0.00	0.13	0.499	O	|	|	|	|	1.46
66.500	0.00	0.13	0.499	O	|	|	|	|	1.45
66.583	0.00	0.13	0.498	O	|	|	|	|	1.45
66.667	0.00	0.13	0.497	O	|	|	|	|	1.45
66.750	0.00	0.13	0.496	O	|	|	|	|	1.45
66.833	0.00	0.13	0.495	O	|	|	|	|	1.45
66.917	0.00	0.13	0.494	O	|	|	|	|	

1.44

67.000	0.00	0.13	0.493	O	|	|	|	|	1.44
67.083	0.00	0.13	0.492	O	|	|	|	|	1.44
67.167	0.00	0.13	0.491	O	|	|	|	|	1.44
67.250	0.00	0.13	0.491	O	|	|	|	|	1.44
67.333	0.00	0.13	0.490	O	|	|	|	|	1.44
67.417	0.00	0.13	0.489	O	|	|	|	|	1.43
67.500	0.00	0.13	0.488	O	|	|	|	|	1.43
67.583	0.00	0.13	0.487	O	|	|	|	|	1.43
67.667	0.00	0.13	0.486	O	|	|	|	|	1.43
67.750	0.00	0.13	0.485	O	|	|	|	|	1.43
67.833	0.00	0.13	0.484	O	|	|	|	|	1.42
67.917	0.00	0.13	0.484	O	|	|	|	|	1.42
68.000	0.00	0.12	0.483	O	|	|	|	|	1.42
68.083	0.00	0.12	0.482	O	|	|	|	|	1.42
68.167	0.00	0.12	0.481	O	|	|	|	|	1.42
68.250	0.00	0.12	0.480	O	|	|	|	|	1.41
68.333	0.00	0.12	0.479	O	|	|	|	|	1.41
68.417	0.00	0.12	0.478	O	|	|	|	|	1.41
68.500	0.00	0.12	0.478	O	|	|	|	|	1.41
68.583	0.00	0.12	0.477	O	|	|	|	|	1.41
68.667	0.00	0.12	0.476	O	|	|	|	|	1.41
68.750	0.00	0.12	0.475	O	|	|	|	|	1.40
68.833	0.00	0.12	0.474	O	|	|	|	|	1.40
68.917	0.00	0.12	0.473	O	|	|	|	|	1.40
69.000	0.00	0.12	0.473	O	|	|	|	|	1.40
69.083	0.00	0.12	0.472	O	|	|	|	|	1.40
69.167	0.00	0.12	0.471	O	|	|	|	|	1.39
69.250	0.00	0.12	0.470	O	|	|	|	|	1.39

69.333	0.00	0.12	0.469	O	|	|	|	|	1.39
69.417	0.00	0.12	0.468	O	|	|	|	|	1.39
69.500	0.00	0.12	0.468	O	|	|	|	|	1.39
69.583	0.00	0.12	0.467	O	|	|	|	|	1.39
69.667	0.00	0.12	0.466	O	|	|	|	|	1.38
69.750	0.00	0.12	0.465	O	|	|	|	|	1.38
69.833	0.00	0.12	0.464	O	|	|	|	|	1.38
69.917	0.00	0.12	0.463	O	|	|	|	|	1.38
70.000	0.00	0.12	0.463	O	|	|	|	|	1.38
70.083	0.00	0.12	0.462	O	|	|	|	|	1.38
70.167	0.00	0.12	0.461	O	|	|	|	|	1.37
70.250	0.00	0.12	0.460	O	|	|	|	|	1.37
70.333	0.00	0.12	0.459	O	|	|	|	|	1.37
70.417	0.00	0.12	0.459	O	|	|	|	|	1.37
70.500	0.00	0.12	0.458	O	|	|	|	|	1.37
70.583	0.00	0.12	0.457	O	|	|	|	|	1.37
70.667	0.00	0.12	0.456	O	|	|	|	|	1.36
70.750	0.00	0.12	0.455	O	|	|	|	|	1.36
70.833	0.00	0.12	0.455	O	|	|	|	|	1.36
70.917	0.00	0.11	0.454	O	|	|	|	|	1.36
71.000	0.00	0.11	0.453	O	|	|	|	|	1.36
71.083	0.00	0.11	0.452	O	|	|	|	|	1.36
71.167	0.00	0.11	0.451	O	|	|	|	|	1.35
71.250	0.00	0.11	0.451	O	|	|	|	|	1.35
71.333	0.00	0.11	0.450	O	|	|	|	|	1.35
71.417	0.00	0.11	0.449	O	|	|	|	|	1.35
71.500	0.00	0.11	0.448	O	|	|	|	|	1.35
71.583	0.00	0.11	0.448	O	|	|	|	|	1.35
71.667	0.00	0.11	0.447	O	|	|	|	|	

1.34

71.750	0.00	0.11	0.446	O	|	|	|	1.34
71.833	0.00	0.11	0.445	O	|	|	|	1.34
71.917	0.00	0.11	0.444	O	|	|	|	1.34
72.000	0.00	0.11	0.444	O	|	|	|	1.34
72.083	0.00	0.11	0.443	O	|	|	|	1.34
72.167	0.00	0.11	0.442	O	|	|	|	1.33
72.250	0.00	0.11	0.441	O	|	|	|	1.33
72.333	0.00	0.11	0.441	O	|	|	|	1.33
72.417	0.00	0.11	0.440	O	|	|	|	1.33
72.500	0.00	0.11	0.439	O	|	|	|	1.33
72.583	0.00	0.11	0.438	O	|	|	|	1.33
72.667	0.00	0.11	0.438	O	|	|	|	1.32
72.750	0.00	0.11	0.437	O	|	|	|	1.32
72.833	0.00	0.11	0.436	O	|	|	|	1.32
72.917	0.00	0.11	0.435	O	|	|	|	1.32
73.000	0.00	0.11	0.435	O	|	|	|	1.32
73.083	0.00	0.11	0.434	O	|	|	|	1.32
73.167	0.00	0.11	0.433	O	|	|	|	1.31
73.250	0.00	0.11	0.432	O	|	|	|	1.31
73.333	0.00	0.11	0.432	O	|	|	|	1.31
73.417	0.00	0.11	0.431	O	|	|	|	1.31
73.500	0.00	0.11	0.430	O	|	|	|	1.31
73.583	0.00	0.11	0.429	O	|	|	|	1.31
73.667	0.00	0.11	0.429	O	|	|	|	1.30
73.750	0.00	0.11	0.428	O	|	|	|	1.30
73.833	0.00	0.11	0.427	O	|	|	|	1.30
73.917	0.00	0.11	0.427	O	|	|	|	1.30
74.000	0.00	0.11	0.426	O	|	|	|	1.30

74.083	0.00	0.10	0.425	O	|	|	|	|	1.30
74.167	0.00	0.10	0.424	O	|	|	|	|	1.30
74.250	0.00	0.10	0.424	O	|	|	|	|	1.29
74.333	0.00	0.10	0.423	O	|	|	|	|	1.29
74.417	0.00	0.10	0.422	O	|	|	|	|	1.29
74.500	0.00	0.10	0.422	O	|	|	|	|	1.29
74.583	0.00	0.10	0.421	O	|	|	|	|	1.29
74.667	0.00	0.10	0.420	O	|	|	|	|	1.29
74.750	0.00	0.10	0.419	O	|	|	|	|	1.29
74.833	0.00	0.10	0.419	O	|	|	|	|	1.28
74.917	0.00	0.10	0.418	O	|	|	|	|	1.28
75.000	0.00	0.10	0.417	O	|	|	|	|	1.28
75.083	0.00	0.10	0.417	O	|	|	|	|	1.28
75.167	0.00	0.10	0.416	O	|	|	|	|	1.28
75.250	0.00	0.10	0.415	O	|	|	|	|	1.28
75.333	0.00	0.10	0.414	O	|	|	|	|	1.27
75.417	0.00	0.10	0.414	O	|	|	|	|	1.27
75.500	0.00	0.10	0.413	O	|	|	|	|	1.27
75.583	0.00	0.10	0.412	O	|	|	|	|	1.27
75.667	0.00	0.10	0.412	O	|	|	|	|	1.27
75.750	0.00	0.10	0.411	O	|	|	|	|	1.27
75.833	0.00	0.10	0.410	O	|	|	|	|	1.27
75.917	0.00	0.10	0.410	O	|	|	|	|	1.26
76.000	0.00	0.10	0.409	O	|	|	|	|	1.26
76.083	0.00	0.10	0.408	O	|	|	|	|	1.26
76.167	0.00	0.10	0.408	O	|	|	|	|	1.26
76.250	0.00	0.10	0.407	O	|	|	|	|	1.26
76.333	0.00	0.10	0.406	O	|	|	|	|	1.26
76.417	0.00	0.10	0.406	O	|	|	|	|	

1.26

76.500	0.00	0.10	0.405	O	|	|	|	1.25
76.583	0.00	0.10	0.404	O	|	|	|	1.25
76.667	0.00	0.10	0.404	O	|	|	|	1.25
76.750	0.00	0.10	0.403	O	|	|	|	1.25
76.833	0.00	0.10	0.402	O	|	|	|	1.25
76.917	0.00	0.10	0.402	O	|	|	|	1.25
77.000	0.00	0.10	0.401	O	|	|	|	1.25
77.083	0.00	0.09	0.400	O	|	|	|	1.24
77.167	0.00	0.09	0.400	O	|	|	|	1.24
77.250	0.00	0.09	0.399	O	|	|	|	1.24
77.333	0.00	0.09	0.398	O	|	|	|	1.24
77.417	0.00	0.09	0.398	O	|	|	|	1.24
77.500	0.00	0.09	0.397	O	|	|	|	1.24
77.583	0.00	0.09	0.396	O	|	|	|	1.23
77.667	0.00	0.09	0.396	O	|	|	|	1.23
77.750	0.00	0.09	0.395	O	|	|	|	1.23
77.833	0.00	0.09	0.395	O	|	|	|	1.23
77.917	0.00	0.09	0.394	O	|	|	|	1.23
78.000	0.00	0.09	0.393	O	|	|	|	1.23
78.083	0.00	0.09	0.393	O	|	|	|	1.23
78.167	0.00	0.09	0.392	O	|	|	|	1.23
78.250	0.00	0.09	0.392	O	|	|	|	1.22
78.333	0.00	0.09	0.391	O	|	|	|	1.22
78.417	0.00	0.09	0.390	O	|	|	|	1.22
78.500	0.00	0.09	0.390	O	|	|	|	1.22
78.583	0.00	0.08	0.389	O	|	|	|	1.22
78.667	0.00	0.08	0.389	O	|	|	|	1.22
78.750	0.00	0.08	0.388	O	|	|	|	1.22

78.833	0.00	0.08	0.387	O	|	|	|	|	1.21
78.917	0.00	0.08	0.387	O	|	|	|	|	1.21
79.000	0.00	0.08	0.386	O	|	|	|	|	1.21
79.083	0.00	0.08	0.386	O	|	|	|	|	1.21
79.167	0.00	0.08	0.385	O	|	|	|	|	1.21
79.250	0.00	0.08	0.385	O	|	|	|	|	1.21
79.333	0.00	0.08	0.384	O	|	|	|	|	1.21
79.417	0.00	0.08	0.383	O	|	|	|	|	1.21
79.500	0.00	0.08	0.383	O	|	|	|	|	1.20
79.583	0.00	0.08	0.382	O	|	|	|	|	1.20
79.667	0.00	0.08	0.382	O	|	|	|	|	1.20
79.750	0.00	0.08	0.381	O	|	|	|	|	1.20
79.833	0.00	0.08	0.381	O	|	|	|	|	1.20
79.917	0.00	0.08	0.380	O	|	|	|	|	1.20
80.000	0.00	0.08	0.380	O	|	|	|	|	1.20
80.083	0.00	0.08	0.379	O	|	|	|	|	1.20
80.167	0.00	0.08	0.379	O	|	|	|	|	1.19
80.250	0.00	0.08	0.378	O	|	|	|	|	1.19
80.333	0.00	0.07	0.378	O	|	|	|	|	1.19
80.417	0.00	0.07	0.377	O	|	|	|	|	1.19
80.500	0.00	0.07	0.377	O	|	|	|	|	1.19
80.583	0.00	0.07	0.376	O	|	|	|	|	1.19
80.667	0.00	0.07	0.376	O	|	|	|	|	1.19
80.750	0.00	0.07	0.375	O	|	|	|	|	1.19
80.833	0.00	0.07	0.375	O	|	|	|	|	1.18
80.917	0.00	0.07	0.374	O	|	|	|	|	1.18
81.000	0.00	0.07	0.374	O	|	|	|	|	1.18
81.083	0.00	0.07	0.373	O	|	|	|	|	1.18
81.167	0.00	0.07	0.373	O	|	|	|	|	

1.18

81.250	0.00	0.07	0.372	O	|	|	|	1.18
81.333	0.00	0.07	0.372	O	|	|	|	1.18
81.417	0.00	0.07	0.371	O	|	|	|	1.18
81.500	0.00	0.07	0.371	O	|	|	|	1.18
81.583	0.00	0.07	0.370	O	|	|	|	1.17
81.667	0.00	0.07	0.370	O	|	|	|	1.17
81.750	0.00	0.07	0.369	O	|	|	|	1.17
81.833	0.00	0.07	0.369	O	|	|	|	1.17
81.917	0.00	0.07	0.368	O	|	|	|	1.17
82.000	0.00	0.07	0.368	O	|	|	|	1.17
82.083	0.00	0.07	0.367	O	|	|	|	1.17
82.167	0.00	0.07	0.367	O	|	|	|	1.17
82.250	0.00	0.06	0.367	O	|	|	|	1.17
82.333	0.00	0.06	0.366	O	|	|	|	1.17
82.417	0.00	0.06	0.366	O	|	|	|	1.16
82.500	0.00	0.06	0.365	O	|	|	|	1.16
82.583	0.00	0.06	0.365	O	|	|	|	1.16
82.667	0.00	0.06	0.364	O	|	|	|	1.16
82.750	0.00	0.06	0.364	O	|	|	|	1.16
82.833	0.00	0.06	0.364	O	|	|	|	1.16
82.917	0.00	0.06	0.363	O	|	|	|	1.16
83.000	0.00	0.06	0.363	O	|	|	|	1.16
83.083	0.00	0.06	0.362	O	|	|	|	1.16
83.167	0.00	0.06	0.362	O	|	|	|	1.16
83.250	0.00	0.06	0.361	O	|	|	|	1.15
83.333	0.00	0.06	0.361	O	|	|	|	1.15
83.417	0.00	0.06	0.361	O	|	|	|	1.15
83.500	0.00	0.06	0.360	O	|	|	|	1.15

83.583	0.00	0.06	0.360	O	|	|	|	|	1.15
83.667	0.00	0.06	0.359	O	|	|	|	|	1.15
83.750	0.00	0.06	0.359	O	|	|	|	|	1.15
83.833	0.00	0.06	0.359	O	|	|	|	|	1.15
83.917	0.00	0.06	0.358	O	|	|	|	|	1.15
84.000	0.00	0.06	0.358	O	|	|	|	|	1.15
84.083	0.00	0.06	0.357	O	|	|	|	|	1.15
84.167	0.00	0.06	0.357	O	|	|	|	|	1.14
84.250	0.00	0.06	0.357	O	|	|	|	|	1.14
84.333	0.00	0.06	0.356	O	|	|	|	|	1.14
84.417	0.00	0.06	0.356	O	|	|	|	|	1.14
84.500	0.00	0.06	0.355	O	|	|	|	|	1.14
84.583	0.00	0.05	0.355	O	|	|	|	|	1.14
84.667	0.00	0.05	0.355	O	|	|	|	|	1.14
84.750	0.00	0.05	0.354	O	|	|	|	|	1.14
84.833	0.00	0.05	0.354	O	|	|	|	|	1.14
84.917	0.00	0.05	0.354	O	|	|	|	|	1.14
85.000	0.00	0.05	0.353	O	|	|	|	|	1.14
85.083	0.00	0.05	0.353	O	|	|	|	|	1.13
85.167	0.00	0.05	0.352	O	|	|	|	|	1.13
85.250	0.00	0.05	0.352	O	|	|	|	|	1.13
85.333	0.00	0.05	0.352	O	|	|	|	|	1.13
85.417	0.00	0.05	0.351	O	|	|	|	|	1.13
85.500	0.00	0.05	0.351	O	|	|	|	|	1.13
85.583	0.00	0.05	0.351	O	|	|	|	|	1.13
85.667	0.00	0.05	0.350	O	|	|	|	|	1.13
85.750	0.00	0.05	0.350	O	|	|	|	|	1.13
85.833	0.00	0.05	0.350	O	|	|	|	|	1.13
85.917	0.00	0.05	0.349	O	|	|	|	|	

1.13

86.000	0.00	0.05	0.349	O	|	|	|	|	1.13
86.083	0.00	0.05	0.349	O	|	|	|	|	1.13
86.167	0.00	0.05	0.348	O	|	|	|	|	1.12
86.250	0.00	0.05	0.348	O	|	|	|	|	1.12
86.333	0.00	0.05	0.348	O	|	|	|	|	1.12
86.417	0.00	0.05	0.347	O	|	|	|	|	1.12
86.500	0.00	0.05	0.347	O	|	|	|	|	1.12
86.583	0.00	0.05	0.347	O	|	|	|	|	1.12
86.667	0.00	0.05	0.346	O	|	|	|	|	1.12
86.750	0.00	0.05	0.346	O	|	|	|	|	1.12
86.833	0.00	0.05	0.346	O	|	|	|	|	1.12
86.917	0.00	0.05	0.345	O	|	|	|	|	1.12
87.000	0.00	0.05	0.345	O	|	|	|	|	1.12
87.083	0.00	0.05	0.345	O	|	|	|	|	1.12
87.167	0.00	0.05	0.344	O	|	|	|	|	1.12
87.250	0.00	0.05	0.344	O	|	|	|	|	1.11
87.333	0.00	0.04	0.344	O	|	|	|	|	1.11
87.417	0.00	0.04	0.343	O	|	|	|	|	1.11
87.500	0.00	0.04	0.343	O	|	|	|	|	1.11
87.583	0.00	0.04	0.343	O	|	|	|	|	1.11
87.667	0.00	0.04	0.343	O	|	|	|	|	1.11
87.750	0.00	0.04	0.342	O	|	|	|	|	1.11
87.833	0.00	0.04	0.342	O	|	|	|	|	1.11
87.917	0.00	0.04	0.342	O	|	|	|	|	1.11
88.000	0.00	0.04	0.341	O	|	|	|	|	1.11
88.083	0.00	0.04	0.341	O	|	|	|	|	1.11
88.167	0.00	0.04	0.341	O	|	|	|	|	1.11
88.250	0.00	0.04	0.341	O	|	|	|	|	1.11

88.333	0.00	0.04	0.340	O	|	|	|	|	1.11
88.417	0.00	0.04	0.340	O	|	|	|	|	1.11
88.500	0.00	0.04	0.340	O	|	|	|	|	1.10
88.583	0.00	0.04	0.339	O	|	|	|	|	1.10
88.667	0.00	0.04	0.339	O	|	|	|	|	1.10
88.750	0.00	0.04	0.339	O	|	|	|	|	1.10
88.833	0.00	0.04	0.339	O	|	|	|	|	1.10
88.917	0.00	0.04	0.338	O	|	|	|	|	1.10
89.000	0.00	0.04	0.338	O	|	|	|	|	1.10
89.083	0.00	0.04	0.338	O	|	|	|	|	1.10
89.167	0.00	0.04	0.337	O	|	|	|	|	1.10
89.250	0.00	0.04	0.337	O	|	|	|	|	1.10
89.333	0.00	0.04	0.337	O	|	|	|	|	1.10
89.417	0.00	0.04	0.337	O	|	|	|	|	1.10
89.500	0.00	0.04	0.336	O	|	|	|	|	1.10
89.583	0.00	0.04	0.336	O	|	|	|	|	1.10
89.667	0.00	0.04	0.336	O	|	|	|	|	1.10
89.750	0.00	0.04	0.336	O	|	|	|	|	1.10
89.833	0.00	0.04	0.335	O	|	|	|	|	1.09
89.917	0.00	0.04	0.335	O	|	|	|	|	1.09
90.000	0.00	0.04	0.335	O	|	|	|	|	1.09
90.083	0.00	0.04	0.335	O	|	|	|	|	1.09
90.167	0.00	0.04	0.334	O	|	|	|	|	1.09
90.250	0.00	0.04	0.334	O	|	|	|	|	1.09
90.333	0.00	0.04	0.334	O	|	|	|	|	1.09
90.417	0.00	0.04	0.334	O	|	|	|	|	1.09
90.500	0.00	0.04	0.333	O	|	|	|	|	1.09
90.583	0.00	0.04	0.333	O	|	|	|	|	1.09
90.667	0.00	0.04	0.333	O	|	|	|	|	

1.09

90.750	0.00	0.03	0.333	O	|	|	|	|	1.09
90.833	0.00	0.03	0.332	O	|	|	|	|	1.09
90.917	0.00	0.03	0.332	O	|	|	|	|	1.09
91.000	0.00	0.03	0.332	O	|	|	|	|	1.09
91.083	0.00	0.03	0.332	O	|	|	|	|	1.09
91.167	0.00	0.03	0.331	O	|	|	|	|	1.09
91.250	0.00	0.03	0.331	O	|	|	|	|	1.09
91.333	0.00	0.03	0.331	O	|	|	|	|	1.08
91.417	0.00	0.03	0.331	O	|	|	|	|	1.08
91.500	0.00	0.03	0.330	O	|	|	|	|	1.08
91.583	0.00	0.03	0.330	O	|	|	|	|	1.08
91.667	0.00	0.03	0.330	O	|	|	|	|	1.08
91.750	0.00	0.03	0.330	O	|	|	|	|	1.08
91.833	0.00	0.03	0.330	O	|	|	|	|	1.08
91.917	0.00	0.03	0.329	O	|	|	|	|	1.08
92.000	0.00	0.03	0.329	O	|	|	|	|	1.08
92.083	0.00	0.03	0.329	O	|	|	|	|	1.08
92.167	0.00	0.03	0.329	O	|	|	|	|	1.08
92.250	0.00	0.03	0.328	O	|	|	|	|	1.08
92.333	0.00	0.03	0.328	O	|	|	|	|	1.08
92.417	0.00	0.03	0.328	O	|	|	|	|	1.08
92.500	0.00	0.03	0.328	O	|	|	|	|	1.08
92.583	0.00	0.03	0.328	O	|	|	|	|	1.08
92.667	0.00	0.03	0.327	O	|	|	|	|	1.08
92.750	0.00	0.03	0.327	O	|	|	|	|	1.08
92.833	0.00	0.03	0.327	O	|	|	|	|	1.08
92.917	0.00	0.03	0.327	O	|	|	|	|	1.08
93.000	0.00	0.03	0.327	O	|	|	|	|	1.07

93.083	0.00	0.03	0.326	O	|	|	|	|	1.07
93.167	0.00	0.03	0.326	O	|	|	|	|	1.07
93.250	0.00	0.03	0.326	O	|	|	|	|	1.07
93.333	0.00	0.03	0.326	O	|	|	|	|	1.07
93.417	0.00	0.03	0.326	O	|	|	|	|	1.07
93.500	0.00	0.03	0.325	O	|	|	|	|	1.07
93.583	0.00	0.03	0.325	O	|	|	|	|	1.07
93.667	0.00	0.03	0.325	O	|	|	|	|	1.07
93.750	0.00	0.03	0.325	O	|	|	|	|	1.07
93.833	0.00	0.03	0.325	O	|	|	|	|	1.07
93.917	0.00	0.03	0.324	O	|	|	|	|	1.07
94.000	0.00	0.03	0.324	O	|	|	|	|	1.07
94.083	0.00	0.03	0.324	O	|	|	|	|	1.07
94.167	0.00	0.03	0.324	O	|	|	|	|	1.07
94.250	0.00	0.03	0.324	O	|	|	|	|	1.07
94.333	0.00	0.03	0.323	O	|	|	|	|	1.07
94.417	0.00	0.03	0.323	O	|	|	|	|	1.07
94.500	0.00	0.03	0.323	O	|	|	|	|	1.07
94.583	0.00	0.03	0.323	O	|	|	|	|	1.07
94.667	0.00	0.03	0.323	O	|	|	|	|	1.07
94.750	0.00	0.03	0.323	O	|	|	|	|	1.07
94.833	0.00	0.03	0.322	O	|	|	|	|	1.07
94.917	0.00	0.03	0.322	O	|	|	|	|	1.06
95.000	0.00	0.03	0.322	O	|	|	|	|	1.06
95.083	0.00	0.03	0.322	O	|	|	|	|	1.06
95.167	0.00	0.03	0.322	O	|	|	|	|	1.06
95.250	0.00	0.03	0.321	O	|	|	|	|	1.06
95.333	0.00	0.03	0.321	O	|	|	|	|	1.06
95.417	0.00	0.02	0.321	O	|	|	|	|	

1.06

95.500	0.00	0.02	0.321	O	|	|	|	|	1.06
95.583	0.00	0.02	0.321	O	|	|	|	|	1.06
95.667	0.00	0.02	0.321	O	|	|	|	|	1.06
95.750	0.00	0.02	0.320	O	|	|	|	|	1.06
95.833	0.00	0.02	0.320	O	|	|	|	|	1.06
95.917	0.00	0.02	0.320	O	|	|	|	|	1.06
96.000	0.00	0.02	0.320	O	|	|	|	|	1.06
96.083	0.00	0.02	0.320	O	|	|	|	|	1.06
96.167	0.00	0.02	0.320	O	|	|	|	|	1.06
96.250	0.00	0.02	0.319	O	|	|	|	|	1.06
96.333	0.00	0.02	0.319	O	|	|	|	|	1.06
96.417	0.00	0.02	0.319	O	|	|	|	|	1.06
96.500	0.00	0.02	0.319	O	|	|	|	|	1.06
96.583	0.00	0.02	0.319	O	|	|	|	|	1.06
96.667	0.00	0.02	0.319	O	|	|	|	|	1.06
96.750	0.00	0.02	0.319	O	|	|	|	|	1.06
96.833	0.00	0.02	0.318	O	|	|	|	|	1.06
96.917	0.00	0.02	0.318	O	|	|	|	|	1.06
97.000	0.00	0.02	0.318	O	|	|	|	|	1.06
97.083	0.00	0.02	0.318	O	|	|	|	|	1.05
97.167	0.00	0.02	0.318	O	|	|	|	|	1.05
97.250	0.00	0.02	0.318	O	|	|	|	|	1.05
97.333	0.00	0.02	0.317	O	|	|	|	|	1.05
97.417	0.00	0.02	0.317	O	|	|	|	|	1.05
97.500	0.00	0.02	0.317	O	|	|	|	|	1.05
97.583	0.00	0.02	0.317	O	|	|	|	|	1.05
97.667	0.00	0.02	0.317	O	|	|	|	|	1.05
97.750	0.00	0.02	0.317	O	|	|	|	|	1.05

97.833	0.00	0.02	0.317	O	|	|	|	|	1.05
97.917	0.00	0.02	0.316	O	|	|	|	|	1.05
98.000	0.00	0.02	0.316	O	|	|	|	|	1.05
98.083	0.00	0.02	0.316	O	|	|	|	|	1.05
98.167	0.00	0.02	0.316	O	|	|	|	|	1.05
98.250	0.00	0.02	0.316	O	|	|	|	|	1.05
98.333	0.00	0.02	0.316	O	|	|	|	|	1.05
98.417	0.00	0.02	0.316	O	|	|	|	|	1.05
98.500	0.00	0.02	0.315	O	|	|	|	|	1.05
98.583	0.00	0.02	0.315	O	|	|	|	|	1.05
98.667	0.00	0.02	0.315	O	|	|	|	|	1.05
98.750	0.00	0.02	0.315	O	|	|	|	|	1.05
98.833	0.00	0.02	0.315	O	|	|	|	|	1.05
98.917	0.00	0.02	0.315	O	|	|	|	|	1.05
99.000	0.00	0.02	0.315	O	|	|	|	|	1.05
99.083	0.00	0.02	0.315	O	|	|	|	|	1.05
99.167	0.00	0.02	0.314	O	|	|	|	|	1.05
99.250	0.00	0.02	0.314	O	|	|	|	|	1.05
99.333	0.00	0.02	0.314	O	|	|	|	|	1.05
99.417	0.00	0.02	0.314	O	|	|	|	|	1.05
99.500	0.00	0.02	0.314	O	|	|	|	|	1.05
99.583	0.00	0.02	0.314	O	|	|	|	|	1.05
99.667	0.00	0.02	0.314	O	|	|	|	|	1.04
99.750	0.00	0.02	0.313	O	|	|	|	|	1.04
99.833	0.00	0.02	0.313	O	|	|	|	|	1.04
99.917	0.00	0.02	0.313	O	|	|	|	|	1.04
100.000	0.00	0.02	0.313	O	|	|	|	|	1.04
100.083	0.00	0.02	0.313	O	|	|	|	|	1.04
100.167	0.00	0.02	0.313	O	|	|	|	|	

1.04

100.250	0.00	0.02	0.313	O	|	|	|	|	1.04
100.333	0.00	0.02	0.313	O	|	|	|	|	1.04
100.417	0.00	0.02	0.313	O	|	|	|	|	1.04
100.500	0.00	0.02	0.312	O	|	|	|	|	1.04
100.583	0.00	0.02	0.312	O	|	|	|	|	1.04
100.667	0.00	0.02	0.312	O	|	|	|	|	1.04
100.750	0.00	0.02	0.312	O	|	|	|	|	1.04
100.833	0.00	0.02	0.312	O	|	|	|	|	1.04
100.917	0.00	0.02	0.312	O	|	|	|	|	1.04
101.000	0.00	0.02	0.312	O	|	|	|	|	1.04
101.083	0.00	0.02	0.312	O	|	|	|	|	1.04
101.167	0.00	0.02	0.311	O	|	|	|	|	1.04
101.250	0.00	0.02	0.311	O	|	|	|	|	1.04
101.333	0.00	0.02	0.311	O	|	|	|	|	1.04
101.417	0.00	0.02	0.311	O	|	|	|	|	1.04
101.500	0.00	0.02	0.311	O	|	|	|	|	1.04
101.583	0.00	0.02	0.311	O	|	|	|	|	1.04
101.667	0.00	0.02	0.311	O	|	|	|	|	1.04
101.750	0.00	0.02	0.311	O	|	|	|	|	1.04
101.833	0.00	0.02	0.311	O	|	|	|	|	1.04
101.917	0.00	0.02	0.310	O	|	|	|	|	1.04
102.000	0.00	0.02	0.310	O	|	|	|	|	1.04
102.083	0.00	0.02	0.310	O	|	|	|	|	1.04
102.167	0.00	0.02	0.310	O	|	|	|	|	1.04
102.250	0.00	0.02	0.310	O	|	|	|	|	1.04
102.333	0.00	0.02	0.310	O	|	|	|	|	1.04
102.417	0.00	0.01	0.310	O	|	|	|	|	1.04
102.500	0.00	0.01	0.310	O	|	|	|	|	1.04

102.583	0.00	0.01	0.310	O	|	|	|	|	1.04
102.667	0.00	0.01	0.310	O	|	|	|	|	1.04
102.750	0.00	0.01	0.309	O	|	|	|	|	1.04
102.833	0.00	0.01	0.309	O	|	|	|	|	1.04
102.917	0.00	0.01	0.309	O	|	|	|	|	1.03
103.000	0.00	0.01	0.309	O	|	|	|	|	1.03
103.083	0.00	0.01	0.309	O	|	|	|	|	1.03
103.167	0.00	0.01	0.309	O	|	|	|	|	1.03
103.250	0.00	0.01	0.309	O	|	|	|	|	1.03
103.333	0.00	0.01	0.309	O	|	|	|	|	1.03
103.417	0.00	0.01	0.309	O	|	|	|	|	1.03
103.500	0.00	0.01	0.309	O	|	|	|	|	1.03
103.583	0.00	0.01	0.308	O	|	|	|	|	1.03
103.667	0.00	0.01	0.308	O	|	|	|	|	1.03
103.750	0.00	0.01	0.308	O	|	|	|	|	1.03
103.833	0.00	0.01	0.308	O	|	|	|	|	1.03
103.917	0.00	0.01	0.308	O	|	|	|	|	1.03
104.000	0.00	0.01	0.308	O	|	|	|	|	1.03
104.083	0.00	0.01	0.308	O	|	|	|	|	1.03
104.167	0.00	0.01	0.308	O	|	|	|	|	1.03
104.250	0.00	0.01	0.308	O	|	|	|	|	1.03
104.333	0.00	0.01	0.308	O	|	|	|	|	1.03
104.417	0.00	0.01	0.308	O	|	|	|	|	1.03
104.500	0.00	0.01	0.307	O	|	|	|	|	1.03
104.583	0.00	0.01	0.307	O	|	|	|	|	1.03
104.667	0.00	0.01	0.307	O	|	|	|	|	1.03
104.750	0.00	0.01	0.307	O	|	|	|	|	1.03
104.833	0.00	0.01	0.307	O	|	|	|	|	1.03
104.917	0.00	0.01	0.307	O	|	|	|	|	

1.03

105.000	0.00	0.01	0.307	O	|	|	|	|	1.03
105.083	0.00	0.01	0.307	O	|	|	|	|	1.03
105.167	0.00	0.01	0.307	O	|	|	|	|	1.03
105.250	0.00	0.01	0.307	O	|	|	|	|	1.03
105.333	0.00	0.01	0.307	O	|	|	|	|	1.03
105.417	0.00	0.01	0.307	O	|	|	|	|	1.03
105.500	0.00	0.01	0.306	O	|	|	|	|	1.03
105.583	0.00	0.01	0.306	O	|	|	|	|	1.03
105.667	0.00	0.01	0.306	O	|	|	|	|	1.03
105.750	0.00	0.01	0.306	O	|	|	|	|	1.03
105.833	0.00	0.01	0.306	O	|	|	|	|	1.03
105.917	0.00	0.01	0.306	O	|	|	|	|	1.03
106.000	0.00	0.01	0.306	O	|	|	|	|	1.03
106.083	0.00	0.01	0.306	O	|	|	|	|	1.03
106.167	0.00	0.01	0.306	O	|	|	|	|	1.03
106.250	0.00	0.01	0.306	O	|	|	|	|	1.03
106.333	0.00	0.01	0.306	O	|	|	|	|	1.03
106.417	0.00	0.01	0.306	O	|	|	|	|	1.03
106.500	0.00	0.01	0.305	O	|	|	|	|	1.03
106.583	0.00	0.01	0.305	O	|	|	|	|	1.03
106.667	0.00	0.01	0.305	O	|	|	|	|	1.03
106.750	0.00	0.01	0.305	O	|	|	|	|	1.03
106.833	0.00	0.01	0.305	O	|	|	|	|	1.03
106.917	0.00	0.01	0.305	O	|	|	|	|	1.03
107.000	0.00	0.01	0.305	O	|	|	|	|	1.03
107.083	0.00	0.01	0.305	O	|	|	|	|	1.03
107.167	0.00	0.01	0.305	O	|	|	|	|	1.02
107.250	0.00	0.01	0.305	O	|	|	|	|	1.02

107.333	0.00	0.01	0.305	O	|	|	|	|	1.02
107.417	0.00	0.01	0.305	O	|	|	|	|	1.02
107.500	0.00	0.01	0.305	O	|	|	|	|	1.02
107.583	0.00	0.01	0.305	O	|	|	|	|	1.02
107.667	0.00	0.01	0.304	O	|	|	|	|	1.02
107.750	0.00	0.01	0.304	O	|	|	|	|	1.02
107.833	0.00	0.01	0.304	O	|	|	|	|	1.02
107.917	0.00	0.01	0.304	O	|	|	|	|	1.02
108.000	0.00	0.01	0.304	O	|	|	|	|	1.02
108.083	0.00	0.01	0.304	O	|	|	|	|	1.02
108.167	0.00	0.01	0.304	O	|	|	|	|	1.02
108.250	0.00	0.01	0.304	O	|	|	|	|	1.02
108.333	0.00	0.01	0.304	O	|	|	|	|	1.02
108.417	0.00	0.01	0.304	O	|	|	|	|	1.02
108.500	0.00	0.01	0.304	O	|	|	|	|	1.02
108.583	0.00	0.01	0.304	O	|	|	|	|	1.02
108.667	0.00	0.01	0.304	O	|	|	|	|	1.02
108.750	0.00	0.01	0.304	O	|	|	|	|	1.02
108.833	0.00	0.01	0.304	O	|	|	|	|	1.02
108.917	0.00	0.01	0.303	O	|	|	|	|	1.02
109.000	0.00	0.01	0.303	O	|	|	|	|	1.02
109.083	0.00	0.01	0.303	O	|	|	|	|	1.02
109.167	0.00	0.01	0.303	O	|	|	|	|	1.02
109.250	0.00	0.01	0.303	O	|	|	|	|	1.02
109.333	0.00	0.01	0.303	O	|	|	|	|	1.02
109.417	0.00	0.01	0.303	O	|	|	|	|	1.02
109.500	0.00	0.01	0.303	O	|	|	|	|	1.02
109.583	0.00	0.01	0.303	O	|	|	|	|	1.02
109.667	0.00	0.01	0.303	O	|	|	|	|	

1.02

109.750	0.00	0.01	0.303	O	|	|	|	|	1.02
109.833	0.00	0.01	0.303	O	|	|	|	|	1.02
109.917	0.00	0.01	0.303	O	|	|	|	|	1.02
110.000	0.00	0.01	0.303	O	|	|	|	|	1.02
110.083	0.00	0.01	0.303	O	|	|	|	|	1.02
110.167	0.00	0.01	0.303	O	|	|	|	|	1.02
110.250	0.00	0.01	0.302	O	|	|	|	|	1.02
110.333	0.00	0.01	0.302	O	|	|	|	|	1.02
110.417	0.00	0.01	0.302	O	|	|	|	|	1.02
110.500	0.00	0.01	0.302	O	|	|	|	|	1.02
110.583	0.00	0.01	0.302	O	|	|	|	|	1.02
110.667	0.00	0.01	0.302	O	|	|	|	|	1.02
110.750	0.00	0.01	0.302	O	|	|	|	|	1.02
110.833	0.00	0.01	0.302	O	|	|	|	|	1.02
110.917	0.00	0.01	0.302	O	|	|	|	|	1.02
111.000	0.00	0.01	0.302	O	|	|	|	|	1.02
111.083	0.00	0.01	0.302	O	|	|	|	|	1.02
111.167	0.00	0.01	0.302	O	|	|	|	|	1.02
111.250	0.00	0.01	0.302	O	|	|	|	|	1.02
111.333	0.00	0.01	0.302	O	|	|	|	|	1.02
111.417	0.00	0.01	0.302	O	|	|	|	|	1.02
111.500	0.00	0.01	0.302	O	|	|	|	|	1.02
111.583	0.00	0.01	0.302	O	|	|	|	|	1.02
111.667	0.00	0.01	0.302	O	|	|	|	|	1.02
111.750	0.00	0.01	0.301	O	|	|	|	|	1.02
111.833	0.00	0.01	0.301	O	|	|	|	|	1.02
111.917	0.00	0.01	0.301	O	|	|	|	|	1.02
112.000	0.00	0.01	0.301	O	|	|	|	|	1.02

112.083	0.00	0.01	0.301	O	|	|	|	|	1.02
112.167	0.00	0.01	0.301	O	|	|	|	|	1.02
112.250	0.00	0.01	0.301	O	|	|	|	|	1.02
112.333	0.00	0.01	0.301	O	|	|	|	|	1.02
112.417	0.00	0.01	0.301	O	|	|	|	|	1.02
112.500	0.00	0.01	0.301	O	|	|	|	|	1.02
112.583	0.00	0.01	0.301	O	|	|	|	|	1.02
112.667	0.00	0.01	0.301	O	|	|	|	|	1.02
112.750	0.00	0.01	0.301	O	|	|	|	|	1.02
112.833	0.00	0.01	0.301	O	|	|	|	|	1.02
112.917	0.00	0.01	0.301	O	|	|	|	|	1.02
113.000	0.00	0.01	0.301	O	|	|	|	|	1.02
113.083	0.00	0.01	0.301	O	|	|	|	|	1.02
113.167	0.00	0.01	0.301	O	|	|	|	|	1.02
113.250	0.00	0.01	0.301	O	|	|	|	|	1.02
113.333	0.00	0.01	0.301	O	|	|	|	|	1.01
113.417	0.00	0.01	0.300	O	|	|	|	|	1.01
113.500	0.00	0.01	0.300	O	|	|	|	|	1.01
113.583	0.00	0.01	0.300	O	|	|	|	|	1.01
113.667	0.00	0.01	0.300	O	|	|	|	|	1.01
113.750	0.00	0.01	0.300	O	|	|	|	|	1.01
113.833	0.00	0.01	0.300	O	|	|	|	|	1.01
113.917	0.00	0.01	0.300	O	|	|	|	|	1.01
114.000	0.00	0.01	0.300	O	|	|	|	|	1.01
114.083	0.00	0.01	0.300	O	|	|	|	|	1.01
114.167	0.00	0.01	0.300	O	|	|	|	|	1.01
114.250	0.00	0.01	0.300	O	|	|	|	|	1.01
114.333	0.00	0.01	0.300	O	|	|	|	|	1.01
114.417	0.00	0.01	0.300	O	|	|	|	|	

1.01

114.500	0.00	0.01	0.300	O	|	|	|	|	1.01
114.583	0.00	0.01	0.300	O	|	|	|	|	1.01
114.667	0.00	0.01	0.300	O	|	|	|	|	1.01
114.750	0.00	0.01	0.300	O	|	|	|	|	1.01
114.833	0.00	0.01	0.300	O	|	|	|	|	1.01
114.917	0.00	0.01	0.300	O	|	|	|	|	1.01
115.000	0.00	0.01	0.300	O	|	|	|	|	1.01
115.083	0.00	0.01	0.300	O	|	|	|	|	1.01
115.167	0.00	0.01	0.300	O	|	|	|	|	1.01
115.250	0.00	0.01	0.300	O	|	|	|	|	1.01
115.333	0.00	0.01	0.299	O	|	|	|	|	1.01
115.417	0.00	0.01	0.299	O	|	|	|	|	1.01
115.500	0.00	0.01	0.299	O	|	|	|	|	1.01
115.583	0.00	0.01	0.299	O	|	|	|	|	1.01
115.667	0.00	0.01	0.299	O	|	|	|	|	1.01
115.750	0.00	0.01	0.299	O	|	|	|	|	1.01
115.833	0.00	0.01	0.299	O	|	|	|	|	1.01
115.917	0.00	0.01	0.299	O	|	|	|	|	1.01
116.000	0.00	0.01	0.299	O	|	|	|	|	1.01
116.083	0.00	0.01	0.299	O	|	|	|	|	1.01
116.167	0.00	0.01	0.299	O	|	|	|	|	1.01
116.250	0.00	0.01	0.299	O	|	|	|	|	1.01
116.333	0.00	0.01	0.299	O	|	|	|	|	1.01
116.417	0.00	0.01	0.299	O	|	|	|	|	1.01
116.500	0.00	0.01	0.299	O	|	|	|	|	1.01
116.583	0.00	0.01	0.299	O	|	|	|	|	1.01
116.667	0.00	0.01	0.299	O	|	|	|	|	1.01
116.750	0.00	0.01	0.299	O	|	|	|	|	1.01

116.833	0.00	0.01	0.299	O	|	|	|	|	1.01
116.917	0.00	0.01	0.299	O	|	|	|	|	1.01
117.000	0.00	0.01	0.299	O	|	|	|	|	1.01
117.083	0.00	0.01	0.299	O	|	|	|	|	1.01
117.167	0.00	0.01	0.299	O	|	|	|	|	1.01
117.250	0.00	0.01	0.299	O	|	|	|	|	1.01
117.333	0.00	0.01	0.299	O	|	|	|	|	1.01
117.417	0.00	0.01	0.299	O	|	|	|	|	1.01
117.500	0.00	0.00	0.299	O	|	|	|	|	1.01
117.583	0.00	0.00	0.298	O	|	|	|	|	1.01
117.667	0.00	0.00	0.298	O	|	|	|	|	1.01
117.750	0.00	0.00	0.298	O	|	|	|	|	1.01
117.833	0.00	0.00	0.298	O	|	|	|	|	1.01
117.917	0.00	0.00	0.298	O	|	|	|	|	1.01
118.000	0.00	0.00	0.298	O	|	|	|	|	1.01
118.083	0.00	0.00	0.298	O	|	|	|	|	1.01
118.167	0.00	0.00	0.298	O	|	|	|	|	1.01
118.250	0.00	0.00	0.298	O	|	|	|	|	1.01
118.333	0.00	0.00	0.298	O	|	|	|	|	1.01
118.417	0.00	0.00	0.298	O	|	|	|	|	1.01
118.500	0.00	0.00	0.298	O	|	|	|	|	1.01
118.583	0.00	0.00	0.298	O	|	|	|	|	1.01
118.667	0.00	0.00	0.298	O	|	|	|	|	1.01
118.750	0.00	0.00	0.298	O	|	|	|	|	1.01
118.833	0.00	0.00	0.298	O	|	|	|	|	1.01
118.917	0.00	0.00	0.298	O	|	|	|	|	1.01
119.000	0.00	0.00	0.298	O	|	|	|	|	1.01
119.083	0.00	0.00	0.298	O	|	|	|	|	1.01
119.167	0.00	0.00	0.298	O	|	|	|	|	

1.01

119.250	0.00	0.00	0.298	O	|	|	|	1.01
119.333	0.00	0.00	0.298	O	|	|	|	1.01
119.417	0.00	0.00	0.298	O	|	|	|	1.01
119.500	0.00	0.00	0.298	O	|	|	|	1.01
119.583	0.00	0.00	0.298	O	|	|	|	1.01
119.667	0.00	0.00	0.298	O	|	|	|	1.01
119.750	0.00	0.00	0.298	O	|	|	|	1.01
119.833	0.00	0.00	0.298	O	|	|	|	1.01
119.917	0.00	0.00	0.298	O	|	|	|	1.01
120.000	0.00	0.00	0.298	O	|	|	|	1.01
120.083	0.00	0.00	0.298	O	|	|	|	1.01
120.167	0.00	0.00	0.298	O	|	|	|	1.01
120.250	0.00	0.00	0.298	O	|	|	|	1.01
120.333	0.00	0.00	0.297	O	|	|	|	1.01
120.417	0.00	0.00	0.297	O	|	|	|	1.01
120.500	0.00	0.00	0.297	O	|	|	|	1.01
120.583	0.00	0.00	0.297	O	|	|	|	1.01
120.667	0.00	0.00	0.297	O	|	|	|	1.01
120.750	0.00	0.00	0.297	O	|	|	|	1.01
120.833	0.00	0.00	0.297	O	|	|	|	1.01
120.917	0.00	0.00	0.297	O	|	|	|	1.01
121.000	0.00	0.00	0.297	O	|	|	|	1.01
121.083	0.00	0.00	0.297	O	|	|	|	1.01
121.167	0.00	0.00	0.297	O	|	|	|	1.01
121.250	0.00	0.00	0.297	O	|	|	|	1.01
121.333	0.00	0.00	0.297	O	|	|	|	1.01
121.417	0.00	0.00	0.297	O	|	|	|	1.01
121.500	0.00	0.00	0.297	O	|	|	|	1.01

121.583	0.00	0.00	0.297	O	|	|	|	|	1.01
121.667	0.00	0.00	0.297	O	|	|	|	|	1.01
121.750	0.00	0.00	0.297	O	|	|	|	|	1.01
121.833	0.00	0.00	0.297	O	|	|	|	|	1.01
121.917	0.00	0.00	0.297	O	|	|	|	|	1.01
122.000	0.00	0.00	0.297	O	|	|	|	|	1.01
122.083	0.00	0.00	0.297	O	|	|	|	|	1.01
122.167	0.00	0.00	0.297	O	|	|	|	|	1.01
122.250	0.00	0.00	0.297	O	|	|	|	|	1.01
122.333	0.00	0.00	0.297	O	|	|	|	|	1.01
122.417	0.00	0.00	0.297	O	|	|	|	|	1.01
122.500	0.00	0.00	0.297	O	|	|	|	|	1.01
122.583	0.00	0.00	0.297	O	|	|	|	|	1.01
122.667	0.00	0.00	0.297	O	|	|	|	|	1.01
122.750	0.00	0.00	0.297	O	|	|	|	|	1.01
122.833	0.00	0.00	0.297	O	|	|	|	|	1.01
122.917	0.00	0.00	0.297	O	|	|	|	|	1.01
123.000	0.00	0.00	0.297	O	|	|	|	|	1.01
123.083	0.00	0.00	0.297	O	|	|	|	|	1.01
123.167	0.00	0.00	0.297	O	|	|	|	|	1.01
123.250	0.00	0.00	0.297	O	|	|	|	|	1.01
123.333	0.00	0.00	0.297	O	|	|	|	|	1.01
123.417	0.00	0.00	0.297	O	|	|	|	|	1.01
123.500	0.00	0.00	0.297	O	|	|	|	|	1.01
123.583	0.00	0.00	0.297	O	|	|	|	|	1.01
123.667	0.00	0.00	0.296	O	|	|	|	|	1.01
123.750	0.00	0.00	0.296	O	|	|	|	|	1.01
123.833	0.00	0.00	0.296	O	|	|	|	|	1.01
123.917	0.00	0.00	0.296	O	|	|	|	|	

1.01

124.000	0.00	0.00	0.296	O	|	|	|	1.01
124.083	0.00	0.00	0.296	O	|	|	|	1.01
124.167	0.00	0.00	0.296	O	|	|	|	1.01
124.250	0.00	0.00	0.296	O	|	|	|	1.01
124.333	0.00	0.00	0.296	O	|	|	|	1.01
124.417	0.00	0.00	0.296	O	|	|	|	1.01
124.500	0.00	0.00	0.296	O	|	|	|	1.01
124.583	0.00	0.00	0.296	O	|	|	|	1.01
124.667	0.00	0.00	0.296	O	|	|	|	1.01
124.750	0.00	0.00	0.296	O	|	|	|	1.01
124.833	0.00	0.00	0.296	O	|	|	|	1.01
124.917	0.00	0.00	0.296	O	|	|	|	1.00
125.000	0.00	0.00	0.296	O	|	|	|	1.00
125.083	0.00	0.00	0.296	O	|	|	|	1.00
125.167	0.00	0.00	0.296	O	|	|	|	1.00
125.250	0.00	0.00	0.296	O	|	|	|	1.00
125.333	0.00	0.00	0.296	O	|	|	|	1.00
125.417	0.00	0.00	0.296	O	|	|	|	1.00
125.500	0.00	0.00	0.296	O	|	|	|	1.00
125.583	0.00	0.00	0.296	O	|	|	|	1.00
125.667	0.00	0.00	0.296	O	|	|	|	1.00
125.750	0.00	0.00	0.296	O	|	|	|	1.00
125.833	0.00	0.00	0.296	O	|	|	|	1.00
125.917	0.00	0.00	0.296	O	|	|	|	1.00
126.000	0.00	0.00	0.296	O	|	|	|	1.00
126.083	0.00	0.00	0.296	O	|	|	|	1.00
126.167	0.00	0.00	0.296	O	|	|	|	1.00
126.250	0.00	0.00	0.296	O	|	|	|	1.00

126.333	0.00	0.00	0.296	O	|	|	|	|	1.00
126.417	0.00	0.00	0.296	O	|	|	|	|	1.00
126.500	0.00	0.00	0.296	O	|	|	|	|	1.00
126.583	0.00	0.00	0.296	O	|	|	|	|	1.00
126.667	0.00	0.00	0.296	O	|	|	|	|	1.00
126.750	0.00	0.00	0.296	O	|	|	|	|	1.00
126.833	0.00	0.00	0.296	O	|	|	|	|	1.00
126.917	0.00	0.00	0.296	O	|	|	|	|	1.00
127.000	0.00	0.00	0.296	O	|	|	|	|	1.00
127.083	0.00	0.00	0.296	O	|	|	|	|	1.00
127.167	0.00	0.00	0.296	O	|	|	|	|	1.00
127.250	0.00	0.00	0.296	O	|	|	|	|	1.00
127.333	0.00	0.00	0.296	O	|	|	|	|	1.00
127.417	0.00	0.00	0.296	O	|	|	|	|	1.00
127.500	0.00	0.00	0.296	O	|	|	|	|	1.00
127.583	0.00	0.00	0.296	O	|	|	|	|	1.00
127.667	0.00	0.00	0.296	O	|	|	|	|	1.00
127.750	0.00	0.00	0.296	O	|	|	|	|	1.00
127.833	0.00	0.00	0.296	O	|	|	|	|	1.00
127.917	0.00	0.00	0.296	O	|	|	|	|	1.00
128.000	0.00	0.00	0.296	O	|	|	|	|	1.00
128.083	0.00	0.00	0.295	O	|	|	|	|	1.00
128.167	0.00	0.00	0.295	O	|	|	|	|	1.00
128.250	0.00	0.00	0.295	O	|	|	|	|	1.00
128.333	0.00	0.00	0.295	O	|	|	|	|	1.00
128.417	0.00	0.00	0.295	O	|	|	|	|	1.00
128.500	0.00	0.00	0.295	O	|	|	|	|	1.00
128.583	0.00	0.00	0.295	O	|	|	|	|	1.00
128.667	0.00	0.00	0.295	O	|	|	|	|	

1.00

128.750	0.00	0.00	0.295	O	|	|	|	1.00
128.833	0.00	0.00	0.295	O	|	|	|	1.00
128.917	0.00	0.00	0.295	O	|	|	|	1.00
129.000	0.00	0.00	0.295	O	|	|	|	1.00
129.083	0.00	0.00	0.295	O	|	|	|	1.00
129.167	0.00	0.00	0.295	O	|	|	|	1.00
129.250	0.00	0.00	0.295	O	|	|	|	1.00
129.333	0.00	0.00	0.295	O	|	|	|	1.00
129.417	0.00	0.00	0.295	O	|	|	|	1.00
129.500	0.00	0.00	0.295	O	|	|	|	1.00
129.583	0.00	0.00	0.295	O	|	|	|	1.00
129.667	0.00	0.00	0.295	O	|	|	|	1.00
129.750	0.00	0.00	0.295	O	|	|	|	1.00
129.833	0.00	0.00	0.295	O	|	|	|	1.00
129.917	0.00	0.00	0.295	O	|	|	|	1.00
130.000	0.00	0.00	0.295	O	|	|	|	1.00
130.083	0.00	0.00	0.295	O	|	|	|	1.00
130.167	0.00	0.00	0.295	O	|	|	|	1.00
130.250	0.00	0.00	0.295	O	|	|	|	1.00
130.333	0.00	0.00	0.295	O	|	|	|	1.00
130.417	0.00	0.00	0.295	O	|	|	|	1.00
130.500	0.00	0.00	0.295	O	|	|	|	1.00
130.583	0.00	0.00	0.295	O	|	|	|	1.00
130.667	0.00	0.00	0.295	O	|	|	|	1.00
130.750	0.00	0.00	0.295	O	|	|	|	1.00
130.833	0.00	0.00	0.295	O	|	|	|	1.00
130.917	0.00	0.00	0.295	O	|	|	|	1.00
131.000	0.00	0.00	0.295	O	|	|	|	1.00

131.083	0.00	0.00	0.295	O	|	|	|	|	1.00
131.167	0.00	0.00	0.295	O	|	|	|	|	1.00
131.250	0.00	0.00	0.295	O	|	|	|	|	1.00
131.333	0.00	0.00	0.295	O	|	|	|	|	1.00
131.417	0.00	0.00	0.295	O	|	|	|	|	1.00
131.500	0.00	0.00	0.295	O	|	|	|	|	1.00
131.583	0.00	0.00	0.295	O	|	|	|	|	1.00
131.667	0.00	0.00	0.295	O	|	|	|	|	1.00
131.750	0.00	0.00	0.295	O	|	|	|	|	1.00
131.833	0.00	0.00	0.295	O	|	|	|	|	1.00
131.917	0.00	0.00	0.295	O	|	|	|	|	1.00
132.000	0.00	0.00	0.295	O	|	|	|	|	1.00
132.083	0.00	0.00	0.295	O	|	|	|	|	1.00
132.167	0.00	0.00	0.295	O	|	|	|	|	1.00
132.250	0.00	0.00	0.295	O	|	|	|	|	1.00
132.333	0.00	0.00	0.295	O	|	|	|	|	1.00
132.417	0.00	0.00	0.295	O	|	|	|	|	1.00
132.500	0.00	0.00	0.295	O	|	|	|	|	1.00
132.583	0.00	0.00	0.295	O	|	|	|	|	1.00
132.667	0.00	0.00	0.295	O	|	|	|	|	1.00
132.750	0.00	0.00	0.295	O	|	|	|	|	1.00
132.833	0.00	0.00	0.295	O	|	|	|	|	1.00
132.917	0.00	0.00	0.295	O	|	|	|	|	1.00
133.000	0.00	0.00	0.295	O	|	|	|	|	1.00
133.083	0.00	0.00	0.295	O	|	|	|	|	1.00
133.167	0.00	0.00	0.295	O	|	|	|	|	1.00
133.250	0.00	0.00	0.295	O	|	|	|	|	1.00
133.333	0.00	0.00	0.295	O	|	|	|	|	1.00
133.417	0.00	0.00	0.295	O	|	|	|	|	

1.00

133.500	0.00	0.00	0.295	O	|	|	|	|	1.00
133.583	0.00	0.00	0.295	O	|	|	|	|	1.00
133.667	0.00	0.00	0.295	O	|	|	|	|	1.00
133.750	0.00	0.00	0.295	O	|	|	|	|	1.00
133.833	0.00	0.00	0.295	O	|	|	|	|	1.00
133.917	0.00	0.00	0.295	O	|	|	|	|	1.00
134.000	0.00	0.00	0.295	O	|	|	|	|	1.00
134.083	0.00	0.00	0.295	O	|	|	|	|	1.00
134.167	0.00	0.00	0.295	O	|	|	|	|	1.00
134.250	0.00	0.00	0.295	O	|	|	|	|	1.00
134.333	0.00	0.00	0.295	O	|	|	|	|	1.00
134.417	0.00	0.00	0.295	O	|	|	|	|	1.00
134.500	0.00	0.00	0.295	O	|	|	|	|	1.00
134.583	0.00	0.00	0.294	O	|	|	|	|	1.00
134.667	0.00	0.00	0.294	O	|	|	|	|	1.00
134.750	0.00	0.00	0.294	O	|	|	|	|	1.00
134.833	0.00	0.00	0.294	O	|	|	|	|	1.00
134.917	0.00	0.00	0.294	O	|	|	|	|	1.00
135.000	0.00	0.00	0.294	O	|	|	|	|	1.00
135.083	0.00	0.00	0.294	O	|	|	|	|	1.00
135.167	0.00	0.00	0.294	O	|	|	|	|	1.00
135.250	0.00	0.00	0.294	O	|	|	|	|	1.00
135.333	0.00	0.00	0.294	O	|	|	|	|	1.00
135.417	0.00	0.00	0.294	O	|	|	|	|	1.00
135.500	0.00	0.00	0.294	O	|	|	|	|	1.00
135.583	0.00	0.00	0.294	O	|	|	|	|	1.00
135.667	0.00	0.00	0.294	O	|	|	|	|	1.00
135.750	0.00	0.00	0.294	O	|	|	|	|	1.00

135.833	0.00	0.00	0.294	O	|	|	|	|	1.00
135.917	0.00	0.00	0.294	O	|	|	|	|	1.00
136.000	0.00	0.00	0.294	O	|	|	|	|	1.00
136.083	0.00	0.00	0.294	O	|	|	|	|	1.00
136.167	0.00	0.00	0.294	O	|	|	|	|	1.00
136.250	0.00	0.00	0.294	O	|	|	|	|	1.00
136.333	0.00	0.00	0.294	O	|	|	|	|	1.00
136.417	0.00	0.00	0.294	O	|	|	|	|	1.00
136.500	0.00	0.00	0.294	O	|	|	|	|	1.00
136.583	0.00	0.00	0.294	O	|	|	|	|	1.00
136.667	0.00	0.00	0.294	O	|	|	|	|	1.00
136.750	0.00	0.00	0.294	O	|	|	|	|	1.00
136.833	0.00	0.00	0.294	O	|	|	|	|	1.00
136.917	0.00	0.00	0.294	O	|	|	|	|	1.00
137.000	0.00	0.00	0.294	O	|	|	|	|	1.00
137.083	0.00	0.00	0.294	O	|	|	|	|	1.00
137.167	0.00	0.00	0.294	O	|	|	|	|	1.00
137.250	0.00	0.00	0.294	O	|	|	|	|	1.00
137.333	0.00	0.00	0.294	O	|	|	|	|	1.00
137.417	0.00	0.00	0.294	O	|	|	|	|	1.00
137.500	0.00	0.00	0.294	O	|	|	|	|	1.00
137.583	0.00	0.00	0.294	O	|	|	|	|	1.00
137.667	0.00	0.00	0.294	O	|	|	|	|	1.00
137.750	0.00	0.00	0.294	O	|	|	|	|	1.00
137.833	0.00	0.00	0.294	O	|	|	|	|	1.00
137.917	0.00	0.00	0.294	O	|	|	|	|	1.00
138.000	0.00	0.00	0.294	O	|	|	|	|	1.00
138.083	0.00	0.00	0.294	O	|	|	|	|	1.00
138.167	0.00	0.00	0.294	O	|	|	|	|	

1.00

138.250	0.00	0.00	0.294	O	|	|	|	1.00
138.333	0.00	0.00	0.294	O	|	|	|	1.00
138.417	0.00	0.00	0.294	O	|	|	|	1.00
138.500	0.00	0.00	0.294	O	|	|	|	1.00
138.583	0.00	0.00	0.294	O	|	|	|	1.00
138.667	0.00	0.00	0.294	O	|	|	|	1.00
138.750	0.00	0.00	0.294	O	|	|	|	1.00
138.833	0.00	0.00	0.294	O	|	|	|	1.00
138.917	0.00	0.00	0.294	O	|	|	|	1.00
139.000	0.00	0.00	0.294	O	|	|	|	1.00
139.083	0.00	0.00	0.294	O	|	|	|	1.00
139.167	0.00	0.00	0.294	O	|	|	|	1.00
139.250	0.00	0.00	0.294	O	|	|	|	1.00
139.333	0.00	0.00	0.294	O	|	|	|	1.00
139.417	0.00	0.00	0.294	O	|	|	|	1.00
139.500	0.00	0.00	0.294	O	|	|	|	1.00
139.583	0.00	0.00	0.294	O	|	|	|	1.00
139.667	0.00	0.00	0.294	O	|	|	|	1.00

Remaining water in basin = 0.29 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1676
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 3.554 (CFS)
Total volume = 2.666 (Ac.Ft)

Status of hydrographs being held in storage

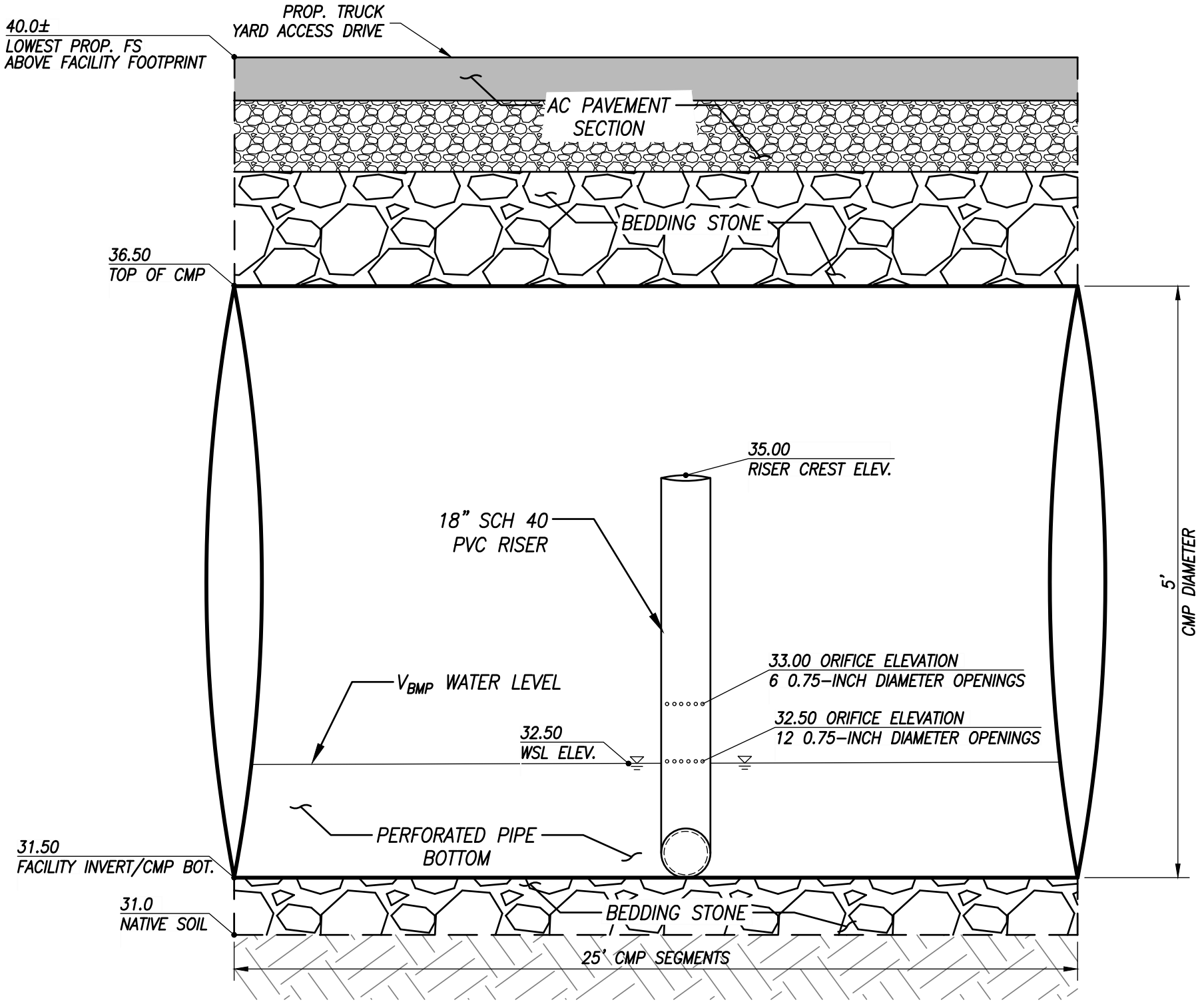
	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

Appendix “C-3”- Stage-Storage-Discharge Calculations

Elevation (ft)	Stage (ft)	Incremental Storage (CF)	Cumulative Storage (CF)	Cumulative Storage (AC*FT)	Discharge (CF)
31.50	0.00	0	0	0	0.000
32.50	1.00	12,794	12,794	0.293710328	0.001
32.75	1.25	4,774	17,568	0.403300128	0.097
33.00	1.50	5,106	22,673	0.520506896	0.138
33.25	1.75	5,356	28,029	0.643460537	0.218
33.50	2.00	5,536	33,565	0.770553606	0.264
33.75	2.25	5,653	39,219	0.900336253	0.302
34.00	2.50	5,711	44,930	1.031442677	0.336
34.25	2.75	5,711	50,641	1.162549101	0.367
34.50	3.00	5,653	56,294	1.292331748	0.395
34.75	3.25	5,536	61,830	1.419424817	0.421
35.00	3.50	5,356	67,186	1.542378458	0.446
35.25	3.75	5,106	72,292	1.659585226	1.552
35.50	4.00	4,774	77,065	1.769175026	3.553
35.75	4.25	4,342	81,407	1.868847006	6.138
36.00	4.50	3,776	85,183	1.955522862	9.039
36.25	4.75	2,997	88,179	2.024317225	10.062
36.50	5.00	1,680	89,859	2.062874848	10.989

60" CMP PIPE area (SF)	19.63494
diameter (ft)	5
radius	2.5
Pipe Storage Only (CF)	89859
No gravel considered	



UNDERGROUND FACILITY OUTLET DETAIL

NTS

		WATER SURFACE LEVEL											
No. Holes	**Orifice Elevation**	32.58	32.67	32.75	32.83	32.92	33.00	33.08	33.17	33.25	33.33	33.42	33.50
12	32.50	0.056	0.080	0.097	0.113	0.126	0.138	0.149	0.159	0.169	0.178	0.187	0.195
6	33.00							0.028	0.040	0.049	0.056	0.063	0.069
ΣDISCHARGE (CFS)		**0.056**	**0.080**	**0.097**	**0.113**	**0.126**	**0.138**	**0.177**	**0.199**	**0.218**	**0.234**	**0.250**	**0.264**

Hole Area = pi*(r)^2 0.75 inch diameter.

0.441786	in^2
0.003068	ft^2

Orifice Discharge Equation= $Q=CA[2g(H-H_0)]^{0.5}$

WATER SURFACE LEVEL											
33.58	33.67	33.75	33.83	33.92	34.00	34.08	34.17	34.25	34.33	34.42	34.50
0.203	0.211	0.218	0.225	0.232	0.239	0.245	0.252	0.258	0.264	0.270	0.276
0.074	0.080	0.084	0.089	0.093	0.097	0.101	0.105	0.109	0.113	0.116	0.119
0.277	**0.290**	**0.302**	**0.314**	**0.325**	**0.336**	**0.347**	**0.357**	**0.367**	**0.377**	**0.386**	**0.395**

WATER SURFACE LEVEL											
34.58	34.67	34.75	34.83	34.92	35.00	35.08	35.17	35.25	35.33	35.42	35.50
0.281	0.287	0.292	0.298	0.303	0.308	0.313	0.318	0.323	0.328	0.333	0.338
0.123	0.126	0.129	0.132	0.135	0.138	0.141	0.144	0.146	0.149	0.152	0.154
0.404	**0.413**	**0.421**	**0.430**	**0.438**	**0.446**	**0.454**	**0.462**	**0.470**	**0.477**	**0.485**	**0.492**

WATER SURFACE LEVEL											
35.58	35.67	35.75	35.83	35.92	36.00	36.08	36.17	36.25	36.33	36.42	36.50
0.342	0.347	0.352	0.356	0.360	0.365	0.369	0.373	0.378	0.382	0.386	0.390
0.157	0.159	0.162	0.164	0.167	0.169	0.171	0.173	0.176	0.178	0.180	0.182
0.499	**0.506**	**0.513**	**0.520**	**0.527**	**0.534**	**0.540**	**0.547**	**0.553**	**0.560**	**0.566**	**0.572**

STAGE VS. DISCHARGE (CREST ELEV.)

Outlet Type	PVC Riser		
Pipe Dia. (ft)	1.5	Pipe Circumfrence (L)	4.71
Crest Elev.	35.0	Quantity	1

*Orifice Equation	**Weir Equation
Q=KORD2H1/2	**Q=CLH1.5**
KOR =3.78	*C=3.33*

Stage (ft)	Effective Head (ft)	Orifice Flow (cfs)	Weir Flow (cfs)	Controlling Discharge (cfs)
35.08	0.083	2.46	0.21	**0.21**
35.17	0.167	3.47	0.59	**0.59**
35.25	0.250	4.25	1.08	**1.08**
35.33	0.333	4.91	1.67	**1.67**
35.42	0.417	5.49	2.33	**2.33**
35.50	0.500	6.01	3.06	**3.06**
35.58	0.583	6.50	3.86	**3.86**
35.67	0.667	6.94	4.71	**4.71**
35.75	0.750	7.37	5.62	**5.62**
35.83	0.833	7.76	6.59	**6.59**
35.92	0.917	8.14	7.60	**7.60**
36.00	1.000	8.51	8.66	**8.51**
36.08	1.083	8.85	9.76	**8.85**
36.17	1.167	9.19	10.91	**9.19**
36.25	1.250	9.51	12.10	**9.51**
36.33	1.333	9.82	13.33	**9.82**
36.42	1.417	10.12	14.60	**10.12**
36.50	1.500	10.42	15.91	**10.42**

*Equation 8-18 (HEC-22 Urban Drainage Manual)

**Equation 8-19 (HEC-22 Urban Drainage Manual)

Appendix “C-4” - Tobacco Road & Placentia Avenue: Half-Street Frontage Hydrology/Hydraulics

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 03/27/24
File:2177HALFSTREETR.out

HALF STREET FLOWS ALONG FRONTAGE
TOBBACO ROAD AND PLACENTIA AVENUE
10 YEAR EVENT

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6313

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

++
Process from Point/Station 200.000 to Point/Station 210.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 669.000(Ft.)
Top (of initial area) elevation = 68.800(Ft.)
Bottom (of initial area) elevation = 58.590(Ft.)
Difference in elevation = 10.210(Ft.)
Slope = 0.01526 s(percent)= 1.53

```
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.345 min.
Rainfall intensity =      1.940(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.847
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.690(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      220.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =    58.590(Ft.)
End of street segment elevation =    53.500(Ft.)
Length of street segment  =   572.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  20.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.050
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.074(CFS)
Depth of flow =   0.264(Ft.), Average velocity =   1.791(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   6.878(Ft.)
Flow velocity =   1.79(Ft/s)
Travel time =    5.32 min.     TC =   14.67  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.842
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.555(In/Hr) for a    10.0 year storm
Subarea runoff =      0.681(CFS) for      0.520(Ac.)
Total runoff =      1.371(CFS)      Total area =       0.940(Ac.)
Street flow at end of street =      1.371(CFS)
Half street flow at end of street =      1.371(CFS)
Depth of flow =   0.282(Ft.), Average velocity =   1.884(Ft/s)
```

```
Flow width (from curb towards crown)=   7.753(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      230.000 to Point/Station      240.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   662.000(Ft.)
Top (of initial area) elevation =    53.210(Ft.)
Bottom (of initial area) elevation =    28.400(Ft.)
Difference in elevation =    24.810(Ft.)
Slope =    0.03748  s(percent)=       3.75
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.775 min.
Rainfall intensity =      2.123(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.849
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.369(CFS)
Total initial stream area =        0.760(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            1.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  32.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version 8.0
Rational Hydrology Study Date: 03/27/24
File:2177HALFSTREETR.out

HALF STREET FLOWS ALONG FRONTAGE
TOBBACO ROAD AND PLACENTIA AVENUE
100 YEAR EVENT

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6313

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++
Process from Point/Station 200.000 to Point/Station 210.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 669.000(Ft.)
Top (of initial area) elevation = 68.800(Ft.)
Bottom (of initial area) elevation = 58.590(Ft.)
Difference in elevation = 10.210(Ft.)
Slope = 0.01526 s(percent)= 1.53

```
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.345 min.
Rainfall intensity =      2.786(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.855
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.000(CFS)
Total initial stream area =        0.420(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      220.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of street segment elevation =    58.590(Ft.)
End of street segment elevation =    53.500(Ft.)
Length of street segment  =   572.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  22.000(Ft.)
Distance from crown to crossfall grade break  =  20.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.050
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      1.530(CFS)
Depth of flow =   0.290(Ft.), Average velocity =   1.928(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.165(Ft.)
Flow velocity =   1.93(Ft/s)
Travel time =    4.94 min.     TC =   14.29  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.850
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.262(In/Hr) for a   100.0 year storm
Subarea runoff =      1.000(CFS) for      0.520(Ac.)
Total runoff =      2.000(CFS)      Total area =       0.940(Ac.)
Street flow at end of street =      2.000(CFS)
Half street flow at end of street =      2.000(CFS)
Depth of flow =   0.311(Ft.), Average velocity =   2.046(Ft/s)
```

```
Flow width (from curb towards crown)=   9.224(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      230.000 to Point/Station      240.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   662.000(Ft.)
Top (of initial area) elevation =    53.210(Ft.)
Bottom (of initial area) elevation =    28.400(Ft.)
Difference in elevation =    24.810(Ft.)
Slope =    0.03748  s(percent)=       3.75
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.775 min.
Rainfall intensity =      3.048(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.857
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  32.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.985(CFS)
Total initial stream area =        0.760(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            1.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  32.0
```

Worksheet for Tobacco Rd - 10 Year

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.006 ft/ft
Discharge	1.37 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.00
0+26	-0.52
0+28	-0.65
0+28	-0.15
0+39	0.08

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.00)	(0+39, 0.08)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.0 in
Elevation Range	-0.6 to 0.1 ft
Flow Area	0.8 ft²
Wetted Perimeter	8.5 ft
Hydraulic Radius	1.1 in
Top Width	8.27 ft
Normal Depth	3.0 in
Critical Depth	3.0 in
Critical Slope	0.006 ft/ft
Velocity	1.78 ft/s
Velocity Head	0.05 ft
Specific Energy	0.30 ft
Froude Number	1.030
Flow Type	Supercritical

Worksheet for Tobacco Rd - 10 Year

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.0 in
Critical Depth	3.0 in
Channel Slope	0.006 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Tobacco Rd - 100 Year

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.006 ft/ft
Discharge	2.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.00
0+26	-0.52
0+28	-0.65
0+28	-0.15
0+39	0.08

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.00)	(0+39, 0.08)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	3.4 in
Elevation Range	-0.6 to 0.1 ft
Flow Area	1.0 ft²
Wetted Perimeter	10.0 ft
Hydraulic Radius	1.2 in
Top Width	9.71 ft
Normal Depth	3.4 in
Critical Depth	3.4 in
Critical Slope	0.005 ft/ft
Velocity	1.94 ft/s
Velocity Head	0.06 ft
Specific Energy	0.34 ft
Froude Number	1.054
Flow Type	Supercritical

Worksheet for Tobacco Rd - 100 Year

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.4 in
Critical Depth	3.4 in
Channel Slope	0.006 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for Placentia Avenue - 10 Year

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.350 ft/ft
Discharge	1.37 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.00
0+30	-0.60
0+32	-0.73
0+32	-0.23
0+53	0.20

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.00)	(0+53, 0.20)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	1.6 in
Elevation Range	-0.7 to 0.2 ft
Flow Area	0.1 ft²
Wetted Perimeter	2.4 ft
Hydraulic Radius	0.7 in
Top Width	2.28 ft
Normal Depth	1.6 in
Critical Depth	3.0 in
Critical Slope	0.006 ft/ft
Velocity	10.02 ft/s
Velocity Head	1.56 ft
Specific Energy	1.69 ft
Froude Number	7.202
Flow Type	Supercritical

Worksheet for Placentia Avenue - 10 Year

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.6 in
Critical Depth	3.0 in
Channel Slope	0.350 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for Placentia Avenue - 100 Year

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.350 ft/ft
Discharge	1.99 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.00
0+30	-0.60
0+32	-0.73
0+32	-0.23
0+53	0.20

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.00)	(0+53, 0.20)	0.013

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	1.8 in
Elevation Range	-0.7 to 0.2 ft
Flow Area	0.2 ft²
Wetted Perimeter	3.6 ft
Hydraulic Radius	0.7 in
Top Width	3.40 ft
Normal Depth	1.8 in
Critical Depth	3.4 in
Critical Slope	0.005 ft/ft
Velocity	9.90 ft/s
Velocity Head	1.52 ft
Specific Energy	1.68 ft
Froude Number	7.188
Flow Type	Supercritical

Worksheet for Placentia Avenue - 100 Year

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.8 in
Critical Depth	3.4 in
Channel Slope	0.350 ft/ft
Critical Slope	0.005 ft/ft

Appendix “D” - Proposed Conditions Map: Routed Hydrograph

PROPOSED HYDROLOGIC CONDITIONS - PERRIS NORTH DEVELOPMENT

APN: 317-240-001
OWNER: CHANDLERS SUB REVISED

APN: 317-240-021
OWNER: CHANDLERS SUB REVISED

EXIST. R/W

PLACENTIA AVENUE

EXIST. 36" RCP LATERAL H10.1 PER RCFCD & WCD PLAN DWG. NO. 4-1173

PROP. 24" RCP STORM DRAIN CONVEYING OVERFLOWS TO EXIST. LATERAL H10.1 IN PLACENTIA AVENUE

JOIN EXIST. 36" RCP PER RCFCD & WCD PLAN DWG. NO. 4-1173 & INSTALL NEW SDMH NO. 2

STA. 20+21.44 LATERAL H-10.1 (22.88) INV

#230 53.21 FS

#240 28.40 FL

S-2 0.76

662'

PROP. R/W

18" OVERFLOW SD

18" OVERFLOW RISER FOR INFILTRATION TRENCH

28.00 INVERT ELEV. SD

Q_{10} = 1.369 CFS
Q_{100} = 1.985 CFS

6" OVERFLOW SD

PROP. MAXWELL DRYWELL FOR WQMP REQUIREMENTS (SEE PWQMP DOCUMENT)

299'

282'

PROP. 'UNDER SIDEWALK DRAIN (TYP.)

#120 35.00 TG/OVERFLOW 34.00 FL

#130 33.00 INV-OVERFLOW 32.00 INV-INFLOW

4" INLET SD

#220 53.50 FL

Q_{10} = 1.371 CFS
Q_{100} = 2.00 CFS

PROP. 24" RCP STORM DRAIN CONVEYING OVERFLOWS TO EXIST. LATERAL H10.1 IN PLACENTIA AVENUE

A 0.77

B 7.2

C 0.33

78'

TOBACCO ROAD

PROP. CATCH BASIN PER PPT220047/IP240025

PROP. INLET PER PPT220047/IP240025 (Q_{100} = 40 CFS)

APN: 317-260-004
OWNER: SERRANO SILVANO

APN: 317-260-005
OWNER: OAKES AND SAWYERS SUB

S-1 0.52

572'

#100 53.20 FL

SEE FACILITY OUTLET DETAIL HEREON

PPT230048
OWNER: THRIFTY OIL COMPANY
PERRIS - NORTH PARCEL

CMP INFILTRATION & DETENTION FACILITY

CMP INFILTRATION & DETENTION FACILITY

EXIST. PL

APN: 317-260-034
OWNER: COUNTY OF RIVERSIDE
PERRIS-COUNTY PARCEL

#110 31.50 INV

12" SD

612'

365'

#210 58.59 FL

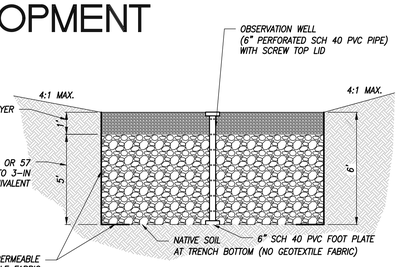
Q_{10} = 0.690 CFS
Q_{100} = 1.000 CFS
PER PPT20047 STUDY

PPT220047
OWNER: THRIFTY OIL COMPANY
PERRIS - SOUTH PARCEL

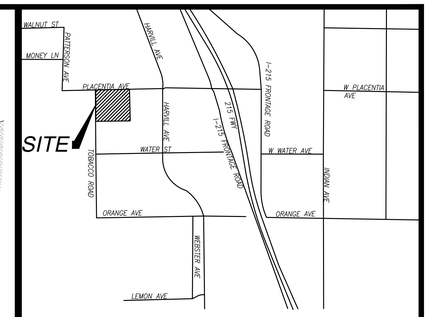
EXIST. R/W

PROP. R/W

EXIST. R/W



INFILTRATION TRENCH DETAIL
NTS

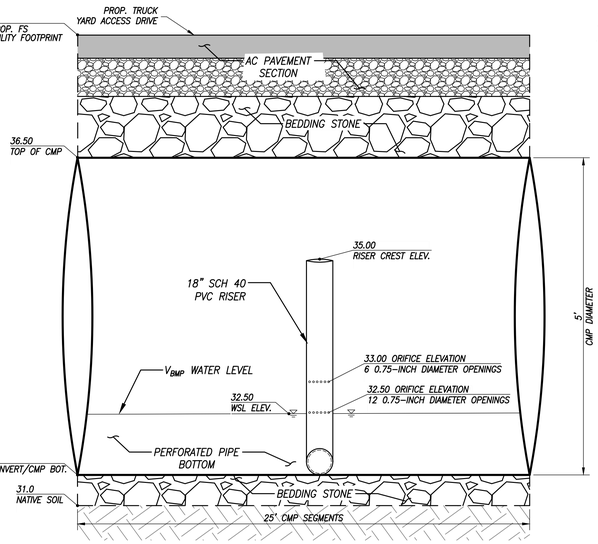


VICINITY MAP

TOWNSHIP 4S,
RANGE 4W, SECTION 13

LEGEND

- U/G ELECTRICAL CONDUITS
- U/G WATER
- EXISTING GROUND CONTOUR
- CENTERLINE
- R/W LINE
- TRIBUTARY AREA BOUNDARY
- SUBAREA
- ACREAGE
- FLOWLINE
- NODE ELEVATION
- CENTROID
- EXIST OFFSITE AC
- PROP. OFFSITE AC
- PROP. PCC PAVEMENT
- EXIST. AC PAVEMENT
- PROP. LANDSCAPE



UNDERGROUND FACILITY OUTLET DETAIL
NTS

WATERSHED A	DEVELOPED **NON-ROUTED** UNIT HYDROGRAPH PEAK DISCHARGE (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	0.6	1.0	1.2	2.2
3 HR DURATION	0.2	0.4	0.5	1.0
6 HR DURATION	0.2	0.3	0.5	0.9
24 HR DURATION	0.1	0.1	0.1	0.2

WATERSHED B	ROUTED FACILITY PEAK OUTFLOW (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	0.0	0.1	0.1	0.2
3 HR DURATION	0.1	0.2	0.2	0.3
6 HR DURATION	0.2	0.3	0.3	0.4
24 HR DURATION	0.2	0.3	0.4	3.6

WATERSHED C	DEVELOPED **NON-ROUTED** UNIT HYDROGRAPH PEAK DISCHARGE (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	0.5	0.7	0.9	1.4
3 HR DURATION	0.2	0.3	0.4	0.6
6 HR DURATION	0.2	0.3	0.4	0.6
24 HR DURATION	0.1	0.1	0.1	0.2

	EXIST. UNDEVELOPED UNIT HYDROGRAPH PEAK FLOW (CFS)			
	2 YR STORM	5 YR STORM	10 YR STORM	100 YR STORM
1 HR DURATION	5.8	9.8	12.9	23.2
3 HR DURATION	1.3	3.5	5.2	10.9
6 HR DURATION	0.9	2.8	4.4	9.6
24 HR DURATION	0.2	0.3	0.4	2.1

30 0 30 60 90

SCALE 1" = 30'

PROPOSED DEVELOPMENT
UNIT HYDROGRAPH EXHIBIT
FOR
THE ORDEN COMPANY
COUNTY OF RIVERSIDE

PREPARED BY:
Armstrong & Brooks Consulting Engineers, Inc.
Civil Engineering · Water Resources · Surveying
1350 E. Chase Drive, Corona, CA 92881
Mail: P.O. Box 78088, Corona, CA 92887
Ph. (951) 372-8400, Fax (951) 372-8430

Appendix “E” – CMP Detention Facility Plans

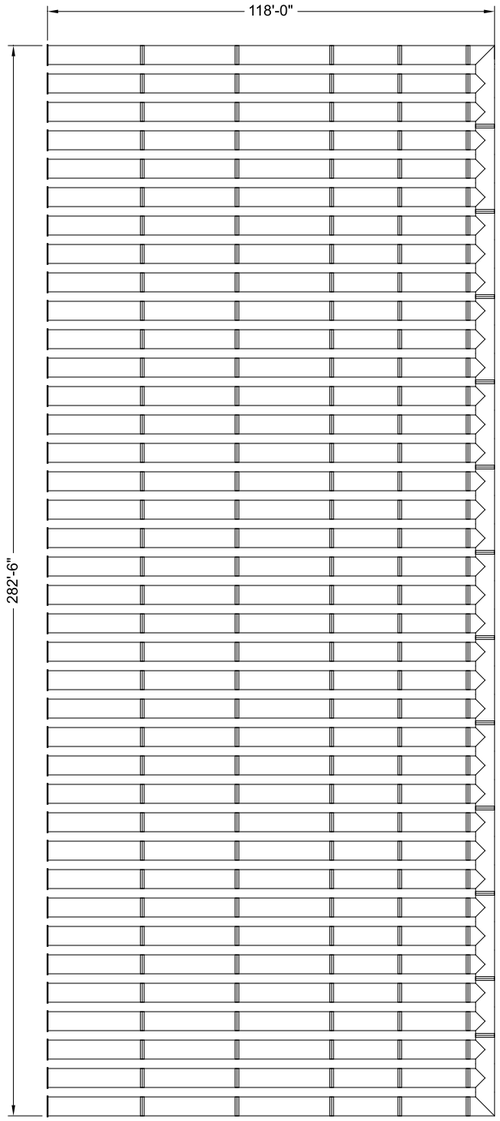
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 4,577 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 89,859 CF
- BACKFILL STORAGE VOLUME = 41,440 CF
- TOTAL STORAGE PROVIDED = 131,300 CF

PIPE DETAILS
- DIAMETER = 60"
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = PERFORATED
- BARREL SPACING = 30"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 2"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 6"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY

SCALE: 1" = 40'

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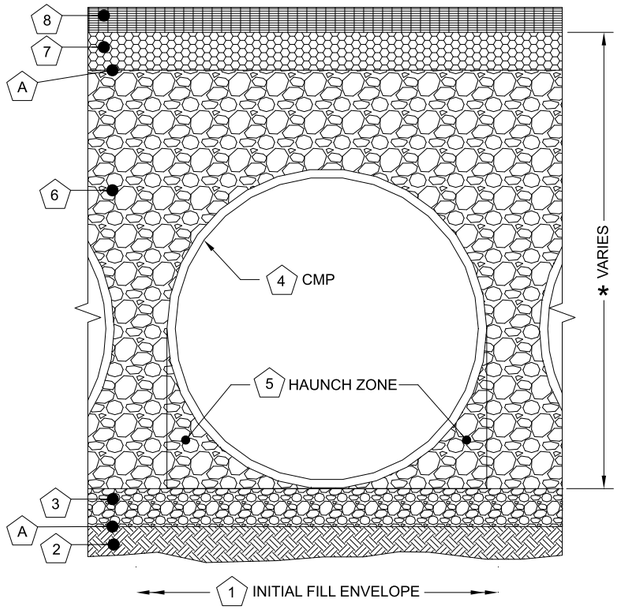
CONTECH® CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		



	Infiltration Systems - CMP Infiltration & CMP Perforated Drainage Pipe			
	Material Location	Description	Material Designation	Designation
8	Rigid or Flexible Pavement (if applicable)			
7	Road Base (if applicable			
A	Geotextile Layer	Non-Woven Geotextile	CONTECH C-40 or C-45	Engineer Decision for consideration to prevent soil migration into varying soil types. Wrap the trench only.
6	Backfill	Infiltration pipe systems have a pipe perforation sized of 3/8" diameter. An open graded, free draining stone, with a particle size of ½" – 2 ½" diameter is recommended.	AASHTO M 145-A-1 or AASHTO M 43 - 3, 4	Material shall be worked into the pipe haunches by means of shovel-slicing, rodding, air-tamper, vibratory rod, or other effective methods. Compaction of all placed fill material is necessary and shall be considered adequate when no further yielding of the material is observed under the compactor, or under foot, and the Project Engineer or his representative is satisfied with the level of compaction"
3	Bedding Stone	Well graded granular bedding material w/maximum particle size of 3"	AASHTO M43 - 3,357,4,467, 5, 56, 57	For soil aggregates larger than 3/8" a dedicated bedding layer is not required for CMP. Pipe may be placed on the trench bottom comprised of native suitable well graded & granular material. For Arch pipes it is recommended to be shaped to a relatively flat bottom or fine-grade the foundation to a slight v-shape. Soil aggregates less than 3/8" and unsuitable material should be over-excavated and re-placed with a 4"-6" layer of well graded & granular stone per the material designation.
A	Geotextile Layer	None	None	Contech does not recommend geotextiles be placed under the invert of Infiltration systems due to the propensity for geotextiles to clog over time.
*	Note: The listed AASHTO designations are for gradation only. The stone must also be angular and clean.			

1 MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT.

FOUNDATION/BEDDING PREPARATION

2 PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

5 HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

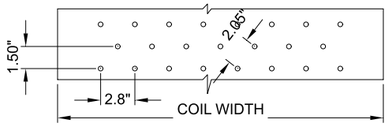
BACKFILL

MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE. ATTENTION MUST BE GIVEN TO PROVIDING ADEQUATE MINIMUM COVER FOR SUCH EQUIPMENT. MAINTAIN BALANCED LOADING ON ALL PIPES IN THE SYSTEM DURING ALL SUCH OPERATIONS.

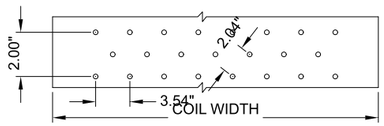
OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

2 2/3" x 1/2" CORRUGATION - STEEL AND ALUMINUM CMP EDGE SPACING EQUAL ON BOTH SIDES



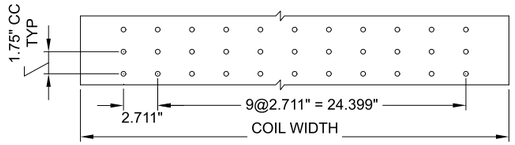
OPEN AREA = 3.76 SQ IN/SQ FT

3" x 1" CORRUGATION - STEEL AND ALUMINUM CMP (COIL PROVIDED FROM CONTECH LANTANA, FL PLANT)



OPEN AREA = 4.16 SQ IN/SQ FT

5" x 1" CORRUGATION - STEEL ONLY
EDGE SPACING EQUAL ON BOTH SIDES



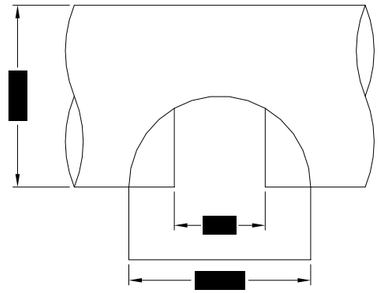
OPEN AREA = 3.33 SQ IN/SQ FT

NOTES:

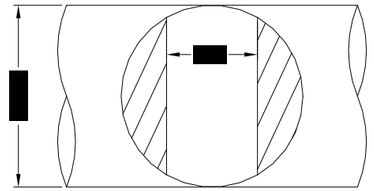
1. PERFORATIONS MEET AASHTO AND ASTM SPECIFICATIONS.
2. PERFORATION OPEN AREA PER SQUARE FOOT OF PIPE IS BASED ON THE NOMINAL DIAMETER AND LENGTH OF PIPE.
3. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. ALL HOLES ⌀3/8".

TYPICAL PERFORATION DETAIL

SCALE: N.T.S.



PLAN

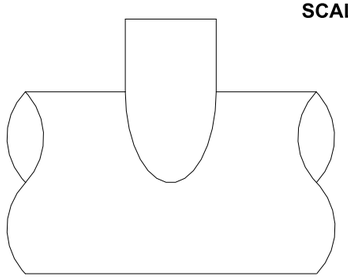


FRONT

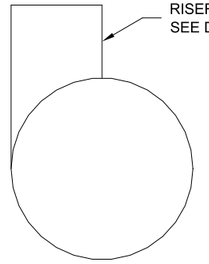
TYPICAL MANWAY DETAIL

SCALE: N.T.S.

NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.



ELEVATION

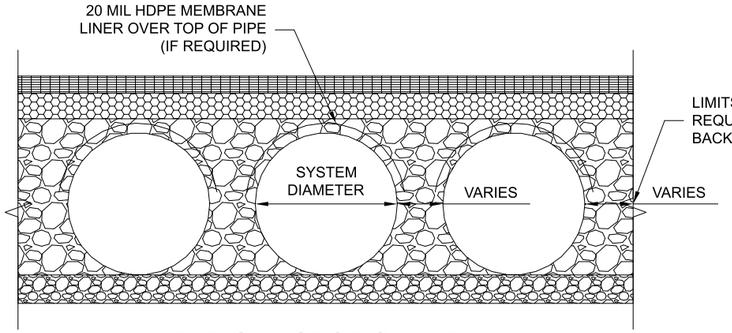


END

TYPICAL RISER DETAIL

SCALE: N.T.S.

NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.



TYPICAL SECTION VIEW

LINER OVER ROWS
SCALE: N.T.S.

NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, AN HDPE MEMBRANE LINER IS RECOMMENDED WITH THE SYSTEM. THE IMPERMEABLE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

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CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

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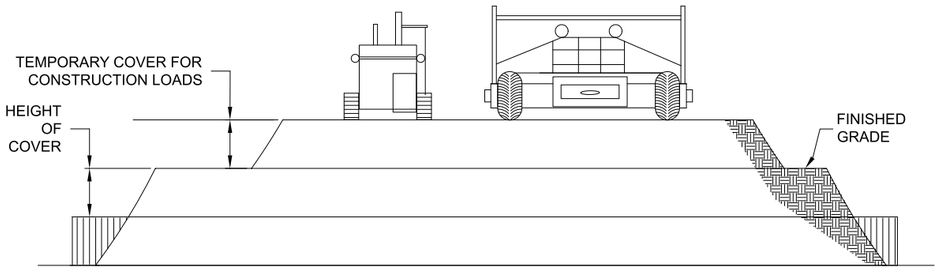

CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

APPLICABLE POLYMER COATED: AASHTO M-245 OR ASTM A-762

ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE
HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.
REQUIREMENTS
INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

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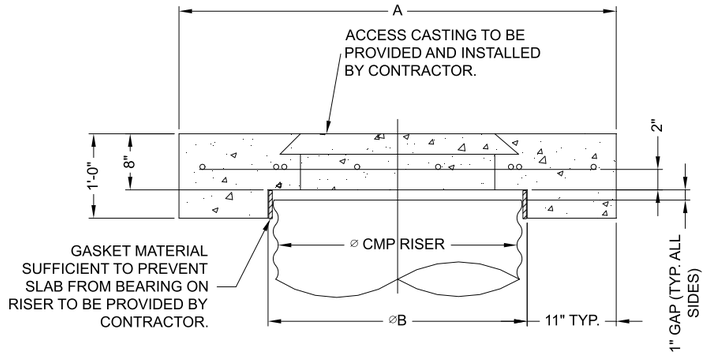
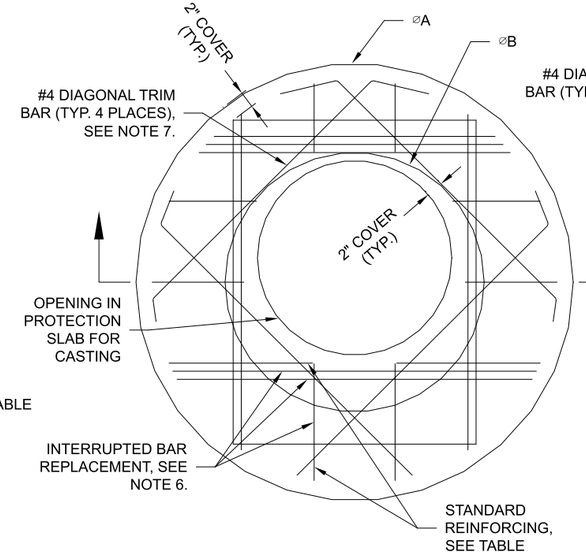


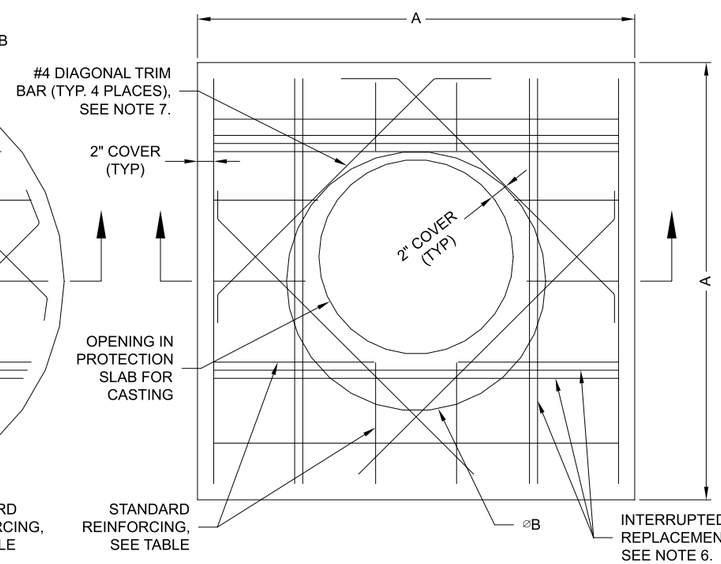
SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

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CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

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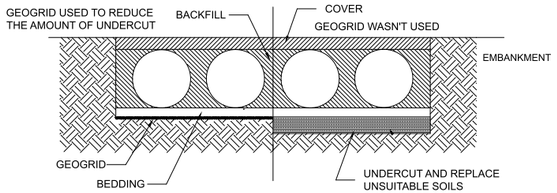
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.

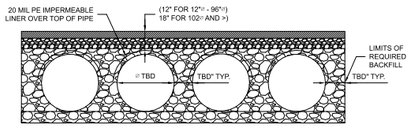


GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DEICING AGENTS. IF SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM THE USE OF SUCH AGENTS INCLUDING PREMATURE CORROSION AND REDUCED ACTUAL SERVICE LIFE.

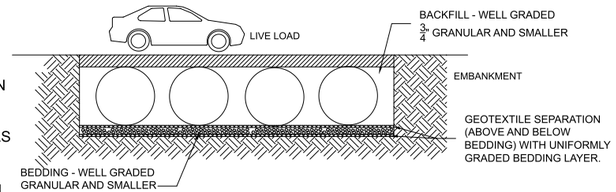
THE PROJECT'S ENGINEER OF RECORD IS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIS/HER BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PROTECTIVE MEASURES ARE REQUIRED. BELOW IS A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.



IN-SITU TRENCH WALL

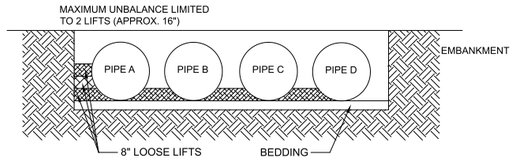
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



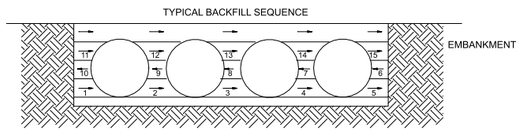
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

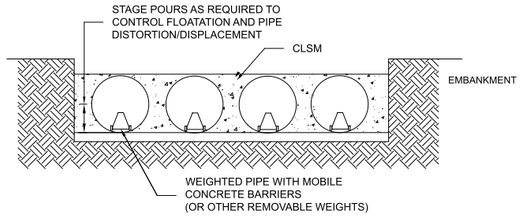


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

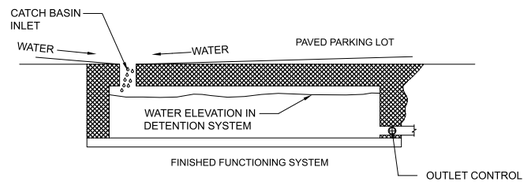


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

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DATE	REVISION DESCRIPTION	BY

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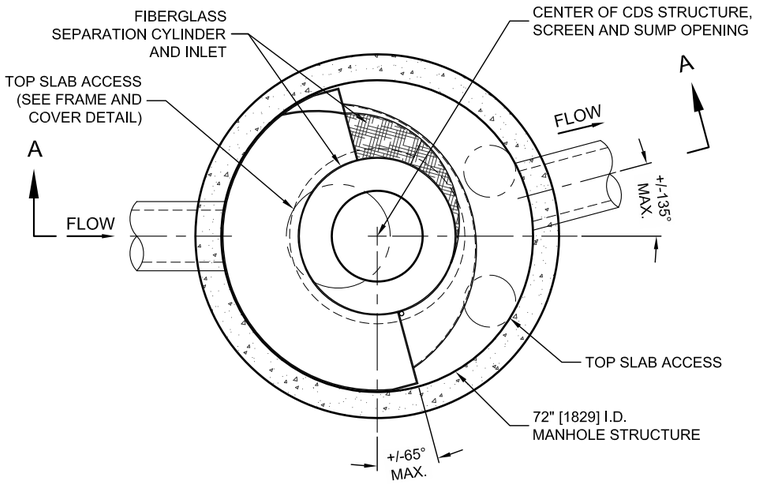
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

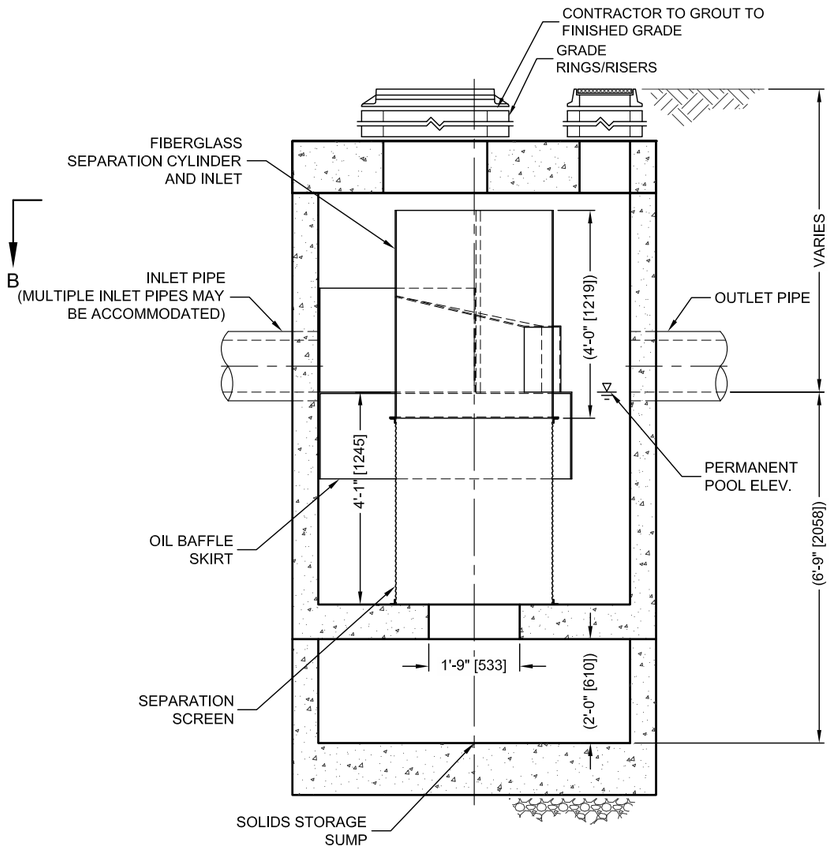
CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		



PLAN VIEW B-B
N.T.S.



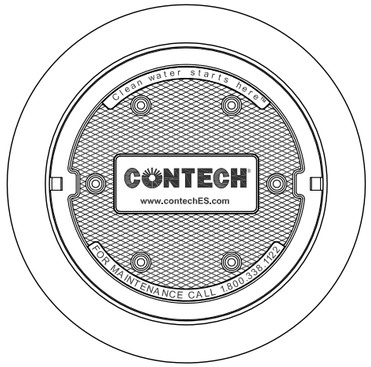
ELEVATION A-A
N.T.S.

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,848; 6,641,720; 6,511,595; 6,581,782; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CDS3035-6-C DESIGN NOTES

THE STANDARD CDS3035-6-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES
SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (CFS OR L/s)	*
PEAK FLOW RATE (CFS OR L/s)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*
SCREEN APERTURE (2400 OR 4700)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

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800-338-1122 513-645-7000 513-645-7993 FAX

CDS3035-6-C
INLINE CDS
STANDARD DETAIL

C:\USERS\SCHLACHTERH\DESKTOP\CDS DETAILS 180 MICRON SIZING\CAD\CDS3035-6-C-DTL.DWG 5/19/2014 5:33 PM

Appendix “G” – Hydraulic Calculations for Connection to Lateral H-10.1

EXIST CONDITIONS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
		WARNING - Junction Analysis - Large Lateral Flow(s)												
1210.840	1491.350	1.892	1493.242	158.00	21.82	7.40	1500.64	.00	3.51	5.23	5.500	.000	.00	1 .0
JUNCT STR	.3571					.0424	.30	1.89	3.27		.013	.00	.00	PIPE
1217.840	1493.850	1.857	1495.707	125.00	24.11	9.03	1504.73	.00	3.28	3.49	3.500	.000	.00	1 .0
3.272	.0842					.0502	.16	1.86	3.49	1.60	.013	.00	.00	PIPE
1221.112	1494.125	1.867	1495.992	125.00	23.95	8.91	1504.90	.00	3.28	3.49	3.500	.000	.00	1 .0
19.728	.0842					.0468	.92	1.87	3.45	1.60	.013	.00	.00	PIPE
1240.840	1495.786	1.940	1497.726	125.00	22.84	8.10	1505.82	.00	3.28	3.48	3.500	.000	.00	1 .0
15.389	.0842					.0413	.64	1.94	3.21	1.60	.013	.00	.00	PIPE
1256.229	1497.081	2.017	1499.098	125.00	21.77	7.36	1506.46	.00	3.28	3.46	3.500	.000	.00	1 .0
12.341	.0842					.0365	.45	2.02	2.98	1.60	.013	.00	.00	PIPE
1268.570	1498.120	2.098	1500.218	125.00	20.76	6.69	1506.91	.00	3.28	3.43	3.500	.000	.00	1 .0
TRANS STR	.1182					.0335	.18	2.10	2.76		.013	.00	.00	PIPE

EXIST CONDITIONS

1274.070	1498.770	2.568	1501.338	125.00	19.40	5.85	1507.18	.00	2.96	2.11	3.000	.000	.00	1 .0
294.750	.0328					.0324	9.55	2.57	1.96	2.57	.013	.00	.00	PIPE
1568.820	1508.430	2.610	1511.040	125.00	19.15	5.69	1516.73	.00	2.96	2.02	3.000	.000	.00	1 .0
139.706	.0319					.0321	4.49	2.61	1.88	2.62	.013	.00	.00	PIPE

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1708.525	1512.890	2.599	1515.490	125.00	19.21	5.73	1521.22	.00	2.96	2.04	3.000	.000	.00	1 .0
252.895	.0319					.0336	8.51	2.60	1.90	2.62	.013	.00	.00	PIPE
1961.421	1520.965	2.460	1523.425	125.00	20.15	6.30	1529.73	.00	2.96	2.30	3.000	.000	.00	1 .0
102.589	.0319					.0369	3.79	2.46	2.16	2.62	.013	.00	.00	PIPE
2064.010	1524.240	2.340	1526.580	125.00	21.13	6.93	1533.51	.00	2.96	2.49	3.000	.000	.00	1 .0
56.962	.0387					.0387	2.21	2.34	2.41	2.34	.013	.00	.00	PIPE
2120.972	1526.445	2.340	1528.785	125.00	21.13	6.93	1535.72	.00	2.96	2.49	3.000	.000	.00	1 .0
277.000	.0387					.0381	10.56	2.34	2.41	2.34	.013	.00	.00	PIPE

2397.973	1537.168	2.376	1539.544	125.00	20.82	6.73	1546.28	.00	2.96	2.44	3.000	.000	.00	1 .0
167.707	.0387					.0358	6.01	2.38	2.34	2.34	.013	.00	.00	PIPE
2565.680	1543.660	2.501	1546.161	125.00	19.85	6.12	1552.28	.00	2.96	2.23	3.000	.000	.00	1 .0
JUNCT STR	.0400					.0387	.19	2.50	2.08		.013	.00	.00	PIPE
2570.680	1543.860	1.786	1545.646	92.00	20.98	6.83	1552.48	.00	2.86	2.95	3.000	.000	.00	1 .0
122.308	.0436					.0426	5.22	1.79	3.03	1.78	.013	.00	.00	PIPE
2692.988	1549.197	1.801	1550.998	92.00	20.76	6.70	1557.69	.00	2.86	2.94	3.000	.000	.00	1 .0
135.512	.0436					.0397	5.38	1.80	2.98	1.78	.013	.00	.00	PIPE
2828.500	1555.110	1.875	1556.985	92.00	19.80	6.09	1563.07	.00	2.86	2.90	3.000	.000	.00	1 .0
66.422	.0396					.0363	2.41	1.87	2.76	1.84	.013	.00	.00	PIPE

Program Package Serial Number: 7062

WATER SURFACE PROFILE LISTING Date:12- 1-2023 Time:10:32:30

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2894.921	1557.741	1.908	1559.649	92.00	19.40	5.84	1565.49	.00	2.86	2.89	3.000	.000	.00	1 .0
72.708	.0396					.0334	2.43	1.91	2.67	1.84	.013	.00	.00	PIPE
2967.629	1560.621	1.989	1562.610	92.00	18.49	5.31	1567.92	.00	2.86	2.84	3.000	.000	.00	1 .0

EXIST CONDITIONS

40.029	.0396						.0297	1.19	1.99	2.46	1.84	.013	.00	.00	PIPE				
3007.658	1562.207	2.076	1564.282	92.00	17.63	4.83	1569.11	.00	2.86	2.77	3.000	.000	.00	1	.0				
26.338	.0396						.0265	.70	2.08	2.26	1.84	.013	.00	.00	PIPE				
3033.997	1563.250	2.169	1565.419	92.00	16.81	4.39	1569.81	.00	2.86	2.69	3.000	.000	.00	1	.0				
18.695	.0396						.0237	.44	2.17	2.08	1.84	.013	.00	.00	PIPE				
3052.692	1563.991	2.270	1566.261	92.00	16.03	3.99	1570.25	.00	2.86	2.57	3.000	.000	.00	1	.0				
13.696	.0396						.0213	.29	2.27	1.89	1.84	.013	.00	.00	PIPE				
3066.387	1564.533	2.382	1566.916	92.00	15.28	3.63	1570.54	.00	2.86	2.43	3.000	.000	.00	1	.0				
10.017	.0396						.0193	.19	2.38	1.71	1.84	.013	.00	.00	PIPE				
3076.404	1564.930	2.509	1567.439	92.00	14.57	3.30	1570.74	.00	2.86	2.22	3.000	.000	.00	1	.0				
6.890	.0396						.0177	.12	2.51	1.52	1.84	.013	.00	.00	PIPE				
3083.294	1565.203	2.657	1567.860	92.00	13.89	3.00	1570.86	.00	2.86	1.91	3.000	.000	.00	1	.0				
3.206	.0396						.0167	.05	2.66	1.31	1.84	.013	.00	.00	PIPE				
3086.500	1565.330	2.858	1568.188	92.00	13.24	2.72	1570.91	.00	2.86	1.28	3.000	.000	.00	1	.0				

PROPOSED CONDITIONS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
						WARNING - Junction Analysis - Large Lateral Flow(s)								
1210.840	1491.350	1.927	1493.277	161.55	21.76	7.35	1500.63	.00	3.55	5.25	5.500	.000	.00	1 .0
JUNCT STR	.3571					.0407	.28	1.93	3.22		.013	.00	.00	PIPE
1217.840	1493.850	1.919	1495.769	128.55	23.80	8.80	1504.57	.00	3.30	3.48	3.500	.000	.00	1 .0
10.898	.0842					.0465	.51	1.92	3.37	1.63	.013	.00	.00	PIPE
1228.738	1494.767	1.960	1496.727	128.55	23.19	8.35	1505.08	.00	3.30	3.47	3.500	.000	.00	1 .0
16.267	.0842					.0423	.69	1.96	3.24	1.63	.013	.00	.00	PIPE
1245.005	1496.136	2.038	1498.174	128.55	22.11	7.59	1505.77	.00	3.30	3.45	3.500	.000	.00	1 .0
12.992	.0842					.0374	.49	2.04	3.00	1.63	.013	.00	.00	PIPE
1257.997	1497.230	2.120	1499.350	128.55	21.08	6.90	1506.25	.00	3.30	3.42	3.500	.000	.00	1 .0
10.573	.0842					.0331	.35	2.12	2.78	1.63	.013	.00	.00	PIPE
1268.570	1498.120	2.208	1500.328	128.55	20.10	6.27	1506.60	.00	3.30	3.38	3.500	.000	.00	1 .0
TRANS STR	.1182					.0325	.18	2.21	2.57		.013	.00	.00	PIPE

PROPOSED CONDITIONS

```
1274.070  1498.770    2.961  1501.731    128.55   18.23    5.16  1506.89     .00    2.96      .68    3.000     .000   .00   1   .0
       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
 223.420    .0322                                          .0329     7.36     2.96    1.00    2.77    .013       .00   .00  PIPE
        |         |        |         |         |             |         |       |        |        |       |       |      |
1497.490  1505.963    2.771  1508.734    128.55   18.84    5.51  1514.25     .00    2.96     1.59    3.000     .000   .00   1   .0
       -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
 138.485    .0322                                          .0321     4.44     2.77    1.60    2.77    .013       .00   .00  PIPE
```

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1635.975	1510.421	2.771	1513.193	128.55	18.84	5.51	1518.71	.00	2.96	1.59	3.000	.000	.00	1 .0
HYDRAULIC JUMP														
1635.975	1510.421	2.770	1513.192	128.55	18.85	5.52	1518.71	.00	2.96	1.60	3.000	.000	.00	1 .0
40.946	.0322					.0323	1.32	2.77	1.61	2.77	.013	.00	.00	PIPE
1676.920	1511.740	2.749	1514.489	128.55	18.94	5.57	1520.06	.00	2.96	1.66	3.000	.000	.00	1 .0
339.520	.0322					.0333	11.32	2.75	1.65	2.77	.013	.00	.00	PIPE
2016.440	1522.670	2.581	1525.251	128.55	19.87	6.13	1531.38	.00	2.96	2.08	3.000	.000	.00	1 .0
JUNCT STR	.0420					.0356	.18	2.58	1.98		.013	.00	.00	PIPE
2021.440	1522.880	2.395	1525.275	125.00	20.66	6.63	1531.90	.00	2.96	2.41	3.000	.000	.00	1 .0
42.570	.0319					.0378	1.61	2.40	2.30	2.62	.013	.00	.00	PIPE
2064.010	1524.240	2.340	1526.580	125.00	21.13	6.93	1533.51	.00	2.96	2.49	3.000	.000	.00	1 .0
56.962	.0387					.0387	2.21	2.34	2.41	2.34	.013	.00	.00	PIPE
2120.972	1526.445	2.340	1528.785	125.00	21.13	6.93	1535.72	.00	2.96	2.49	3.000	.000	.00	1 .0

PROPOSED CONDITIONS

```
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
  277.000    .0387                                          .0381    10.56     2.34    2.41    2.34    .013       .00   .00  PIPE
         |         |        |         |         |              |         |       |        |        |       |       |      |
 2397.973  1537.168    2.376  1539.544    125.00   20.82    6.73  1546.28     .00    2.96     2.44    3.000     .000   .00   1   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
  167.707    .0387                                          .0358     6.01     2.38    2.34    2.34    .013       .00   .00  PIPE
         |         |        |         |         |              |         |       |        |        |       |       |      |
 2565.680  1543.660    2.501  1546.161    125.00   19.85    6.12  1552.28     .00    2.96     2.23    3.000     .000   .00   1   .0
        -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-      -|-     -|-     -|-     |-
JUNCT STR   .0400                                           .0387      .19    2.50    2.08            .013       .00   .00  PIPE
```

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2570.680	1543.860	1.786	1545.646	92.00	20.98	6.83	1552.48	.00	2.86	2.95	3.000	.000	.00	1 .0
122.308	.0436					.0426	5.22	1.79	3.03	1.78	.013	.00	.00	PIPE
2692.988	1549.197	1.801	1550.998	92.00	20.76	6.70	1557.69	.00	2.86	2.94	3.000	.000	.00	1 .0
135.512	.0436					.0397	5.38	1.80	2.98	1.78	.013	.00	.00	PIPE
2828.500	1555.110	1.875	1556.985	92.00	19.80	6.09	1563.07	.00	2.86	2.90	3.000	.000	.00	1 .0
66.422	.0396					.0363	2.41	1.87	2.76	1.84	.013	.00	.00	PIPE
2894.921	1557.741	1.908	1559.649	92.00	19.40	5.84	1565.49	.00	2.86	2.89	3.000	.000	.00	1 .0
72.708	.0396					.0334	2.43	1.91	2.67	1.84	.013	.00	.00	PIPE
2967.629	1560.621	1.989	1562.610	92.00	18.49	5.31	1567.92	.00	2.86	2.84	3.000	.000	.00	1 .0
40.029	.0396					.0297	1.19	1.99	2.46	1.84	.013	.00	.00	PIPE
3007.658	1562.207	2.076	1564.282	92.00	17.63	4.83	1569.11	.00	2.86	2.77	3.000	.000	.00	1 .0
26.338	.0396					.0265	.70	2.08	2.26	1.84	.013	.00	.00	PIPE
3033.997	1563.250	2.169	1565.419	92.00	16.81	4.39	1569.81	.00	2.86	2.69	3.000	.000	.00	1 .0

PROPOSED CONDITIONS

```
      -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-       -|-     -|-     -|-     -|-     |-
  18.695    .0396                                              .0237      .44     2.17    2.08    1.84    .013       .00   .00  PIPE
       |         |        |         |         |              |         |       |       |       |       |       |       |      |
3052.692  1563.991    2.270  1566.261     92.00   16.03    3.99  1570.25     .00    2.86    2.57    3.000     .000   .00   1   .0
      -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-       -|-     -|-     -|-     -|-     |-
  13.696    .0396                                              .0213      .29     2.27    1.89    1.84    .013       .00   .00  PIPE
       |         |        |         |         |              |         |       |       |       |       |       |       |      |
3066.387  1564.533    2.382  1566.916     92.00   15.28    3.63  1570.54     .00    2.86    2.43    3.000     .000   .00   1   .0
      -|-       -|-      -|-       -|-       -|-     -|-     -|-       -|-     -|-      -|-       -|-     -|-     -|-     -|-     |-
  10.017    .0396                                              .0193      .19     2.38    1.71    1.84    .013       .00   .00  PIPE
```

PROPOSED CONDITIONS

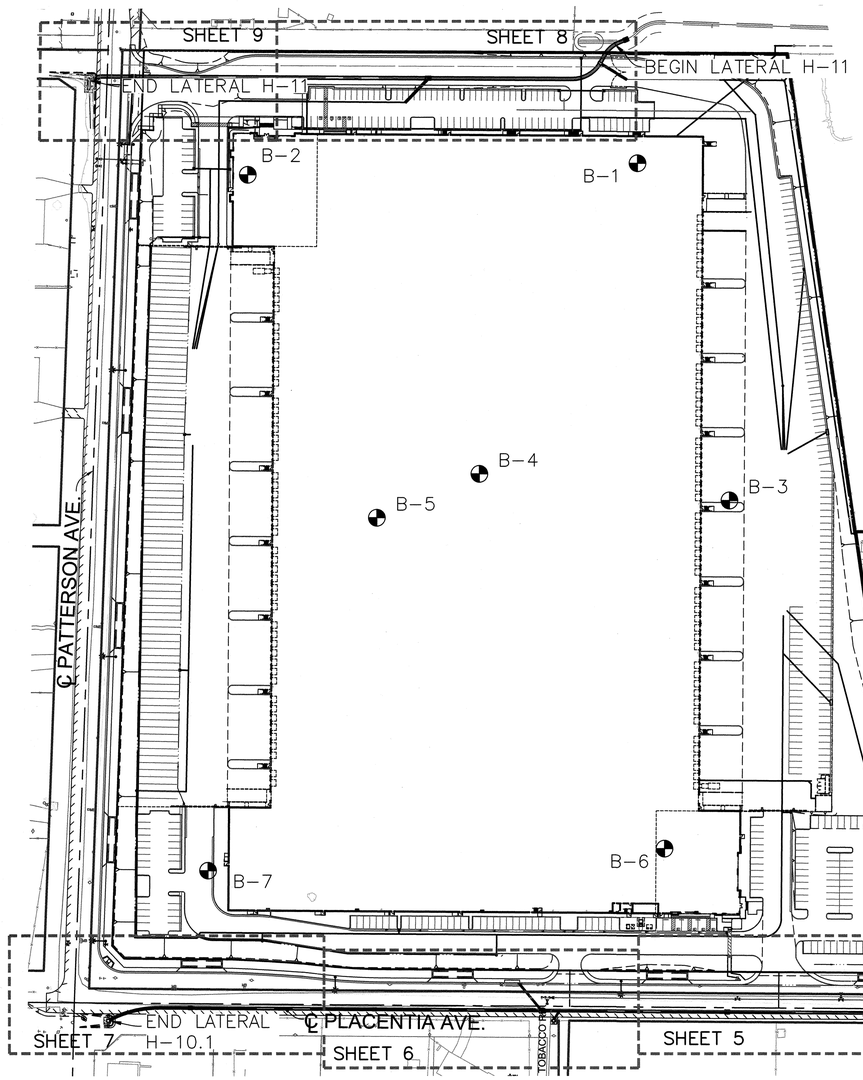
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3076.404	1564.930	2.509	1567.439	92.00	14.57	3.30	1570.74	.00	2.86	2.22	3.000	.000	.00	1 .0
6.890	.0396					.0177	.12	2.51	1.52	1.84	.013	.00	.00	PIPE

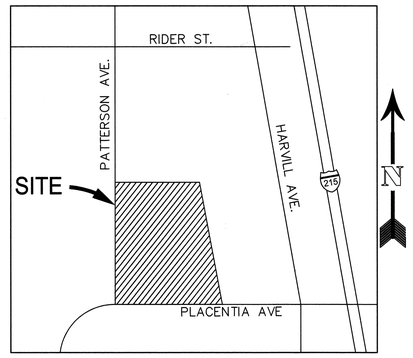
Appendix "H-1" –

Perris Valley MDP Lateral H-10.1 Plans

DWG 4-1173

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT





VICINITY MAP
NOT TO SCALE

SHEET INDEX

	SHEET NO.:
TITLE SHEET	1
LATERAL H-10.1 PLAN & PROFILE	2-7
LATERAL H-11 PLAN & PROFILE	8
LATERAL H-11 PLAN & PROFILE	9
CONNECTOR PIPE PROFILES	10

R.C.F.C. & W.C.D. STANDARD DRAWINGS

MH 252	MANHOLE NO. 2
MH 254	MANHOLE NO. 4
M 803	CONCRETE COLLAR FOR PIPES 12"-66"
CB 100	CATCH BASIN NO. 1
LD 201	LOCAL DEPRESSION NO. 2, CASE B
CB 110	CONCRETE DROP INLET
TS 303	TRANSITION STRUCTURE NO. 3

BASIS OF BEARINGS

BASIS OF BEARINGS S THE C.L. OF PATTERSON AVE PER RS 146/25

BEING: NORTH 00°04'26" WEST

INDEX MAP

100 50 0 100
SCALE 1"=100'

N

GENERAL NOTES

1. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S (DISTRICT) M.O.U. STANDARD SPECIFICATIONS DATED MARCH 2020 AND DISTRICT STANDARD DRAWINGS. FOR THE LATEST STANDARD DRAWINGS, PLEASE REFER TO THE "ENGINEERING TOOLS" PAGE FOUND ON THE "BUSINESS" SECTION OF THE DISTRICT'S WEBSITE.
2. CONTACT THE ENCROACHMENT PERMIT ENGINEER AT 951.955.1266 IF AN ENCROACHMENT PERMIT IS REQUIRED FROM THE DISTRICT. AFTER THE PERMIT IS ISSUED, THE DISTRICT MUST BE NOTIFIED ONE (1) WEEK PRIOR TO CONSTRUCTION.
3. CONTACT CONSTRUCTION MANAGEMENT AT 951.955.1288 IF CONSTRUCTION INSPECTION WILL BE PERFORMED BY THE DISTRICT. THE DISTRICT MUST BE NOTIFIED TWENTY (20) DAYS PRIOR TO CONSTRUCTION.
4. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
5. STATIONING FOR LATERALS AND CONNECTOR PIPES REFER TO THE CENTERLINE INTERSECTION STATIONS.
6. FORTY-EIGHT (48) HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT AT 1.800.227.2600.
7. ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD 88).
8. ALL COORDINATES ARE SHOWN IN FEET AND DECIMALS THEREOF BASED ON THE NORTH AMERICAN DATUM (NAD 83), CALIFORNIA COORDINATE SYSTEM (CCS), ZONE 6 AND EPOCH 2019.30.
9. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
10. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
11. UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "A" HOT MIX ASPHALT OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
12. OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
13. PIPE CONNECTED TO THE MAINLINE PIPE SHALL CONFORM TO JUNCTION STRUCTURE NO. 4 (JS 229) UNLESS OTHERWISE NOTED.
14. PIPE BEDDING SHALL CONFORM TO DISTRICT STANDARD DRAWING NO. M815.
15. BH-1 INDICATES SOIL BORING LOCATIONS BASED ON THE SOILS REPORT DATED 9/2014. LOCATIONS SHOWN ARE APPROXIMATE.
16. "V" IS THE DEPTH OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
17. CATCH BASINS SHALL BE LOCATED SO THAT LOCAL DEPRESSION SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
18. ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS ARE TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
19. STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO DISTRICT STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
20. THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
21. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHOULD BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
22. APPROVAL OF THESE PLANS BY DISTRICT DOES NOT RELIEVE THE DEVELOPER'S ENGINEER OF RESPONSIBILITY FOR THE ENGINEERING DESIGN. IF FIELD CHANGES ARE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO MAKE THE NECESSARY CORRECTIONS.
23. THE CONTRACTOR OR DEVELOPER SHALL SECURE ALL REQUIRED ENCROACHMENT AND/OR STATE AND FEDERAL REGULATORY PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.
24. THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES AND STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1-1/2" OVER THE REINFORCING STEEL AND INCREASED TO A MINIMUM OF 3 1/2" OVER REINFORCING STEEL FOR BOX CULVERT, WHEN DESIGN VELOCITIES EXCEED 20' PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'C=5,000 PSI FOR VELOCITIES EXCEEDING 20' PER SECOND AND F'C=6,000 PSI FOR VELOCITIES EXCEEDING 30' PER SECOND.
25. CONSTRUCTION JOINTS FOR CALTRANS STANDARD REINFORCED CONCRETE BOX SHALL BE PLACED ACCORDING TO DISTRICT STANDARD DRAWING NO. BOX 401.
26. ROCK FOR ACCESS ROADS, TURN AROUNDS AND OTHER AREAS WITHIN DISTRICT RIGHT OF WAY AS SHOWN ON THE PROJECT DRAWINGS AND AS DIRECTED BY THE ENGINEER SHALL MEET THE REQUIREMENTS FOR 1" X NO. 4 COARSE AGGREGATE AS PER SECTION 90-1.02C(4)(B) OF THE CALTRANS SPECIFICATIONS. X VALUES FOR ROCK GRADATION SHALL BE 75 AND 15 FOR 3/4" AND 3/8" RESPECTIVELY. ROCK SHALL ADDITIONALLY MEET THE SPREADING AND COMPACTION REQUIREMENTS OF SECTIONS 26-1.03D AND 26-1.03E OF THE CALTRANS SPECIFICATIONS. FURTHERMORE, ROCK DEPTH SHALL NOT EXCEED 3" AND SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER. ROCK SHALL NOT CONTAIN RECYCLED CONCRETE PRODUCTS.

RECMD PLAN CHECK OVERSIGHT ENGINEER — REGISTRATION NUMBER 76450 — DATE SIGNED 10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

County File # 969-WW

10/7/2021

PPT190008 IP200047

SEAL: REGISTERED PROFESSIONAL ENGINEER — DANE A. SOMMERS — No. 80433 Exp. 9-30-23 — CIVIL — STATE OF CALIFORNIA

PREPARED BY:
SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA. 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY: Edwin Quinonez
CHIEF, PLANNING
DATE: 10/13/2021

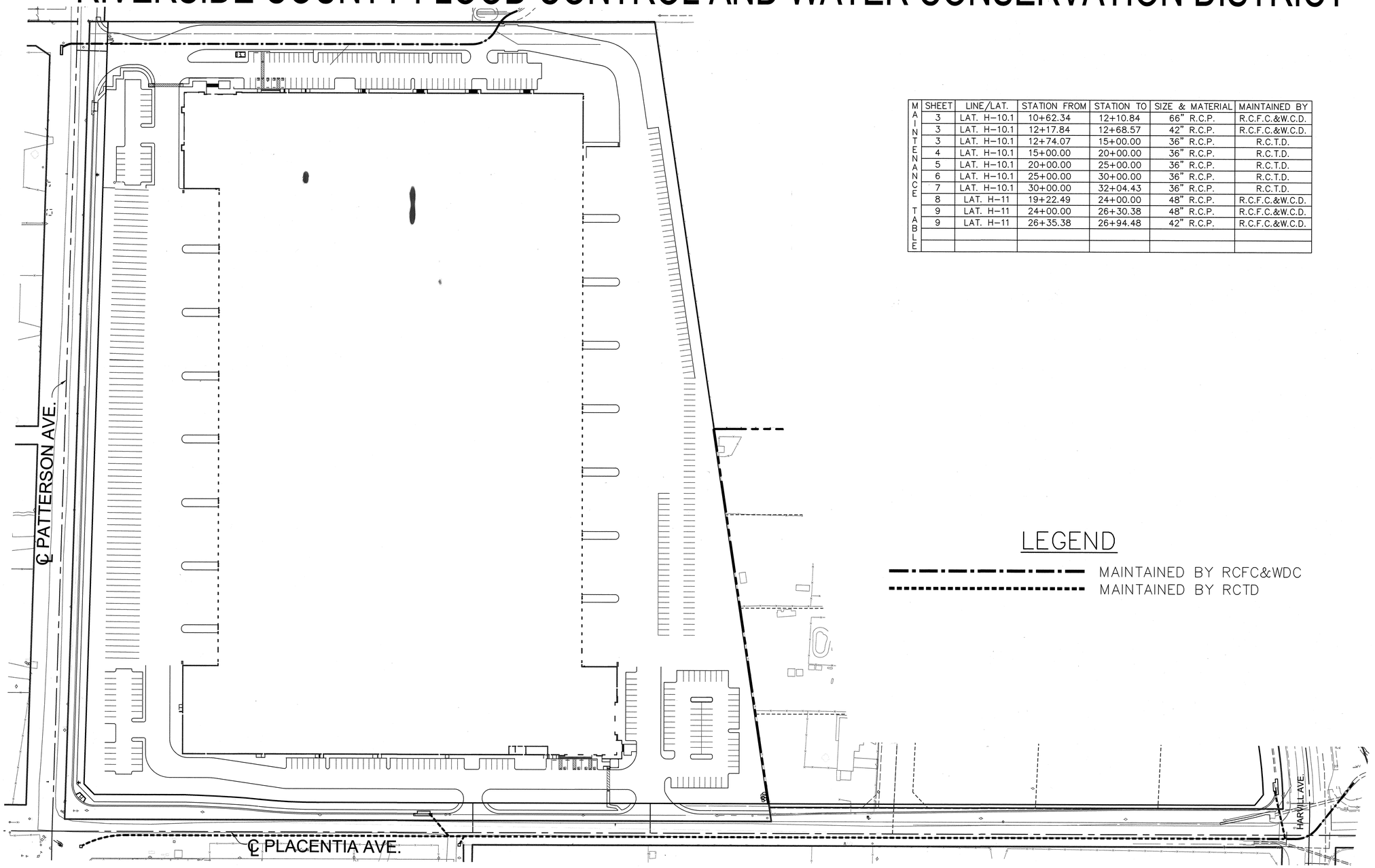
APPROVED BY:
GENERAL MANAGER - CHIEF ENGINEER
DATE: 10/14/2021

PERRIS VALLEY MDP
LATERALS H-10.1 STAGE 2
& H-11 STAGE 4
TITLE SHEET

PROJECT NO. 4-0-00499 4-0-00502
DRAWING NO. 4-1173
SHEET NO. 1 OF 10

#969-WW

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT



MAINTENANCE TABLE	SHEET	LINE/LAT.	STATION FROM	STATION TO	SIZE & MATERIAL	MAINTAINED BY
	3	LAT. H-10.1	10+62.34	12+10.84	66" R.C.P.	R.C.F.C.&W.C.D.
	3	LAT. H-10.1	12+17.84	12+68.57	42" R.C.P.	R.C.F.C.&W.C.D.
	3	LAT. H-10.1	12+74.07	15+00.00	36" R.C.P.	R.C.T.D.
	4	LAT. H-10.1	15+00.00	20+00.00	36" R.C.P.	R.C.T.D.
	5	LAT. H-10.1	20+00.00	25+00.00	36" R.C.P.	R.C.T.D.
	6	LAT. H-10.1	25+00.00	30+00.00	36" R.C.P.	R.C.T.D.
	7	LAT. H-10.1	30+00.00	32+04.43	36" R.C.P.	R.C.T.D.
	8	LAT. H-11	19+22.49	24+00.00	48" R.C.P.	R.C.F.C.&W.C.D.
	9	LAT. H-11	24+00.00	26+30.38	48" R.C.P.	R.C.F.C.&W.C.D.
	9	LAT. H-11	26+35.38	26+94.48	42" R.C.P.	R.C.F.C.&W.C.D.

LEGEND

MAINTAINED BY RCFC&WDC

MAINTAINED BY RCTD

RECMD	PLAN CHECK OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED
	[signature]	76450	10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE A. SOMMERS No. 90433 Exp. 8-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY: SDH AND ASSOCIATES INC. 27363 VIA INDUSTRIA Temecula, CA, 92590 TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY: DANE SOMMERS
DRAWN BY: DANE SOMMERS
CONST. SET: 09/2021
CHECKED BY: DANE SOMMERS
P8 NUMBER: P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS DESCRIPTION	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY: [signature] DATE: 10-13-2021

APPROVED BY: Edwin Quinong DATE: 10/13/2021

PERRIS VALLEY MDP
LATERALS H-10.1 STAGE 2
& H-11 STAGE 4

PROJECT NO. 4-0-00499 4-0-00502
DRAWING NO. 4-1173
SHEET NO. 2 10

969-WW

PPT190008 IP200047

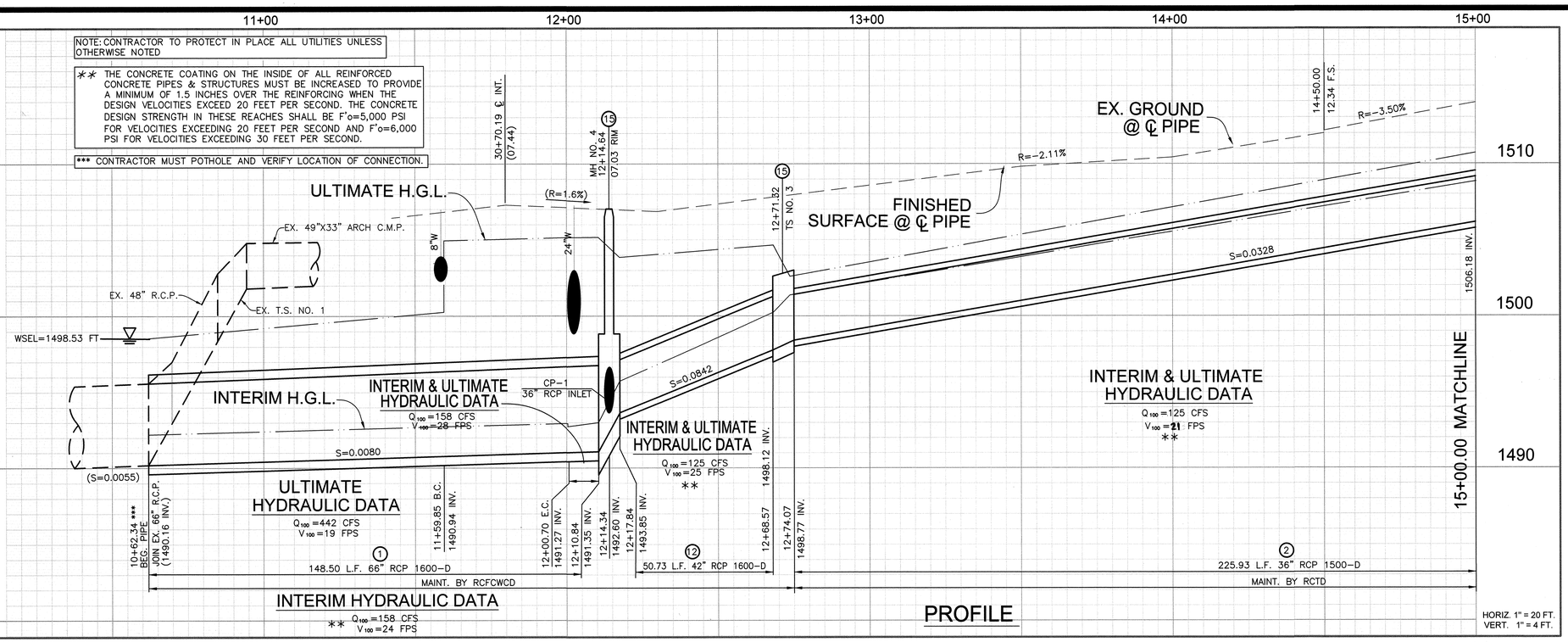
JCG 10/7/2021

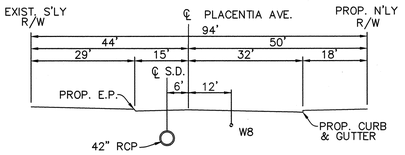
#969-WW

NOTE: CONTRACTOR TO PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED

** THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES & STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1.5 INCHES OVER THE REINFORCING WHEN THE DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'o=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'o=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.

*** CONTRACTOR MUST POTHOLE AND VERIFY LOCATION OF CONNECTION.





TYPICAL SECTION
PLACENTIA AVE. STA. 12+17.84-12+68.57
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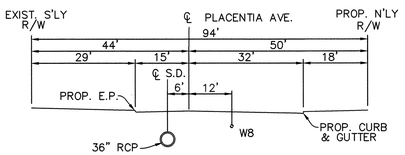

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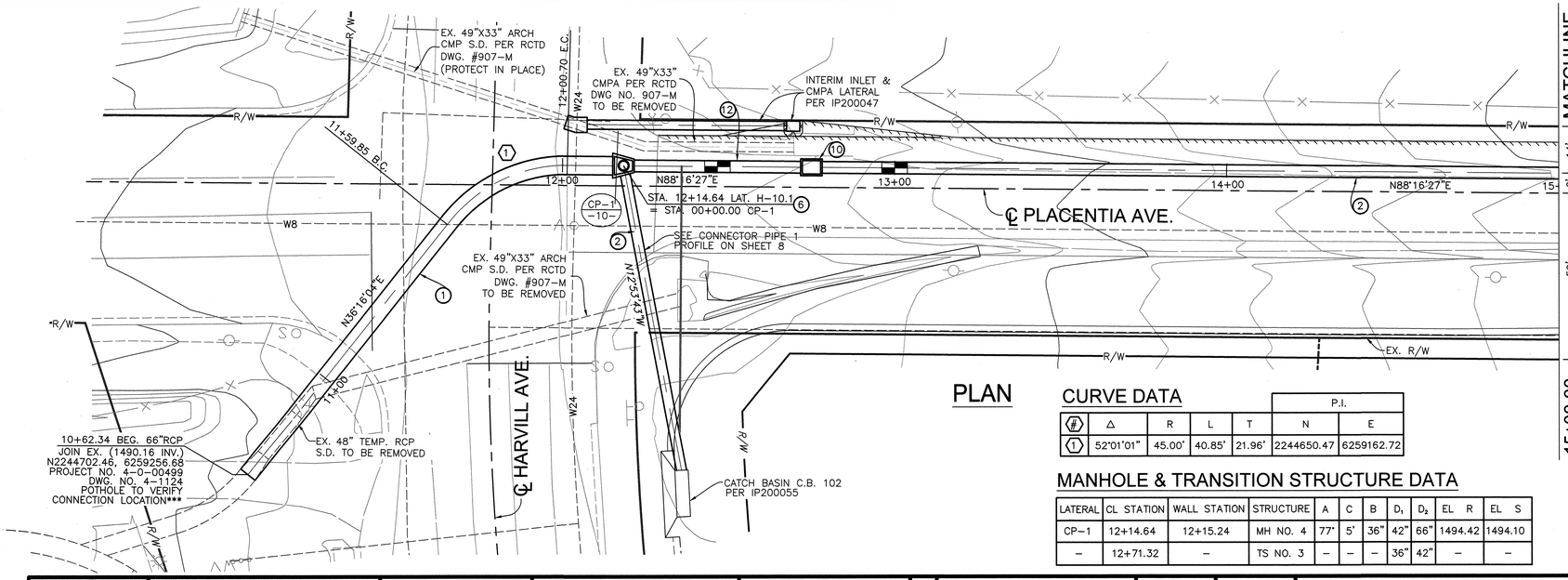


PLAN

CURVE DATA

					P.I.	
#	Δ	R	L	T	N	E
1	52°01'01"	45.00'	40.85'	21.96'	2244650.47	6259162.72

MANHOLE & TRANSITION STRUCTURE DATA

LATERAL	CL STATION	WALL STATION	STRUCTURE	A	C	B	D_1	D_2	EL R	EL S
CP-1	12+14.64	12+15.24	MH NO. 4	77'	5'	36"	42"	66"	1494.42	1494.10
-	12+71.32	-	TS NO. 3	-	-	-	36"	42"	-	-

CONSTRUCTION NOTES

1. CONSTRUCT 66" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
2. CONSTRUCT 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
6. CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
7. CONSTRUCT CATCH BASIN NO. 6 PER RCFC&WCD STD. DWG. NO. CB102
10. CONSTRUCT TRANSITION STRUCTURE NO. 3 PER RCFC & WCD STD. DWG. NO. TS303
12. CONSTRUCT 42" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
15. CONSTRUCT MH NO. 4 PER RCFC & WCD STD. DWG. NO MH254

N

0 10 20 40

SCALE: 1"=20'

RECD 10/7/2021

969-WW PPT190008 IP200047

RECMD PLAN CHECK OVERSIGHT ENGINEER — REGISTRATION NUMBER 76950 — DATE SIGNED 10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER — DANE R. SOMMERS — No. 76950 — Exp. 6-30-23 — CIVIL — STATE OF CALIFORNIA

PREPARED BY:
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

Don't Dig...Until You Call U.S.A. Toll Free
1-800-227-2600
for the location of buried utility lines.
Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

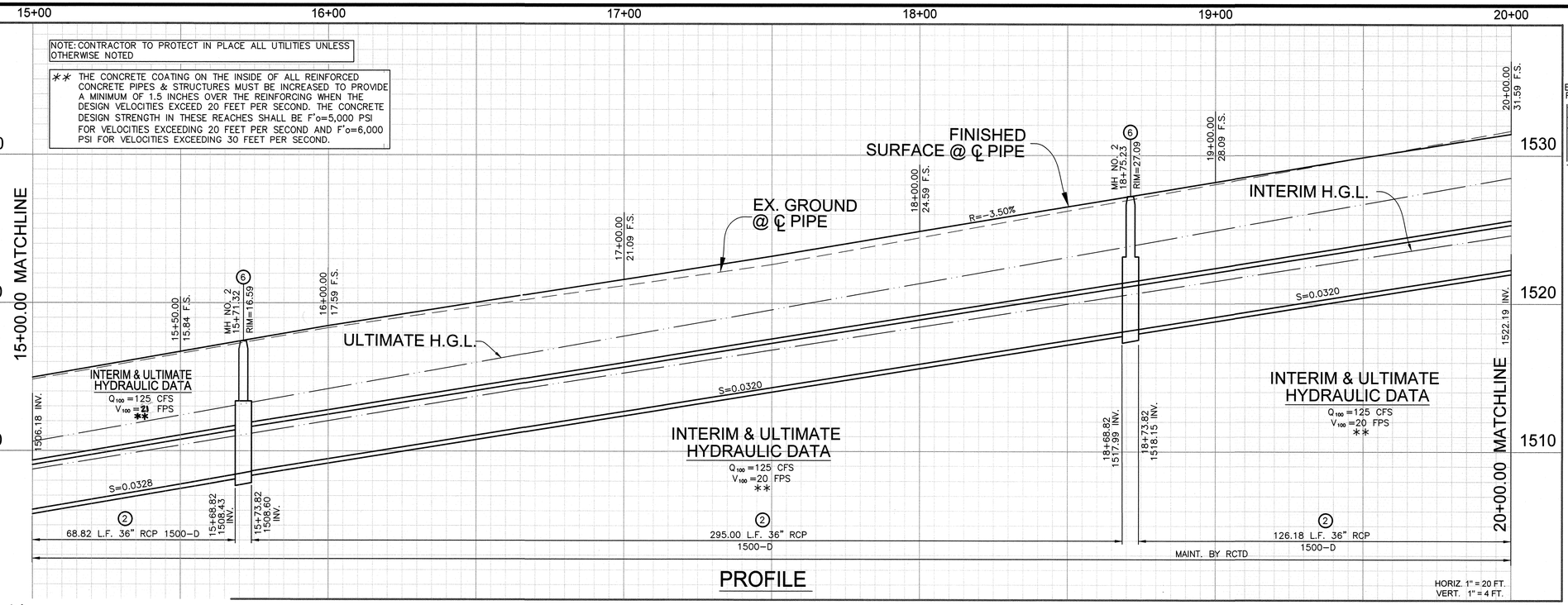
RECOMMENDED FOR APPROVAL BY: DATE: 10-13-2021

APPROVED BY: Edwin Quinonez DATE: 10/13/2021

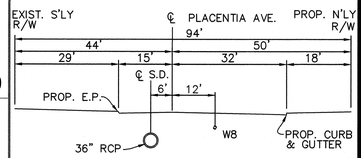
PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
STA. 10+62.34 TO 16+00.00

PROJECT NO. 4-0-00499
DRAWING NO. 4-1173
SHEET NO. 3 10

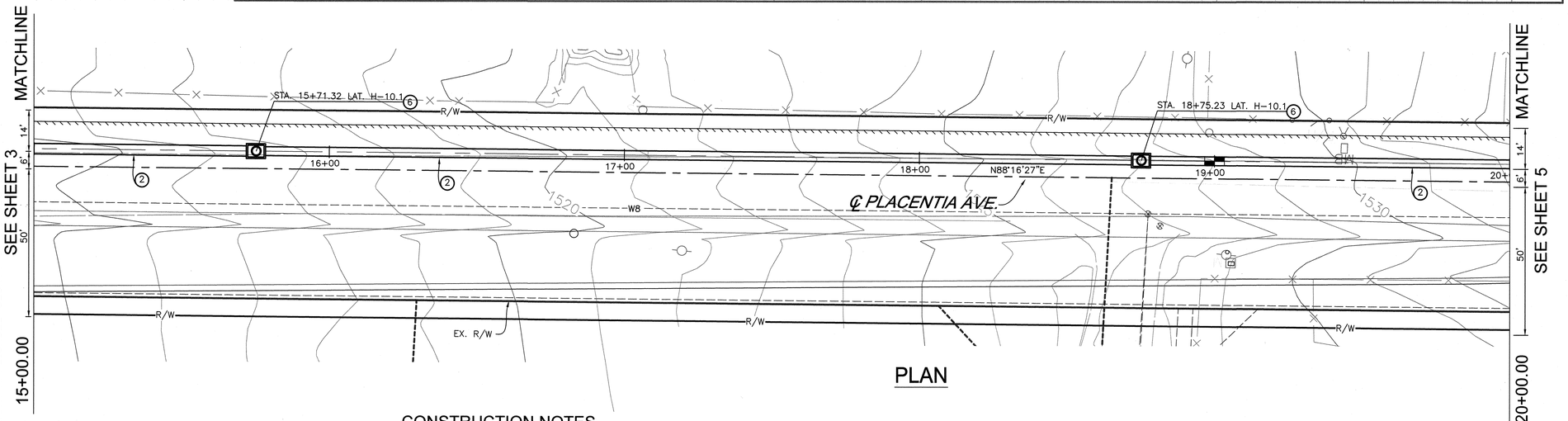
#969-WW



PROFILE



TYPICAL SECTION
PLACENTIA AVE. STA. 15+00.00-20+00.00
SCALE: 1"=20'



PLAN

CONSTRUCTION NOTES

(2) CONSTRUCT 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)

(6) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252

N

0 10 20 40

SCALE: 1"=20'

RECMD	PLAN CHECK OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED
	[signature]	76450	10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE A. SOMMERS No. 90433 Exp. 9-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY: SDH AND ASSOCIATES INC. 27363 VIA INDUSTRIA Temecula, CA, 92590 TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS DESCRIPTION	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

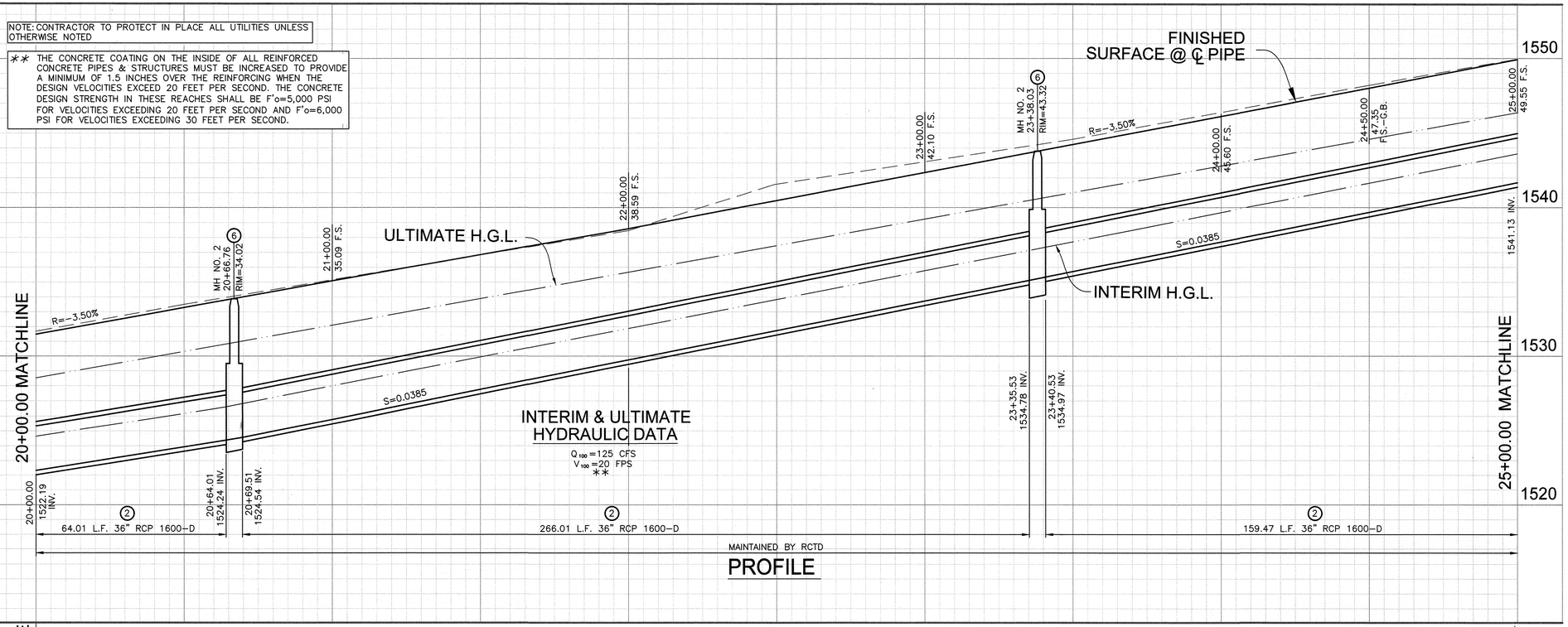
PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
STA. 15+00.00 TO 20+00.00

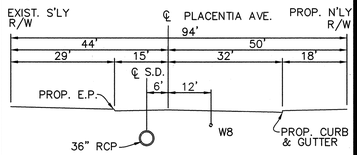
#969-WW

PPT190008 IP200047

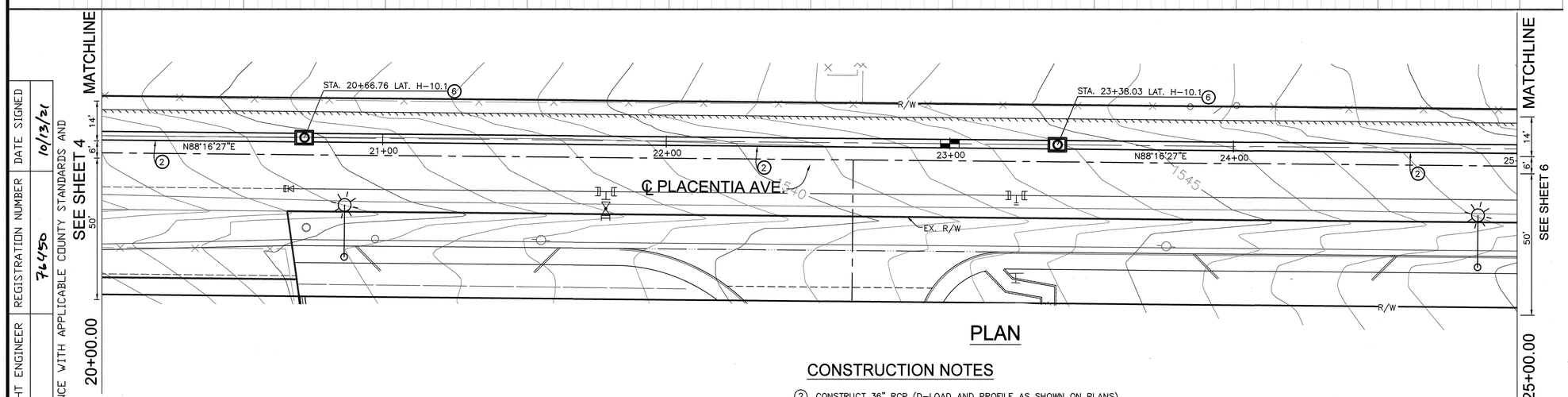
PROJECT NO.	4-0-00499
DRAWING NO.	4-1173
SHEET NO.	4 10

#969-WW

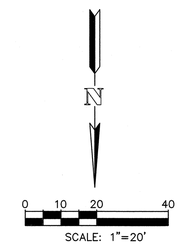




TYPICAL SECTION
PLACENTIA AVE. STA. 20+00.00-25+00.00
SCALE: 1"=20'



PLAN



SCALE: 1"=20'

CONSTRUCTION NOTES

(2) CONSTRUCT 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)

(4) CONSTRUCT 18" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)

(8) CONSTRUCT CONCRETE DROP INLET PER MODIFIED RCFC&WCD STD. DWG. NO. CB110

RECMD	PLAN CHECK OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED
	[signature]	76450	10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE A. SOMMERS No. 80433 Exp. 9-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY: SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY: DANE SOMMERS
DRAWN BY: DANE SOMMERS
CONST. SET: 09/2021
CHECKED BY: DANE SOMMERS
P8 NUMBER: P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS DESCRIPTION	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
STA. 20+00.00 TO 25+00.00

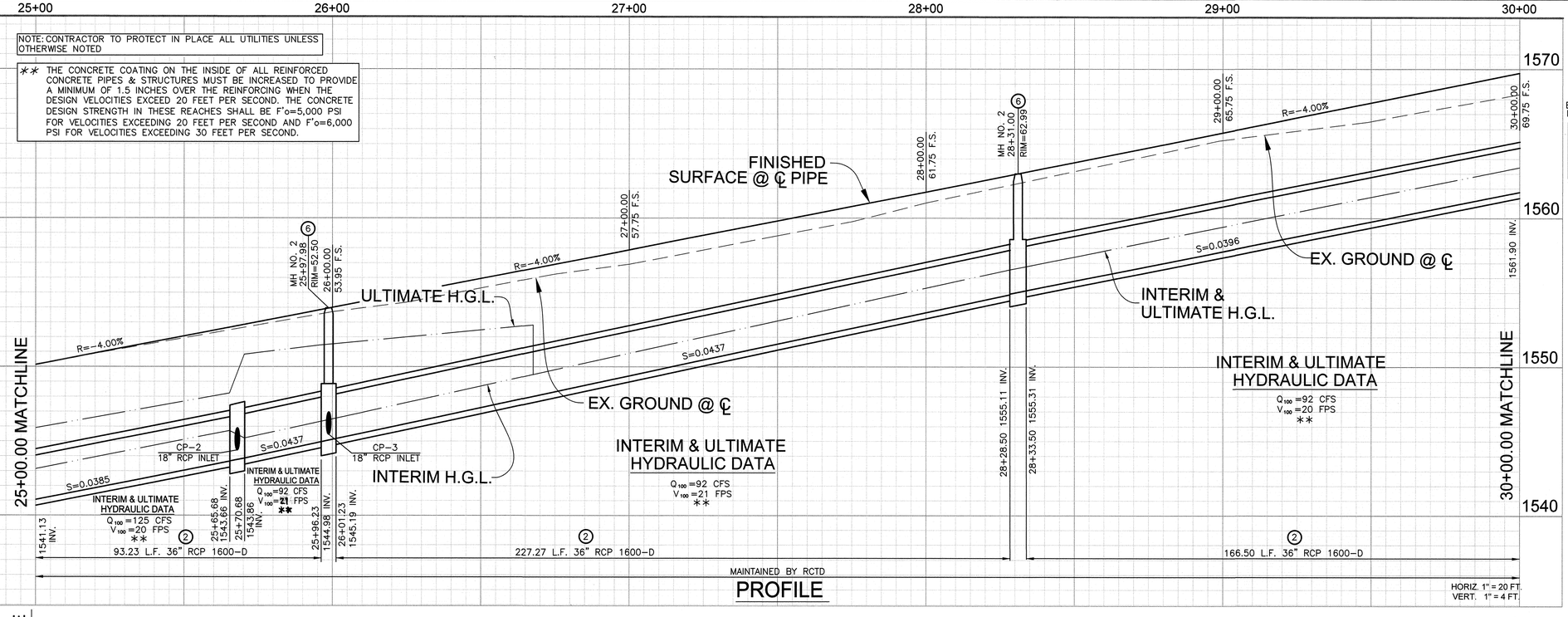
PROJECT NO. 4-0-00499
DRAWING NO. 4-1173
SHEET NO. 5 10

#969-WW

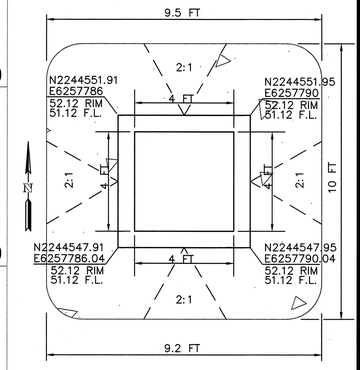
#969-WW PPT190008 IP200047

NOTE: CONTRACTOR TO PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED

** THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES & STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1.5 INCHES OVER THE REINFORCING WHEN THE DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'c=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'c=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.

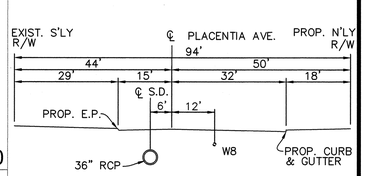


PROFILE

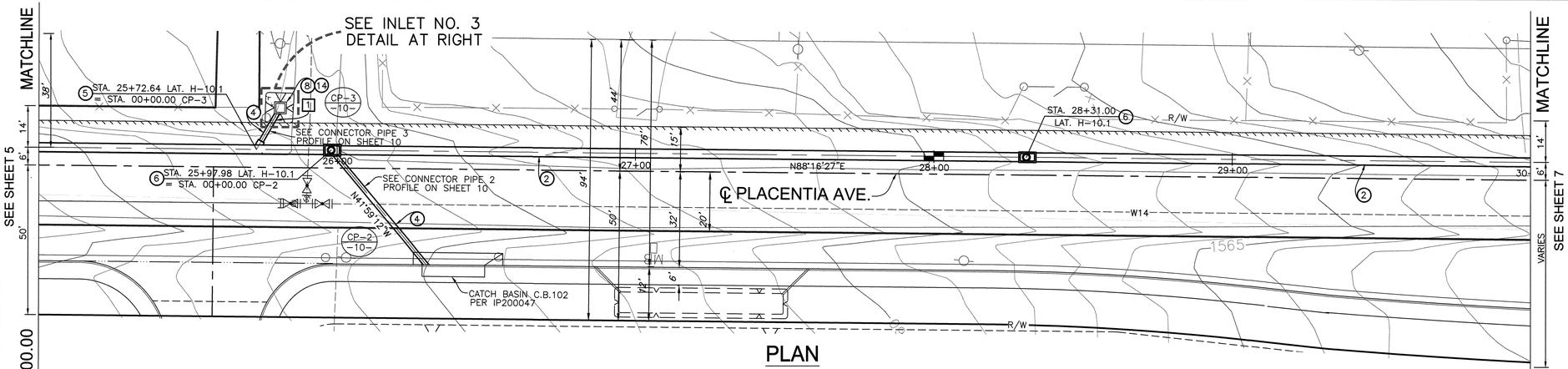


NOTE: SEE CB110 STD DETAIL
T = 12 IN. SUM OF INLET OPENINGS = 16 L.F.
4 L.F. EA. SIDE
6" PCC CONCRETE PAD
F'c=3000 PSI

(8) INLET NO. 3 DETAIL
NOT TO SCALE



TYPICAL SECTION
PLACENTIA AVE. STA. 25+00.00-30+00.00
SCALE: 1"=20'



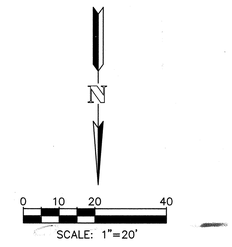
PLAN

CONSTRUCTION NOTES

(2) CONSTRUCT 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(4) CONSTRUCT 18" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(5) CONSTRUCT JUNCTION STRUCTURE NO. 2 PER RCFC&WCD STD. DWG. NO. JS227
(6) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
(8) CONSTRUCT CONCRETE DROP INLET PER MODIFIED RCFC&WCD STD. DWG. NO. CB110
(14) CONSTRUCT FULL CAPTURE TRASH CONTROL DEVICES PER RCTD STD. PLAN 313

MANHOLE/JUNCTION STRUCTURE DATA

LATERAL	CL STATION	WALL STATION	STRUCTURE	A	C
CP-2	25+78.70	25+79.63	JS NO. 2	50°	–
CP-3	25+72.64	25+73.70	MH NO. 2	60°	5'



RECMD PLAN CHECK OVERSIGHT ENGINEER — REGISTRATION NUMBER 76450 — DATE SIGNED 10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER — DAVID A. SOMMERS — No. 76433 Exp. 9-30-23 — CIVIL — STATE OF CALIFORNIA

PREPARED BY:
SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA. 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
STA. 25+00.00 TO 30+00.00

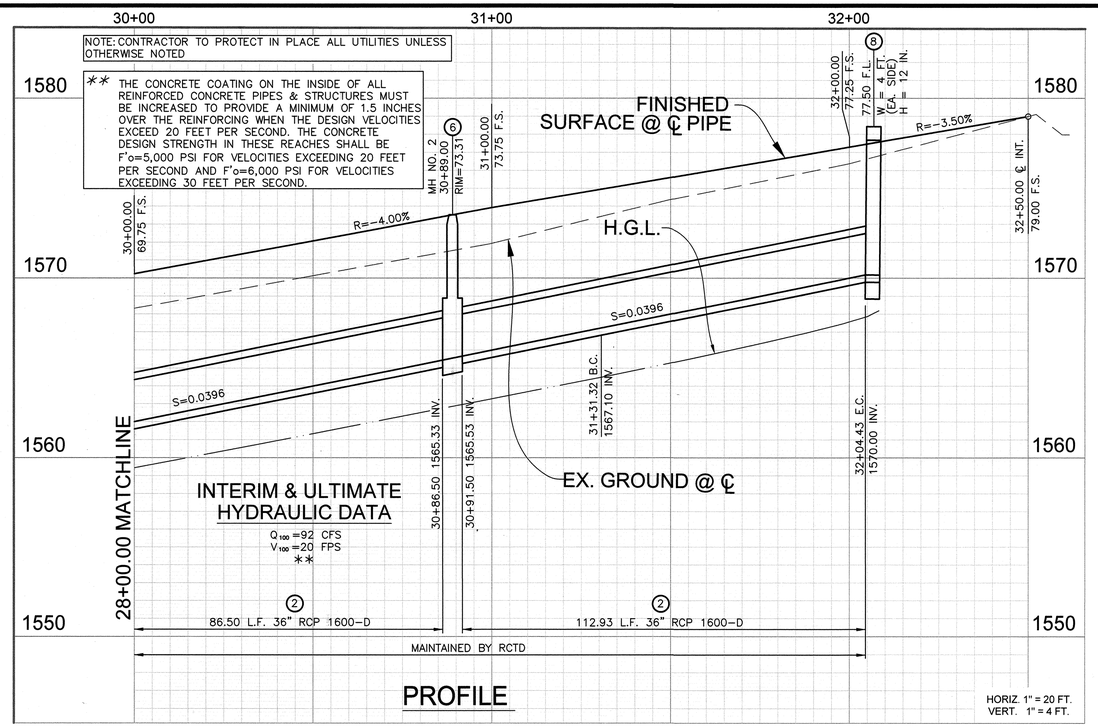
PROJECT NO. 4-0-00499
DRAWING NO. 4-1173
SHEET NO. 6 10

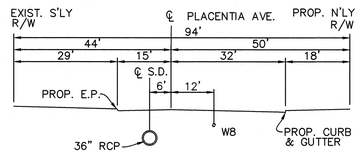
#969-WW

JRG 10/7/2021

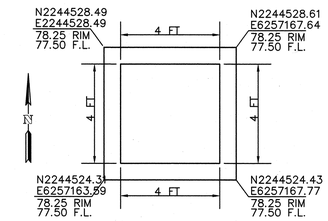
PPT190008 IP200047

#969-WW



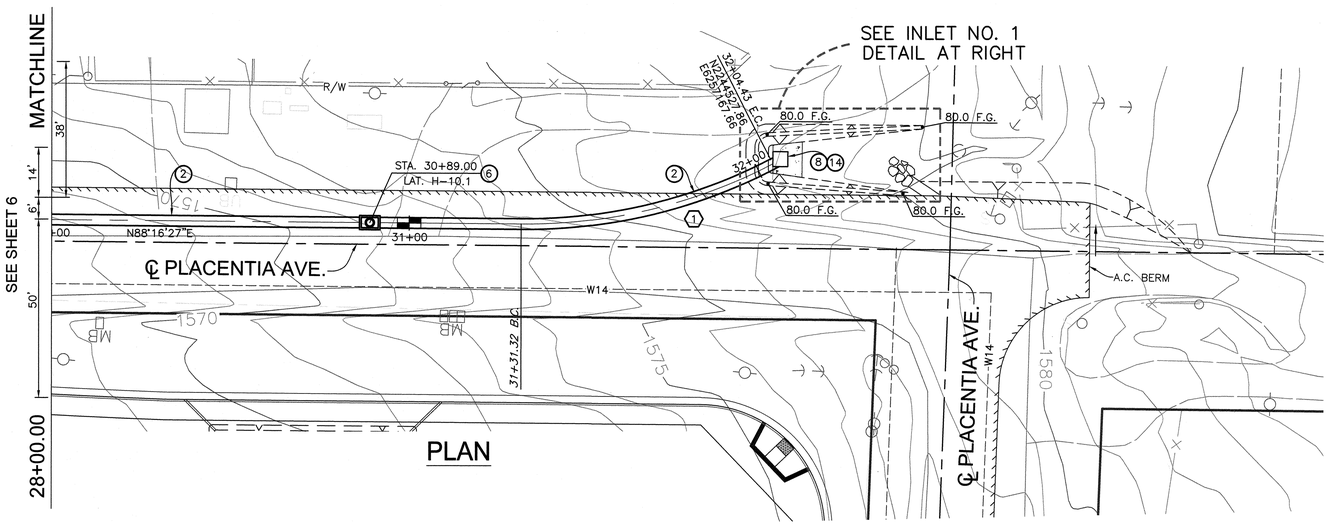


TYPICAL SECTION
PLACENTIA AVE. STA. 30+00.00-31+31.32
SCALE: 1"=20'



NOTE: SEE CB110 STD DETAIL T = 12 IN.
SUM OF INLET OPENINGS = 16 L.F.
4 L.F. EA. SIDE

⑧ INLET NO. 1 DETAIL
NOT TO SCALE



CURVE DATA

#	Δ	R	L	T	P.I. N	P.I. E
1	27°55'48"	150.00'	73.12'	37.30'	2244546.31	6257200.08

CONSTRUCTION NOTES

(2) CONSTRUCT 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(6) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
(8) CONSTRUCT CONCRETE DROP INLET PER MODIFIED RCFC&WCD STD. DWG. NO. CB110
(14) CONSTRUCT FULL CAPTURE TRASH CONTROL DEVICES PER RCTD STD. PLAN 313

N

0 10 20 40
SCALE: 1"=20'

#969-WW

PPT190008 IP200047

RECMD PLAN CHECK OVERSIGHT ENGINEER: Bryan — REGISTRATION NUMBER: 76950 — DATE SIGNED: 10/13/21
APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER BRIAN A. SOMMERS No. 80433 Exp. 9-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY:
SDH ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY: DANE SOMMERS
DRAWN BY: DANE SOMMERS
CONST. SET: 09/2021
CHECKED BY: DANE SOMMERS
PB NUMBER: PB/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	DESCRIPTION	APPR.	DATE	APPR.	DATE
	REVISIONS	ENGINEER		RCFC & WCD	

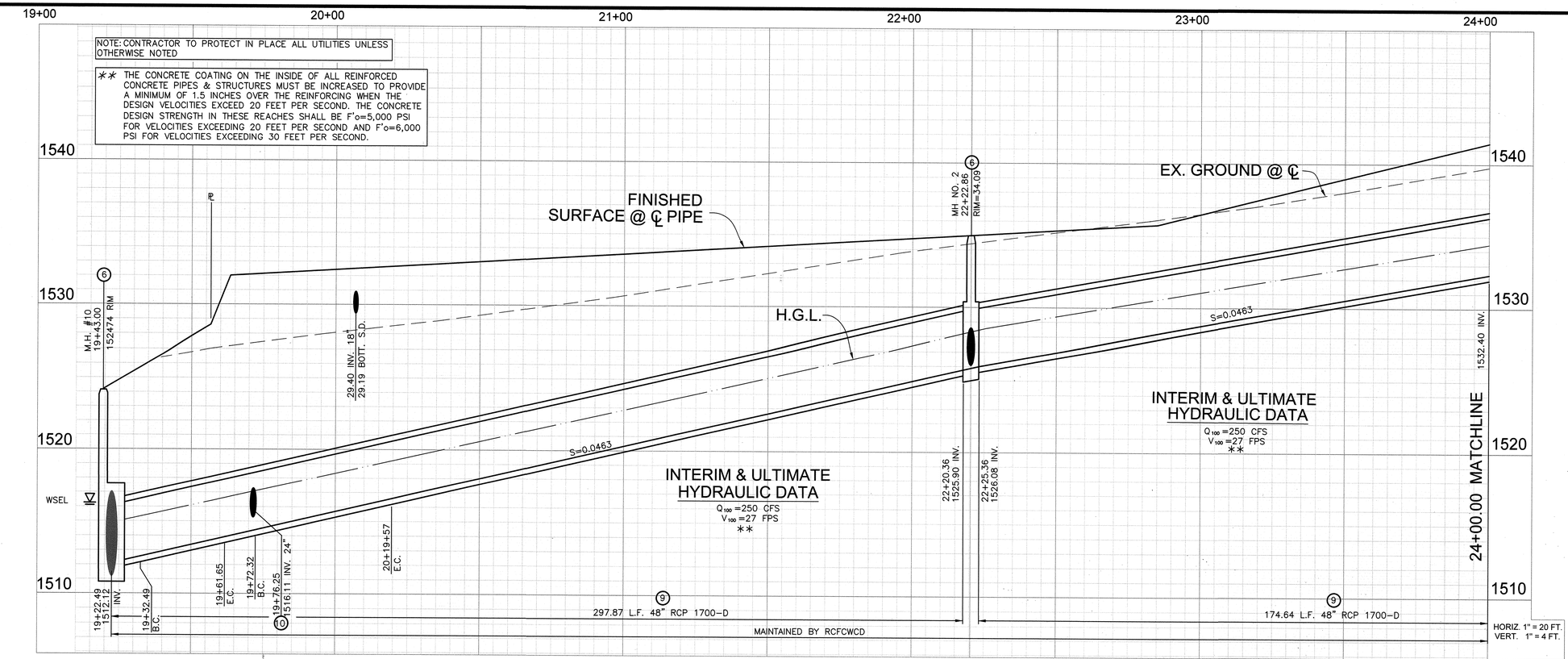
PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
STA. 28+00.00 TO 32+58.78

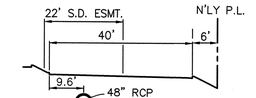
PROJECT NO. 4-0-00499
DRAWING NO. 4-1173
SHEET NO. 7 10

#969-WW

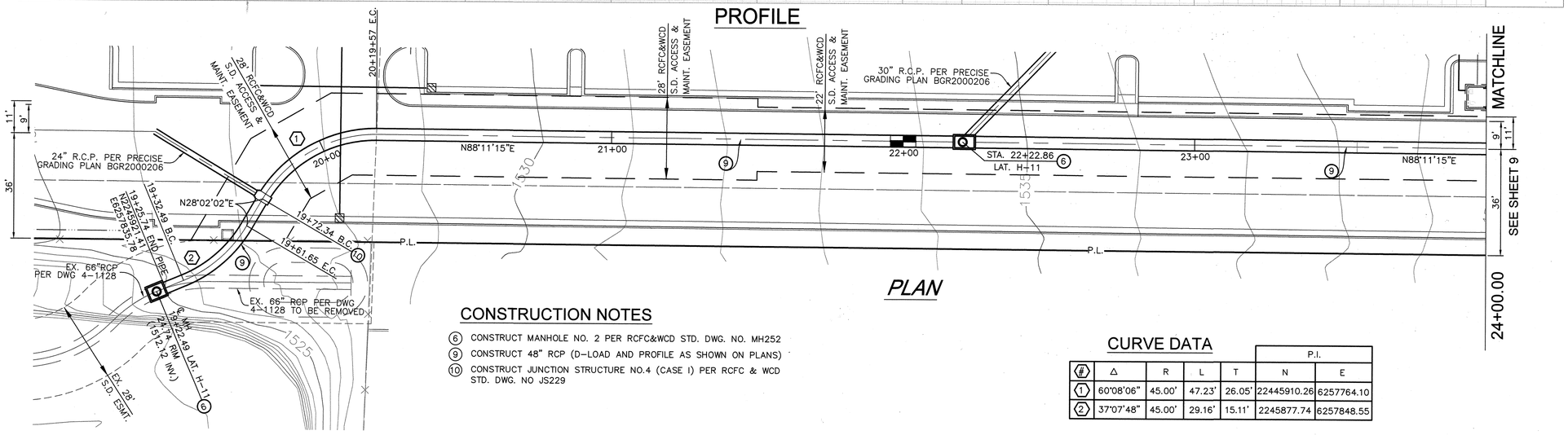
NOTE: CONTRACTOR TO PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED

** THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES & STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1.5 INCHES OVER THE REINFORCING WHEN THE DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'o=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'o=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.





TYPICAL SECTION
PRIVATE DRIVE STA. 19+48.25-24+00.00
SCALE: 1"=20'



PLAN

CONSTRUCTION NOTES

(6) CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
(9) CONSTRUCT 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(10) CONSTRUCT JUNCTION STRUCTURE NO.4 (CASE I) PER RCFC & WCD STD. DWG. NO JS229

CURVE DATA

#	Δ	R	L	T	P.I. N	P.I. E
1	60°08'06"	45.00'	47.23'	26.05'	22445910.26	6257764.10
2	37°07'48"	45.00'	29.16'	15.11'	2245877.74	6257848.55

N

0 10 20 40
SCALE: 1"=20'

RECMD PLAN CHECK OVERSIGHT ENGINEER — DATE SIGNED 10/13/21
REGISTRATION NUMBER 76150
APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE C. SOMMERS No. 80433 Exp. 9-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY:
SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY:	DANE SOMMERS
DRAWN BY:	DANE SOMMERS
CONST. SET:	09/2021
CHECKED BY:	DANE SOMMERS
P8 NUMBER:	P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 10-13-2021
APPROVED BY: Edwin Quinonez DATE: 10/13/2021

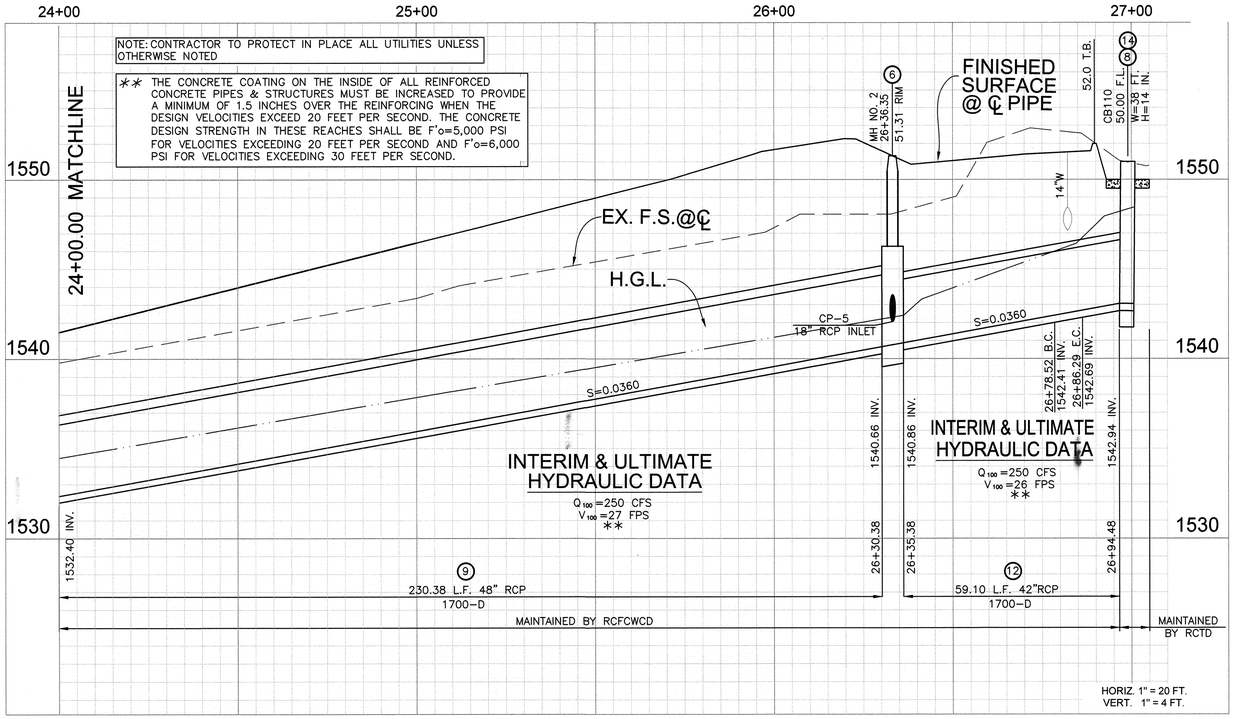
#969-WW

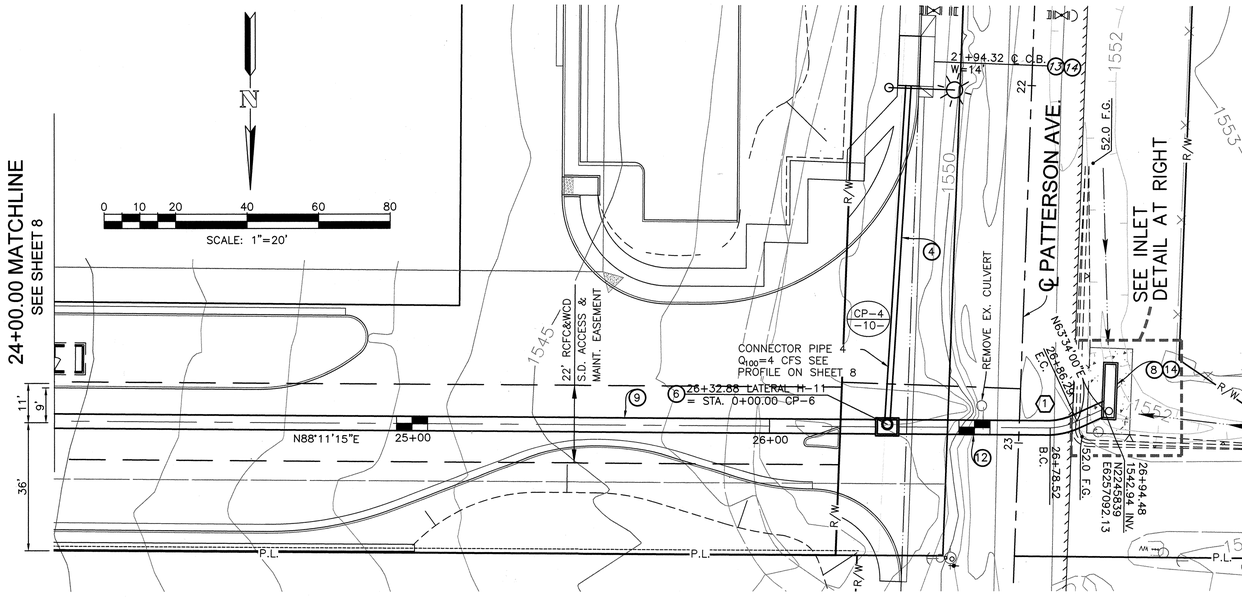
PPT190008 IP200047

PERRIS VALLEY MDP
LATERAL H-11 STAGE 4
STA. 19+50.00 TO 24+00.00

PROJECT NO. 4-0-00502
DRAWING NO. 4-1173
SHEET NO. 8 10

#969-WW



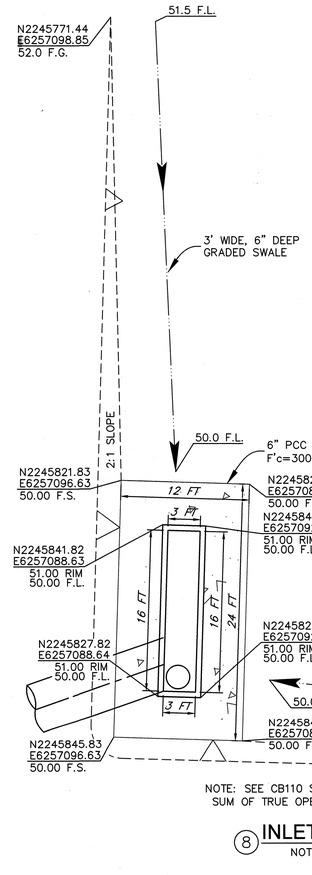


22' S.D. ESMT.
VARIES
6'
N'LY P.L.
9.6'
48" RCP

TYPICAL SECTION
PRIVATE DRIVE STA. 24+00.00-26+30.38
SCALE: 1"=20'

PATTERSON AVE. R/W
42" RCP

TYPICAL SECTION
PRIVATE DRIVE STA. 26+35.38-26+94.48
NO SCALE



8 INLET DETAIL
NOT TO SCALE

MANHOLE DATA

LATERAL	CL STATION	WALL STATION	STRUCTURE	A	C
CP-4	26+36.35	26+36.35	MH NO. 2	87°	5'

CURVE DATA

#	Δ	R	L	T	P.I. N	P.I. E
1	23°10'45"	19.22'	7.78'	3.94'	22445825.65	6257848.55

CONSTRUCTION NOTES

4. CONSTRUCT 18" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
6. CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
5. CONSTRUCT JUNCTION STRUCTURE NO. 2 PER RCFC&WCD STD. DWG. NO. JS227
8. CONSTRUCT CONCRETE DROP INLET PER MODIFIED RCFC&WCD STD. DWG. CB110
9. CONSTRUCT 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
12. CONSTRUCT 42" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
13. CONSTRUCT CATCH BASIN NO. 6 PER RCFC&WCD STD. DWG. NO. CB102
14. CONSTRUCT FULL CAPTURE TRASH CONTROL DEVICES PER RCTD STD. PLAN 313

RECMD PLAN CHECK OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED
76450 | 10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE A. SOMMERS No. 19433 Exp. 9-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY:
SDH ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA. 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY: DANE SOMMERS
DRAWN BY: DANE SOMMERS
CONST. SET: 09/2021
CHECKED BY: DANE SOMMERS
P8 NUMBER: P8/239541

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
BURIED CABLE
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-13 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

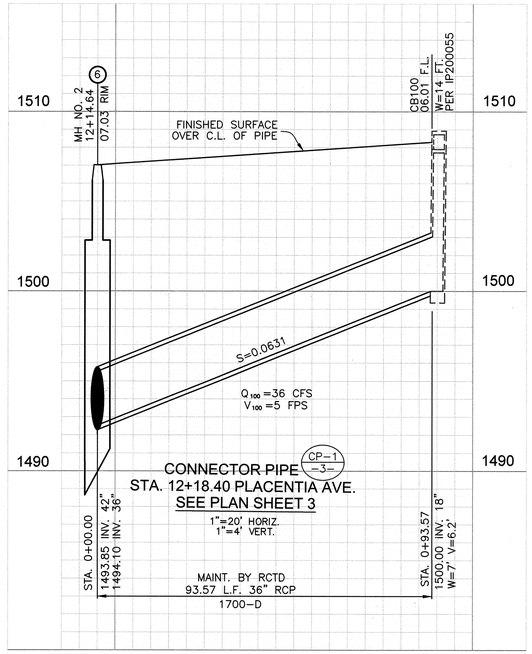
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 10-13-2021
APPROVED BY: Edwin Quintero DATE: 10/13/2021

PERRIS VALLEY MDP
LATERAL H-11 STAGE 4
STA. 24+00.00 TO 26+89.73

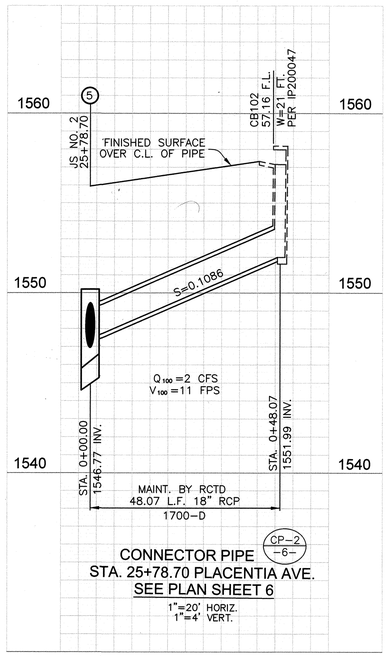
PROJECT NO. 4-0-00502
DRAWING NO. 4-1173
SHEET NO. 9 10

10/7/2021
#969-WW
PPT190008 IP200047
#969-WW

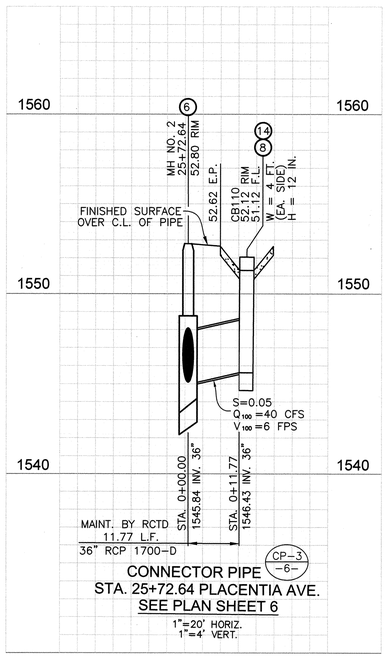
PROFILE SCALE
HORIZ. 1" = 20 FT.
VERT. 1" = 4 FT.



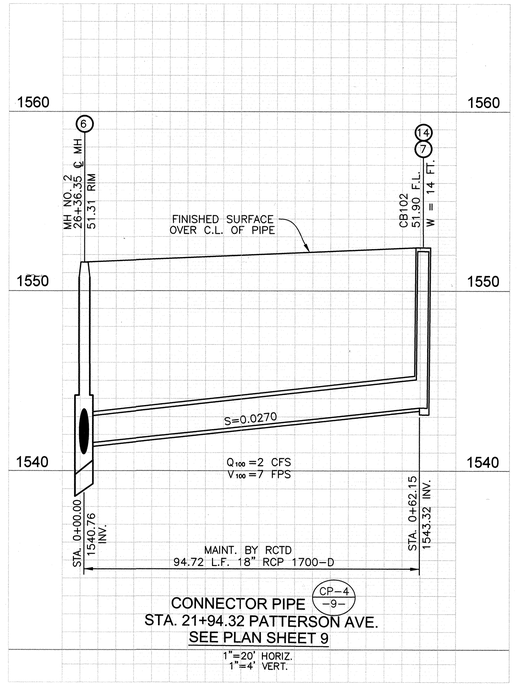
CONNECTOR PIPE (CP-1 / -3-)
STA. 12+18.40 PLACENTIA AVE.
SEE PLAN SHEET 3
1"=20' HORIZ.
1"=4' VERT.



CONNECTOR PIPE (CP-2 / -6-)
STA. 25+78.70 PLACENTIA AVE.
SEE PLAN SHEET 6
1"=20' HORIZ.
1"=4' VERT.



CONNECTOR PIPE (CP-3 / -6-)
STA. 25+72.64 PLACENTIA AVE.
SEE PLAN SHEET 6
1"=20' HORIZ.
1"=4' VERT.



CONNECTOR PIPE (CP-4 / -9-)
STA. 21+94.32 PATTERSON AVE.
SEE PLAN SHEET 9
1"=20' HORIZ.
1"=4' VERT.

CONSTRUCTION NOTES

5. CONSTRUCT CONCRETE COLLAR PER RCFC&WCD STD. DWG. NO. M803
6. CONSTRUCT MANHOLE NO. 2 PER RCFC&WCD STD. DWG. NO. MH252
7. CONSTRUCT CATCH BASIN NO. 6 PER RCFC&WCD STD. DWG. NO. CB102
8. CONSTRUCT CONCRETE DROP INLET PER MODIFIED RCFC&WCD STD. DWG. CB110
14. CONSTRUCT FULL CAPTURE TRASH CONTROL DEVICES PER RCTD STD. PLAN 313

RECMD	PLAN CHECK OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED
	[signature]	76450	10/13/21

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES.

#969-WW

JLG 10/7/2021

PPT190008 IP200047

SEAL: REGISTERED PROFESSIONAL ENGINEER DANE A. SOMMERS No. 90433 Exp. 9-30-23 CIVIL STATE OF CALIFORNIA

PREPARED BY: SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
27363 VIA INDUSTRIA
Temecula, CA, 92590
TEL: (951) 683-3691 FAX (951) 788-2314

DESIGNED BY: DANE SOMMERS
DRAWN BY: DANE SOMMERS
CONST. SET: 09/2021
CHECKED BY: DANE SOMMERS
P8 NUMBER: P8/239541

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BENCH MARK
CITY OF RIVERSIDE BENCHMARK #E4-J3 PK NAIL AND CITY ENGINEER TAG IN THE TOP OF CURB OF THE MOST SOUTHERLY CURB RETURN AT THE INTERSECTION OF LINCOLN AVE. AND VAN BUREN BLVD. ELEV.=860.662 (1988)

REF.	REVISIONS DESCRIPTION	ENGINEER APPR.	ENGINEER DATE	RCFC & WCD APPR.	RCFC & WCD DATE

PERRIS VALLEY MDP
LATERAL H-10.1 STAGE 2
& H-11 STAGE 4
CONNECTOR PIPE PROFILES

PROJECT NO. 4-0-00499 4-0-00502
DRAWING NO. 4-1173
SHEET NO. 10 10

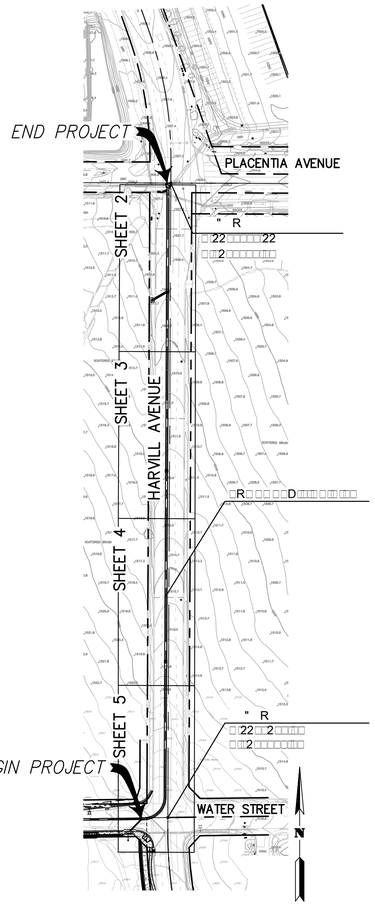
#969-WW

Appendix "H-1" –

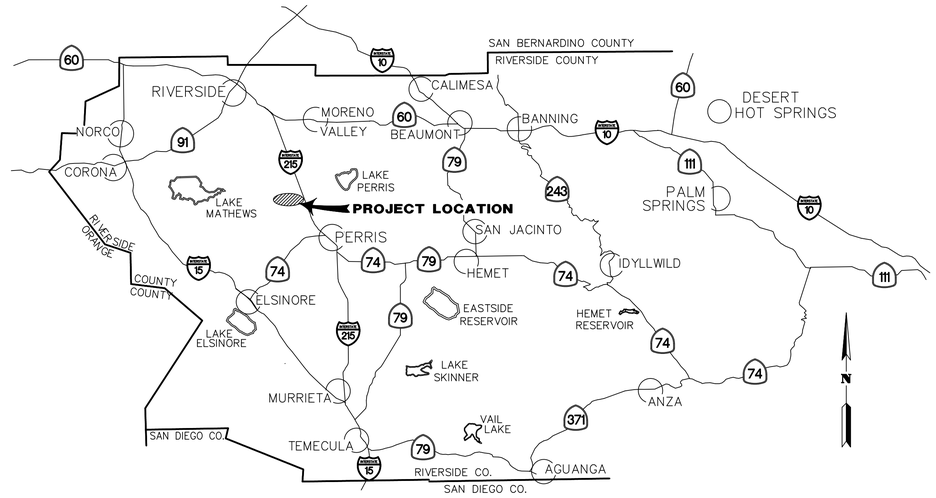
Perris Valley MDP Lateral H-10 Plans

PPT-220002

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT



INDEX MAP
1" = 150'



VICINITY MAP
N.T.S.

BASIS OF BEARINGS:
BEARINGS SHOW HEREON ARE BASED ON THE BEARING BETWEEN CORS (OR GPS) "PPBF" AND CORS (OR GPS) "MLFP" BEING NORTH 53°20'18" WEST PER RECORDS ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR.

INDEX

	SHEET NO.
TITLE SHEET	1
PLAN & PROFILE	2–6

R.C.F.C & W.C.D STANDARD DRAWINGS

CB108	36" CMP INLET
JS227	JUNCTION STRUCTURE NO. 2
MH252	MANHOLE NO. 2
MH254	MANHOLE NO. 4
M803	CONCRETE COLLAR
M816	CONCRETE BULKHEAD

NOTICE TO CONTRACTOR

IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND ELEVATION OF THE EXISTING FACILITIES PRIOR TO THE START OF ANY CONSTRUCTION.

GENERAL NOTES

1. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S M.O.U STANDARD SPECIFICATIONS DATED MARCH 2020, AND THE DISTRICT'S STANDARD MANUAL. FOR THE LATEST DRAWINGS OF THE STANDARD MANUAL, PLEASE REFER TO THE "PUBLICATIONS AND RECORDS" PAGE FOUND ON THE DISTRICT'S WEBSITE.
2. CONTACT THE ENCROACHMENT PERMIT ENGINEER AT 951.955.1266 IF AN ENCROACHMENT PERMIT IS REQUIRED FROM THE DISTRICT. AFTER THE PERMIT IS ISSUED THE DISTRICT MUST BE NOTIFIED ONE WEEK PRIOR TO CONSTRUCTION.
3. CONTACT CONSTRUCTION MANAGEMENT AT 951.955.1288 IF CONSTRUCTION INSPECTION WILL BE PERFORMED BY THE DISTRICT. THE DISTRICT MUST BE NOTIFIED TWENTY DAYS (20) PRIOR TO CONSTRUCTION.
4. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
5. STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE INTERSECTION STATIONS.
6. FORTY–EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1.800.227.2600.
7. ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON THE NATIONAL GEODETIC VERTICAL DATUM (NAVD 88).
8. ALL COORDINATES ARE SHOWN IN FEET AND DECIMALS THEREOF BASED ON AN ASSUMED COORDINATE SYSTEM.
9. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
10. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
11. UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "A" HOT MIX ASPHALT OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
12. OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
13. PIPE CONNECTED TO THE MAINLINE PIPE SHALL CONFORM TO JUNCTION STRUCTURE NO. 4 (JS 229) UNLESS OTHERWISE NOTED.
14. PIPE BEDDING SHALL CONFORM TO THE DISTRICTS STANDARD DRAWING NO. M815
15. "V" IS THE DEPTH OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
16. CATCH BASINS SHALL BE LOCATED SO THAT LOCAL DEPRESSION SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
17. ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
18. STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO DISTRICT STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
19. THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
20. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHOULD BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
21. APPROVAL OF THESE PLANS BY THE DISTRICT DOES NOT RELIEVE THE DEVELOPER'S ENGINEER OF RESPONSIBILITY FOR THE ENGINEERING DESIGN. IF FIELD CHANGES ARE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO MAKE THE NECESSARY CORRECTIONS.
22. THE CONTRACTOR OR DEVELOPER SHALL SECURE ALL REQUIRED ENCROACHMENT AND/OR STATE AND FEDERAL REGULATORY PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.
23. THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES OR STRUCTURES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1–1/2 INCHES OVER THE REINFORCING AND INCREASED TO A MINIMUM OF 3–1/2 INCHES OVER REINFORCING FOR BOX CULVERT, WHEN DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'C=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'C=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.
24. CONSTRUCTION JOINTS FOR CALTRANS STANDARD REINFORCED CONCRETE BOX SHALL BE PLACED ACCORDING TO THE DISTRICT STANDARD DRAWING NO. BOX 401.
25. TWO HYDRAULIC GRADE LINES ARE SHOWN ON THE STORM DRAIN PROFILE FOR REFERENCE. REFLECTING THE RATIONAL METHOD CALCULATED FLOWS AND THE PRORATED FLOWS FROM THE MASTER DRAINAGE PLAN.

IP 220057
PPT–220002

RECMD	COUNTY OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

REGISTERED PROFESSIONAL ENGINEER — JOHNNY MURAD — NO. 67512 — EXPIRATION 6-30-2023 — CIVIL — STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 450 • ONTARIO, CALIFORNIA 91764 • (909) 941-7799

PREPARED UNDER THE SUPERVISION OF: JOHNNY MURAD

R.C.E.	EXPIRES	DATE
67512	6-30-23	

DESIGNED BY: MG
DRAWN BY: H-Z STAFF
CONSTR. SET:
CHECKED BY: J.M.
PB NUMBER:

DIGALERT — DIAL BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — TWO WORKING DAYS BEFORE YOU DIG — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

PERMANENT BENCH MARK
BM-432 ADJUSTED 1992
AT THE SWC OF THE INT. OF PERRIS BL & RIDER ST, AT THE BASE OF A STEEL TRAFFIC SIG. LT. A 3-1/4" STD MWDSC ALM. DISK SET ON EASTSIDE FLUSH.

ELEVATION = 1455.11' (NAVD88)

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL: CHIEF OF PLANNING DATE:

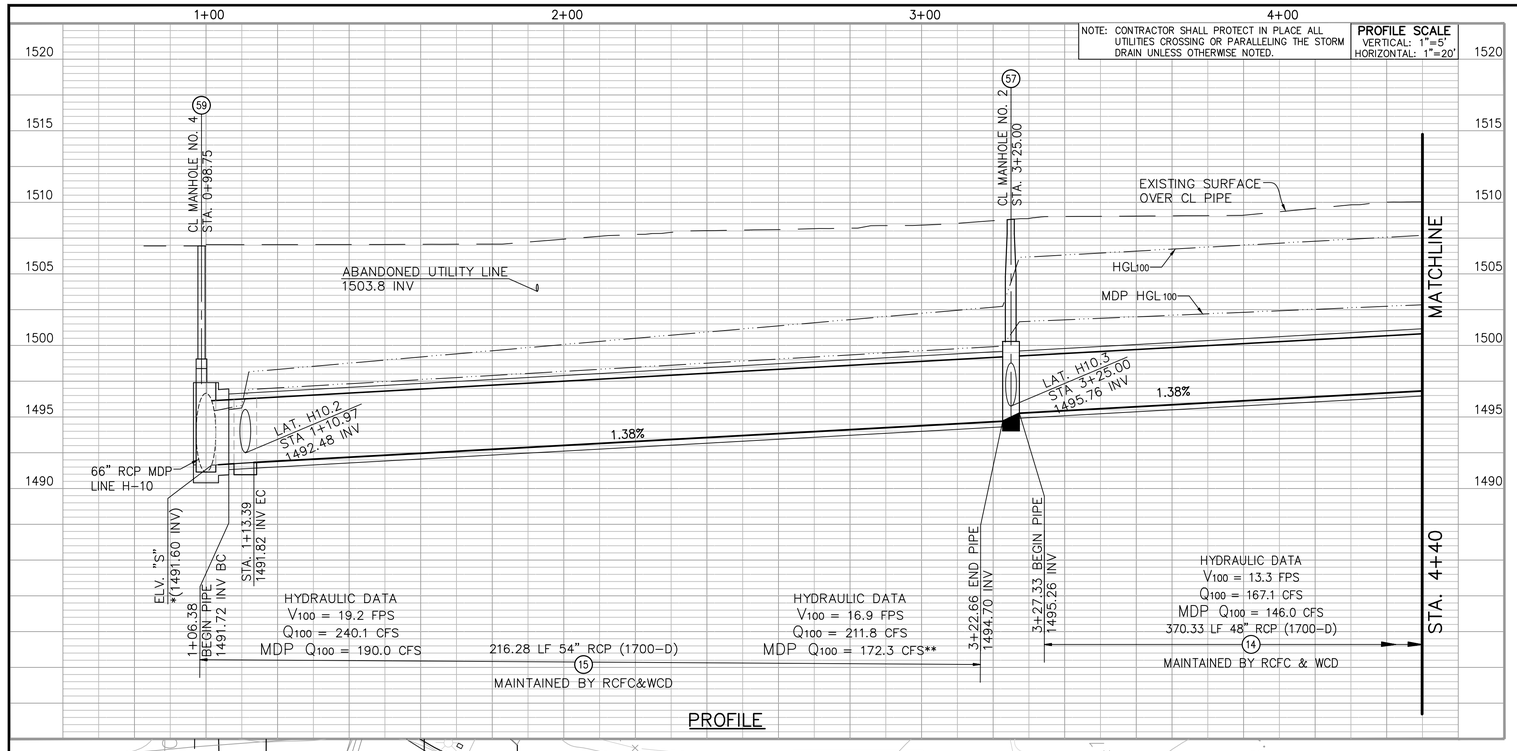
APPROVED BY: GENERAL MANAGER – CHIEF ENGINEER DATE:

PERRIS VALLEY MDP LINE H-10

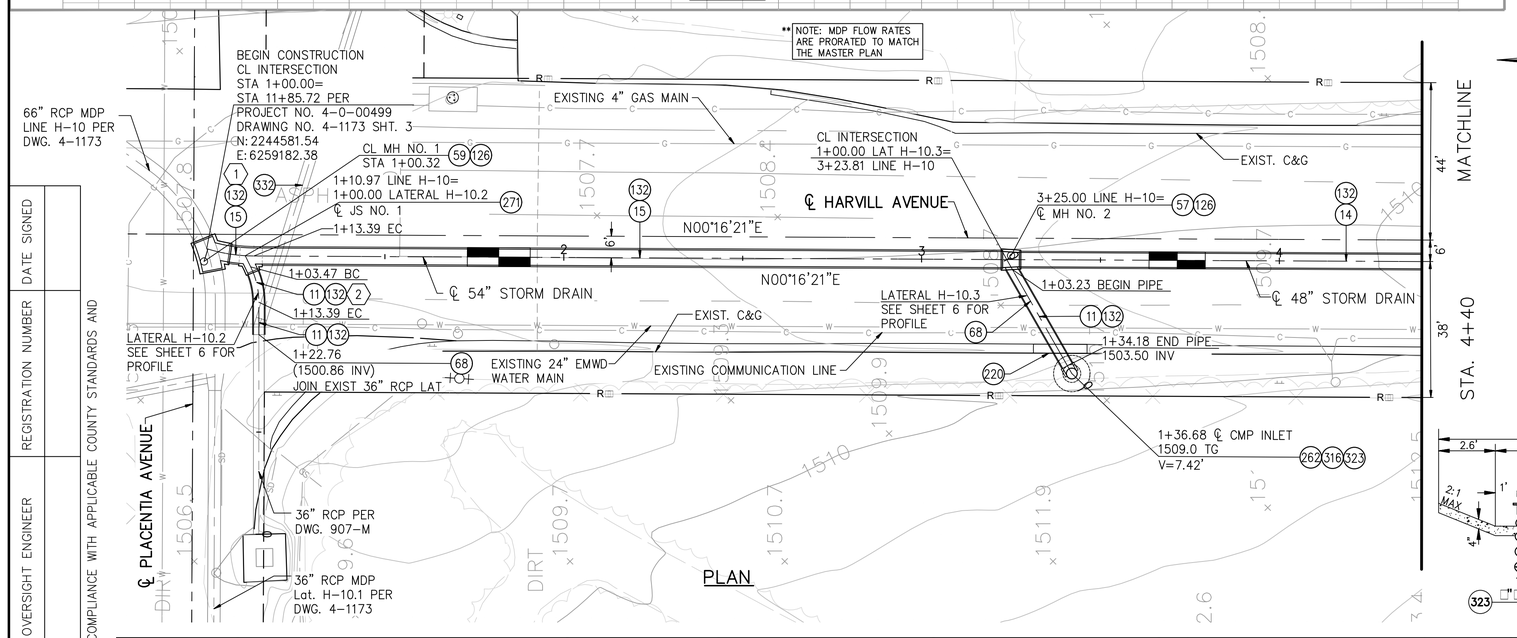
HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE

PROJECT NO. ———
DRAWING NO. ————
SHEET NO. 1 OF 6

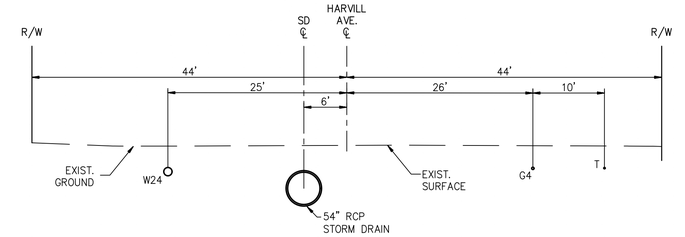
J:\RIVERSIDE\projects\PERRIS VALLEY MDP LINE H-10\Design\Drawings\Plan and Profile\PP_H10_Cover.dgn 22 DGN 06-SEP-2022 DR 06-SEP-2022 15:22:22



PROFILE



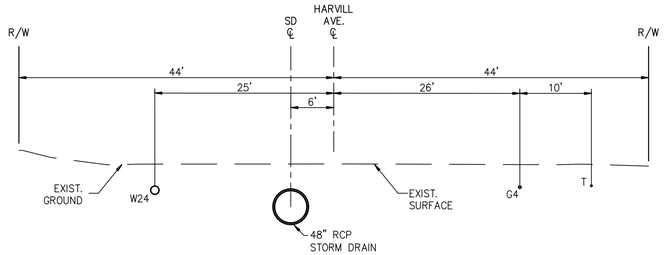
PLAN



SECTION AT STA 1+68.00

TYPICAL FROM STA. 1+00.00 TO 3+22.66

10' 0 10'



SECTION AT STA 3+90.00

TYPICAL FROM STA. 3+27.33 TO 4+40.00

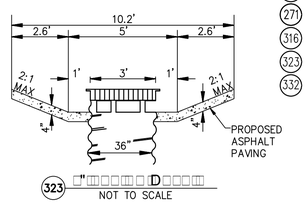
20' 0 20'

MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	℄ STATION	WALL STATION	STRUCTURE	A	C
H-10	1+00.00	1+06.38	MH NO. 1	45°	4.85'
H-10.2	1+10.97	1+12.15	JS NO. 1	45°	4.81'
H-10.3	3+25.00	3+25.04	MH NO. 2	60°	3.23'

CURVE DATA		①	②
R		45.00'	22.50'
∆		17°02'51.72"	26°02'53.88"
L		13.39'	10.23'
T		6.74'	5.20'
B.C.		1+00.00	1+03.47
E.C.		1+13.39	1+13.69
P.I.	NORTHING	2244575.10	2244566.97
	EASTING	6259180.38	6259172.63

CONSTRUCTION NOTES

(11) INSTALL 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(14) INSTALL 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(15) INSTALL 54" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(57) CONSTRUCT MANHOLE NO. 2 PER R.C.F.C. & WCD STD. PLAN MH252
(59) CONSTRUCT TRANSITION STRUCTURE NO.3 PER RCFC&WCD STD. PLAN TS303
(68) CONSTRUCT CONCRETE COLLAR PER R.C.F.C. & W.C.D. STD. PLAN M803
(126) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
(132) SAWCUT, REMOVE AND REPLACE EXISTING AC OVER AB PAVEMENT IN KIND AFTER CONSTRUCTION PER COUNTY OF RIVERSIDE STD. 818
(220) SAWCUT AND REMOVE EXISTING CURB & GUTTER AND REPLACE IN KIND
(262) GRADE AROUND RISER TO ALLOW FOR A 1.3' DEPRESSION WITH 2:1 MAX SIDES
(271) CONSTRUCT JUNCTION STRUCTURE NO. 2 PER R.C.F.C. & W.C.D. STD. PLAN JS227
(316) CONSTRUCT CMP INLET PER R.C.F.C. & W.C.D. STD. PLAN CB108
(323) INSTALL 4" MIN. AC PAVING AROUND THE RISER
(332) REMOVE CONFLICTING PORTION OF STORM DRAIN, ABANDON AND BACKFILL WITH SAND



* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

IP 220057
PPT-220002

DATE SIGNED | REGISTRATION NUMBER | COUNTY OVERSIGHT ENGINEER | RECMD

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

REGISTERED PROFESSIONAL ENGINEER JOHNNY MURAD NO. 67512 EXPIRATION 6-30-2023 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 450 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: JOHNNY MURAD
R.C.E. 67512 EXPIRES 6-30-23 DATE

DESIGNED BY: MG
DRAWN BY: H-Z STAFF
CONSTR. SET:
CHECKED BY: J.M.
P8 NUMBER:

DIGALERT
DIAL BEFORE YOU DIG TOLL FREE 1-800-227-2600 TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

PERMANENT BENCH MARK
BM-432 ADJUSTED 1992 AT THE SWC OF THE INT. OF PERRIS BL & RIDER ST, AT THE BASE OF A STEEL TRAFFIC SIG. LT. A 3-1/4" STD MWDSC ALM. DISK SET ON EASTSIDE FLUSH.
ELEVATION = 1455.11' (NAVD88)

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

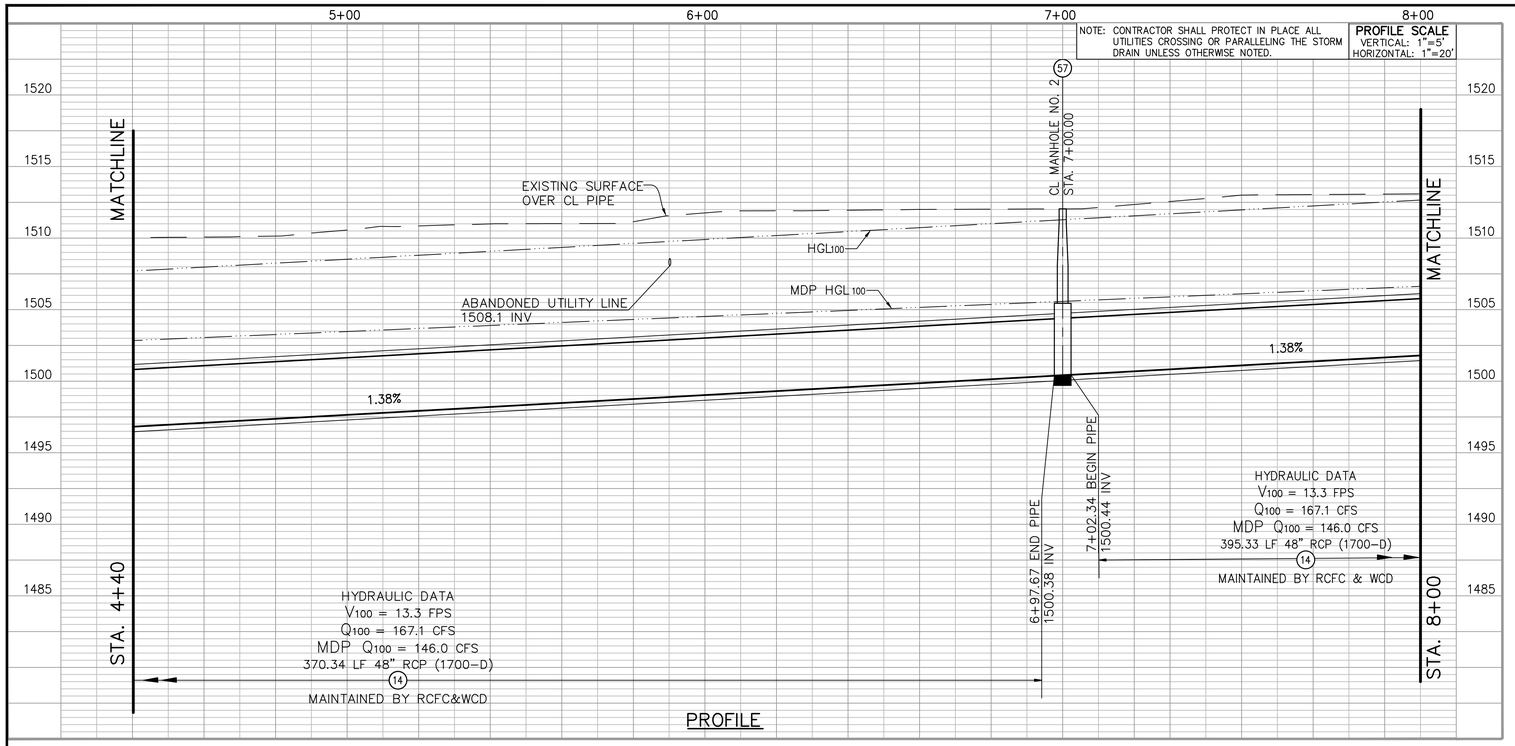
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: CHIEF OF PLANNING DATE:
APPROVED BY: GENERAL MANAGER - CHIEF ENGINEER DATE:

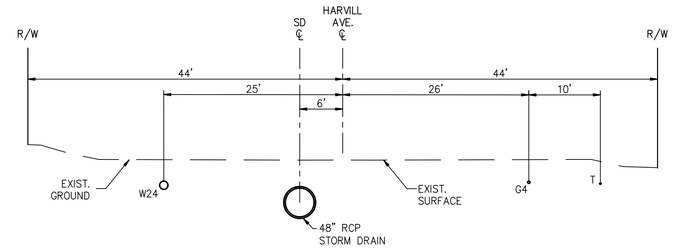
PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE
STA. 1+00.00 TO 4+40.00

PROJECT NO. ---
DRAWING NO. ----
SHEET NO. 2 OF 6

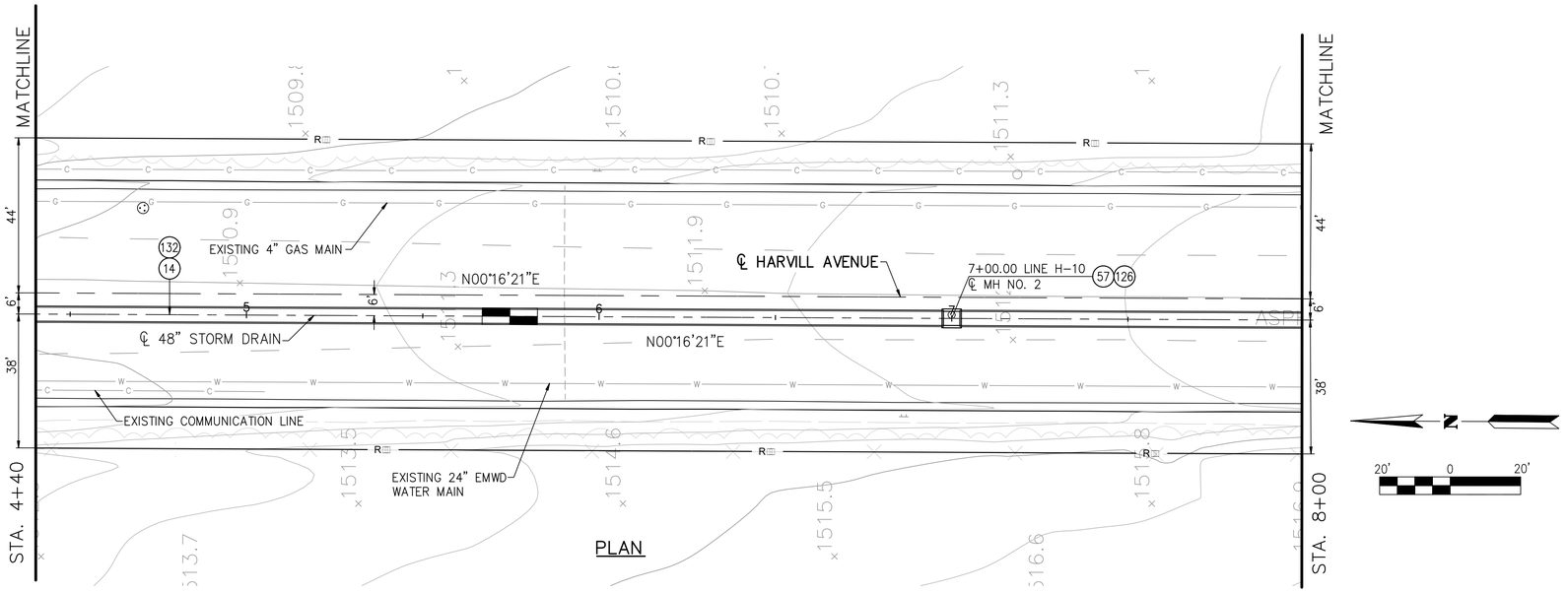
D:\Projects\Projects D\Projects D-0\Projects D-00\Projects D-00-0\Projects D-00-0-0\Projects D-00-0-0-0\DR: 2.2 dd 2.2 2022





SECTION AT STA 6+26.50
TYPICAL FROM STA. 4+40.00 TO 8+00.00

10' 0 10'



MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	℄ STATION	WALL STATION	STRUCTURE	A	C
–	7+00.00	–	MH NO. 3	–	–

20' 0 20'

CONSTRUCTION NOTES

(14) INSTALL 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(57) CONSTRUCT MANHOLE NO. 2 PER R.C.F.C. & WCD STD. PLAN MH252
(126) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
(132) SAWCUT, REMOVE AND REPLACE EXISTING AC OVER AB PAVEMENT IN KIND AFTER CONSTRUCTION PER COUNTY OF RIVERSIDE STD. 818

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

IP 220057
PPT-220002

RECMD | COUNTY OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

REGISTERED PROFESSIONAL ENGINEER JOHNNY MURAD NO. 67512 EXPIRATION 6-30-2023 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
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PREPARED UNDER THE SUPERVISION OF: JOHNNY MURAD
R.C.E. 67512 EXPIRES 6-30-23 DATE

DESIGNED BY: MG
DRAWN BY: H-Z STAFF
CONSTR. SET:
CHECKED BY: J.M.
P8 NUMBER:

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

PERMANENT BENCH MARK
BM-432 ADJUSTED 1992
AT THE SWC OF THE INT. OF PERRIS BL & RIDER ST, AT THE BASE OF A STEEL TRAFFIC SIG. LT. A 3-1/4" STD MWDSC ALM. DISK SET ON EASTSIDE FLUSH.

ELEVATION = 1455.11' (NAVD88)

REF.	DESCRIPTION	APPR.	DATE
	REVISIONS		

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY:
CHIEF OF PLANNING
DATE:

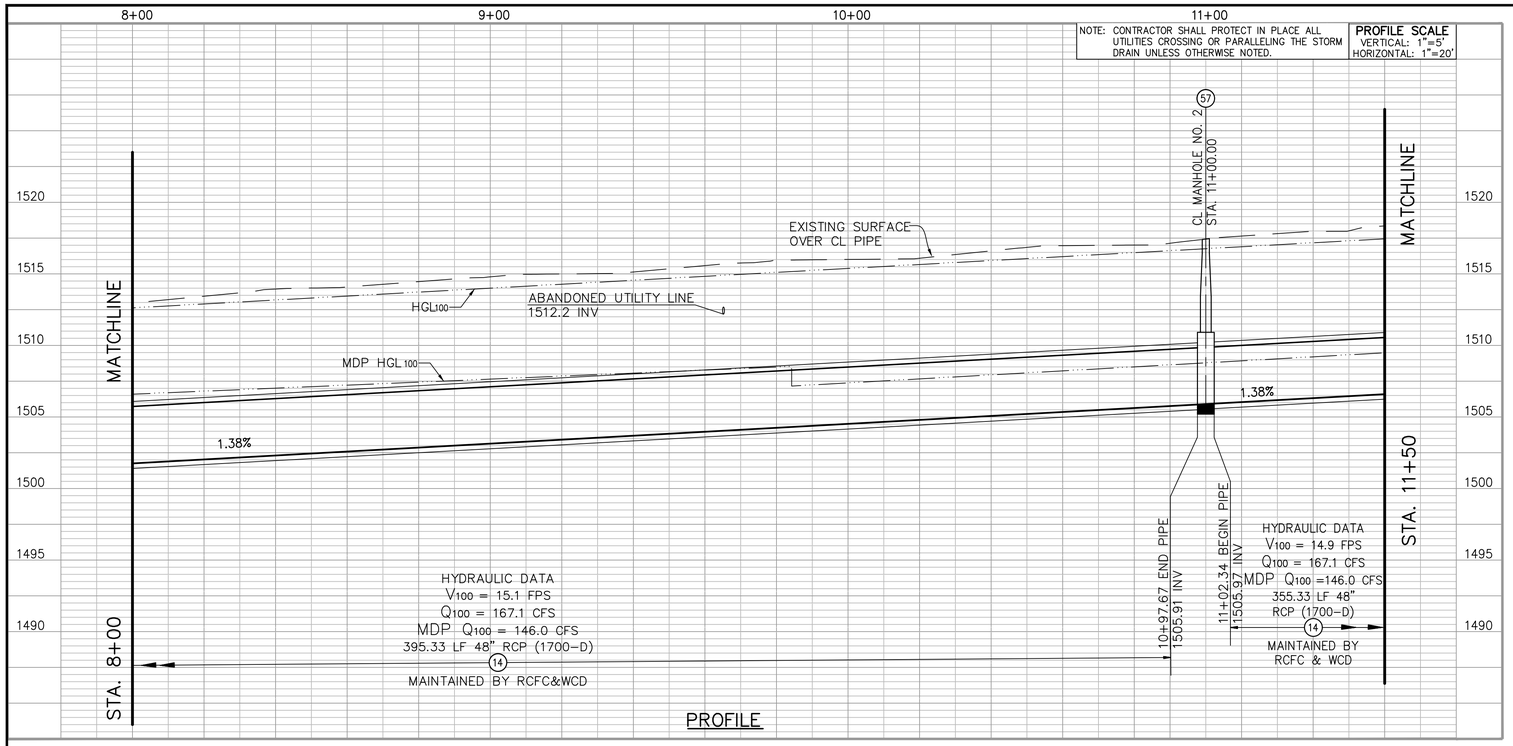
APPROVED BY:
GENERAL MANAGER – CHIEF ENGINEER
DATE:

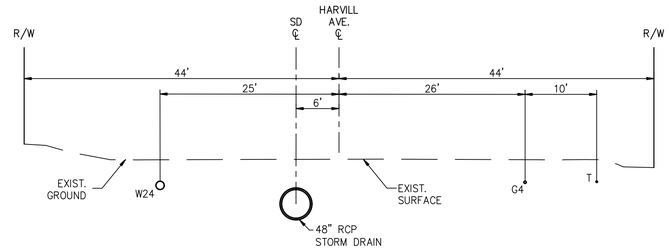
PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE
STA. 4+40.00 TO 8+00.00

PROJECT NO. ———
DRAWING NO. ————
SHEET NO. 3 OF 6

D:\R\[illegible]\DR_2.dgn 12/2/2022

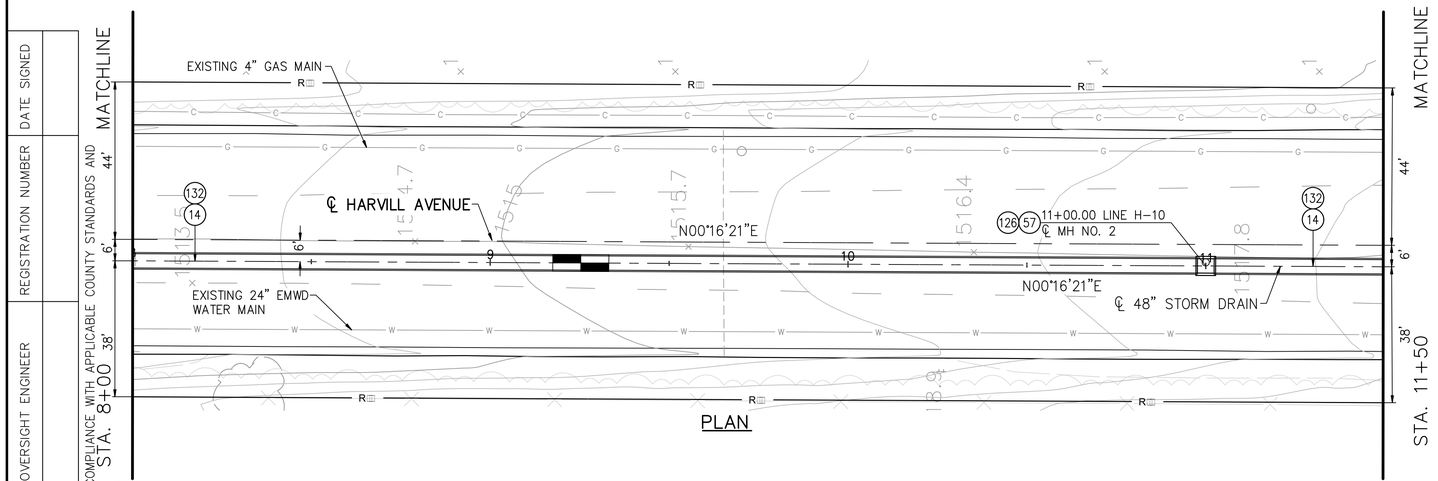




SECTION AT STA 9+27.00

TYPICAL FROM STA. 8+00.00 TO 11+50.00

10' 0 10'



MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	℄ STATION	WALL STATION	STRUCTURE	A	C
–	11+00.00	–	MH NO. 4	–	–

CONSTRUCTION NOTES

(14) INSTALL 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)

(57) CONSTRUCT MANHOLE NO. 2 PER R.C.F.C. & WCD STD. PLAN MH252

(126) ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED

(132) SAWCUT, REMOVE AND REPLACE EXISTING AC OVER AB PAVEMENT IN KIND AFTER CONSTRUCTION PER COUNTY OF RIVERSIDE STD. 818

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

IP 220057
PPT-220002

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

RECMD | COUNTY OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED

REGISTERED PROFESSIONAL ENGINEER — JOHNNY MURAD — NO. 67512 — EXPIRATION 6-30-2023 — CIVIL — STATE OF CALIFORNIA

HUITT-ZOLLARS
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R.C.E. 67512 EXPIRES 6-30-23 DATE

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ELEVATION = 1455.11' (NAVD88)

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	REVISIONS		

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

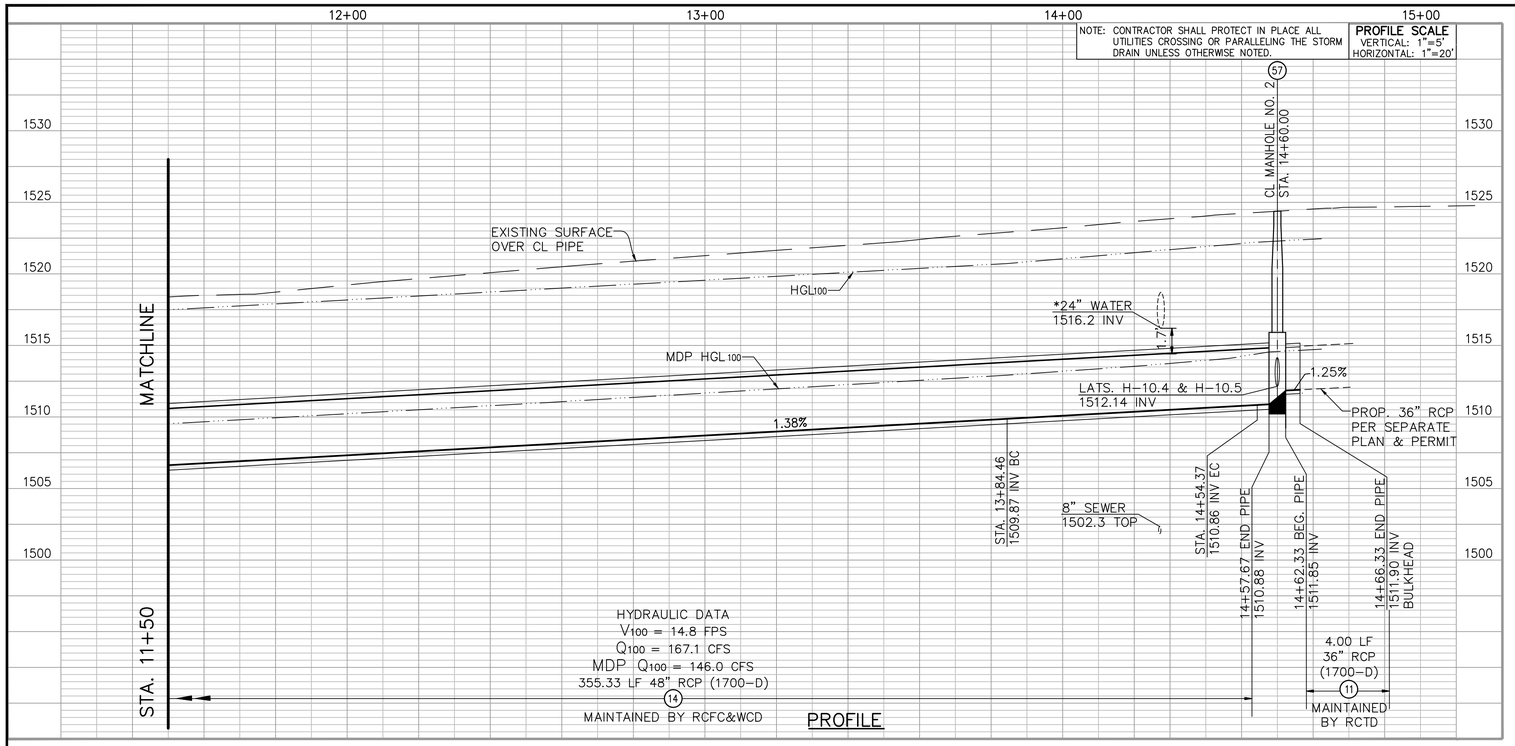
RECOMMENDED FOR APPROVAL BY: CHIEF OF PLANNING DATE:

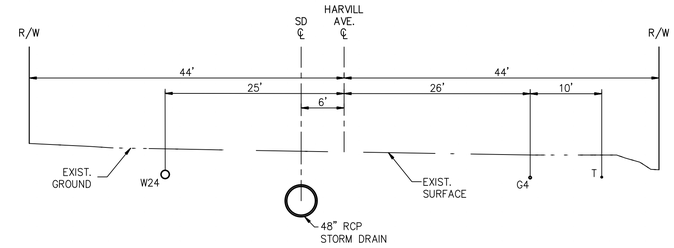
APPROVED BY: GENERAL MANAGER – CHIEF ENGINEER DATE:

PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE
STA. 8+00.00 TO 11+50.00

PROJECT NO. ———
DRAWING NO. ————
SHEET NO. 4 OF 6

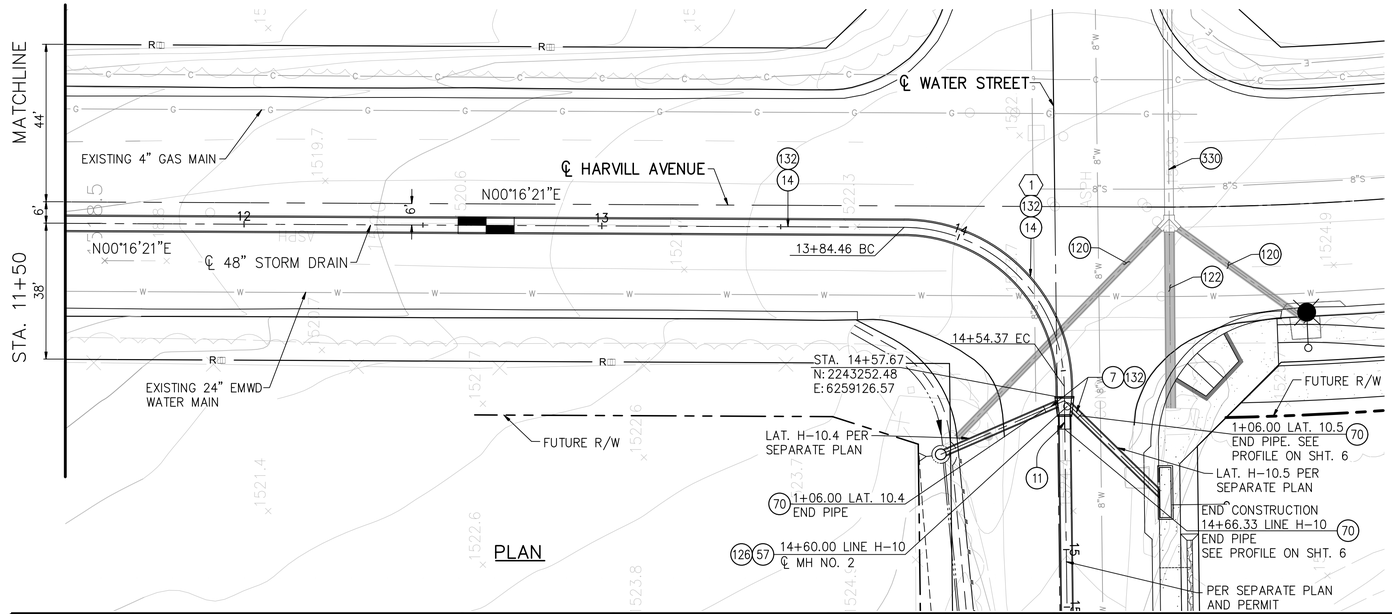




SECTION AT STA 11+65.00

TYPICAL FROM STA. 11+50.00 TO 13+84.46

10' 0 10'



20' 0 20'

HATCHING LEGEND

120	LIMITS OF REMOVAL FOR EXISTING 18" SD
122	LIMITS OF REMOVAL FOR EXISTING 30" SD

CURVE DATA	①
R	45.00'
Δ	89°00'59.04"
L	69.91'
T	44.23'
B.C.	13+84.46
E.C.	14+54.37
P.I. NORTHING	2243253.06
P.I. EASTING	6259174.09

MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	℄ STATION	WALL STATION	STRUCTURE	A	C
–	14+79.65	–	MH NO. 5	–	–

CONSTRUCTION NOTES

7. INSTALL 18" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
11. INSTALL 36" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
14. INSTALL 48" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
57. CONSTRUCT MANHOLE NO. 2 PER R.C.F.C. & WCD STD. PLAN MH252
70. CONSTRUCT CONCRETE BULKHEAD PER R.C.F.C. & W.C.D. STANDARD M816
120. REMOVE EXISTING 18" RCP (LIMITS OF REMOVAL AS INDICATED ON PLAN)
122. REMOVE EXISTING 30" RCP (LIMITS OF REMOVAL AS INDICATED ON PLAN)
126. ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
132. SAWCUT, REMOVE AND REPLACE EXISTING AC OVER AB PAVEMENT IN KIND AFTER CONSTRUCTION PER COUNTY OF RIVERSIDE STD. 818
330. EXISTING STORM DRAIN TO BE ABANDONED, FILLED WITH SAND, AND CAPPED PER R.C.F.C. & W.C.D. STANDARD M816.

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

IP 220057
PPT-220002

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

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RECOMMENDED FOR APPROVAL BY: _____ CHIEF OF PLANNING DATE: _____

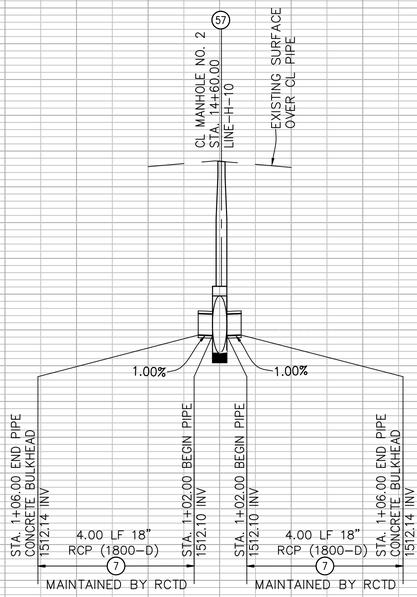
APPROVED BY: _____ GENERAL MANAGER - CHIEF ENGINEER DATE: _____

PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE
STA. 11+50.00 TO 14+76.32

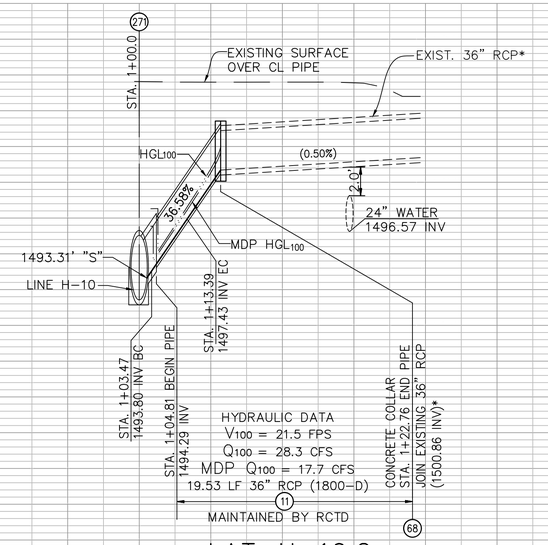
PROJECT NO. ---
DRAWING NO. ----
SHEET NO. 5 OF 6

DR: I:\projects\prd\D\docs\D_dsgn\Dr\sheets\DR_2.dgn 2.2.0



LAT. H-10.4
SEE SHEET 5

LAT. H-10.5
SEE SHEET 5



LAT. H-10.2
SEE SHEET 2

LAT. H-10.3
SEE SHEET 2

PROFILE SCALE
VERTICAL: 1"=5'
HORIZONTAL: 1"=20'

5' 0 5'

* NOTE:
HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

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DATE:

PERRIS VALLEY MDP LINE H-10

HARVILL AVENUE
FROM WATER ST. TO PLACENTIA AVE
PROFILES

PROJECT NO. ———
DRAWING NO. ————
SHEET NO. 6 OF 6

IP 220057
PPT-220002

D:\R\...\Drawings\...\...dgn 22 2022

Appendix "I" –

Percolation Report (Southerly Neighboring Property)

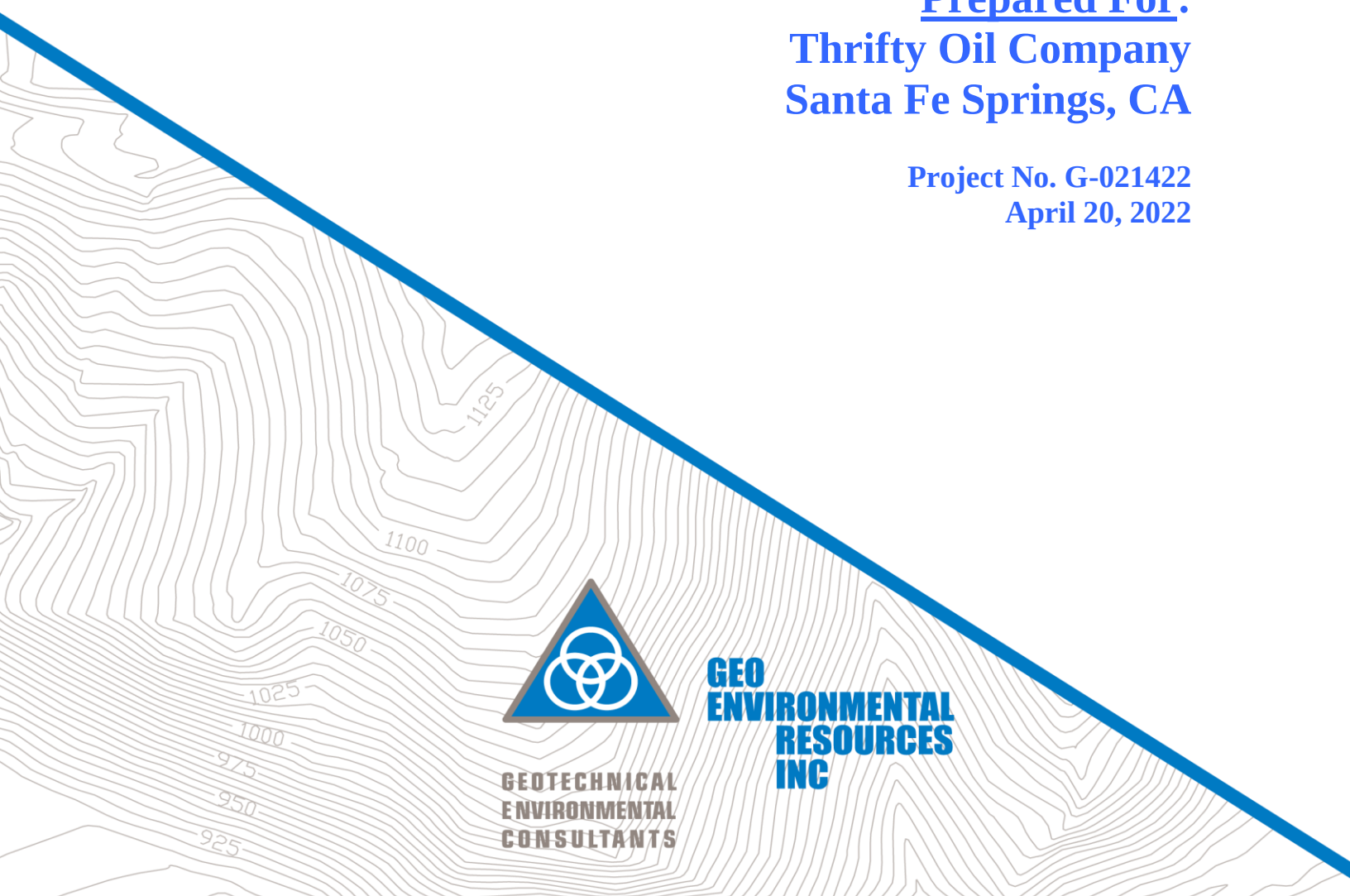
Geotechnical Engineering Exploration and Analysis

Percolation Feasibility Study Results

23628 Water Street, Perris, CA

Prepared For:
Thrifty Oil Company
Santa Fe Springs, CA

Project No. G-021422
April 20, 2022



GEOTECHNICAL
ENVIRONMENTAL
CONSULTANTS

GEO
ENVIRONMENTAL
RESOURCES
INC

1. PURPOSE AND SCOPE

This report provides the results of our recent percolation feasibility study for the proposed Tilt-up Commercial structure. The purpose of the study is to present the results of the field evaluation for the infiltration rate for the storm water runoff at the subject property.

Peculation test was conducted in accordance with **ASTM D 3385 "STANDARD TEST METHOD FOR INFILTRATION RATE OF SOILS IN FIELD USING DOUBLE-RING INFILTROMETER".** Two (2) locations have been designated to conduct the percolation test procedure. Please review the "Site Location Plan" Figure No.1 to review the approximate percolation tests location. The main purpose of multiple-locations is to obtain additional infiltration rates.

2. SUBSURFACE EXPLORATION

Percolation test No.1 was conducted next to Boring No.6 and Percolation No.2 was performed adjacent to the Boring No.5. For percolation, No.1 Test Pit No.1 was excavated to an approximate depth of 80 inches below the existing grade. Test pit Number 2, which was excavated for per was excavated to an approximate depth of 84 inches below the existing grade. Both two test pits were excavated with the help of backhoe and field equipment. The exposed subgrade within both locations were saturated 24-hours prior to actual percolation test.

3. SUBSURFACE CONDITION

The subsurface soil encountered in Test Pit No 1 (TP-1) consisted of Brown Silty Fine to Coarse Sand, Trace Clay Alluvial Deposits (Qof) Dry to damp to the depth of about 18 inches, which was underlain by Orange Silty Fine Sand with Clay to Clayey Fine Sand, Alluvial Deposits (Qof) to the depth of 8 feet. The samples were obtain by the help of the hand auger and field equipment and it was obtained at the corner of test pit, where the percolation had been performed.

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In case of Test pit No 2 (TP-2), Soil classified as Brown Silty Fine to Coarse Sand, Trace Clay

Alluvial Deposits (Qof), Dry to damp and dense. This layer was continued to the depth of 3 feet. Then after that we observed Cemented soil with CALICHE, Alluvial Deposit (Qof) and moist which was very dense as well

Detailed geotechnical subsurface condition was originally discussed in our original geotechnical report (G-021422), which was prepared as Proposed Tilt up.

According to attached figure 6, the subject site is not located within a "Liquefaction Zone" based on the review of the liquefaction map of California (California Department of Conservation). Also there is no evidence of near-surface groundwater in our subsurface exploration. Within Test Pit No.1 and 2 there was no groundwater encountered to maximum explored depth.

4. GEOTECHNICAL CONSIDERATIONS

The followings were considered prior to test procedure. :

1. Water infiltration into the ground should be at least 10 feet above the groundwater table.
2. The distance between the infiltration facility and the adjacent private property lines should be at least 10 feet.
3. The minimum foundation set back should be at least 10 feet from the infiltration facility.

4. Test Procedure

The double ring infiltrometer test (ASTM D 3385) is a well recognized and documented technique for directly measuring the soil infiltration rate of a site. Double ring infiltration was developed in response to the fact that smaller (less than 40 inch diameter) single ring infiltrometers tend to overestimate vertical infiltration rates. This has been attributed to the fact that the flow of water beneath the cylinder is not purely vertical and diverges laterally.

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Double ring infiltrometers minimize the error associated with the single-ring method because the water level in the outer ring forces vertical infiltration of water in the inner ring. Care should be taken when driving the rings into the ground as there can be a poor connection between the ring wall and the soil. This poor connection can cause a leakage of water along the ring wall and an overestimation of the infiltration rate. Another potential source of error is attributed to the size of the cylinders. As such, the use of cylinder sizes less than those prescribed in ASTM D 3385 is not recommended by most codes.

Geo Environmental Resources, double ring infiltrometer consists of a 12-inch inner ring and a 24-inch outer ring. While there are two operational techniques used with the double-ring infiltrometer, the constant head method and the falling head method; ASTM D3385 mandates the use of the constant head method.

With the constant head method, water is consistently added to both the outer and inner rings to maintain a constant level throughout the testing. The volume of water needed to maintain the fixed level of the inner ring is measured. To help maintain a constant head, a variety of devices may be used. A hook gauge, steel tape or rule, or length of steel or plastic rod pointed on one end, can be used for measuring and controlling the depth of liquid (head) in the infiltrometer ring. If available, a graduated Mariotte tube or automatic flow control system may also be used.

On the other hand and with the falling head method, which has been used in this report, the falling level of the water is measured in each time interval and ultimately, as shown in following tables, a final report shall be provided and, based on the test results, an infiltration rate shall be recommended. The final number is average of previous 4-infiltration rate.

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5. FINDINGS AND CONCLUSIONS

Result of Percolation test **No.1 indicates 5.25 inch/hr.** with a percolation **No.2 indicating 4.7 inch/hr.** Attached please see percolation tables and graphs.

($\boldsymbol{Final\ Infiltration\ rate} = \frac{\boldsymbol{Infiltration\ rate\ from\ test}}{\boldsymbol{Factor\ of\ safety}}$) **The minimum recommended factor of safety will be two (2).** Therefore, the actual infiltration rate of subject property will be half of the obtained infiltration rate**.**

It is our opinion that due the variability within the near-surface soil, the lower infiltration rate (Infiltration No.2) should be considered to utilize in the design. Therefore, the recommended infiltration rate is 2.35 Inch/hr.

1. The infiltration of the storm water will not result in ground settlement that could affect adversely the proposed structure.
2. All results and findings are based on level (Horizontal) surface area. Effect of any slope or inclination shall be considered to evaluate the final Percolation rate.
3. The proposed infiltration facility should be designed in such way that in case of "Drainage Capacity Failure" overflow to street.

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Figure 20: Approximate location and depth of the test.



Figure 21: Using bentonite to seal the apparatus, Soil was firm and dry



Figure 22: Position of laser meter and method of reading level of the water.



Figure 23: Accuracy of Reading water level by laser meter. Test was done by reading level of the water at specific time intervals

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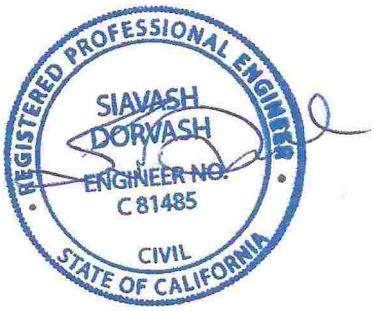
We appreciate the opportunity to be of service on this report. If we may be of additional Assistance, should Geotechnical Related problems occurs, please do not hesitate to contact us at Any time.

Very truly yours,

GEO ENVIRONMENTAL RESOURCES, INC.

Alexander A. Rastegar

Project Engineer



S. Dorvash, P.E.

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GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil

Percolation Location 1 (TP-1)

				Inner Ring		*Annular Ring*				
Trial Number	*Time (hour:min)*		*Elapsed time (Δt)*	*Elevation Inch(H)*	*ΔH*	*Elevation Inch(H)*	*ΔH*	*Liquid Temperature*	*Infiltration Rate - Annular (Inch/hour)*	*Infiltration Rate -Inner (Inch/hour)*
	Start	9:30	0:15	5 3/16		6 4/16			-	-
1	End	9:45		7 2/16	1 15/16	8 9/16	2 5/16	64	-	-
	Start	10:00	0:15	9 3/16	2 1/16	11	2 7/16	64	-	-
2	End	10:15		11 4/16	2 1/16	13 7/16	2 7/16	64	-	-
	Start	10:30	0:15	13 5/16	2 1/16	Water (5 9/16))	2 8/16	64	9 11/16	**8 2/16**
3	End	10:45		15 5/16	2	8	2 7/16	64	9 13/16	**8 3/16**
	Start	11:00	0:15	Water(5 4/16)	2 1/16	10 6/16	2 6/16	64	9 12/16	**8 3/16**
4	End	11:15		7 5/16	2 1/16	12 12/16	2 6/16	65	9 10/16	**8 3/16**
	Start	11:30	0:15	9 5/16	2	15 1/16	2 5/16	65	9 7/16	**8 2/16**
5	End	11:45		11 4/16	1 15/16	Water (6 3/16))	2 7/16	65	9 7/16	**8 1/16**
	Start	12:00	0:15	13 3/16	1 15/16	8 10/16	2 7/16	65	9 8/16	**7 15/16**
6	End	12:15		15 1/16	1 14/16	10 15/16	2 5/16	65	9 8/16	**7 12/16**
	Start	12:30	0:15	Water(5 4/16)	2	13 5/16	2 6/16	66	9 9/16	**7 12/16**
7	End	12:45		7 4/16	2	15 10/16	2 5/16	66	9 7/16	**7 13/16**
	Start	13:00	0:15	9 2/16	1 14/16	(Water)5 3/16	2 7/16	66	9 7/16	**7 12/16**
8	End	13:15		10 14/16	1 12/16	7 8/16	2 5/16	66	9 7/16	**7 10/16**
	Start	13:30	0:15	12 8/16	1 10/16	9 13/16	2 5/16	66	9 6/16	**7 4/16**
9	End	13:45		14 1/16	1 9/16	12	2 3/16	70	9 4/16	**6 13/16**
	Start	14:00	0:15	Water(5 10/16)	1 14/16	14 1/16	2 1/16	70	8 14/16	**6 13/16**
10	End	14:15		7 4/16	1 10/16	(Water)5 3/16	2	70	8 9/16	**6 11/16**
	Start	14:30	0:15	8 13/16	1 9/16	7 5/16	2 2/16	70	8 6/16	**6 10/16**
11	End	14:45		10 6/16	1 9/16	9 5/16	2	70	8 3/16	**6 10/16**
	Start	15:00	0:15	11 14/16	1 8/16	11 3/16	1 14/16	70	8	**6 4/16**
12	End	15:15		13 5/16	1 7/16	13	1 13/16	72	7 13/16	**6 1/16**
	Start	15:30	0:15	14 11/16	1 6/16	(Water)5 7/16	1 12/16	72	7 8/16	**5 14/16**
13	End	15:45		Water(6 6/16)	1 7/16	7 2/16	1 13/16	72	7 5/16	**5 12/16**
	Start	16:00	0:15	7 12/16	1 6/16	8 12/16	1 10/16	72	7 1/16	**5 10/16**
14	End	16:15		9 1/16	1 5/16	10 4/16	1 8/16	73	6 8/16	**5 8/16**
	Start	16:30	0:15	10 6/16	1 5/16	11 12/16	1 8/16	74	6 5/16	**5 7/16**
15	End	16:45		11 11/16	1 5/16	13 4/16	1 8/16	75	6 2/16	**5 5/16**
	Start	17:00	0:15	13	1 5/16	14 12/16	1 8/16	76	6	**5 4/16**
16	End	17:15		14 5/16	1 5/16	16 4/16	1 8/16	77	6	**5 4/16**

Infiltration Rate (Inch/Hour): *5 5/16*

5.25

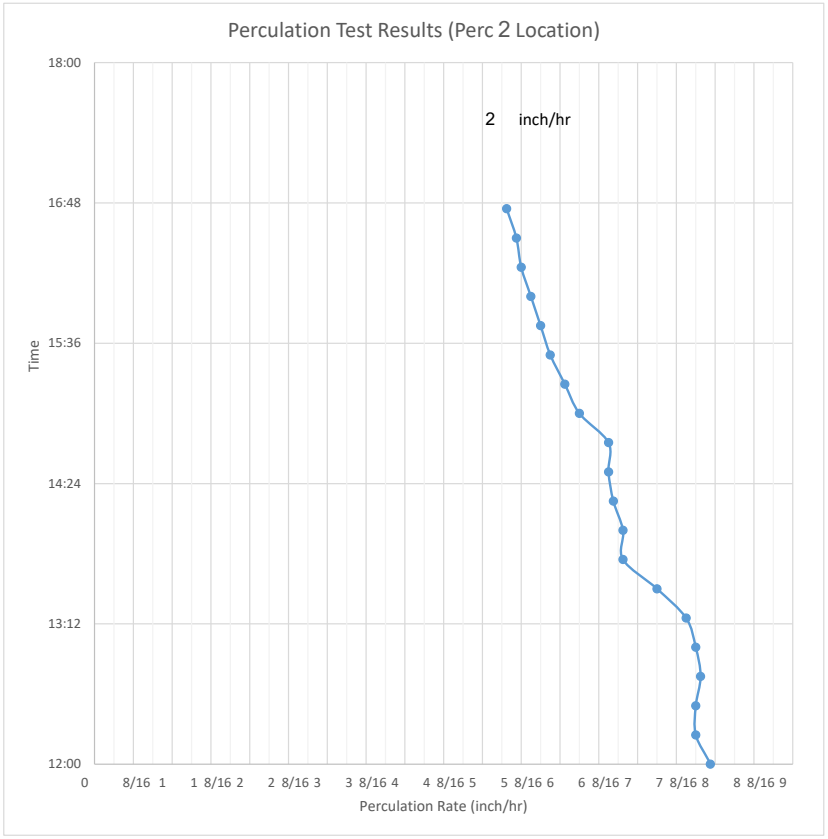
Double Ring Infiltration Test Data

GEO ENVIRONMENTAL RESOURCES INC
GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil



GEO ENVIRONMENTAL RESOURCES INC
GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/15/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	67°-87° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil

Percolation Location TP-2

				Inner Ring		*Annular Ring*				
Trial Number	*Time (hour:min)*		*Elapsed time (Δt)*	*Elevation Inch(H)*	*ΔH*	*Elevation Inch(H)*	*ΔH*	*Liquid Temperature*	*Infiltration Rate - Annular (Inch/hour)*	*Infiltration Rate -Inner (Inch/hour)*
	Start	9:00	0:15	5 14/16		5 11/16			-	-
1	End	9:15		8	2 2/16	7 15/16	2 4/16	64	-	-
	Start	9:30	0:15	10 4/16	2 4/16	10 6/16	2 7/16	64	-	-
2	End	9:45		12 6/16	2 2/16	12 11/16	2 5/16	64	-	-
	Start	10:00	0:15	14 8/16	2 2/16	Water (5 1/16)	2 4/16	64	9 4/16	**8 10/16**
3	End	10:15		16 8/16	2	7 7/16	2 6/16	64	9 6/16	**8 8/16**
	Start	10:30	0:15	Water(5 8/16)	2 2/16	9 10/16	2 3/16	64	9 2/16	**8 6/16**
4	End	10:45		7 8/16	2	11 14/16	2 4/16	65	8 15/16	**8 4/16**
	Start	11:00	0:15	9 9/16	2 1/16	14	2 2/16	65	8 13/16	**8 3/16**
5	End	11:15		11 9/16	2	Water (5 1/16))	2 3/16	65	8 10/16	**8 3/16**
	Start	11:30	0:15	13 8/16	1 15/16	7 5/16	2 4/16	65	8 11/16	**8**
6	End	11:45		15 7/16	1 15/16	9 6/16	2 1/16	65	8 10/16	**7 15/16**
	Start	12:00	0:15	Water(5 15/16)	1 14/16	11 6/16	2	66	8 8/16	**7 12/16**
7	End	12:15		7 15/16	2	13 4/16	1 14/16	66	8 3/16	**7 12/16**
	Start	12:30	0:15	9 13/16	1 14/16	15 2/16	1 14/16	66	7 13/16	**7 11/16**
8	End	12:45		11 9/16	1 12/16	Water(5 5/16)	1 12/16	66	7 8/16	**7 8/16**
	Start	13:00	0:15	13 5/16	1 12/16	7 2/16	1 12/16	66	7 4/16	**7 6/16**
9	End	13:15		15	1 11/16	8 13/16	1 11/16	70	7 1/16	**7 1/16**
	Start	13:30	0:15	Water(5 2/16)	1 11/16	9 8/16	11/16	70	5 14/16	**6 14/16**
10	End	13:45		6 15/16	1 13/16	11 2/16	1 10/16	70	5 12/16	**6 15/16**
	Start	14:00	0:15	8 8/16	1 9/16	12 11/16	1 9/16	70	5 9/16	**6 12/16**
11	End	14:15		10 1/16	1 9/16	14 3/16	1 8/16	70	5 6/16	**6 10/16**
	Start	14:30	0:15	11 8/16	1 7/16	Water (5 5/16)	1 8/16	70	6 3/16	**6 6/16**
12	End	14:45		12 13/16	1 5/16	6 15/16	1 10/16	72	6 3/16	**5 14/16**
	Start	15:00	0:15	14 1/16	1 4/16	8 6/16	1 7/16	72	5 14/16	**5 9/16**
13	End	15:15		Water(5 12/16)	1 3/16	9 10/16	1 4/16	72	5 10/16	**5 3/16**
	Start	15:30	0:15	7	1 4/16	10 15/16	1 5/16	72	5 7/16	**5**
14	End	15:45		8 3/16	1 3/16	12 3/16	1 4/16	73	5 5/16	**4 14/16**
	Start	16:00	0:15	9 5/16	1 2/16	13 7/16	1 4/16	74	5	**4 12/16**
15	End	16:15		10 7/16	1 2/16	14 11/16	1 4/16	75	5 1/16	**4 11/16**
	Start	16:30	0:15	11 9/16	1 2/16	15 15/16	1 4/16	76	5	**4 9/16**
16	End	16:45		12 11/16	1 2/16					

Infiltration Rate (Inch/Hour): ***4 11/16 =4.7***

GEO ENVIRONMENTAL RESOURCES INC
GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
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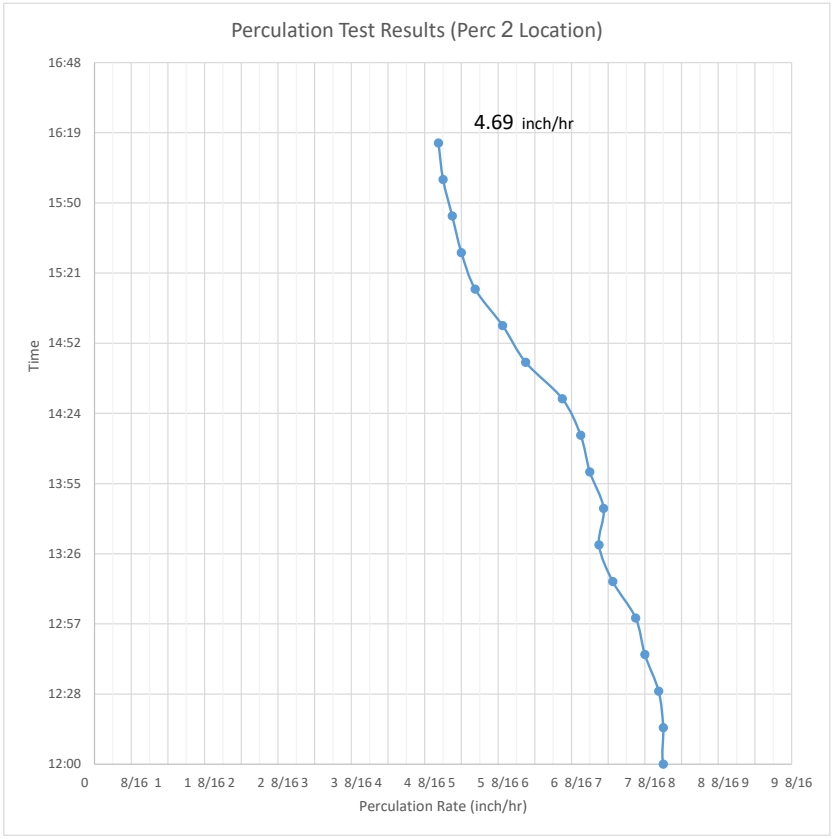
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil



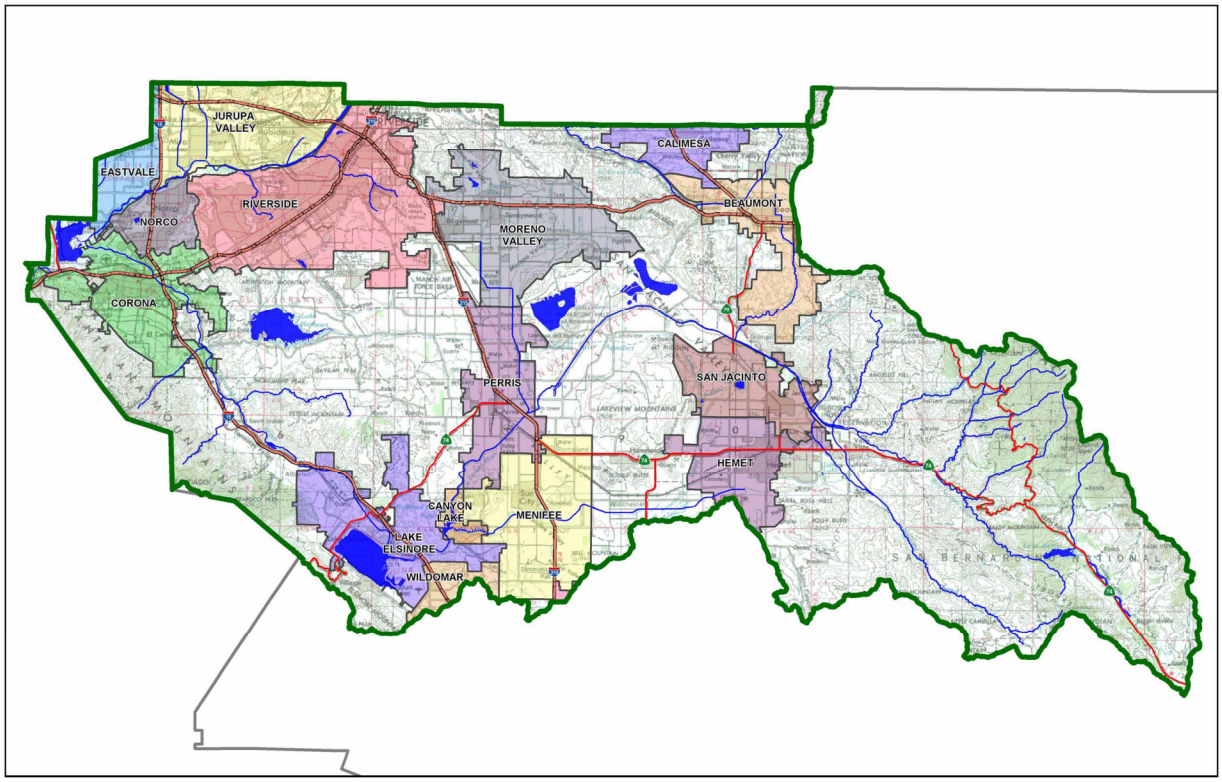
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Perris North – The Orden Company

Development No: PPT230048

Design Review/Case No:



☒ **Preliminary**
☐ **Final**

Original Date Prepared: December 1, 2023

Revision Date(s): March 27, 2024; November 1, 2024

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

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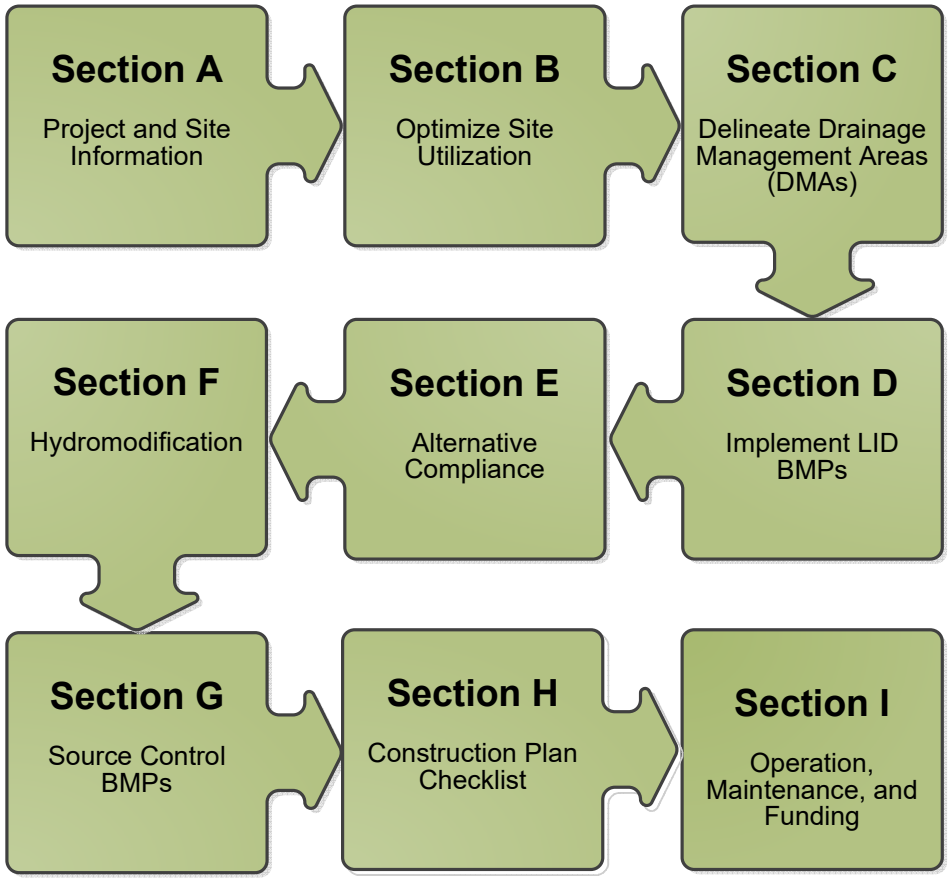
A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well-prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared by Armstrong and Brooks Consulting Engineers for Thrifty Oil Company for their Tobacco Road project.

This WQMP is intended to comply with the requirements of the Riverside County 2010 SAR MS4 Permit and Riverside County Municipal Code Section XII.D which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under Riverside County Water Quality Ordinance Order No. R8-2010-0033 (MS4 Permit).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Stephane Wandel	Executive Director of Acquisitions & Development
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Bill Brooks	Principal
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:



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Section A: Project and Site Information

PROJECT INFORMATION		
Type of Project:	Industrial	
Planning Area:	Mead Valley Area Plan I-P Zone (Industrial Park)	
Community Name:	N/A	
Development Name:	N/A	
PROJECT LOCATION		
Latitude & Longitude (DMS): 33°49'19" N, 117°14'58" W		
Project Watershed and Sub-Watershed: Santa Ana Watershed		
Gross Acres: 9.14 acres APN(s): 317-260-017, 317-260-018 Map Book and Page No.: MB 1/5		
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)	Warehouse	
Proposed or Potential SIC Code(s)	4225	
Area of Impervious Project Footprint (SF)	379,819	
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	323,229	
Does the project consist of offsite road improvements?	☒ Y	☐ N
Does the project propose to construct unpaved roads?	☐ Y	☒ N
Is the project part of a larger common plan of development (phased project)?	☒ Y	☒ N
EXISTING SITE CHARACTERISTICS		
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	0	
Is the project located within any MSHCP Criteria Cell?	☐ Y	☒ N
If so, identify the Cell number:	N/A	
Are there any natural hydrologic features on the project site?	☐ Y	☒ N
Is a Geotechnical Report attached?	☐ Y	☒ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)		
What is the Water Quality Design Storm Depth for the project?	0.59 in	

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Perris Valley Drain	N/A	N/A	N/A
San Jacinto River Reach 3	None	AGR*,GWR*,REC1*,REC2*,WARM*,WILD*	N/A
San Jacinto River Reach 2	None	AGR,GWR,WILD,MUN,REC1,REC2,WARM	N/A
Canyon Lake (Railroad Canyon Reservoir)	Nutrients	WILD, REC2,WARM,GWR,MUN,REC1,AGR	N/A
San Jacinto River Reach 1	None	AGR*,GWR*,REC1*,REC2*,WARM*,WILD*	N/A
Lake Elsinore	DDT, Nutrients, Low Dissolved Oxygen, PCBs, Toxicity	REC1, REC2, WARM, WILD	N/A

Denotes **Intermittent Beneficial Use*

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)*	☐ Y	☒ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

Yes, based on topographical evidence the site currently drains easterly and the grading for the site mimics current site drainage. Proposed grading and proposed storm drains will allow for site runoff to be conveyed to a proposed underground retention chamber below the eastern truck parking lot. Excess runoff from this proposed facility will be discharged using an overflow pipe at a rate less than existing, predeveloped conditions.

Did you identify and protect existing vegetation? If so, how? If not, why?

No, a small percentage of the existing site is covered by vegetation making it infeasible to protect. Vegetation will be placed through proposed landscaping areas within proposed parking islands and alongside sidewalks.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Yes, infiltration capacity was estimated per attached Geotechnical Report for adjacent property and was used in determining the BMPs applied to the site.

Did you identify and minimize impervious area? If so, how? If not, why?

Yes, impervious area was minimized through the implementation of landscaped parking islands throughout the site instead of impervious asphalt/concrete.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

No, however all site runoff will be routed to the underground detention chambers which will also infiltrate into the gravel bed.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA A	Mixed	33,331	D
DMA B	Mixed	316,213	D
DMA C	Mixed	14,478	D
DMA D	Ornamental Landscape	15,682	A

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*
[2]*If multi-surface provide back-up*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA D	15,682	Landscaped	Drip

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Impervious fraction	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA A	INFILTRATION TRENCH #1
DMA B	UNDERGROUND INFILTRATION CHAMBER #1
DMA C	DRY WELL #1

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?		X
If Yes, list affected DMAs:		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☒The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape:

Type of Landscaping (Conservation Design or Active Turf):

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces:

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor:

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area:

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users:

Project Type:

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces:

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor:

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users:

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: N/A

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: N/A

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
N/A	N/A

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☐ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA A	☒	☐	☐	☐	☐
DMA B	☒	☐	☐	☐	☐
DMA C	☒	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth	Design Capture Volume, V_{BMP}	Proposed Volume on Plans
	[A]		[B]	[C]	[A] x [C]	(in)	(cubic feet)	(cubic feet)
DMA-A	*33,331*	*Mixed Surface Types*	*0.41**	*0.29*	*9,511.2*	*0.59*	*467.6*	*680*

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth	Design Capture Volume, V_{BMP}	Proposed Volume on Plans
	[A]		[B]	[C]	[A] x [C]	(in)	(cubic feet)	(cubic feet)
DMA-B	*316,213*	*Mixed Surface Types*	*0.95**	*0.81*	*255,176 .9*	*0.59*	*12,546.2*	*12,794*

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth	Design Capture Volume, V_{BMP}	Proposed Volume on Plans
	[A]		[B]	[C]	[A] x [C]	(in)	(cubic feet)	(cubic feet)
DMA-C	*14,478*	*Mixed Surface Types*	*0.88**	*0.7*	*10,160. 5*	*0.59*	*499.6*	*1,770*

** Per Section 2.3.1 of the 2012 Santa Watershed Region WQMP Guidance Document, a composite effective impervious fraction can be used when multiple surfaces types are present in a DMA. A composite effective impervious fraction has been used for DMA-A, DMA-B, and DMA-C. Proposed site grading will convey DMA-A flows to an infiltration trench. Sheet and concentrated flows from DMA-B will be conveyed to an underground retention chamber. DMA-C flows will concentrate at a dry well at the northeastern corner of the site.*

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☒ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☒ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☒	☒	☐	☐	☒	☐	☒	☒

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
Total Credit Percentage[1]	

[1]Cannot Exceed 50%

[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Area x Runoff Factor		*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]				
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration			
Volume (Cubic Feet)			

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Susceptibility Maps.

Does the project qualify for this HCOC Exemption? ☒ Y ☐ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

Project site identified to be within a non-HCOC applicable area on HCOC applicability map included in Appendix 7. HCOC applicability map also indicates that all downstream conveyance channels that receive runoff from the project are classified as "not susceptible stream channels."

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	Maintain and periodically repaint or replace inlet markings. Provide stormwater pollution prevention information to new site owners, lessees, or operators. See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance, " in Appendix 10.
Landscape/ Outdoor Pesticide Use	Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the	Maintain landscaping using minimum or no pesticides.

	use of fertilizers and pesticides that can contribute to stormwater pollution. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	See applicable operational BMPs in SC-41, " Building and Grounds Maintenance," in Appendix 10.
Refuse areas	State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34,"Waste Handling and Disposal," in Appendix 10.
Loading Docks		Move loaded and unloaded items indoors as soon as possible. See Fact Sheet SC-30, "Outdoor Loading and Unloading," in Appendix 10.
Plazas, sidewalks, and parking lots.		Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
UNDERGROUND RETENTION CHAMBER #1	*Retention and Infiltration below eastern truck parking on site*	*WQMP Exhibit, Conceptual Grading Plan*	
INFILTRATION TRENCH #1	*Infiltration at easterly end of vegetated swale*	*WQMP Exhibit, Conceptual Grading Plan*	
DRY WELL #1	*Deep infiltration at northeast corner parking lot*	*WQMP Exhibit, Conceptual Grading Plan*	

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: Property Owner will be responsible for BMP maintenance.

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

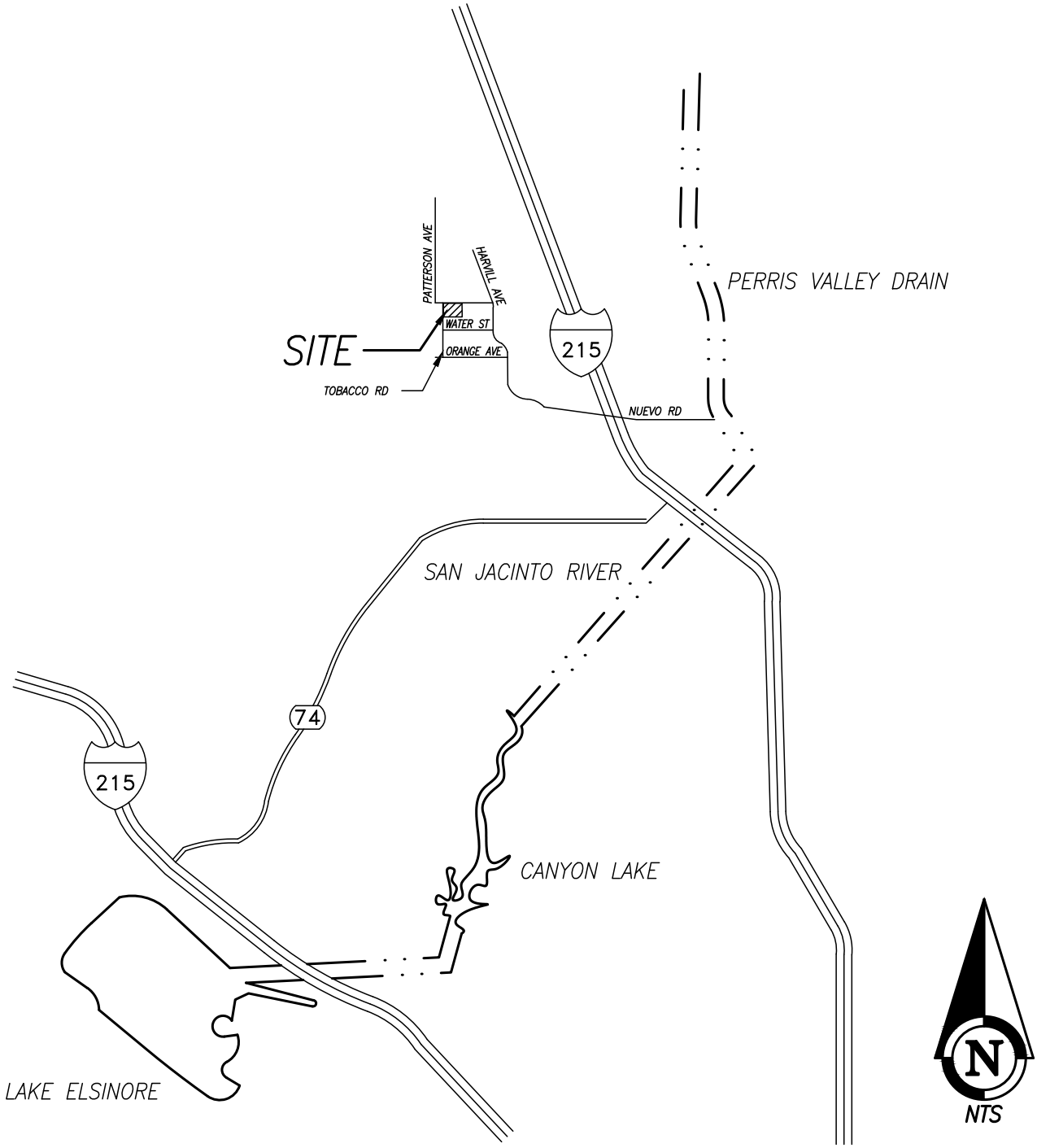
☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

RECEIVING WATERS MAP



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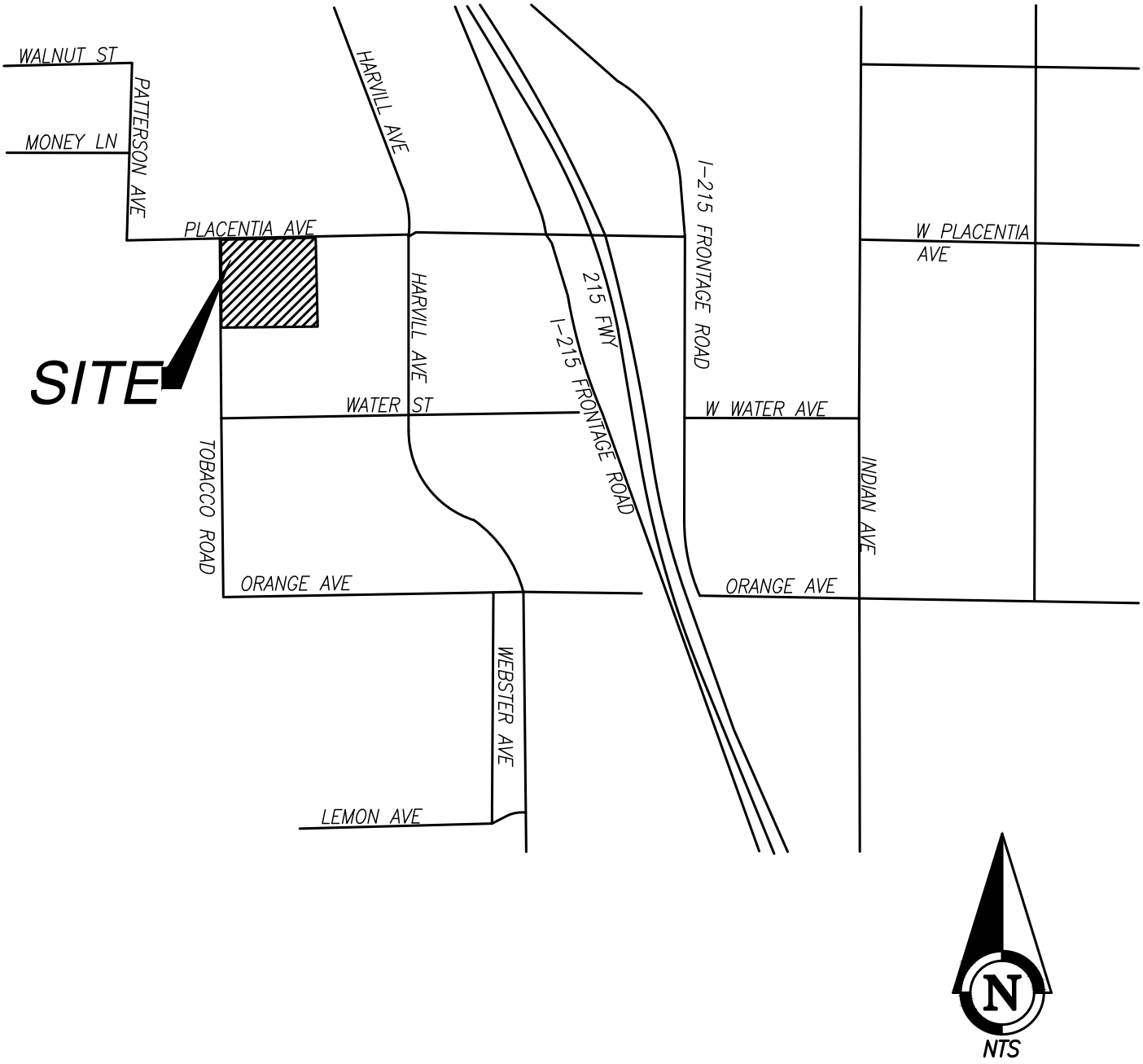
RECEIVING WATERS MAP
FOR
THE ORDEN COMPANY
WAREHOUSE FACILITY

COUNTY OF RIVERSIDE

VICINITY MAP



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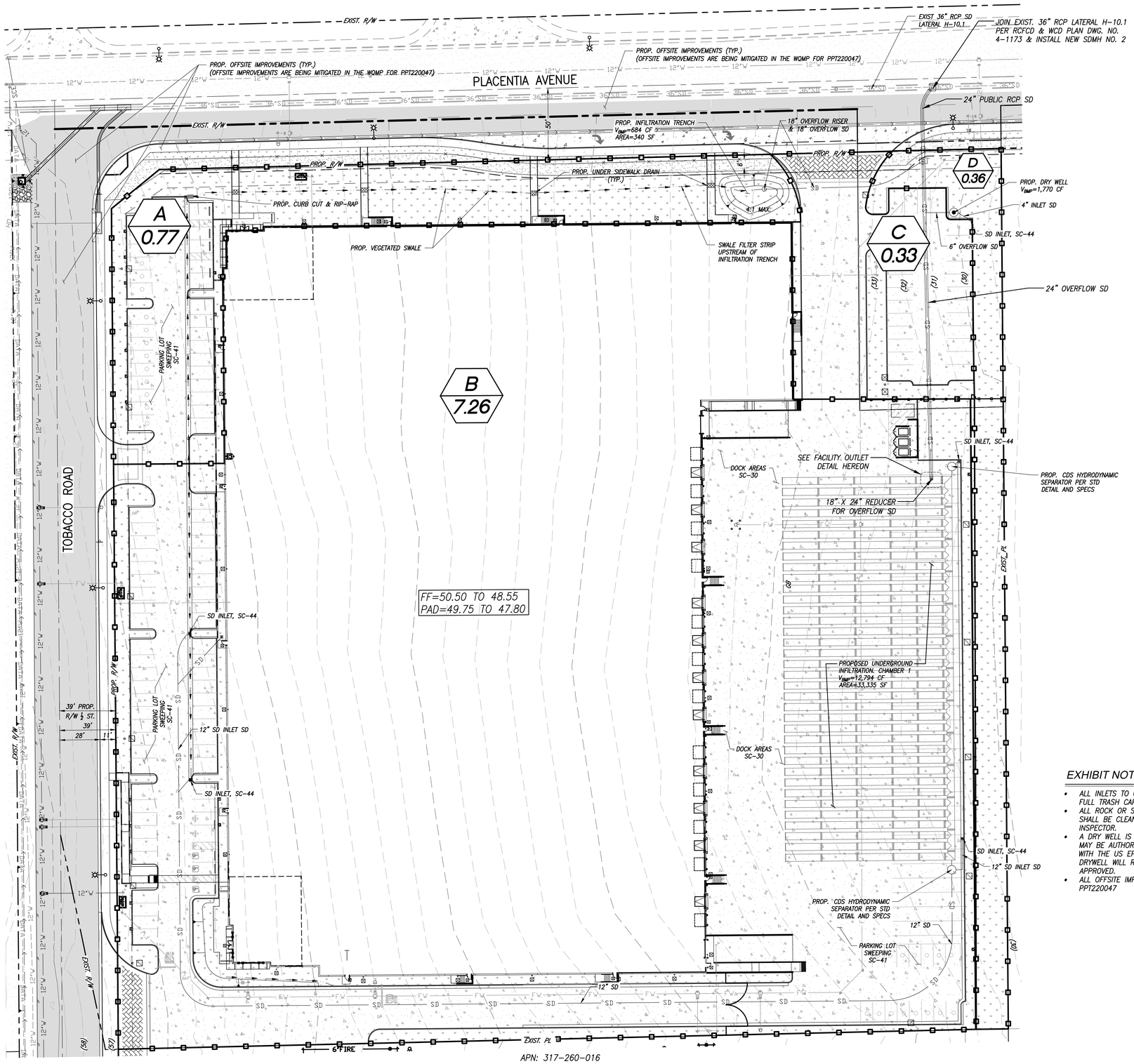
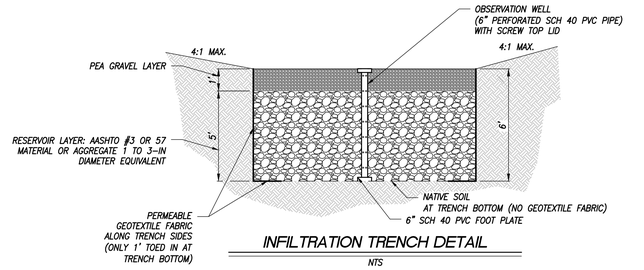
VICINITY MAP
FOR
THE ORDEN COMPANY
WAREHOUSE FACILITY
COUNTY OF RIVERSIDE

SITE DATA	
TOTAL PROJECT AREA (AC)	8.72
HYDROLOGIC SOIL GROUP	A
APPROXIMATE DEPTH TO GROUNDWATER (FT)	65

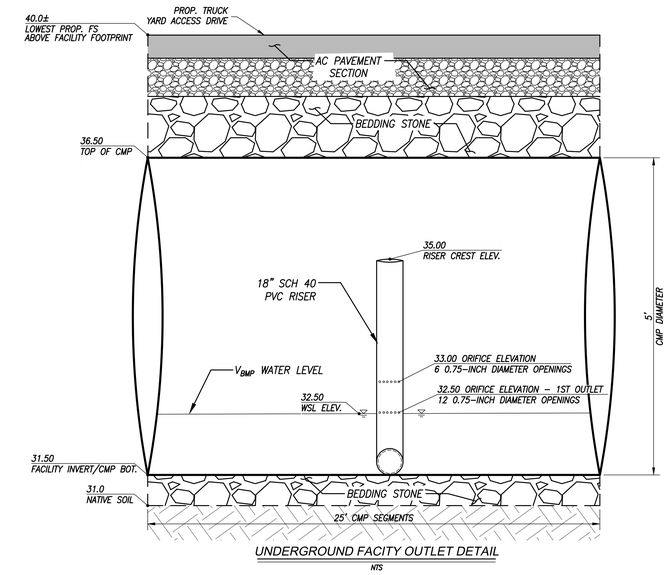
DMA ID	DMA TYPE	PERVIOUS AREA (SF)	IMPERVIOUS AREA (SF)	TOTAL AREA (SF)	DCV (CU FT)	V_{BMP} (CU FT)
DMA-A	DRAINS TO BMP	21,793	11,538	33,331	467.6	684
DMA-B	DRAINS TO BMP	17,131	299,082	316,213	12,546.2	12,794
DMA-C	DRAINS TO BMP	1,921	12,557	14,478	499.6	1,770
DMA-D	SELF-TREATING	15,682	0	15,682	N/A	N/A





INFILTRATION TRENCH DETAIL

NTS



UNDERGROUND FACITY OUTLET DETAIL

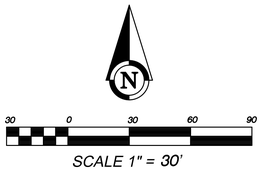
NTS

EXHIBIT NOTES

- ALL INLETS TO ONSITE UNDERGROUND STORM DRAIN ARE TO INCLUDE FULL TRASH CAPTURE DEVICES.
- ALL ROCK OR SAND TO BE PLACED IN POST-CONSTRUCTION BMPS SHALL BE CLEAN-WASHED ROCK TO THE SATISFACTION OF THE GRADING INSPECTOR.
- A DRY WELL IS CONSIDERED A CLASS V INJECTION WELL. DRY WELLS MAY BE AUTHORIZED TO OPERATE AS LONG AS THEY ARE REGISTERED WITH THE US EPA AND ONLY INJECT UNCONTAMINATED STORMWATER. THE DRYWELL WILL REGISTER WITH THE US EPA BEFORE THE FINAL WQMP IS APPROVED.
- ALL OFFSITE IMPROVEMENTS ARE BEING MITIGATED IN THE WQMP FOR PPT220047

LEGEND

590	GROUND CONTOUR		EXIST OFFSITE AC
	CENTERLINE		PROP. OFFSITE AC
	R/W LINE		PROP. PCC PAVEMENT
	DMA BOUNDARY		EXIST. AC PAVEMENT
	STORM DRAIN		PROP. LANDSCAPE
CB	CATCH BASIN	X / X.XX	DRAINAGE MANAGEMENT AREA / ACREAGE
SDMH	STORM DRAIN MANHOLE		
	EXISTING TREE EXISTING		



SCALE 1" = 30'

PRELIMINARY WATER QUALITY MANAGEMENT PLAN

FOR

PPT230048 - THE ORDEN COMPANY

RIVERSIDE COUNTY, CA

SHEET 1 OF 1

SEAL: REGISTERED PROFESSIONAL ENGINEER WILLIAM D. ARMSTRONG No. C053114 Exp. 6/30/25 CIVIL STATE OF CALIFORNIA

PREPARED BY:

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E:\123\177 ORDEN COMPANY_PERRIS NORTH\ADMIN\WQMP\177-WQMP-EXH.DWG 10/31/24

Appendix 2: Construction Plans

Grading and Drainage Plans

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

Geotechnical Engineering Exploration and Analysis

Proposed Commercial Building
23641 Placentia Avenue
Perris, CA

Prepared For:

The Orden Company
Santa Fe Springs, CA

Project No. G-012424-1
February 8, 2024

GEO ENVIRONMENTAL RESOURCES INC
GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

February 8, 2024

The Orden Company
Santa Fe Springs, California

Attention: Ms. Jamie Jones
Project Manager

Subject: Geotechnical Engineering Exploration and Analysis
Proposed Commercial Building
23641 Placentia Street, Perris, California

Project No. G-012424-1 APN: 317-260-017

Dear Ms. Jones:

In accordance with your request and authorization, **Geotechnical Engineering Exploration and Analysis** has been conducted for the above referenced site. Conclusions and recommendations developed from the exploration and analysis are discussed in the accompanying report.

We appreciate the opportunity to be of service on this project. If we may be of additional assistance, should geotechnical related problems occur or to provide observation and testing services during construction, please do not hesitate to call at any time.

Very truly yours,
GEO ENVIRONMENTAL RESOURCES, INC.

A. Rastegar

Alexander A. Rastegar
Project Engineer

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Appendix A: Boring Logs

Appendix B: Laboratory Testing

Appendix C: Figures

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Appendix E: USGS Seismic Design Parameters

Appendix F: Percolation Feasibility study

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1.0 PROPOSED DEVELOPMENT

Based on the review of the CONCEPTUAL GRADING PLAN (SHEET 1) which we have received via email, the proposed development consists of construction of 185,785 S.F. of commercial (concrete tilt-up) building within the above subject property.

Based on the information obtained during our site reconnaissance and subsurface exploration, the subject property is a vacant parcel located within the southeast corner of Tobacco Road & Placentia Avenue. It appears that the subject property used to be part of a larger parcel, which was bordered by Water Street to the south, Placentia Avenue to the north, Harvill Avenue to the east and Tobacco Road to the west.

The property is rectangular in shape, is covered with vegetation, and assorted sizes of trees. According to the proposed grading plan the western portion of the site is 3-4 feet higher than the east side. The proposed general parking areas will be located along the west and south side of the subject property. As part of our exploration, we have conducted a percolation test for the proposed Infiltration basin, which will be constructed within the northeast corner of the subject property, which will be designed as landscape area.

2.0 SCOPE OF SERVICES

This report provides the results of a Percolation test and geotechnical engineering exploration and analysis for the construction of the proposed commercial building and other related improvements. We performed a visual site reconnaissance, subsurface exploration, field and laboratory testing, and geotechnical engineering analysis in order to provide geotechnical grading and design recommendations for the proposed commercial building and other related improvement.

3.0 SITE LOCATION

The property is located at 23641 Placentia Avenue in Perris California. The property is bordered by an existing vacant parcel to the east, south, Placentia Avenue to the east and Tobacco Road to the west.

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4.0 SUBSURFACE EXPLORATION

4.1 Subsurface Exploration

Total of five (5) Borings were excavated within the area of the proposed developments to the depths ranging from of 7 to 30½ feet below existing backyard grade. The approximate boring locations are shown on the boring location plan **(Figure 1, Appendix C).** The Borings was advanced by the drilling rig. Borings No. 5 was also utilized for a perc test for retention basin design.

The relatively undisturbed soil sample was collected at approximate every 1½-3 ½ ft. Soil sampling was conducted in accordance with ASTM D1587 and D3550 Standard Specifications. Soil sample was visually reviewed and classified in the field pursuant to ASTM D2488, placed in sealed containers and transported to our laboratory for further review and testing. **Field and laboratory testing is enclosed in Appendix B**. The terms and symbols on the test boring logs are defined in the **General Notes in Appendix D**.

4.2 Local Geology

Based on review of the **GEOLOGIC MAP OF THE PERRIS QUADRANGLE BY THOMAS W. DIBBLEE, JR., 2003,** the native material was identified as **Alluvial Fan Gravel & Sand Deposits (Qoa) See FIGURE NO.2.**

4.3 Earth Material

The subsurface soil profile at test boring No.1 consists of Silty fine to coarse Sand with Caliche, Gray brown in color, damp to moist and loose to very dense extended to the maximum explored depth of 30 ½ feet below existing grade.

4.4 Top Soil (Ts)

The encountered soil within the top 12-to-18 inches were identified as Topsoil (Ts). The topsoil was classified as brown Silty fine to medium Sand, trace roots.

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4.5 Native Soil (Ns)

Native materials were encountered below depth of topsoils within all five (5) boring locations. The native soils (Ns) were identified as Alluvial Gravel, Sand & Silt **(Qoa)** deposits.

4.6 Groundwater

Ground water was not encountered during our sub surface exploration. However, it is not uncommon for groundwater or seepage conditions to develop where none previously existed. Groundwater elevations are dependent on seasonal precipitation, irrigation, land use, among other factors, and vary as a result. Based on review of some of the nearest well(s) to the subject property the approximate depth of ground water is between 75-to-85 feet below Ground Surface Elevation **see (Figure No.3)**

4.7 Expansive Potential

Expansion Index (EI) test was conducted according to the ASTM (D-2429) on bulk samples (1-4 feet) from Boring No. 2 of the near-surface materials. Results indicated that the near-surface material are low expansive with in expansion potential of (EI = 4).

4.8 Laboratory Testing

The relatively undisturbed soil samples were subjected to various laboratory tests such as Water-Content Determination (ASTM D2216), Moisture-Unit Weight Relationships (ASTM D-1557), Consolidation Test (ASTM D-2435) and Direct-Shear Test (ASTM D-3080).

4.9 Sulfate Potential

Based on our review of laboratory testing result, the water-soluble sulfate (SO4) content is (56.7 mg/kg), according to ACI 318 Section 4.3.1 (type V) concrete is not required to be utilized for the proposed project.

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4.10 Corrosion Potential

Based on the review of laboratory test results the on- site soil possess a PH of **6.6** (EPA 9045B) and Resistivity of 3000 (Ohm-cm). Therefore, the on-site soil has been classified as having "**Corrosive"** potential. And the project Structural Engineer should provide specific recommendations for mitigation and protection, as necessary.

5.0 PERCOLATION FEASIBILITY STUDY

Percolation feasibility study for design of retention basin has been conducted. Our exploration consisted of a site inspection, subsurface exploration and percolation test. The purpose of this test was to determine the permeability rate of subsurface materials for retention basin design for onsite water runoffs.

Percolation test holes were excavated to a depth of about 5-feet below existing grades using a field equipment's hand auger. Two inches of gravel was place at the bottom of the hole. A 3-inch in diameter PVC pipe was placed into the hole and extended to the gravel layer. The test locations were pre-saturated prior to testing. Percolation testing began about 24 hours after the holes were pre-saturated. Percolation data sheets are presented in **APPENDIX F** of this report. Calculations to convert the percolation test rate to infiltration test rates are presented in Table 5. A factor of safety should be applied to the infiltration rates below per the Handbook.

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TABLE 5
INFILTRATION TEST RATES FOR PERCOLATION AREAS

Parameter	P-1
Depth (inches)	60
Test Type	Falling Head
Change in head over time: ΔH (inches)	1.5
Average head: Havg (inches)	20.
Time Interval (minutes): Δt (minutes)	10
Radius of test hole: r (inches)	4
Tested Infiltration Rate: It (inches/hour per square inch)	2.7

The in-situ field percolation tests performed provide short-term infiltration rates, which apply mainly to the initiation of the infiltration process due to the short time frame of the test (hours instead of days) and the amount of water used. Where appropriate, the short-term infiltration rates should be converted to long-term infiltration rates using reduction factors depending upon the degree of infiltrate quality, maintenance access and frequency, site variability, subsurface stratigraphy variation, and other factors, as determined by the project civil engineer. The small-scale percolation testing cannot model the complexity of the effect of interbedded layers of different soil composition, and our test results should be considered only as index values of infiltration rates.

Landscaping adjacent to newly paved areas is not recommended due to the potential of irrigation water infiltrating beneath the pavement's subgrade and base course and cause pavement failure. Where landscaping are planned adjacent to the new pavement, construction of a cutoff wall along the edge of the new pavement is necessary.

The cutoff wall should extend at minimum 6-inch below the bottom of the Aggregate Base Course Material. Finally, if not properly constructed, there is a potential for distress to improvements and properties located in down gradient or adjacent to infiltration areas.

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6.0 GEOLOGIC AND SEISMICITY

5.1 Seismic Design Parameters

The site is located at approximately 33.8226 Latitude and -117.2501 longitudes. Any new structural related construction must be designed in accordance with the requirements of the latest edition of the California Uniform Building Code (CBC).

The CBC provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, seismic zoning, occupancy, and the seismic design parameters.

The Site Seismic Parameters presented below are based on the Mapped Acceleration Parameters (Ss and S1) as well as the Site Coefficients and Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameters. Based on the California Building Code, the site have been identified as Category II and classified as **SITE CLASS D (STIFF SOIL)** based on Table 1613.5.2 (Site Class definitions). The following parameters may be utilized for the subject site. In addition, copies of most current USGS Design Maps Summary is in Appendix E of this report.

SITE SEISMIC PARAMETERS	
Mapped 0.2 second Period Spectral Acceleration, Ss	1.488
Mapped 1.0 second Period Spectral Acceleration, S1	0.551
Site Coefficient for Site Class “D”, Fa	1.0
Site Coefficient for Site Class “D”, Fv	Null-See Section 11.4.8
Maximum Considered Earthquake Spectral Response Acceleration Parameters at 0.2 second, SMS	1.488
Maximum Considered Earthquake Spectral Response Acceleration Parameters at 1 second, SM1	Null-See Section 11.4.8
Design Spectral Response Acceleration parameter for 0.2 Second, SDS	0.992
Design Spectral Response Acceleration parameter for 0.2 Second, SD1	Null-See Section 11.4.8

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5.2 Geological Hazards

It is our judgment, that based on the specific data and information contained or referenced in this report, the construction of the proposed commercial building will be safe against hazards from landslides, settlement or slippage, and they would not adversely affect the stability of the existing and adjacent structures, provided the recommendations presented herein are properly interpreted and implemented.

6.0 SECONDARY SEISMIC EFFECTS

The primary geologic hazard at the sites is moderate to strong ground shaking caused by an earthquake on any of the local or regional faults. The subject property is 16 and 10 miles east and west of active faults, respectively **see (FIGURE-5).** The potential for secondary geologic hazards was also evaluated including, liquefaction, dynamic settlement.

6.1 Liquefaction

Liquefaction is the loss of strength in generally cohesion less, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors in which influence the potential for liquefaction include groundwater table elevation, soil type and grain size characteristics, and relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface.

However, based on the review of **"CGS Seismic Zonation Program"** as well as the **GEOLOGIC MAP OF PERRIS QUADRANGLE BY THOMAS W. DIBBLEE, JR., 2005**, the subject property is NOT located within "Liquefiable" area. In addition, review of the Susceptibility map of Riverside County revealed that the subject property is within an area with **LOW LIQUEFACTION SUSCEPTIBILTY see (FIGURE-7).**

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6.2 Surface Rupture

Based on research of available literature and results of site reconnaissance, no known active or potentially active faults underlie the subject site. In addition, the subject site is not located within any **Alquist-Priolo** Earthquake Fault Zone. Based on these considerations, the potential for surface ground rupture at the subject site is considered moderate.

6.3 Landslide

As indicated previously, the subject property is relatively flat. In addition, based on review of "CGS Seismic Hazards Zonation "the subject property is NOT located within potential "Landslide" area.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the result of sub-surface exploration, laboratory testing, and research, it is the finding of this firm that the construction of the proposed commercial building is considered feasible from a geotechnical engineering standpoint provided the advice and recommendations presented herein are followed and implemented during construction.

Results of moisture-density testing revealed that the majority of the near-surface materials are in damp condition. In addition, results of Consolidation tests, which were conducted on the randomly selected soil samples at various depths also indicated excessive consolidation under potential building pressure.

Therefore, we are recommending that in order to develop a uniform sub-surface layer with increased support characteristics with proper in-situ moisture content, following completion of the existing vegetation and tree removal, the proposed building pad area should be over-excavated to approximate depth of **four (4) feet below bottom of proposed parameter and column footings. The lateral extend of the proposed over-excavations should be 3-feet beyond the edge of the proposed parameter and column footings.**

The foundation system may consist of either independently poured spread footings or a monolithically poured foundation and floor slab thereby using a turned-down slab

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construction technique. The proposed continuous and column pad footings should be designed by the project structural engineer. However, at the minimum, the parameter and column pad footings should be embedded at least 30-to-24 inches into the newly placed and compacted structural fill material, respectively. The proposed column and continuous footings may be designed for a maximum, allowable soil bearing strength of 2,500 pounds per square foot (psf).

7.1 Site Preparation and Grading

Subgrade Preparation within the Building pad Area

As indicated in section 7.0, we are recommending that in order to develop a uniform sub-surface layer with increased support characteristics, following completion of the trees and vegetation removal, the proposed building area to be over-excavated to approximate depth of eight (8) feet below its proposed Rough Finished Grade (RFG) elevation or an equivalent of four (4) feet below the proposed foundation subgrade (whichever is lower in elevation).

Upon completion of over-excavation, the exposed subgrade within the entire pad area should be scarified to depth of 12-inch, moisture conditioned as necessary and compacted to 90 percent of Maximum Laboratory Dry Density, as determined by (ASTM D-1557) Test Method. **It should be noted that the upper 12-inch should be compacted to 95 percent of its Maximum Laboratory Dry Density.**

Any loose or otherwise unsuitable soil that is encountered during compaction and proof rolling should be removed to depth of firm subgrade, which should be determined and confirmed by a representative from this office.

The entire grading operation should be conducted in the presence of a representative from this office. And the ultimate depth of removal as well as bottom scarification and compacting should be verified and confirmed by our representative as well.

7.2 Pavement Grading Recommendation

Following removal of all the grass, vegetation and trees and necessary cuts. We are recommending that the entire new pavement area to be over-excavated to depth of 24-inch below its Proposed Rough Finished Grade (RFG). Upon completion, the exposed

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subgrade should be scarified to depth of 12-inch, moisture conditioned, and compacted to at least 90 percent of its Maximum Dry Density as Determined by the (ASTM D 1557-12) Test Method.

7.3 Fill Placement

All the new fill soils should be placed in 8-10 inches thick loose lift and each lift should be Moisture conditioned to the suitable moisture content and compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D 1557-12) Test Method.

On-site soil may be utilized as structural fill provided they are free of debris and moisture conditioned as necessary to the satisfaction of our field representative.

All grading and fill placement activities should be completed in accordance with the requirements of the City of Perris and/or County of Riverside Grading Guidelines. All fill soils should be compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D 1557-12).

Compaction tests should be performed periodically by a representative from this office as random verification of compaction and moisture content. These tests are intended to aid the contractor. Since the tests are taken at random locations and depths, they may not be indicative of the entire fill and therefore should not relieve the contractor of his responsibility to meet the project specification.

7.4 Imported Structural Fill

In general, all imported structural fill soils (If needed) should consist of low to non-expansive (EI<20), well-graded soil. Imported soils should be evaluated by a geotechnical engineer or his representative prior to placement.

7.5 Utility Trench Backfill

In general, all the new utility trench backfill should also be compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D- 1557-12). Compacted trench backfill should be performed to the requirement of the local grading guidelines. The trench backfill soils should be compaction tested where possible, probed

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and visually evaluated elsewhere. Temporary Excavation In general, temporary excavation higher than four (4) feet should be sloped back to 1:1(Vertical: Horizontal).

8.0 CONSTRUCTION CONSIDERATION

8.1 Excavation Difficulties

In general, the encountered sub-surface material was identified to be in dense to very dense condition. Therefore, some excavation difficulties should be anticipated.

8.2 Over-Sized Partials

During the grading process, if "over-sized" particles encountered in excessive quantities, proper segregation should be conducted in order to make the excavated materials suitable for fill placement or remove them from the excavation area.

9.0 FOUNDATION DESIGN AND CONSTRUCTION

9.1 Shallow Foundation Parameters for the Building (Structural Fill)

1- An allowable Soil Bearing pressure of 2,000 (psf)
2- An allowable At-Rest pressure of 57.5 (psf) **USE 57** (psf)
3- An allowable Active pressure of 38.3 (psf) **USE 40** (psf)
4- An allowable passive pressure of 345.0 (psf) **USE 300** (psf)
5- Friction angle of 30 degree
6- The proposed footing dimension should be provided by the project structural engineer, however, at the minimum the proposed continuous and column pad footing should be embedded at least 36 and 24 inches into newly placed and compacted structural fill soil, respectively.
7- Soil Density 115.2 (psf)
8- Kh =0.25
9- (Delta)(KAE) =0.19
10- (seismic Increment) =21.5 (pcf)
11- Utilize 0.4 for recommended coefficient of friction for sliding

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9.2 Footing Reinforcement

The minimum longitudinal steel reinforcing within proposed wall and column pad footing should be performed by the project structural engineer. The Bearing suitability of the exposed subgrade within the footing excavation should be evaluated by a representative from this office prior to placement of the reinforcement.

9.3 Floor Slab Design and Construction for Commercial Building

Based on the recommended subgrade preparation and the anticipated live floor loading, a 7-inch-thick concrete slab over the newly placed and structural fill soil which have been moisture conditioned and compacted to 90 percent (with exception of the top 12-inch which should compacted to 95 percent). It is recommended that the Concrete control joints at 30 times slab thickness (per foot) be provided to lower the potential of concrete slab shrinkage.

9.4 Foundation Static Settlement

Most of the settlement will occur during the initial application of the load, which is during the construction of the new tilt-up building. Following completion of the tilt-up Construction, we expect no more than 1-inch total and ¾ -inch differential for the static settlement over span 100 feet.

9.5 Drainage

All the site drainage should be collected and transferred to the street in non-erosive drainage devices. The proposed tilt-up building should be provided with roof drainage as well.

Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation. The ground immediately adjacent to the foundation shall be sloped away from the new structure at a slope of not less than one-unit vertical in 20 units horizontal (5 percent slope) for a minimum distance of 10 feet of horizontal distance measured perpendicular to the face of the wall.

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If physical obstructions or lot lines prohibit 10 feet of horizontal distance, a 5-percent slope shall be provided to an approved alternative method of diverting water away from the foundation.

9.11 Grading and Foundation Plan Review

It is recommended that proposed grading and foundation plans be reviewed by this office prior to finalization to verify that the plans have been prepared in conformance with the geotechnical recommendations presented in this report and if necessary to provide additional analyses or recommendations.

10.0 RETAINING WALL DESIGN

10.1 Wall Design

For simplicity and ease of report interpretation the following chart had been prepared to show the at rest, active and passive lateral pressures for the proposed retaining walls up to 10 feet high. The design is based on the compacted soil parameters, assuming level-backfill.

ITEM	VALUE1
At-Rest Case	57.5psf/ft (use 58) psf/ft
Active Case	38.3 psf/ft (use 40) psf/ft
Passive Case	345.0 (use 300) psf/ft
*Note: The values are based on Compacted Soil.	

Retaining walls greater than 6 feet in height should be designed for seismic lateral earth pressures. The "**Total seismic earth pressure",** which is a combination of "static earth pressure' and "**incremental seismic pressure".** The pressure distribution may be considered to be a triangle with the maximum pressure at the bottom. The resultant of this force may be assumed to be at 1/3 the height of the wall from the bottom of the wall.

The **"incremental seismic pressure"** can be calculated as the difference of "total seismic earth pressure" and "static earth pressure. Note**, Any computed seismic increment of**

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lateral earth pressure should not be added to the static (at-rest) lateral earth pressures". The Seismic increment of 21.5 (pcf) should be used for design of the wall greater than 6 feet.

10.2 Retaining Wall Drainage

Retaining walls should be provided with a drainage system at the base of the walls. The drainage should consist of a 4-inch in diameter-perforated pipe, embedded within a 12-inch thick, clean gravel wrapped in a geosynthetic filtration fabric.

10.3 Retaining Wall Backfill

The following is our general guidelines for the backfill within all the proposed retaining wall (s) regardless of their heights. Following placement of the drainage system the on-site soils may be utilized as backfill material behind the proposed retaining walls. The backfill material should be free of any debris as well as the over-sized particles to satisfactory of the project geotechnical engineer.

If needed, the fill material should be moisture conditioned as necessary, placed in thin lifts (8-to-10 inches) and each lift should be compacted with grading equipment to 90 percent of its Maximum Laboratory Dry Density.

As an alternative, the proposed retaining walls may be backfilled with import material with low expansion (EI<20). The imported soil should be evaluated and confirmed by the Geotechnical engineer prior to usage.

11.0 PAVEMENT RECOMMENDATION

11.1 Asphalt Pavement

Based on these findings and assuming traffic index (TI=7) the following table presents the recommended thickness for the new flexible pavement structure consisting of asphaltic concrete over a granular base, along with the appropriate CALTRANS specifications for proper materials and placement procedures.

Preliminary Pavement Recommendations

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	Parking Spots (Light Traffic Area)	**Driveways and aprons (Heavy Traffic Areas)**
PCC Section: Portland Cement Concrete	6.0-Inch Thick PCC over 6.0-Inch thick Layer of Aggregate Base Course, which had been reinforced	8.0-Inch Thick over 6.0-inch Thick Layer of Aggregate Base Course, which had been reinforced
Asphalt Section Asphaltic Concrete	4-Inch Thick AC over 8-Inch thick layer of Aggregate Base Course	4-Inch Thick AC over 12-Inch Thick Layer of Aggregate Base Course

The underlying recently compacted subgrade should be scarified to depth of 6-inch, moisture conditioned as necessary and compacted to at least 90 percent of Maximum Laboratory Dry Density as Determined by (ASTM D-1557-12) Test Method.

The new Aggregate Base Course material should be moisture conditioned as necessary and compacted to at least 95 percent of the Maximum Laboratory Dry Density as determined by (ASTM D-1557-12) test method. Asphalt Concrete (AC) should be compacted to a minimum of 95 percent of the laboratory Marshall Density.

11.2 Exterior Concrete Flat Work

The preparation of the subgrade soils within the flat work area such as side walk is as follows, the upper 6-inch of pavement over subgrade soils, which had been scarified to depth of 12-inch, moisture conditioned as necessary and compacted to at least 90 percent of the Maximum Laboratory Dry Density as determined by (ASTM D 1557-12) test method.

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12.0 EXPLORATION LIMITATIONS

The conclusions and recommendations presented in this report are based on the findings and observations in the field and the results of laboratory tests performed on representative samples. The soils encountered in the boreholes are believed to be representative of the investigated area; however, soil characteristics can vary throughout the site. Geo Environmental Resources Inc. should be notified if subsurface conditions are encountered which differ from those described in this report.

This report has not been prepared for use by parties or projects other than those named and described above. It may not contain sufficient information for other parties or other purposes.

The conclusions and recommendations presented in this report are professional opinions. These opinions have been derived in accordance with current standards of geotechnical engineering and engineering geology practice, field observations and laboratory test results. No other warranty is expressed or implied.

Samples secured for this investigation will be retained in our laboratory for a period of thirty (30) days from the date of this report and will be disposed after this period unless other arrangements are made.

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13.0 REFERENCES

a) United States Geologic Survey (USGS),

b) 2008b, National Seismic Hazards Maps-Fault Parameters

C) California Building Code (CBC) latest addition

d) Geologic Map of the Perris Quadrangle

e) Perris Quadrangle by (Thomas W. Dibblee, Jr., 2003)

f) California Geological Survey (Cgs Seismic Zonation)

g) County of Riverside Liquefaction susceptibility Map

h) Nearby Wells (Ground water Information)

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APPENDIX A

BORING LOGS

LOG OF BORING

B-1

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1	SM	TOP SOIL: Light gray-brown Silty to medium Sand, trace roots, damp, loose	-1	S	10	3.1	
3	SM	Natural Soil: (Ns) Brown, Silty fine to medium Sand, trace Clay, damp, firm	-3	D	30	3.3	115.2
4.5							
5	SM/SC	Natural Soil: (Ns) Light brown, Silty to Clayey fine to coarse Sand, damp, dense	-5	D	38	3.6	116.9
7	SM/SC	Same	-7	S	43	4.2	
8.5							
9.5							
10	SM	Natural Soil: Brown, Silty fine to coarse Sand, damp to moist, very dense	-10	D	53	4.6	121.9
15	SM	Same	-15	D	4"/60	5.3	123.8
19.5							

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D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-1

Project Location 23641 Placentia Avenue, perris, CA

Date Drilled: 1-21-2024

Surface Elevation (ft): 100

Project No.: G-032522

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Dry Unit Wt. (pcf)
20	SM	Natural Soil: Brown, Silty fine to coarse Sand, damp to moist, very dense	-20	D	62	5.9	127.9
24.5 25	SM	Light gray-brown, Silty fine to Course Sand with Caliche, damp to moist, very dense	-25	S	5"/69	5.2	
30		Terminated at depth of 30.0 feet. Groundwater not encountered. Boring backfilled on 1-21- 2024.					
35							

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D =Drive sample
S = SPT sample

Plate A-2

LOG OF BORING

B-2

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1	SM	TOP SOIL: Light gray-brown Silty fine to medium Sand, damp, loose	-1	S	8	2.9	
4	SM	Natural Soil: (Ns) Brown, Silty fine to coarse Sand, trace fine gravel, damp, dense	-4	D	36	3.4	118.2
7	SM	Same	-7	D	46	3.2	122.6
10	SM	Damp to moist, very dense	-10	D	4"/54	5.1	131.6
15	SM	Orange-brown, Silty fine to coarse Sand, trace Caliche, damp to moist, very dense	-15	S	62	4.8	
19.5							

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D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-2

Project Location 23641 Placentia Avenue, perris, CA

Date Drilled: 1-21-2024

Surface Elevation (ft): 100

Project No.: G-032522

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Dry Unit Wt. (pcf)
20	SM	Natural Soil: (Ns) Orange-brown, Silty fine to coarse Sand, trace Caliche, damp to moist, very dense	-20	D	68	5.1	130.7
22.5		Terminated at depth of 22.5 feet. Groundwater not encountered. Boring backfilled on 1-21-2024.					
25							
30							
35							

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D =Drive sample
S = SPT sample

Plate A-2

LOG OF BORING

B-3

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1							
3	SM	Natural Soil: Light brown, Silty fine to medium Sand, with Clay, damp, firm	-3	D	27	3.6	115.6
6	SM	Dense	-6	S	47	3.9	
8		Same	-8	S	53	4.4	
11	SM	Natural Soil: Brown to orange-brown, Silty fine to coarse Sand, with Clay, damp, very dense	-11	D	65	4.7	122.6
15	SM	Light brown, Silty fine to coarse Sand with Caliche, damp to moist, very dense	-15	S	5"/59	5.2	
18	SM	Same	-18	S	3"/52	5.9	
19.5		Terminated at 19.5 feet					

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D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-4

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1		TOP SOIL: Light brown, Silty fine to medium Sand, trace roots, moist, loose	-1	S	9	5.6	
3	SM	Natural Soil:(Ns) Brown to orange brown Silty fine to coarse Sand with Clay, damp, dense	-3	D	34	3.6	112.9
5	SM	Same	-5	D	41	3.9	116.2
7	SM	Same	-7	S	48	3.4	
10	SM/SP	Natural Soil: Gray-brown, Silty fine to coarse Sand, trace fine gravel, damp to moist, very dense	-10	D	5"/60	5.1	123.1
15	SM/SP	Same	-15	D	54.0	4.4	
18	SM/SP	Same	-18	D	65	4.1	
19.5		Terminated at 19.5 feet					

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D =Drive sample
S = SPT sample

Plate A-1

LOG OF BORING

B-5

Project Location 23641 Placentia Avenue, Perris, CA **Date Drilled:** 1-21-2024

Surface Elevation (ft): 100 **Project No.:** G-012424-1

Depth (ft)	USCS Class.	Summery of Subsurface Conditions	Sample Depth (ft)	Sample	Blow Count (N)	Moisture (%)	Wet Unit Wt. (pcf)
1		TOP SOIL: Light gray-brown, Silty fine to medium Sand, trace roots, damp, loose	-1	S			
3	SM	Natural Soil:(Ns) Brown to orange brown Silty fine to medium Sand trace Clay, damp, firm	-3	S			
5	SM	Light brown, Silty fine to Clayey fine to coarse Sand damp, dense	-5	S			
6.5							
7		Terminated at depth of 7.0 feet. Groundwater not encountered. Boring backfilled on 1-21- 2024.					
10							
15							

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D =Drive sample
S = SPT sample

Plate A-1

APPENDIX B

LABORATORY TESTING

Geo Environmental Resources Inc.

CONSOLIDATION TEST NO.1

Location: Perris-23641 Placentia Avenue

Boring No: B-1

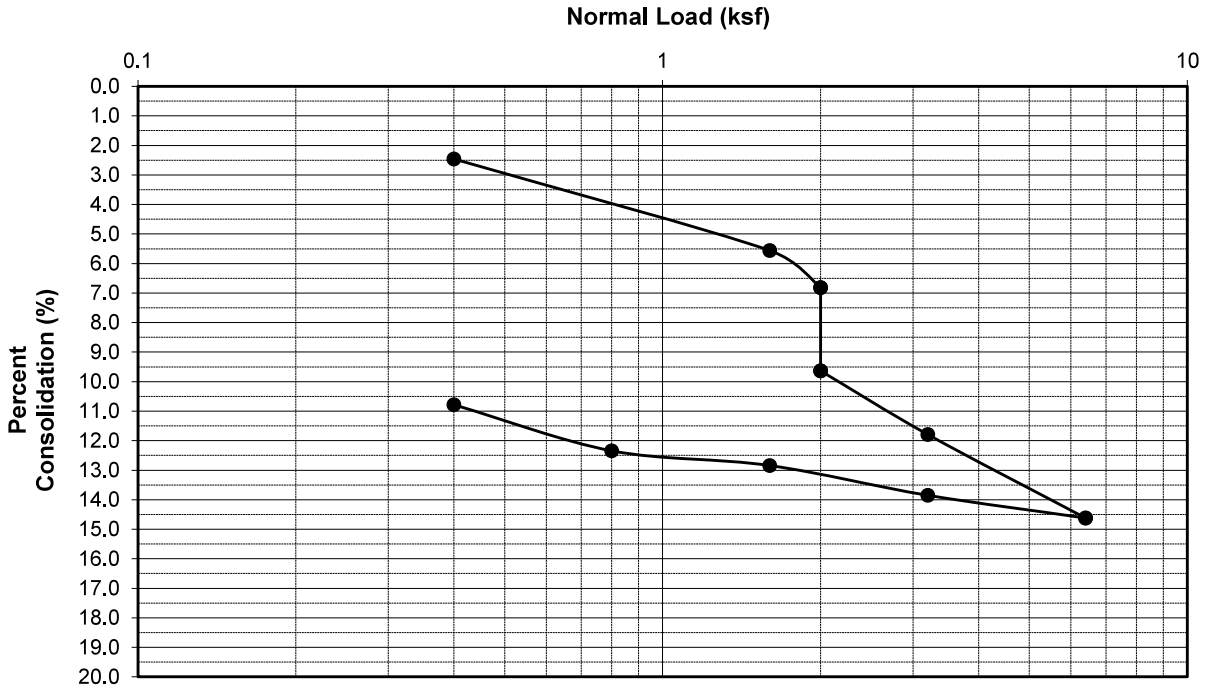
Soil Type: Brown Silty fine Sand, trace clay

Tested By: RK

Project No G-012424-1

Depth: 3feet

Date: 1/23/2024

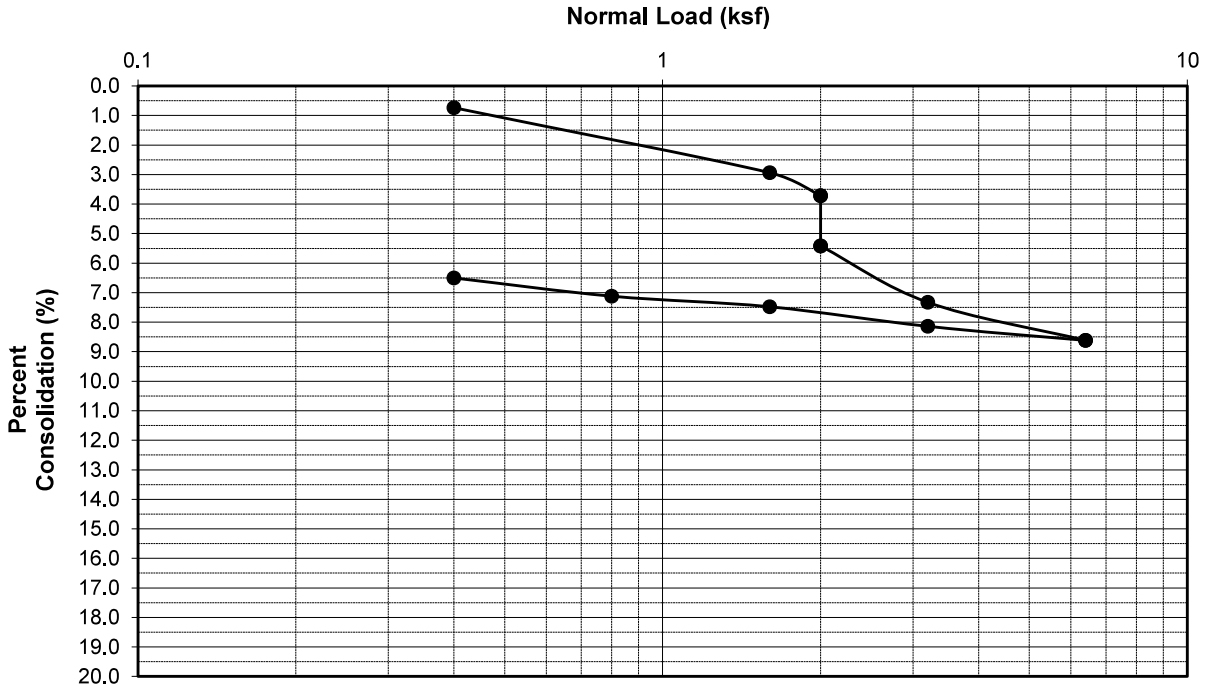


Geo Environmental Resources Inc.

CONSOLIDATION TEST NO.3

Location: PERRIS-23641 Placentia Avenue
Boring No: B-2
Soil Type: Light brown Silty fine to coarse sand
Tested By: RK
Project No G-012224-1
Depth: Bulk (1-5feet)
Date: 1/25/2024

REMOLD SAMPLE



Geo Environmental Resources Inc.

CONSOLIDATION TEST NO.2

Location: Perris-23628 Water Street

Boring No: B-3

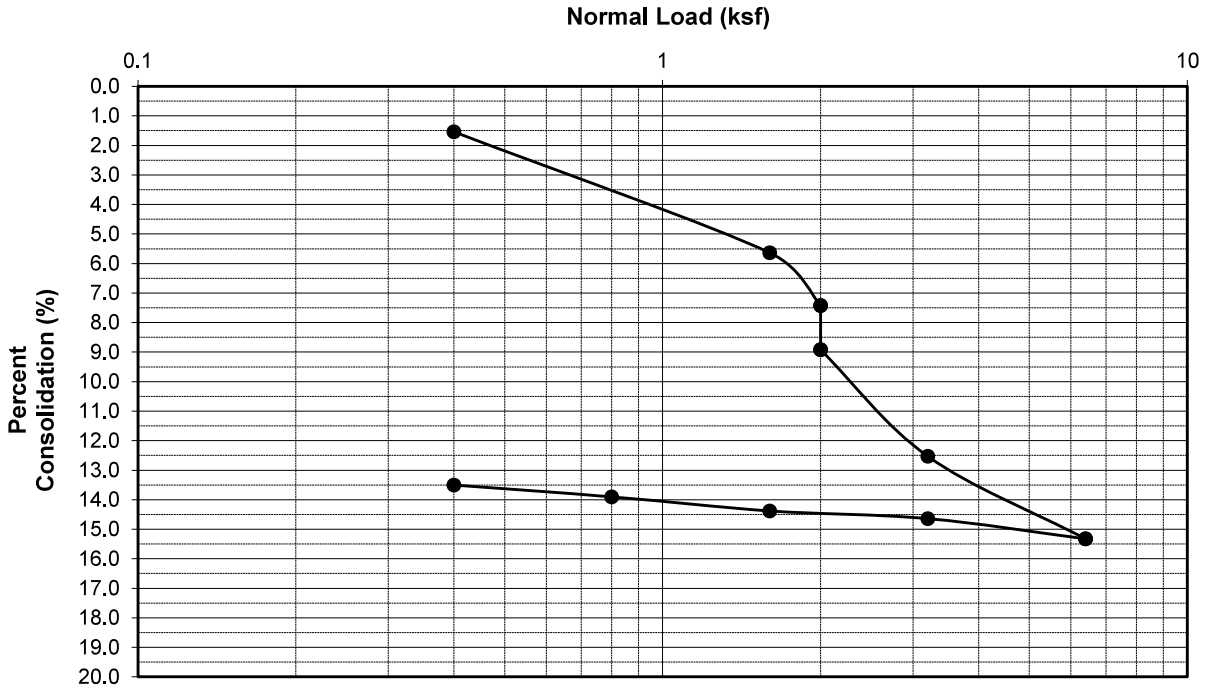
Soil Type: Dark to light brown Silty fine sand

Tested By: RK

Project No. G-012424-1

Depth: 5.0 feet

Date: 1/25/2024



Geo Environmental Resources Inc.

DIRECT SHEAR TEST

REMOLDED SAMPLE

Location : Perris-23641 Placentia Avenue

Boring No: B-2

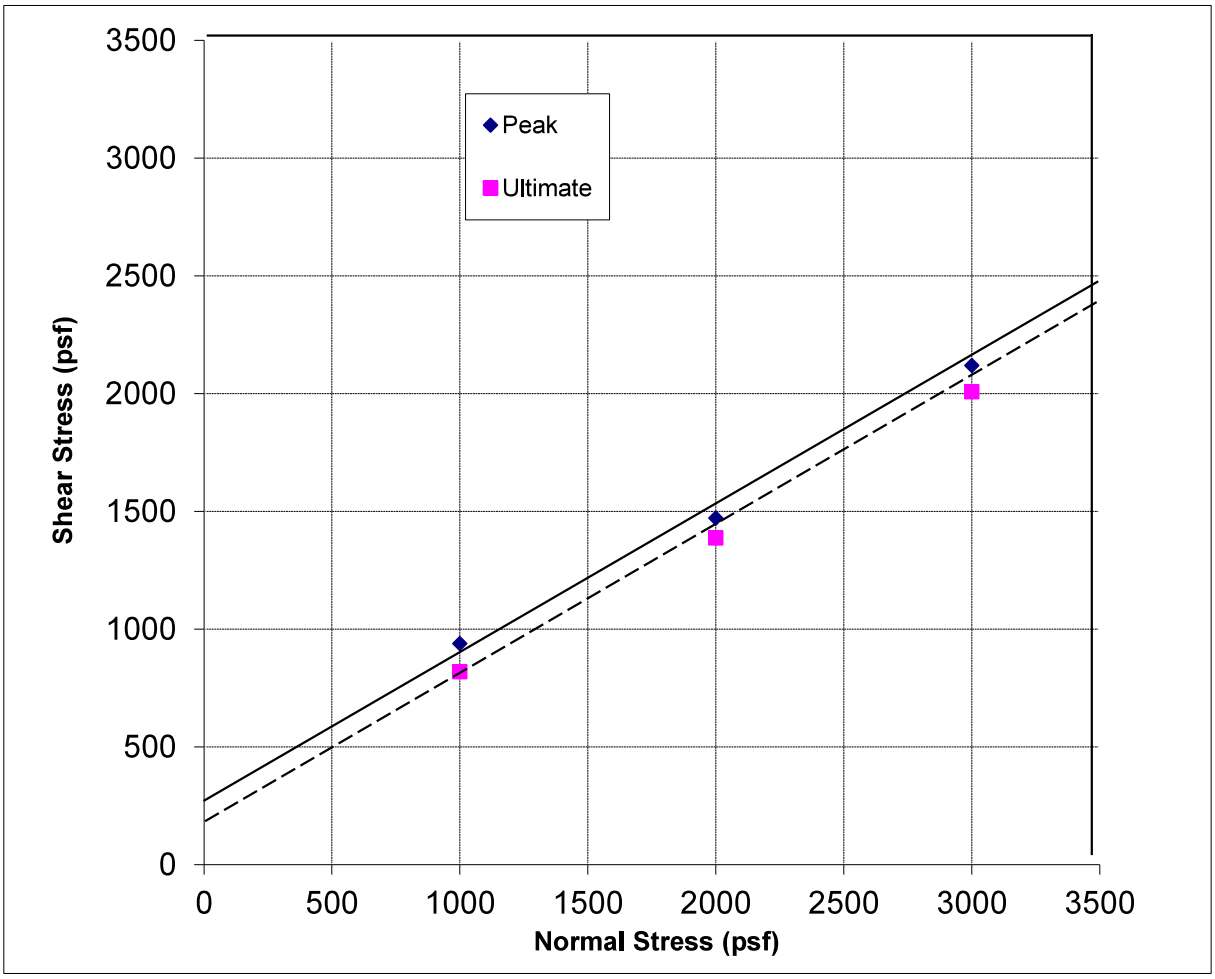
Soil Type: Brown silty fine to coarse sand

Tested by: MF

Project No: G-012424-1

Depth: (1- 5) feet

Date: 1/26/2024

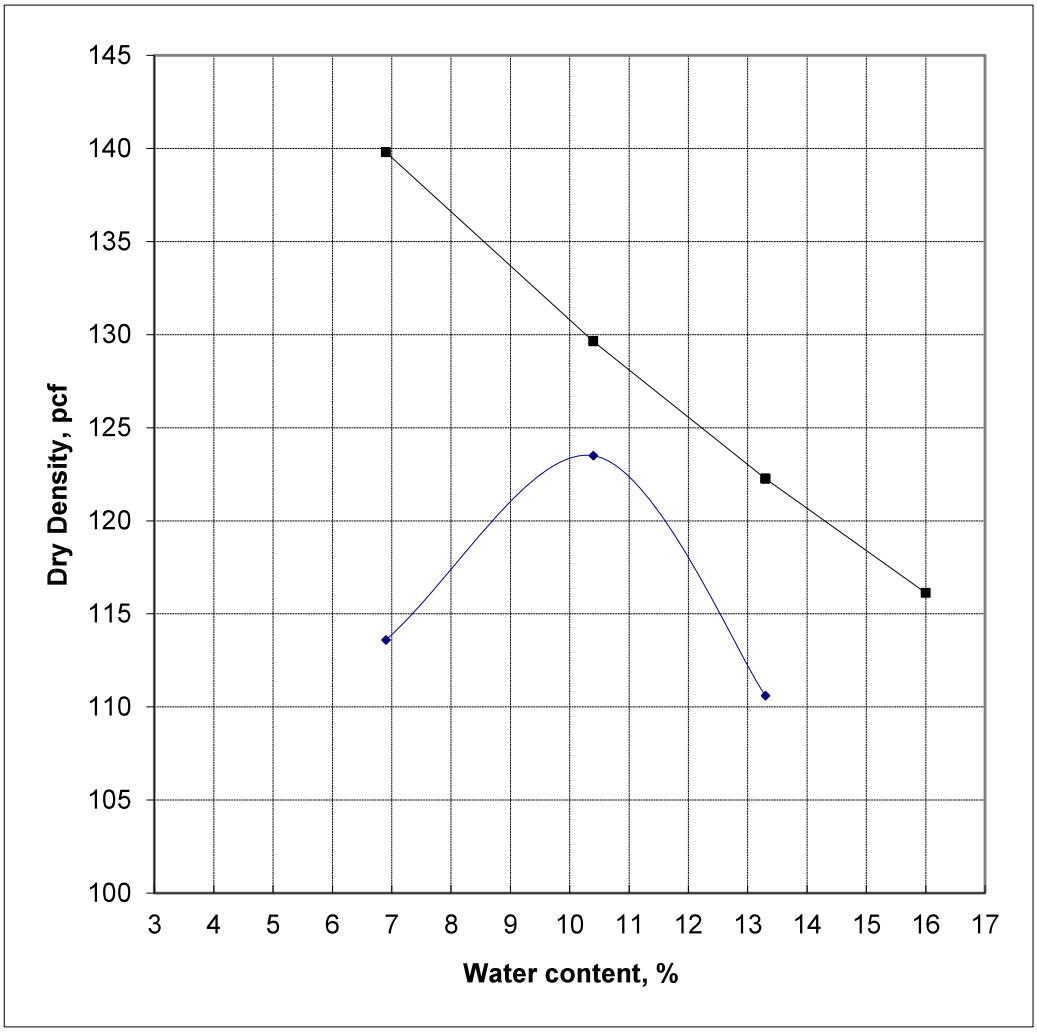


	Peak	Ultimate
Cohesion (psf)	280	180
Friction Angle (deg.)	30	30

Geo Environmental Resources Inc.

MAXIMUM DENSITY TEST

Location : Perris-23841 Placentia Avenue
Boring No: B-4
Soil Type: Brown silty f-c sand
Tested by: MG
Project No: G-012424-1
Depth: Bulk (2-6) feet
Date: 1/25/2024
Proctor No.1 123.5 @ 10.5



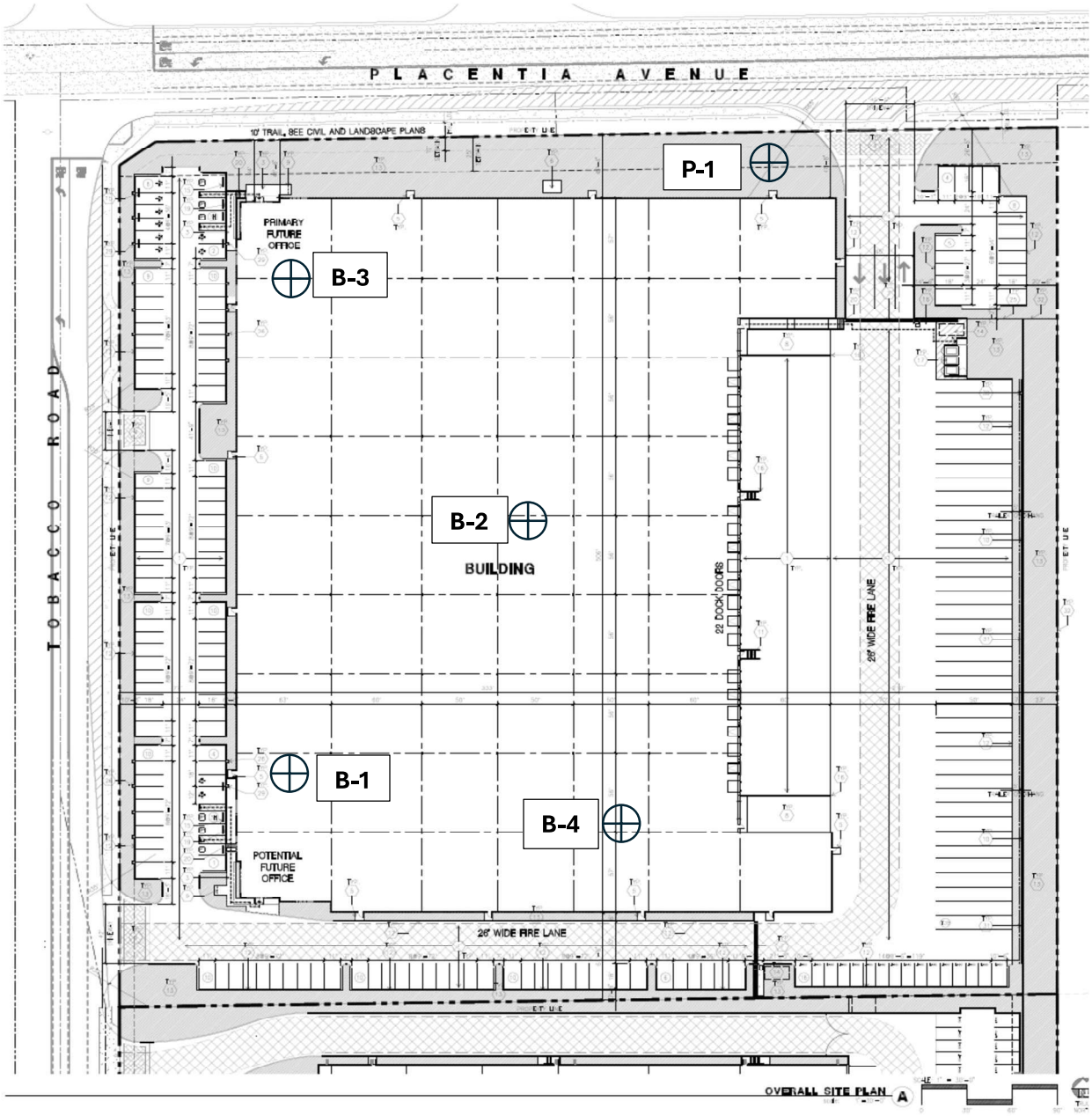
APPENDIX C

FIGURES

GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

N



THIS SITE PLAN IS FOR GEOTECHNICAL REPORT ONLY. SITE PLAN PREPARED WITHOUT BENEFIT OF TITLE OPINION, DEED RESTRICTION, OR SURVEY. SITE SUBJECT TO CHANGE.

Boring Location ⊕

GERI	Geo Environmental Resources, Inc. 2511 West La Palma Ave., Suite E Anaheim, California 92801	SITE PLAN /Boring Location Project No. G-012424-1 **Figure 1**

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GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

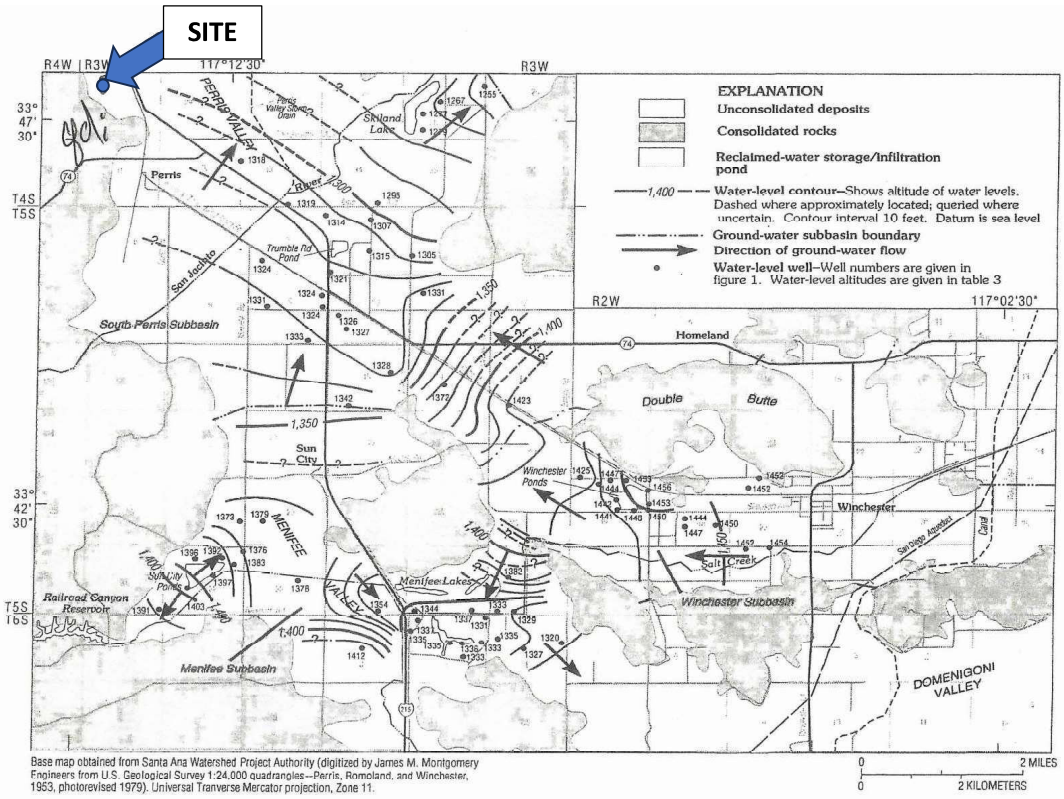
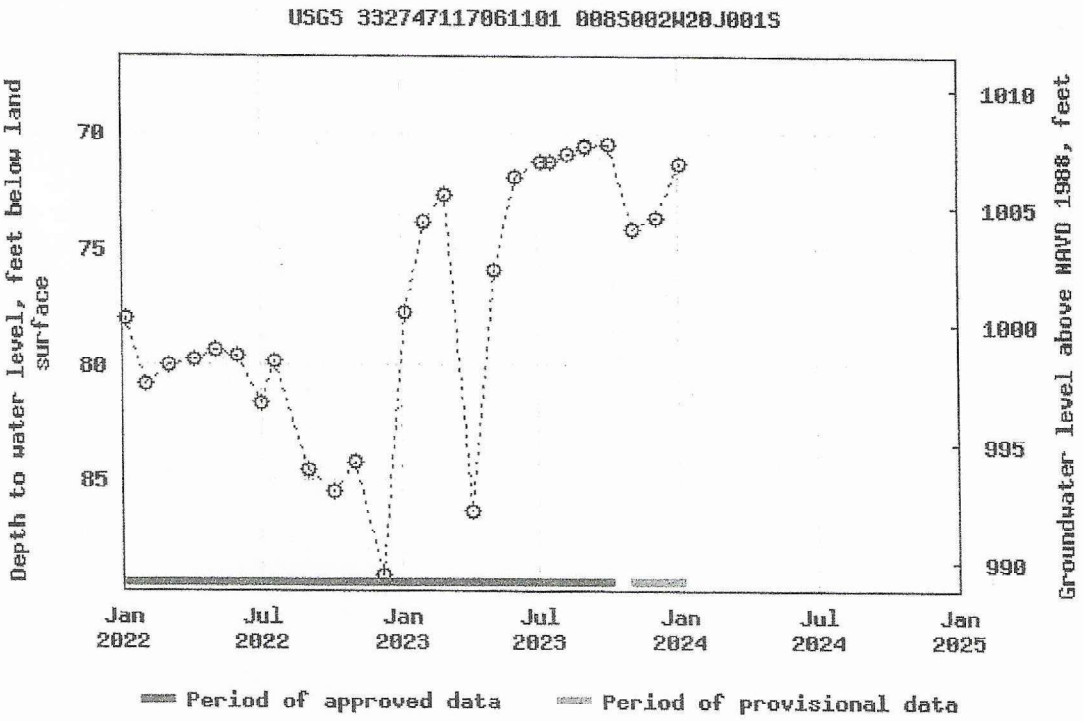


Figure 2. Water levels in the Winchester, Menifee, and south Perris ground-water subbasins, California, March 31 to June 6, 1995.



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

USGS 332747117061102 008S002W20J002S

Riverside County, California
Hydrologic Unit Code 18070302
Latitude 33°27'47.53", Longitude 117°06'15.58" NAD83
Land-surface elevation 1,078.36 feet above NAVD88
The depth of the well is 180 feet below land surface.
The depth of the hole is 590 feet below land surface.
This well is completed in the California Coastal Basin aquifers (N100CACSTL) national aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

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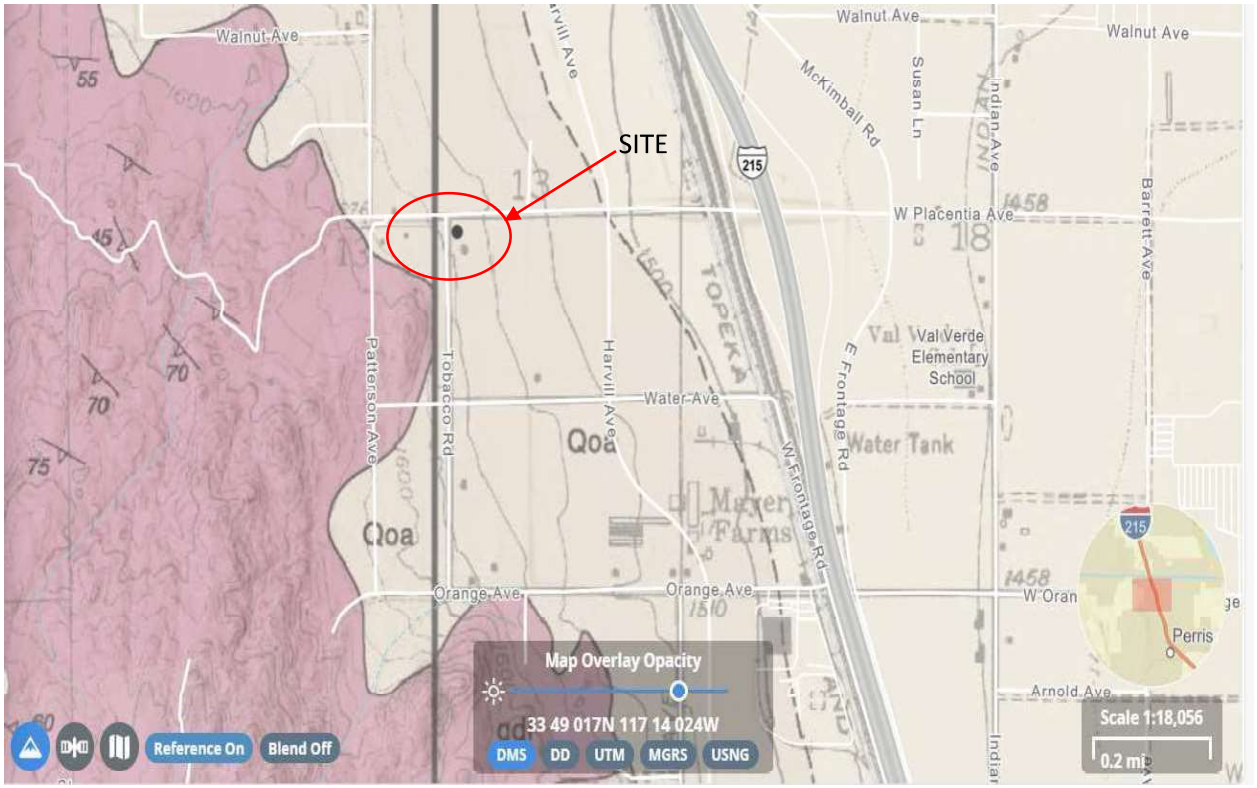

FIGURE NO. 4-USGS-NATIVE SOIL-ALLUVIAL FAN GRAVEL AND SAND (Qoa)

Project: Proposed Commercial Tilt-up Building

Project: Address: 23641 Placentia Avenue, Perris, CA

Project No.G-012224-1

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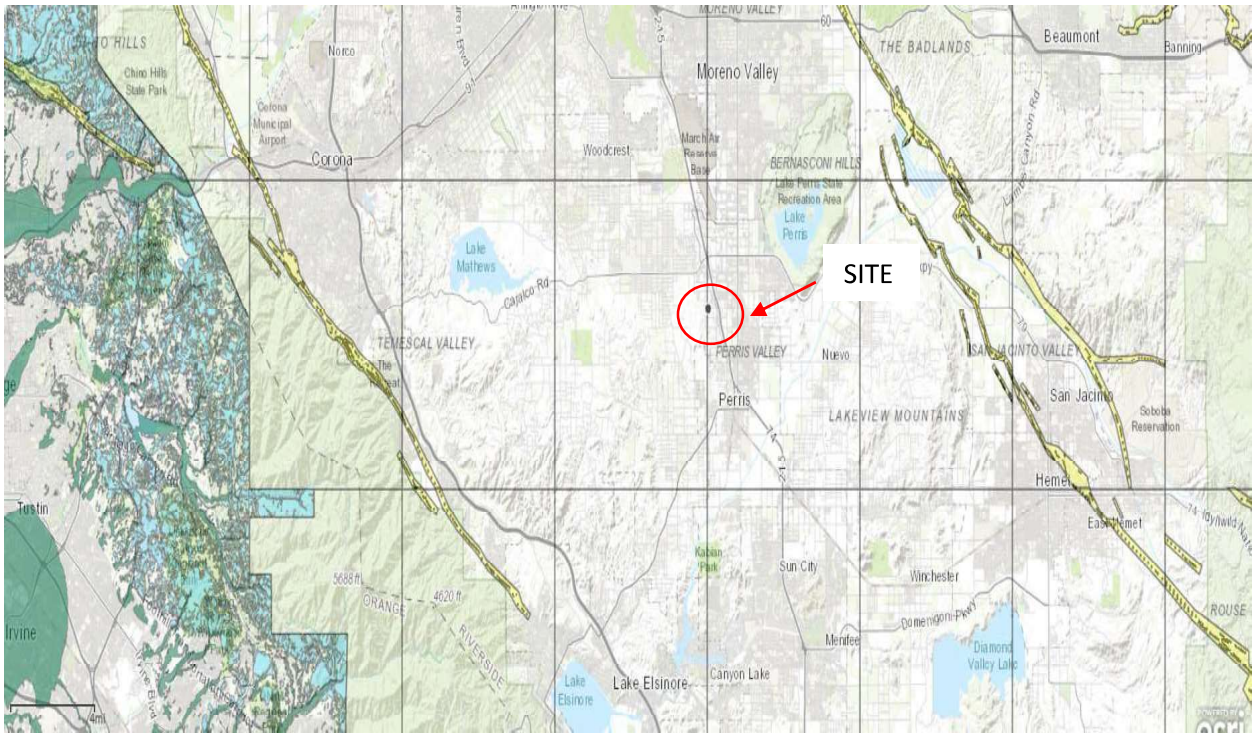

FIGURE NO. 5 -CGS-SEISMIC HAZARDS-ACTIVE FAULTS

Project: Proposed Commercial Building

Project Address: 23641 Placentia Avenue, Perris, CA

Project No. G-012424-1

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FIGURE NO. 6 CGS-VICINITY MAP

Project: Proposed Commercial Building

Project Address: 23641 Placentia Avenue, Perris, CA

Project No. G-012424-1

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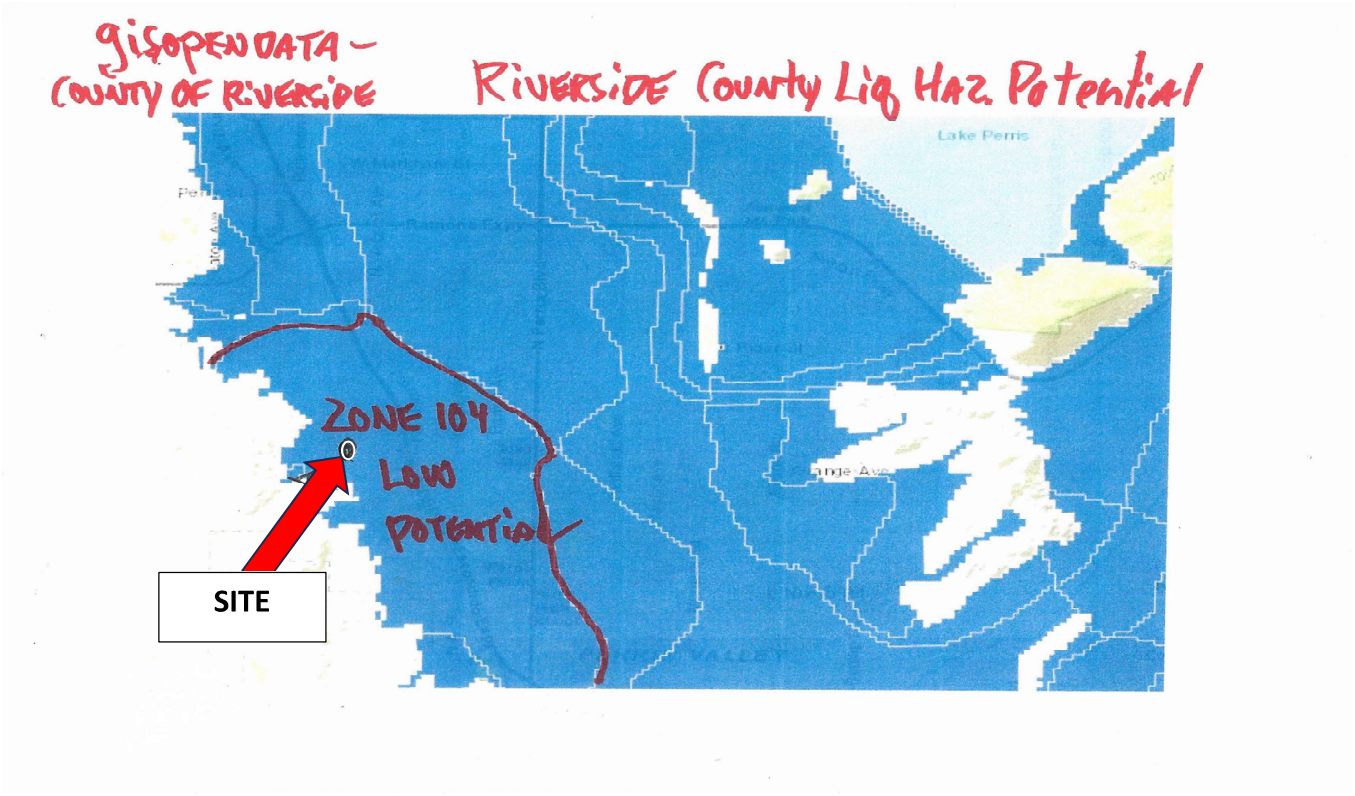


Figure No. 7 Liquefaction Susceptibility

APPENDIX D

General Notes

GENERAL NOTES

SAMPLE IDENTIFICATION

All samples are visually classified in general accordance with the Unified Soil Classification System (ASTM D-2487-75 or D-2488-75)

DESCRIPTIVE TERM (% BY DRY WEIGHT)

Trace:	1-10%
Little:	11-20%
Some:	21-35%
And/Adjective	36-50%

PARTICLE SIZE (DIAMETER)

Boulders:	8 in and larger
Cobbles:	3 in to 8 in
Gravel:	coarse - ¾ to 3 in
	fine - No. 4 (4.76 mm) to ¾ in
Sand:	coarse - No. 4 (4.76 mm) to No. 10 (2.0 mm)
	medium - No. 10 (2.0 mm) to No. 40 (0.42 mm)
	fine - No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt:	No. 200 (0.074 mm) and smaller (Non-plastic)
Clay:	No. 200 (0.074 mm) and smaller (Plastic)

SOIL PROPERTY SYMBOLS

Dd:	Dry Density (pcf)
LL:	Liquid Limit, percent
PL:	Plastic Limit, percent
PI:	Plasticity Index (LL-PL)
LOI:	Loss on Ignition, percent
Gs:	Specific Gravity
K:	Coefficient of Permeability
w:	Moisture content, percent
qp:	Calibrated Penetrometer Resistance, tsf
qs:	Vane-Shear Strength, tsf
qu:	Unconfined Compressive Strength, tsf
qc:	Static Cone Penetrometer Resistance Correlated to Unconfined Compressive Strength, tsf
PID:	Results of vapor analysis conducted on representative samples utilizing a Photoionization Detector calibrated to a benzene standard. Results expressed in HNU-units (BDL=Below Detection Limits)
N:	Penetration Resistance per 6 inch interval, or fraction thereof, for a standard 2 inch O.D. (1⅜ inch I.D.) split spoon sampler driven with a 140 pound weight free-falling 30 inches. Performed in general accordance with Standard Penetration Test Specifications (ASTM D-1586). N in blows per foot equals sum of N values where plus sign is shown
Nc:	Penetration Resistance per 1¾ inches of Dynamic Cone Penetrometer. Approximately equivalent to Standard Penetration Test N-Value in blows per foot.
Nr:	Penetration Resistance per 6 inch interval, or fraction thereof, for California Ring Sampler driven with a 140 pound weight free-falling 30 inches per ASTM D-3550. Not equivalent to Standard Penetration Test N-Value.

DRILLING AND SAMPLING SYMBOLS

SS:	Split-Spoon
ST:	Shelby Tube - 3" O.D. (except where noted)
CS:	3" O.D. California Ring Sampler
DC:	Dynamic Cone Penetrometer per ASTM Special Technical Publication No. 399
AU:	Auger Sample
DB:	Diamond Bit
CB:	Carbide Bit
WS:	Wash Sample
RB:	Rock-Roller Bit
BS:	Bulk Sample
Note:	Depth intervals for sampling shown on Record of Subsurface Exploration are not indicative of sample recovery, but position where sampling initiated

SOIL STRENGTH CHARACTERISTICS

COHESIVE (CLAYEY) SOILS

COMPARATIVE CONSISTENCY	BLOWS PER FOOT (N)	UNCONFINED COMPRESSIVE STRENGTH (TSF)
Very Soft	0-2	0-0.25
Soft	3-4	0.25-0.50
Medium Stiff	5-8	0.50-1.00
Stiff	9-15	1.00-2.00
Very Stiff	16-30	2.00-4.00
Hard	31+	4.00+

DEGREE OF PLASTICITY	PI	DEGREE OF EXPANSIVE POTENTIAL	PI
None to Slight	0-4	Low	0-15
Slight	5-10	Medium	15-25
Medium	11-30	High	25+
High to Very High	31+		

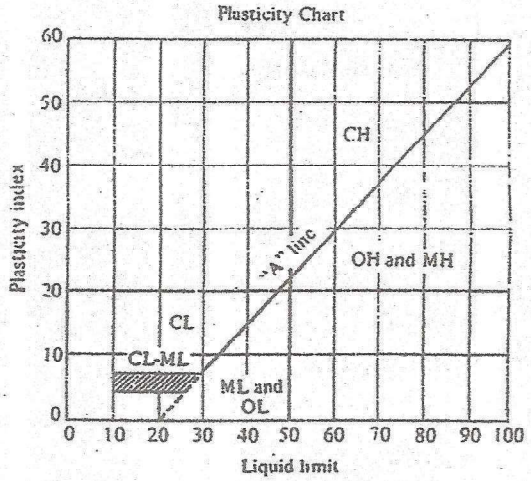
NON-COHESIVE (GRANULAR) SOILS

RELATIVE DENSITY	BLOWS PER FOOT (N)
Very Loose	0-4
Loose	5-10
Firm	11-30
Dense	31-50
Very Dense	51+

UNIFIED SOIL CLASSIFICATION SYSTEM. (ASTM D-2487)

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravels with fines (Appreciable amount of fines)	GM[a] d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits below "A" line with P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM[a] d / u	Silty sands, sand-silt mixtures	Atterberg limits above "A" line or P.I. less than 4 — Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
Fine-grained soils (More than half material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly organic soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
- Less than 5 per cent — GW, GP, SW, SP
- More than 12 per cent — GM, GC, SM, SC
- 5 to 12 per cent — *Borderline* cases requiring dual symbols[b]



[a] Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.

[b] Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.

CHARACTERISTICS AND RATINGS OF UNIFIED SOIL SYSTEM CLASSES FOR SOIL CONSTRUCTION *

Class	Compaction Characteristics	Max. Dry Density Standard Proctor (pcf)	Compressibility and Expansion	Drainage and Permeability	Value as an Embankment Material	Value as Subgrade When Not Subject to Frost	Value as Base Course	Value as Temporary Pavement	
								With Dust Palliative	With Bituminous Treatment
GW	Good: tractor, rubber-tired, steel wheel or vibratory roller	125-135	Almost none	Good drainage, pervious	Very stable	Excellent	Good	Fair to Poor	Excellent
GP	Good: tractor, rubber-tired, steel wheel or vibratory roller	115-125	Almost none	Good drainage, pervious	Reasonably stable	Excellent to good	Poor to fair	Poor	
GM	Good: rubber-tired or light sheepsfoot roller	120-135	Slight	Poor drainage, semipervious	Reasonably stable	Excellent to good	Fair to poor	Poor	Poor to fair
GC	Good to fair: rubber-tired or sheepsfoot roller	115-130	Slight	Poor drainage, impervious	Reasonably stable	Good	Good to fair **	Excellent	Excellent
SW	Good: tractor, rubber-tired or vibratory roller	110-130	Almost none	Good drainage, pervious	Very stable	Good	Fair to poor	Fair to poor	Good
SP	Good: tractor, rubber-tired or vibratory roller	100-120	Almost none	Good drainage, pervious	Reasonably stable when dense	Good to fair	Poor	Poor	Poor to fair
SM	Good: rubber-tired or sheepsfoot roller	110-125	Slight	Poor drainage, impervious	Reasonably stable when dense	Good to fair	Poor	Poor	Poor to fair
SC	Good to fair: rubber-tired or sheepsfoot roller	105-125	Slight to medium	Poor drainage, impervious	Reasonably stable	Good to fair	Fair to poor	Excellent	Excellent
ML	Good to poor: rubber-tired or sheepsfoot roller	95-120	Slight to medium	Poor drainage, impervious	Poor stability, high density required	Fair to poor	Not suitable	Poor	Poor
CL	Good to fair: sheepsfoot or rubber-tired roller	95-120	Medium	No drainage, impervious	Good stability	Fair to poor	Not suitable	Poor	Poor
OL	Fair to poor: sheepsfoot or rubber-tired roller	80-100	Medium to high	Poor drainage, impervious	Unstable, should not be used	Poor	Not suitable	Not suitable	Not suitable
MH	Fair to poor: sheepsfoot or rubber-tired roller	70-95	High	Poor drainage, impervious	Poor stability, should not be used	Poor	Not suitable	Very poor	Not suitable
CH	Fair to poor: sheepsfoot roller	80-105	Very high	No drainage, impervious	Fair stability, may soften on expansion	Poor to very poor	Not suitable	Very poor	Not suitable
OH	Fair to poor: sheepsfoot roller	65-100	High	No drainage, impervious	Unstable, should not be used	Very poor	Not suitable	Not suitable	Not suitable
Pt	Not suitable		Very high	Fair to poor drainage	Should not be used	Not suitable	Not suitable	Not suitable	Not suitable

* "The Unified Classification: Appendix A - Characteristics of Soil, Groups Pertaining to Roads and Airfields, and Appendix B - Characteristics of Soil Groups Pertaining to Embankments and Foundations," Technical Memorandum 357, U.S. Waterways Experiment Station, Vicksburg, 1953.

** Not suitable if subject to frost.

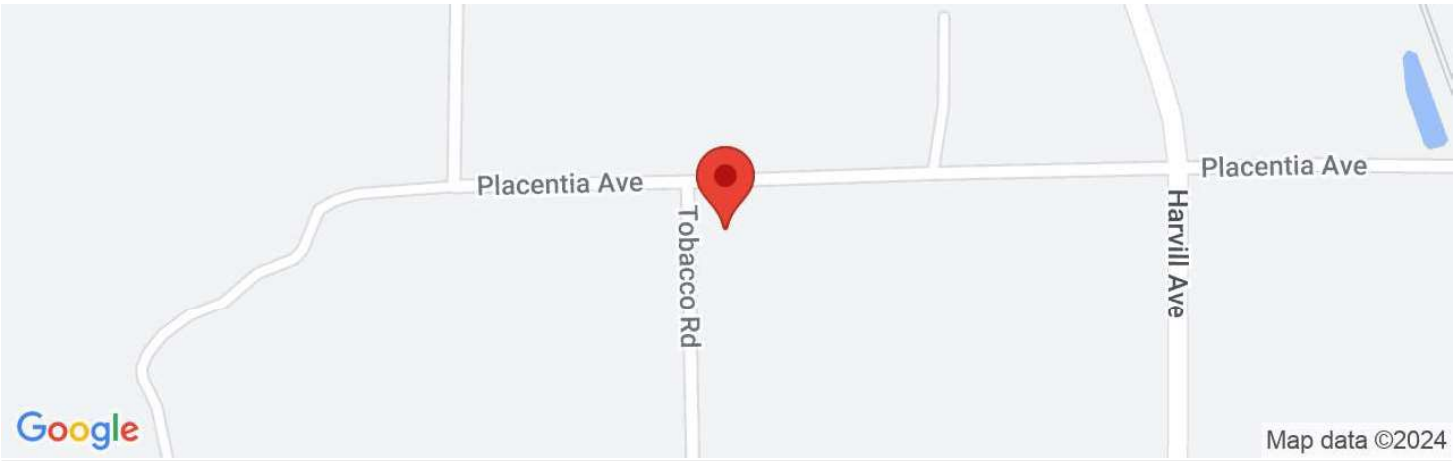
APPENDIX E

Seismic Design Parameters

USGS web services were down for some period of time and as a result this tool wasn't operational, resulting in *timeout* error.
USGS web services are now operational so this tool should work as expected.

23641 Placentia Ave, Perris, CA 92570, USA

Latitude, Longitude: 33.8226811, -117.2501986



Date	2/9/2024, 9:14:15 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.488	MCE_R ground motion. (for 0.2 second period)
S_1	0.551	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.488	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	0.992	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.5	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.55	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.488	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.587	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.551	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.601	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)

Type	Value	Description
PGA_{UH}	0.625	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.938	Mapped value of the risk coefficient at short periods
C_{R1}	0.918	Mapped value of the risk coefficient at a period of 1 s
C_V	1.398	Vertical coefficient

DISCLAIMER

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APPENDIX E

Seismic Design Parameters

PERCOLATION TEST REPORT

Project Name:		Commercial Tilt-up Building			**Project No.:**		G-012424-1
Test Hole No.:		P-1			**Date Excavated:**		2/5/2024
Length of Test Pipe:			72.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			1.2	inches	**Presoak Date:**		2/4/2024
Depth of Test Hole:			70.8	inches	**Perc Test Date:**		2/5/2024
Check for Sandy Soil Criteria Tested by:				A.K	**Percolation Tested by:**		A.K
Water level measured from BOTTOM of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	8:00 AM 8:25 AM	25	25	64.8	13.2	51.6	0.5
2	8:30 AM 8:55 AM	25	50	64.8	15.6	49.2	0.5
			Soil Criteria: Sandy				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	9:00 AM 9:30 AM	30	30	64.8	18.0	46.8	0.6
2	9:30 AM 10:00 AM	30	60	63.6	19.2	44.4	0.7
3	10:00 AM 10:30 AM	30	90	64.8	16.8	48.0	0.6
4	10:30 AM 11:00 AM	30	120	63.6	20.4	43.2	0.7
5	11:00 AM 11:30 AM	30	150	64.8	24.0	40.8	0.7
6	11:30 AM 12:00 PM	30	180	64.8	26.4	38.4	0.8
7	12:00 PM 12:30 PM	30	210	64.8	28.8	36.0	0.8
8	12:30 PM 1:00 PM	30	240	64.8	30.0	34.8	0.9
9	1:00 PM 1:30 PM	30	270	64.8	30.0	34.8	0.9
10	1:30 PM 2:00 PM	30	300	64.8	31.2	33.6	0.9
11	2:00 PM 2:30 PM	30	330	64.8	31.2	33.6	0.9
12	2:30 PM 3:00 PM	30	360	64.8	31.2	33.6	0.9

Radius of test hole (in):			4				
Average Head (in):			48.0				**A-1**
Infiltration Rate (in/hr):			2.7				

ADDITIONAL PERCOLATION DATA

PERCOLATION TESTING FOR PPT220047
(NEIGHBORING PROJECT TO THE SOUTH)

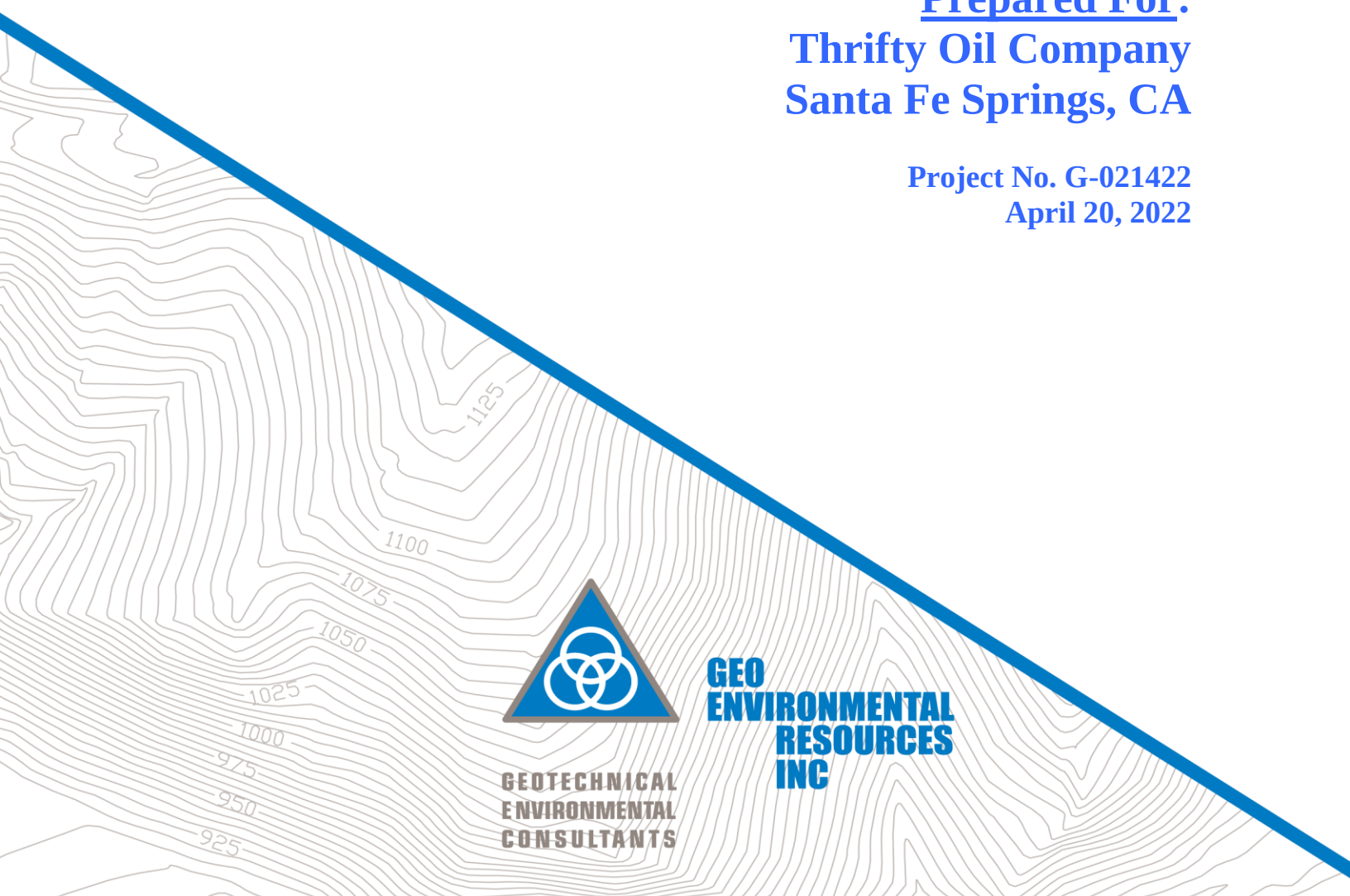
Geotechnical Engineering Exploration and Analysis

Percolation Feasibility Study Results

23628 Water Street, Perris, CA

Prepared For:
Thrifty Oil Company
Santa Fe Springs, CA

Project No. G-021422
April 20, 2022



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RESOURCES
INC

1. PURPOSE AND SCOPE

This report provides the results of our recent percolation feasibility study for the proposed Tilt-up Commercial structure. The purpose of the study is to present the results of the field evaluation for the infiltration rate for the storm water runoff at the subject property.

Peculation test was conducted in accordance with **ASTM D 3385 "STANDARD TEST METHOD FOR INFILTRATION RATE OF SOILS IN FIELD USING DOUBLE-RING INFILTROMETER".** Two (2) locations have been designated to conduct the percolation test procedure. Please review the "Site Location Plan" Figure No.1 to review the approximate percolation tests location. The main purpose of multiple-locations is to obtain additional infiltration rates.

2. SUBSURFACE EXPLORATION

Percolation test No.1 was conducted next to Boring No.6 and Percolation No.2 was performed adjacent to the Boring No.5. For percolation, No.1 Test Pit No.1 was excavated to an approximate depth of 80 inches below the existing grade. Test pit Number 2, which was excavated for per was excavated to an approximate depth of 84 inches below the existing grade. Both two test pits were excavated with the help of backhoe and field equipment. The exposed subgrade within both locations were saturated 24-hours prior to actual percolation test.

3. SUBSURFACE CONDITION

The subsurface soil encountered in Test Pit No 1 (TP-1) consisted of Brown Silty Fine to Coarse Sand, Trace Clay Alluvial Deposits (Qof) Dry to damp to the depth of about 18 inches, which was underlain by Orange Silty Fine Sand with Clay to Clayey Fine Sand, Alluvial Deposits (Qof) to the depth of 8 feet. The samples were obtain by the help of the hand auger and field equipment and it was obtained at the corner of test pit, where the percolation had been performed.

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In case of Test pit No 2 (TP-2), Soil classified as Brown Silty Fine to Coarse Sand, Trace Clay

Alluvial Deposits (Qof), Dry to damp and dense. This layer was continued to the depth of 3 feet. Then after that we observed Cemented soil with CALICHE, Alluvial Deposit (Qof) and moist which was very dense as well

Detailed geotechnical subsurface condition was originally discussed in our original geotechnical report (G-021422), which was prepared as Proposed Tilt up.

According to attached figure 6, the subject site is not located within a "Liquefaction Zone" based on the review of the liquefaction map of California (California Department of Conservation). Also there is no evidence of near-surface groundwater in our subsurface exploration. Within Test Pit No.1 and 2 there was no groundwater encountered to maximum explored depth.

4. GEOTECHNICAL CONSIDERATIONS

The followings were considered prior to test procedure. :

1. Water infiltration into the ground should be at least 10 feet above the groundwater table.
2. The distance between the infiltration facility and the adjacent private property lines should be at least 10 feet.
3. The minimum foundation set back should be at least 10 feet from the infiltration facility.

4. Test Procedure

The double ring infiltrometer test (ASTM D 3385) is a well recognized and documented technique for directly measuring the soil infiltration rate of a site. Double ring infiltration was developed in response to the fact that smaller (less than 40 inch diameter) single ring infiltrometers tend to overestimate vertical infiltration rates. This has been attributed to the fact that the flow of water beneath the cylinder is not purely vertical and diverges laterally.

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Double ring infiltrometers minimize the error associated with the single-ring method because the water level in the outer ring forces vertical infiltration of water in the inner ring. Care should be taken when driving the rings into the ground as there can be a poor connection between the ring wall and the soil. This poor connection can cause a leakage of water along the ring wall and an overestimation of the infiltration rate. Another potential source of error is attributed to the size of the cylinders. As such, the use of cylinder sizes less than those prescribed in ASTM D 3385 is not recommended by most codes.

Geo Environmental Resources, double ring infiltrometer consists of a 12-inch inner ring and a 24-inch outer ring. While there are two operational techniques used with the double-ring infiltrometer, the constant head method and the falling head method; ASTM D3385 mandates the use of the constant head method.

With the constant head method, water is consistently added to both the outer and inner rings to maintain a constant level throughout the testing. The volume of water needed to maintain the fixed level of the inner ring is measured. To help maintain a constant head, a variety of devices may be used. A hook gauge, steel tape or rule, or length of steel or plastic rod pointed on one end, can be used for measuring and controlling the depth of liquid (head) in the infiltrometer ring. If available, a graduated Mariotte tube or automatic flow control system may also be used.

On the other hand and with the falling head method, which has been used in this report, the falling level of the water is measured in each time interval and ultimately, as shown in following tables, a final report shall be provided and, based on the test results, an infiltration rate shall be recommended. The final number is average of previous 4-infiltration rate.

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5. FINDINGS AND CONCLUSIONS

Result of Percolation test **No.1 indicates 5.25 inch/hr.** with a percolation **No.2 indicating 4.7 inch/hr.** Attached please see percolation tables and graphs.

($\boldsymbol{Final\ Infiltration\ rate} = \frac{\boldsymbol{Infiltration\ rate\ from\ test}}{\boldsymbol{Factor\ of\ safety}}$) **The minimum recommended factor of safety will be two (2).** Therefore, the actual infiltration rate of subject property will be half of the obtained infiltration rate**.**

It is our opinion that due the variability within the near-surface soil, the lower infiltration rate (Infiltration No.2) should be considered to utilize in the design. Therefore, the recommended infiltration rate is 2.35 Inch/hr.

1. The infiltration of the storm water will not result in ground settlement that could affect adversely the proposed structure.
2. All results and findings are based on level (Horizontal) surface area. Effect of any slope or inclination shall be considered to evaluate the final Percolation rate.
3. The proposed infiltration facility should be designed in such way that in case of "Drainage Capacity Failure" overflow to street.

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Figure 20: Approximate location and depth of the test.



Figure 21: Using bentonite to seal the apparatus, Soil was firm and dry



Figure 22: Position of laser meter and method of reading level of the water.



Figure 23: Accuracy of Reading water level by laser meter. Test was done by reading level of the water at specific time intervals

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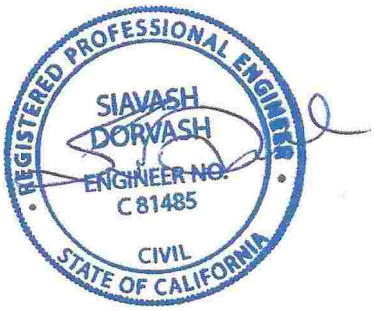
We appreciate the opportunity to be of service on this report. If we may be of additional Assistance, should Geotechnical Related problems occurs, please do not hesitate to contact us at Any time.

Very truly yours,

GEO ENVIRONMENTAL RESOURCES, INC.

Alexander A. Rastegar

Project Engineer



S. Dorvash, P.E.

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Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil

Percolation Location 1 (TP-1)

				Inner Ring		*Annular Ring*				
Trial Number	*Time (hour:min)*		*Elapsed time (Δt)*	*Elevation Inch(H)*	*ΔH*	*Elevation Inch(H)*	*ΔH*	*Liquid Temperature*	*Infiltration Rate - Annular (Inch/hour)*	*Infiltration Rate -Inner (Inch/hour)*
	Start	9:30	0:15	5 3/16		6 4/16			-	-
1	End	9:45		7 2/16	1 15/16	8 9/16	2 5/16	64	-	-
	Start	10:00	0:15	9 3/16	2 1/16	11	2 7/16	64	-	-
2	End	10:15		11 4/16	2 1/16	13 7/16	2 7/16	64	-	-
	Start	10:30	0:15	13 5/16	2 1/16	Water (5 9/16))	2 8/16	64	9 11/16	**8 2/16**
3	End	10:45		15 5/16	2	8	2 7/16	64	9 13/16	**8 3/16**
	Start	11:00	0:15	Water(5 4/16)	2 1/16	10 6/16	2 6/16	64	9 12/16	**8 3/16**
4	End	11:15		7 5/16	2 1/16	12 12/16	2 6/16	65	9 10/16	**8 3/16**
	Start	11:30	0:15	9 5/16	2	15 1/16	2 5/16	65	9 7/16	**8 2/16**
5	End	11:45		11 4/16	1 15/16	Water (6 3/16))	2 7/16	65	9 7/16	**8 1/16**
	Start	12:00	0:15	13 3/16	1 15/16	8 10/16	2 7/16	65	9 8/16	**7 15/16**
6	End	12:15		15 1/16	1 14/16	10 15/16	2 5/16	65	9 8/16	**7 12/16**
	Start	12:30	0:15	Water(5 4/16)	2	13 5/16	2 6/16	66	9 9/16	**7 12/16**
7	End	12:45		7 4/16	2	15 10/16	2 5/16	66	9 7/16	**7 13/16**
	Start	13:00	0:15	9 2/16	1 14/16	(Water)5 3/16	2 7/16	66	9 7/16	**7 12/16**
8	End	13:15		10 14/16	1 12/16	7 8/16	2 5/16	66	9 7/16	**7 10/16**
	Start	13:30	0:15	12 8/16	1 10/16	9 13/16	2 5/16	66	9 6/16	**7 4/16**
9	End	13:45		14 1/16	1 9/16	12	2 3/16	70	9 4/16	**6 13/16**
	Start	14:00	0:15	Water(5 10/16)	1 14/16	14 1/16	2 1/16	70	8 14/16	**6 13/16**
10	End	14:15		7 4/16	1 10/16	(Water)5 3/16	2	70	8 9/16	**6 11/16**
	Start	14:30	0:15	8 13/16	1 9/16	7 5/16	2 2/16	70	8 6/16	**6 10/16**
11	End	14:45		10 6/16	1 9/16	9 5/16	2	70	8 3/16	**6 10/16**
	Start	15:00	0:15	11 14/16	1 8/16	11 3/16	1 14/16	70	8	**6 4/16**
12	End	15:15		13 5/16	1 7/16	13	1 13/16	72	7 13/16	**6 1/16**
	Start	15:30	0:15	14 11/16	1 6/16	(Water)5 7/16	1 12/16	72	7 8/16	**5 14/16**
13	End	15:45		Water(6 6/16)	1 7/16	7 2/16	1 13/16	72	7 5/16	**5 12/16**
	Start	16:00	0:15	7 12/16	1 6/16	8 12/16	1 10/16	72	7 1/16	**5 10/16**
14	End	16:15		9 1/16	1 5/16	10 4/16	1 8/16	73	6 8/16	**5 8/16**
	Start	16:30	0:15	10 6/16	1 5/16	11 12/16	1 8/16	74	6 5/16	**5 7/16**
15	End	16:45		11 11/16	1 5/16	13 4/16	1 8/16	75	6 2/16	**5 5/16**
	Start	17:00	0:15	13	1 5/16	14 12/16	1 8/16	76	6	**5 4/16**
16	End	17:15		14 5/16	1 5/16	16 4/16	1 8/16	77	6	**5 4/16**

Infiltration Rate (Inch/Hour): *5 5/16*

5.25

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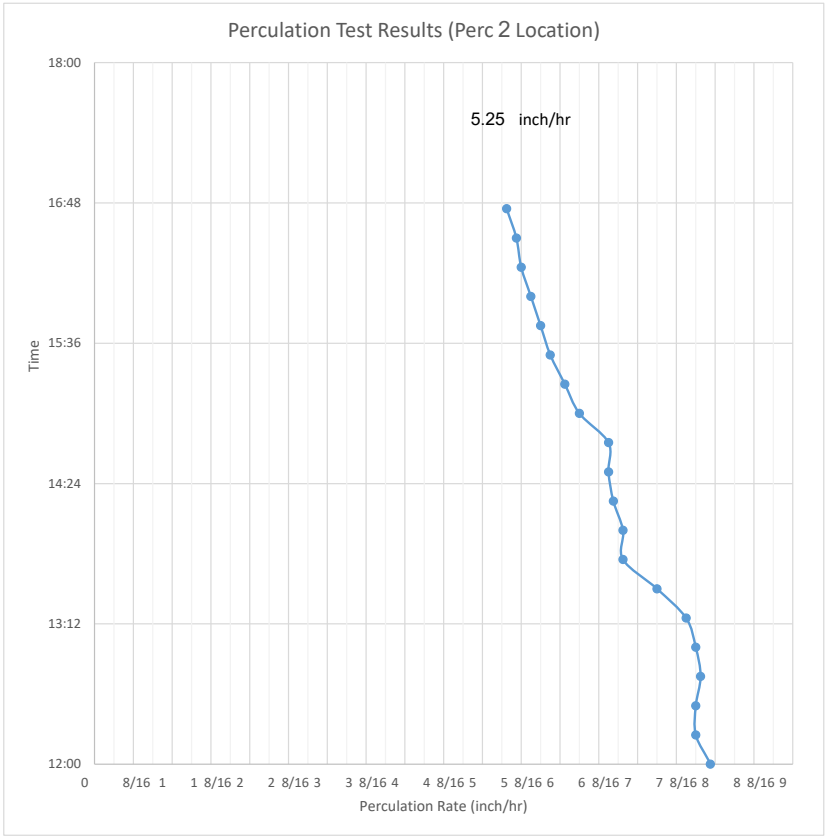
Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil



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Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/15/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	67°-87° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil

Percolation Location TP-2

				Inner Ring		*Annular Ring*				
Trial Number	*Time (hour:min)*		*Elapsed time (Δt)*	*Elevation Inch(H)*	*ΔH*	*Elevation Inch(H)*	*ΔH*	*Liquid Temperature*	*Infiltration Rate - Annular (Inch/hour)*	*Infiltration Rate -Inner (Inch/hour)*
	Start	9:00	0:15	5 14/16		5 11/16			-	-
1	End	9:15		8	2 2/16	7 15/16	2 4/16	64	-	-
	Start	9:30	0:15	10 4/16	2 4/16	10 6/16	2 7/16	64	-	-
2	End	9:45		12 6/16	2 2/16	12 11/16	2 5/16	64	-	-
	Start	10:00	0:15	14 8/16	2 2/16	Water (5 1/16)	2 4/16	64	9 4/16	**8 10/16**
3	End	10:15		16 8/16	2	7 7/16	2 6/16	64	9 6/16	**8 8/16**
	Start	10:30	0:15	Water(5 8/16)	2 2/16	9 10/16	2 3/16	64	9 2/16	**8 6/16**
4	End	10:45		7 8/16	2	11 14/16	2 4/16	65	8 15/16	**8 4/16**
	Start	11:00	0:15	9 9/16	2 1/16	14	2 2/16	65	8 13/16	**8 3/16**
5	End	11:15		11 9/16	2	Water (5 1/16))	2 3/16	65	8 10/16	**8 3/16**
	Start	11:30	0:15	13 8/16	1 15/16	7 5/16	2 4/16	65	8 11/16	**8**
6	End	11:45		15 7/16	1 15/16	9 6/16	2 1/16	65	8 10/16	**7 15/16**
	Start	12:00	0:15	Water(5 15/16)	1 14/16	11 6/16	2	66	8 8/16	**7 12/16**
7	End	12:15		7 15/16	2	13 4/16	1 14/16	66	8 3/16	**7 12/16**
	Start	12:30	0:15	9 13/16	1 14/16	15 2/16	1 14/16	66	7 13/16	**7 11/16**
8	End	12:45		11 9/16	1 12/16	Water(5 5/16)	1 12/16	66	7 8/16	**7 8/16**
	Start	13:00	0:15	13 5/16	1 12/16	7 2/16	1 12/16	66	7 4/16	**7 6/16**
9	End	13:15		15	1 11/16	8 13/16	1 11/16	70	7 1/16	**7 1/16**
	Start	13:30	0:15	Water(5 2/16)	1 11/16	9 8/16	11/16	70	5 14/16	**6 14/16**
10	End	13:45		6 15/16	1 13/16	11 2/16	1 10/16	70	5 12/16	**6 15/16**
	Start	14:00	0:15	8 8/16	1 9/16	12 11/16	1 9/16	70	5 9/16	**6 12/16**
11	End	14:15		10 1/16	1 9/16	14 3/16	1 8/16	70	5 6/16	**6 10/16**
	Start	14:30	0:15	11 8/16	1 7/16	Water (5 5/16)	1 8/16	70	6 3/16	**6 6/16**
12	End	14:45		12 13/16	1 5/16	6 15/16	1 10/16	72	6 3/16	**5 14/16**
	Start	15:00	0:15	14 1/16	1 4/16	8 6/16	1 7/16	72	5 14/16	**5 9/16**
13	End	15:15		Water(5 12/16)	1 3/16	9 10/16	1 4/16	72	5 10/16	**5 3/16**
	Start	15:30	0:15	7	1 4/16	10 15/16	1 5/16	72	5 7/16	**5**
14	End	15:45		8 3/16	1 3/16	12 3/16	1 4/16	73	5 5/16	**4 14/16**
	Start	16:00	0:15	9 5/16	1 2/16	13 7/16	1 4/16	74	5	**4 12/16**
15	End	16:15		10 7/16	1 2/16	14 11/16	1 4/16	75	5 1/16	**4 11/16**
	Start	16:30	0:15	11 9/16	1 2/16	15 15/16	1 4/16	76	5	**4 9/16**
16	End	16:45		12 11/16	1 2/16					

Infiltration Rate (Inch/Hour): ***4 11/16 =4.7***

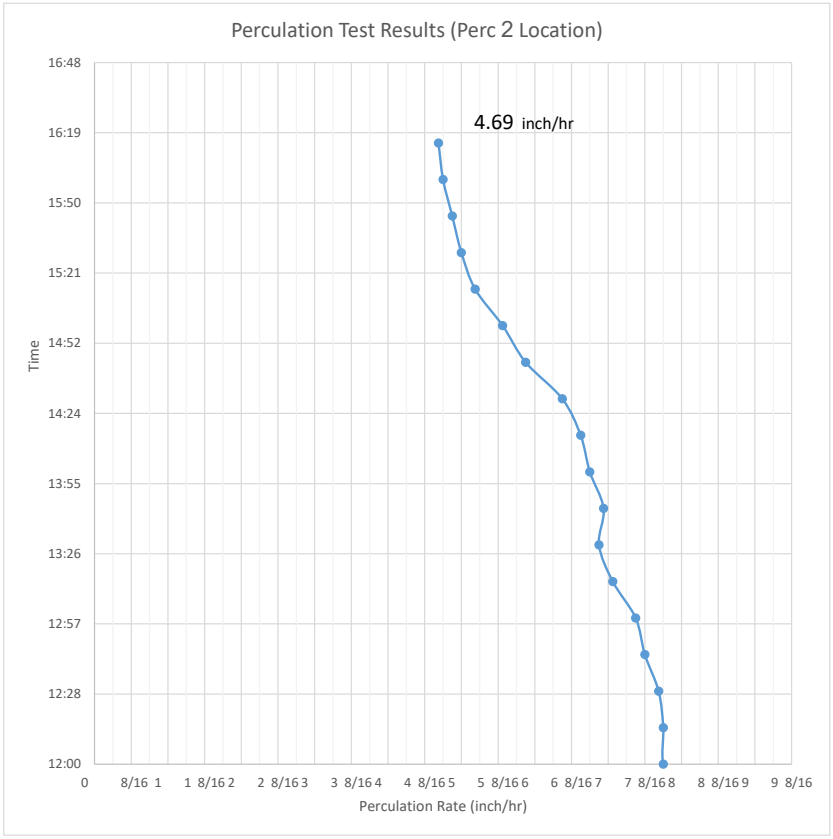
GEO ENVIRONMENTAL RESOURCES INC
GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

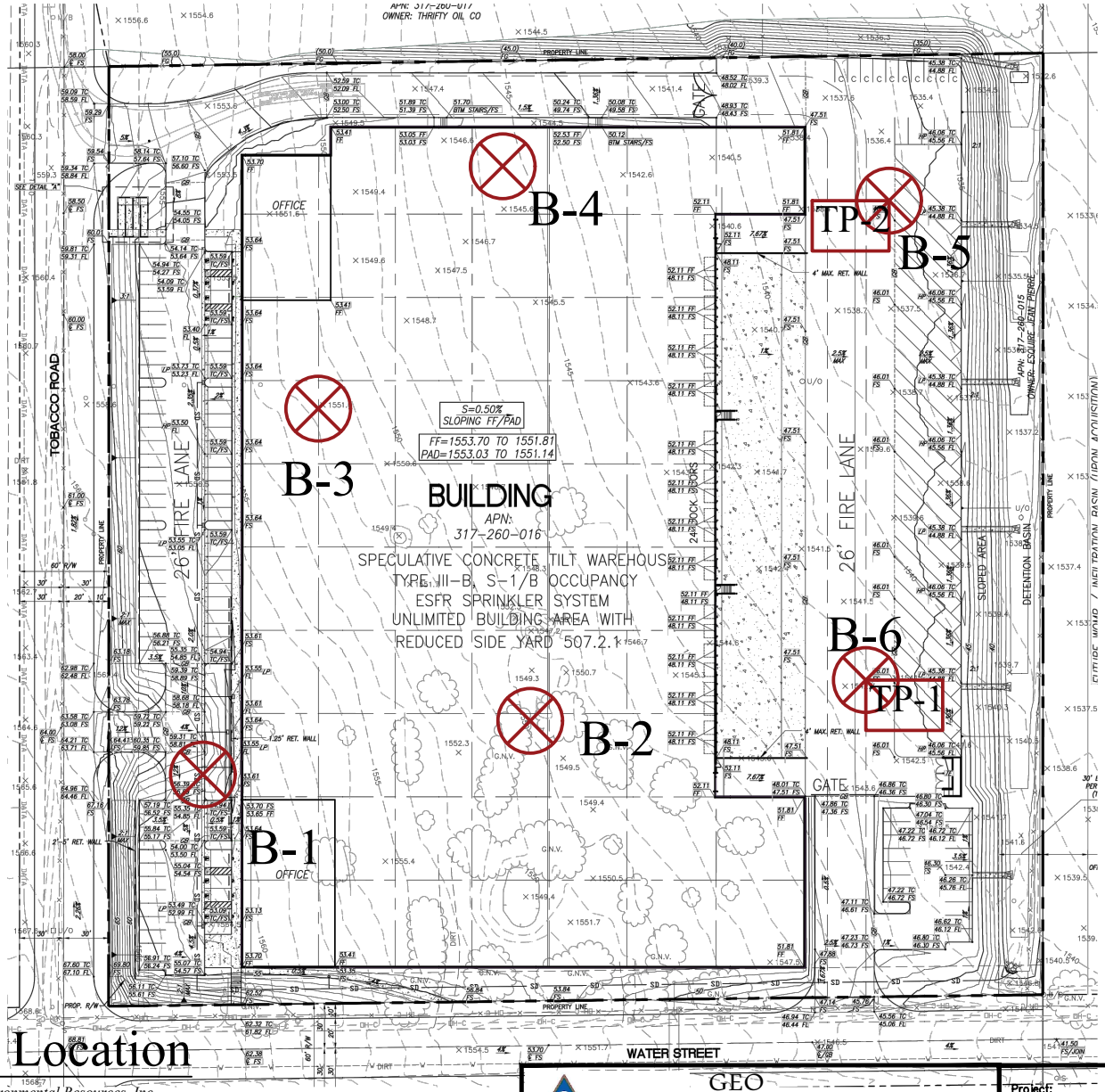
Double Ring Infiltration Test Data

ASTM D3385 – 18 & City Guide

Date of Test **4/14/2021**

		Inner Ring Diameter:	12 inch	Liquid:	Tap Water
Project Name:	**Proposed Tilt-up**	Outer Ring Diameter:	24 inch	Liquid Temperature:	63°-70° f
Project Address:	**23628 Water Street, Perris**	Height Of Ring:	24 inch	Type of Test:	Falling Head
		Depth to the Soil:	6 Inch	Weather Temperature:	65°-90° f
Project number:	**G-021422**	Method of measuring the surface of the water :	Laser	Weather:	Sunny
				Soil Type:	Native Soil





Plan & Boring Location

Based on the drawing that was sent to GEO Environmental Resources, Inc

B-1 *Approximate Boring Location*
P-1 *Approximate Percolation Test Location*

GEO ENVIRONMENTAL RESOURCES INC
GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

GEO ENVIRONMENTAL RESOURCES, INC.
TEL: (714) 995-9001 FAX: (714) 995-9008

Project:		
Proposed Tiltup		
ADDRESS: 23628 Water Street, Perris		
Project NO: G-021422	SCALE: As Mentioned	FIG.:1

Appendix 4: Historical Site Conditions

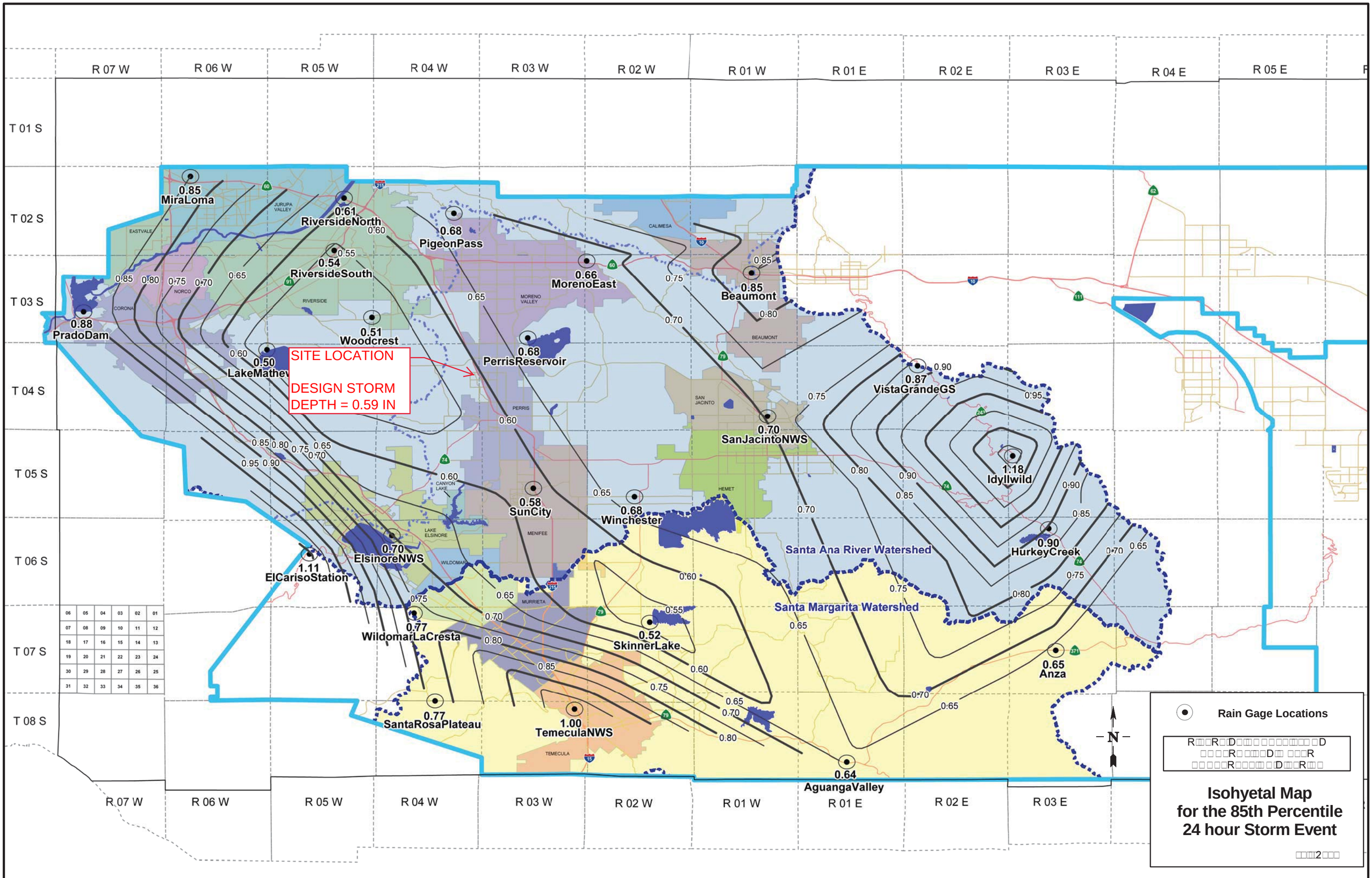
Phase I Environmental Site Assessment or Other Information on Past Site Use

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation



R 07 W
R 06 W
R 05 W
R 04 W
R 03 W
R 02 W
R 01 W
R 01 E
R 02 E
R 03 E
R 04 E
R 05 E
T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S
0.85 MiraLoma
0.61 RiversideNorth
0.68 PigeonPass
0.54 RiversideSouth
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathew
0.68 PerrisReservoir
SITE LOCATION
DESIGN STORM
DEPTH = 0.59 IN
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.90 HurkeyCreek
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley
Santa Ana River Watershed
Santa Margarita Watershed
Rain Gage Locations
Isohyetal Map
for the 85th Percentile
24 hour Storm Event

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Armstrong & Brooks Consulting Engineers	Date	11/30/2023
Designed by	Joshua Groenheim	Case No	
Company Project Number/Name	123.2177 PERRIS NORTH		

BMP Identification

BMP NAME / ID: INFILTRATION TRENCH #1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.59 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA A	*33,331*	*Mixed Surface Types*	*0.41*	*0.29*	*9511.2*			
	33331		***Total***		**9511.2**	**0.59**	***467.6***	***600***

Notes:

Infiltration Trench - Design Procedure	BMP ID: TRENCH	Legend:	Required Entries / Calculated Cells
Company Name: ARSMTRONG & BROOKS		Date:	11/1/2024
Designed by: ALEX GUTIERREZ		County/City Case No.:	

Design Volume

Enter the area tributary to this feature, Max = 10 acres	A_t =	1	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP} =	468	ft^3

Calculate Maximium Depth of the Reservoir Layer

Enter Infiltration rate	I =	2.7	in/hr
Enter Factor of Safety, FS (unitless)	FS =	3	
Obtain from Table 1, Appendix A: "Infiltration Testing" of this BMP Handbook			
	n =	40	%
Calculate D_1. $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times (n/100) \times FS}$	D_1 =	13.50	ft
Enter depth to historic high groundwater mark (measured from finished grade)		45	ft
Enter depth to top of bedrock or impermeable layer (measured from finished grade)		60	ft
D_2 is the smaller of: Depth to groundwater - 11 ft; & Depth to impermeable layer - 6 ft	D_2 =	34.0	ft
D_{MAX} is the smaller value of D_1 and D_2, must be less than or equal to 8 feet.	D_{MAX} =	8.0	ft

Trench Sizing

Enter proposed reservoir layer depth D_R, must be ≤ D_{MAX}	D_R =	5.00	ft
Calculate the design depth of water, d_W			
Design $d_W = (D_R) \times (n/100)$	Design d_W =	2.00	ft
Minimum Surface Area, A_S $A_S = \frac{V_{BMP}}{d_W}$	A_S =	234	ft^2
Proposed Design Surface Area	A_D =	340	ft^2
Minimum Width = D_R + 1 foot pea gravel		6.00	ft
Sediment Control Provided? (Use pulldown)			
Geotechnical report attached? (Use pulldown)		Yes	

If the trench has been designed correctly, there should be no error messages on the spreadsheet.

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Armstrong & Brooks Consulting Engineers	Date	11/30/2023
Designed by	Joshua Groenheim	Case No	
Company Project Number/Name	123.2177 PERRIS NORTH		

BMP Identification

BMP NAME / ID: UNDERGROUND RETENTION CHAMBER #1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.59 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA B	*316,213*	*Mixed Surface Types*	*0.95*	*0.81*	*255176.9*			
	316213		***Total***		***255176.9***	***0.59***	***12546.2***	***12,794***

Notes:

Infiltration Basin - Design Procedure (Rev. 03-2012)	BMP ID CHAMBERS	Legend:	Required Entries / Calculated Cells

Company Name: ARMSTRONG & BROOKS — Date: 11/1/2024

Designed by: JOSHUA GROENHEIM — County/City Case No.:

Design Volume

a) Tributary area (BMP subarea)	A_T =	7.26	acres
b) Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	12,546	ft^3

Maximum Depth

a) Infiltration rate	I =	2.7	in/hr
b) Factor of Safety (See Table 1, Appendix A: "Infiltration Testing" from this BMP Handbook)	FS =	3	
c) Calculate D_1 $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times FS}$	D_1 =	5.4	ft
d) Enter the depth of freeboard (at least 1 ft)		1	ft
e) Enter depth to historic high ground water (measured from **top** of basin)		50	ft
f) Enter depth to top of bedrock or impermeable layer (measured from **top** of basin)		10	ft
g) D_2 is the smaller of: Depth to groundwater - (10 ft + freeboard) and Depth to impermeable layer - (5 ft + freeboard)	D_2 =	4.0	ft
h) D_{MAX} is the smaller value of D_1 and D_2 but shall not exceed 5 feet	D_{MAX} =	4.0	ft

Basin Geometry

a) Basin side slopes (no steeper than 4:1)	z =	4	:1
b) Proposed basin depth (excluding freeboard)	d_B =	1	ft
c) Minimum bottom surface area of basin ($A_S = V_{BMP}/d_B$)	A_S =	12546	ft^2
d) Proposed Design Surface Area	A_D =	33335	ft^2

Forebay

a) Forebay volume (minimum 0.5% V_{BMP})	Volume =	63	ft^3
b) Forebay depth (height of berm/splashwall. 1 foot min.)	Depth =		ft
c) Forebay surface area (minimum)	Area =		ft^2
d) Full height notch-type weir	Width (W) =		in

Notes:

CONTECH®
ENGINEERED SOLUTIONS

CMP Detention and Infiltration



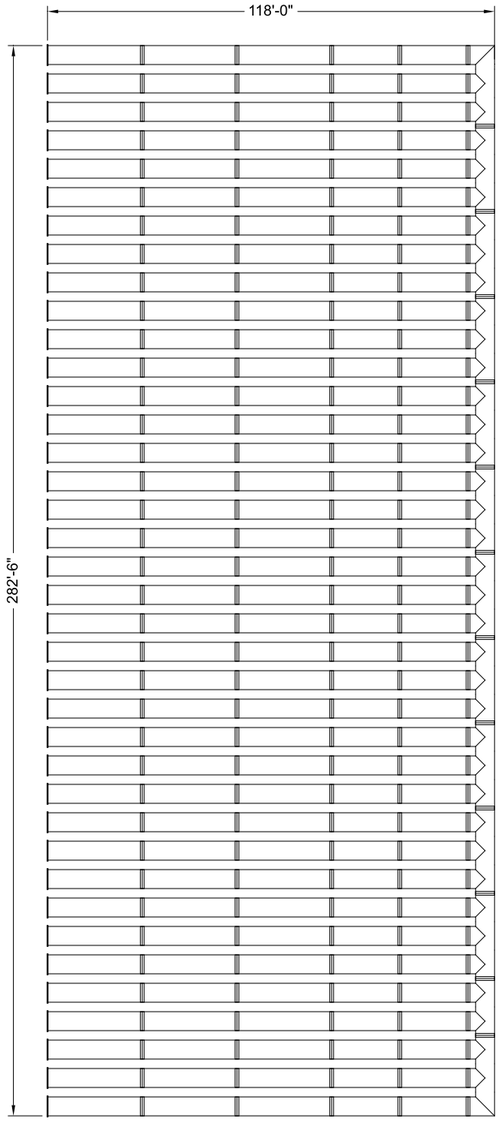
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 4,577 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 89,859 CF
- BACKFILL STORAGE VOLUME = 41,440 CF
- TOTAL STORAGE PROVIDED = 131,300 CF

PIPE DETAILS
- DIAMETER = 60"
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = PERFORATED
- BARREL SPACING = 30"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 2"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 6"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY

SCALE: 1" = 40'

C:\EXPORTS\TEMPLATES\CMP_V8.DWG 10/18/2019 10:02 AM

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DATE	REVISION DESCRIPTION	BY

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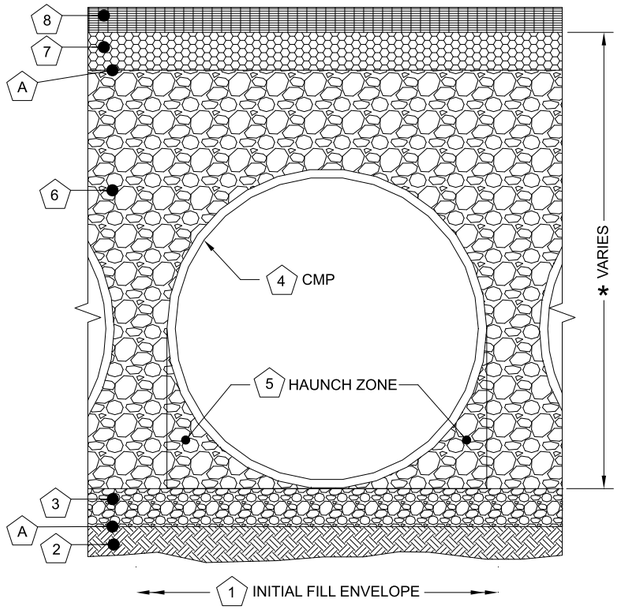
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH® CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		



	Infiltration Systems - CMP Infiltration & CMP Perforated Drainage Pipe			
	Material Location	Description	Material Designation	Designation
8	Rigid or Flexible Pavement (if applicable)			
7	Road Base (if applicable			
A	Geotextile Layer	Non-Woven Geotextile	CONTECH C-40 or C-45	Engineer Decision for consideration to prevent soil migration into varying soil types. Wrap the trench only.
6	Backfill	Infiltration pipe systems have a pipe perforation sized of 3/8" diameter. An open graded, free draining stone, with a particle size of ½" – 2 ½" diameter is recommended.	AASHTO M 145-A-1 or AASHTO M 43 - 3, 4	Material shall be worked into the pipe haunches by means of shovel-slicing, rodding, air-tamper, vibratory rod, or other effective methods. Compaction of all placed fill material is necessary and shall be considered adequate when no further yielding of the material is observed under the compactor, or under foot, and the Project Engineer or his representative is satisfied with the level of compaction"
3	Bedding Stone	Well graded granular bedding material w/maximum particle size of 3"	AASHTO M43 - 3,357,4,467, 5, 56, 57	For soil aggregates larger than 3/8" a dedicated bedding layer is not required for CMP. Pipe may be placed on the trench bottom comprised of native suitable well graded & granular material. For Arch pipes it is recommended to be shaped to a relatively flat bottom or fine-grade the foundation to a slight v-shape. Soil aggregates less than 3/8" and unsuitable material should be over-excavated and re-placed with a 4"-6" layer of well graded & granular stone per the material designation.
A	Geotextile Layer	None	None	Contech does not recommend geotextiles be placed under the invert of Infiltration systems due to the propensity for geotextiles to clog over time.
*	Note: The listed AASHTO designations are for gradation only. The stone must also be angular and clean.			

1 MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT.

FOUNDATION/BEDDING PREPARATION

2 PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER.

5 HAUNCH ZONE MATERIAL SHALL BE PLACED AND UNIFORMLY COMPACTED WITHOUT SOFT SPOTS.

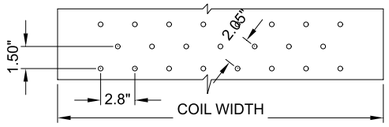
BACKFILL

MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE. ATTENTION MUST BE GIVEN TO PROVIDING ADEQUATE MINIMUM COVER FOR SUCH EQUIPMENT. MAINTAIN BALANCED LOADING ON ALL PIPES IN THE SYSTEM DURING ALL SUCH OPERATIONS.

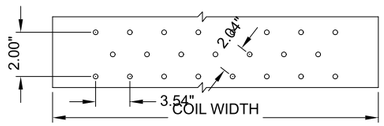
OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

2 2/3" x 1/2" CORRUGATION - STEEL AND ALUMINUM CMP EDGE SPACING EQUAL ON BOTH SIDES



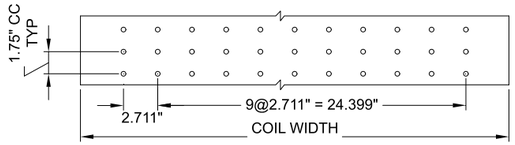
OPEN AREA = 3.76 SQ IN/SQ FT

3" x 1" CORRUGATION - STEEL AND ALUMINUM CMP (COIL PROVIDED FROM CONTECH LANTANA, FL PLANT)



OPEN AREA = 4.16 SQ IN/SQ FT

5" x 1" CORRUGATION - STEEL ONLY
EDGE SPACING EQUAL ON BOTH SIDES



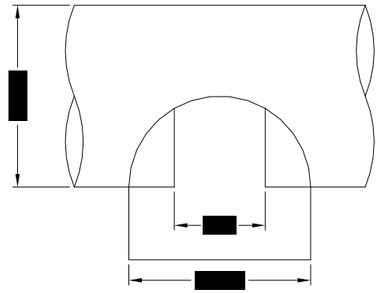
OPEN AREA = 3.33 SQ IN/SQ FT

NOTES:

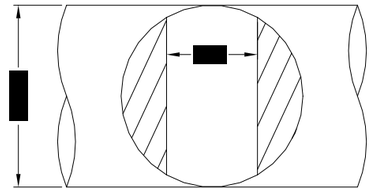
1. PERFORATIONS MEET AASHTO AND ASTM SPECIFICATIONS.
2. PERFORATION OPEN AREA PER SQUARE FOOT OF PIPE IS BASED ON THE NOMINAL DIAMETER AND LENGTH OF PIPE.
3. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. ALL HOLES ⌀3/8".

TYPICAL PERFORATION DETAIL

SCALE: N.T.S.



PLAN

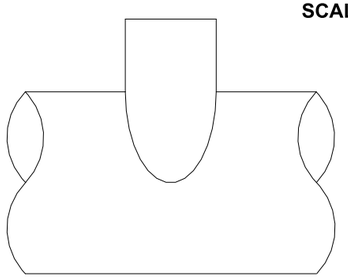


FRONT

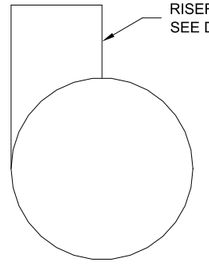
TYPICAL MANWAY DETAIL

SCALE: N.T.S.

NOTE:
MANWAY DETAIL APPLICABLE FOR CMP SYSTEMS WITH DIAMETERS 48" AND LARGER. MANWAYS MAY BE REQUIRED ON SMALLER SYSTEMS DEPENDING ON ACTUAL SITE SPECIFIC CONDITIONS.



ELEVATION

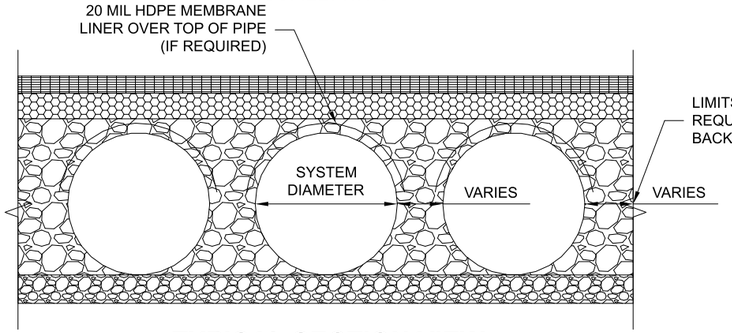


END

TYPICAL RISER DETAIL

SCALE: N.T.S.

NOTE:
LADDERS ARE OPTIONAL AND ARE NOT REQUIRED FOR ALL SYSTEMS.



TYPICAL SECTION VIEW

LINER OVER ROWS
SCALE: N.T.S.

NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, AN HDPE MEMBRANE LINER IS RECOMMENDED WITH THE SYSTEM. THE IMPERMEABLE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

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CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO41779 123.2177 Perris North
CMP Detention - Watershed A
Perris, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
28628	41779	12/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

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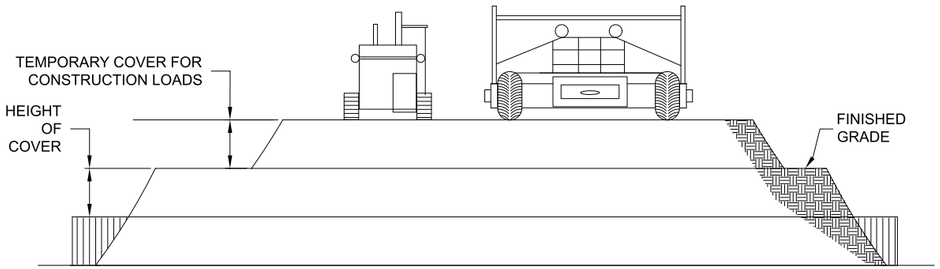


CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

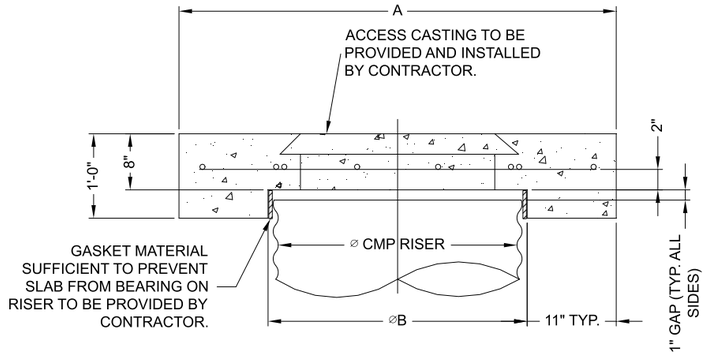
APPLICABLE POLYMER COATED: AASHTO M-245 OR ASTM A-762

ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE
HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.
REQUIREMENTS
INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

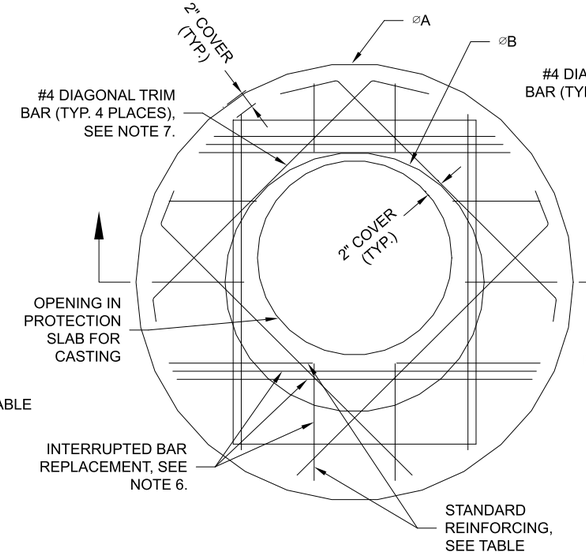
NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.



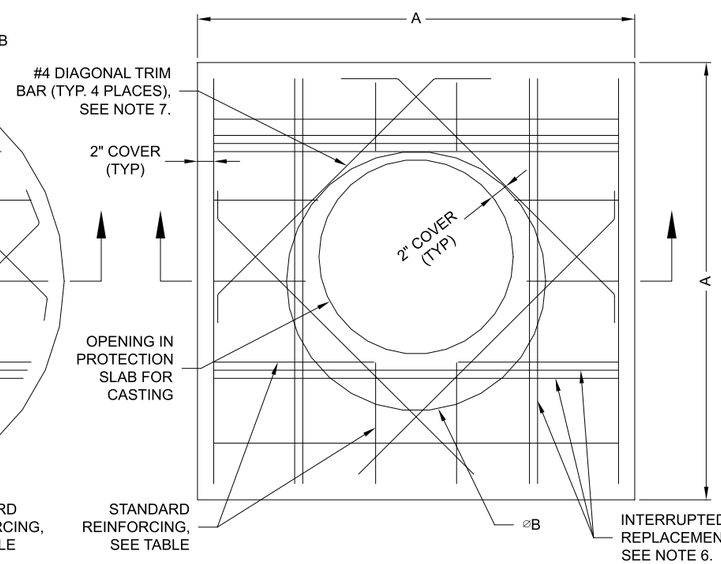
SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

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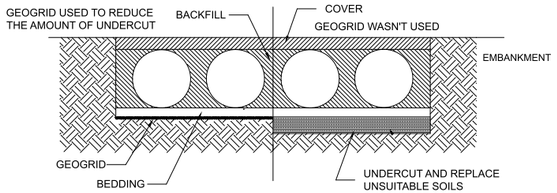
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.

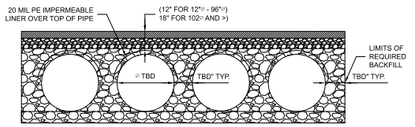


GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DEICING AGENTS. IF SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM THE USE OF SUCH AGENTS INCLUDING PREMATURE CORROSION AND REDUCED ACTUAL SERVICE LIFE.

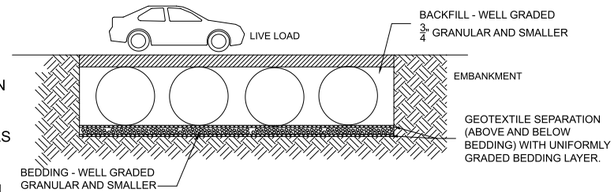
THE PROJECT'S ENGINEER OF RECORD IS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIS/HER BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PROTECTIVE MEASURES ARE REQUIRED. BELOW IS A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.



IN-SITU TRENCH WALL

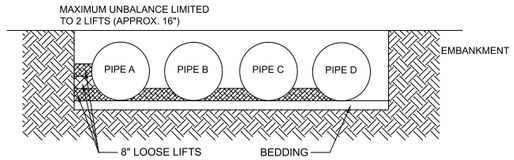
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



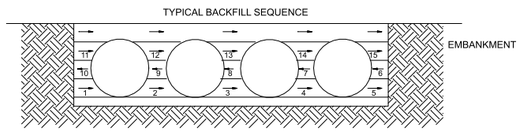
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

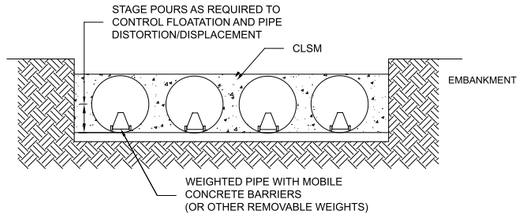


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

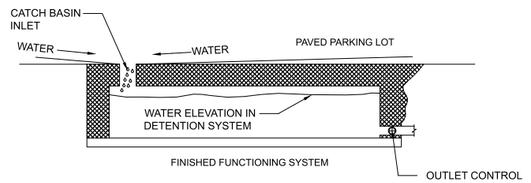


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

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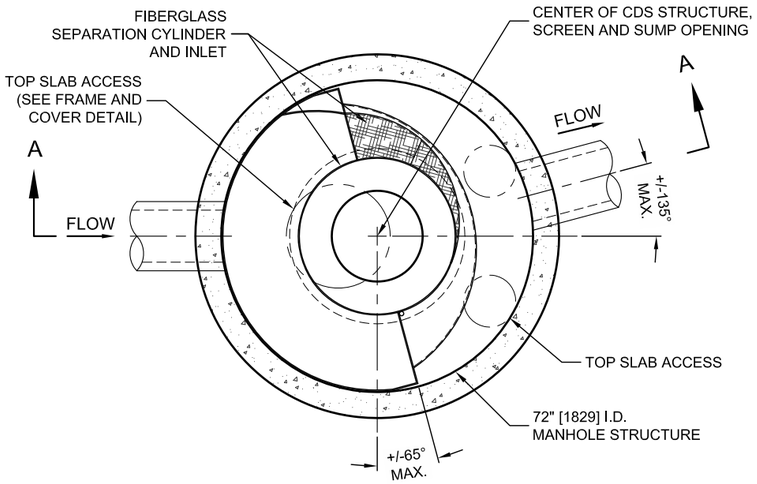
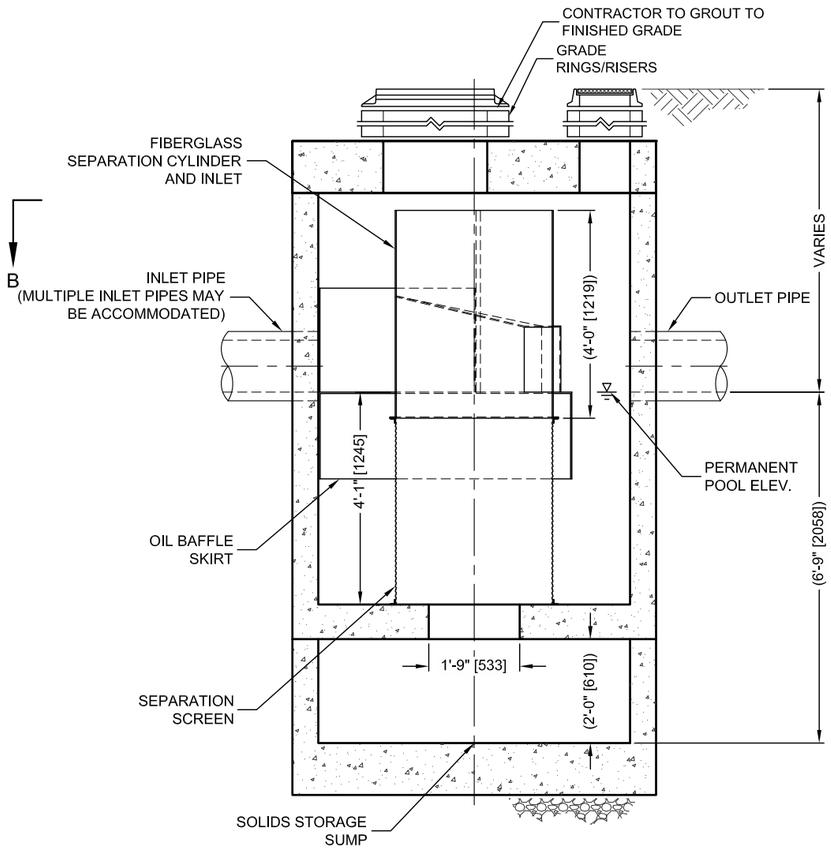


PLAN VIEW B-B
N.T.S.



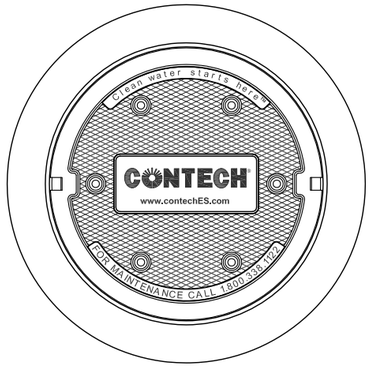
ELEVATION A-A
N.T.S.

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,848; 6,641,720; 6,511,595; 6,581,782; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CDS3035-6-C DESIGN NOTES

THE STANDARD CDS3035-6-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES
SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (CFS OR L/s)	*
PEAK FLOW RATE (CFS OR L/s)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*
SCREEN APERTURE (2400 OR 4700)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

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C:\USERS\SCHLACHTERH\DESKTOP\CDS DETAILS 180 MICRON SIZING\CAD\CDS3035-6-C-DTL.DWG 5/19/2014 5:33 PM

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Armstrong & Brooks Consulting Engineers	Date	11/30/2023
Designed by	Joshua Groenheim	Case No	
Company Project Number/Name	123.2177 PERRIS NORTH		

BMP Identification

BMP NAME / ID: DRY WELL #1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.59 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

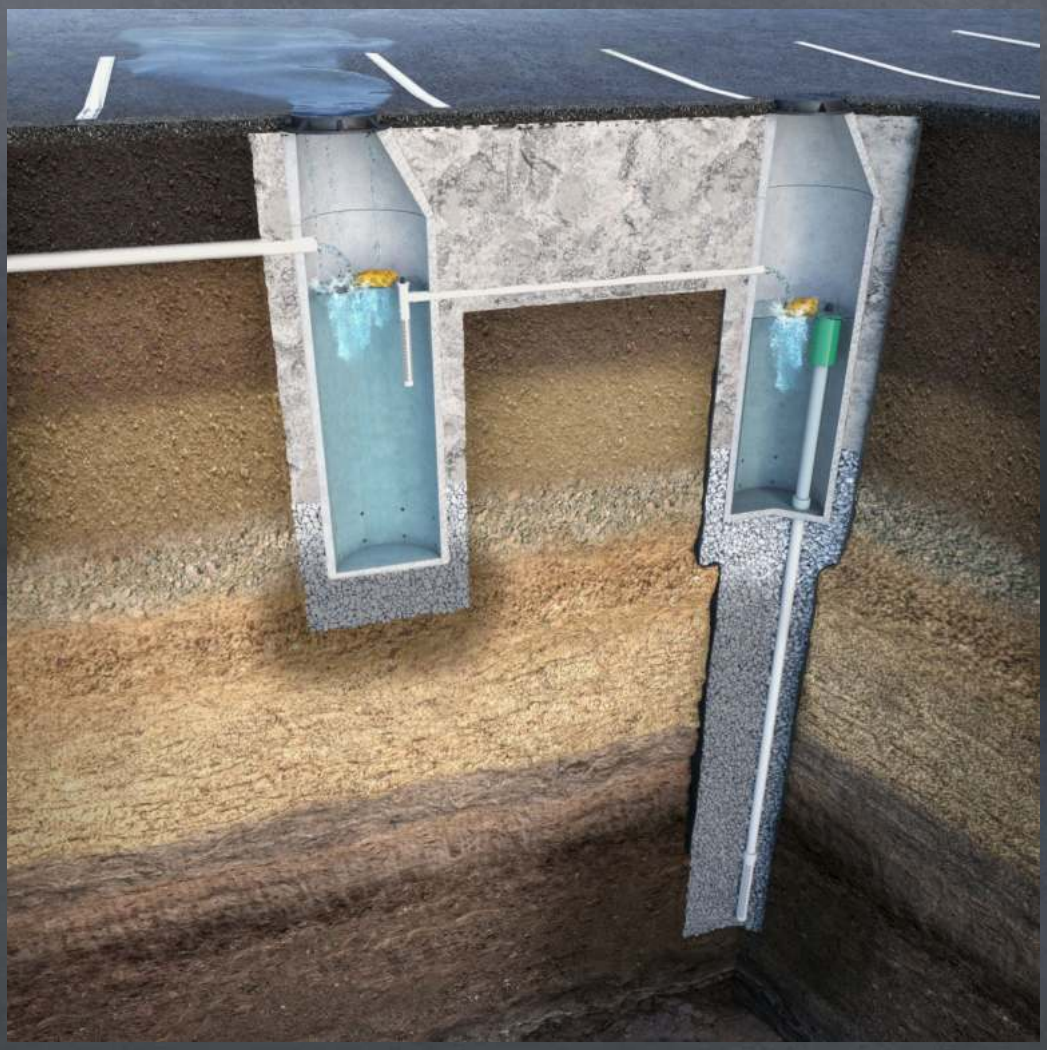
DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA C	*14,478*	*Mixed Surface Types*	*0.88*	*0.70*	*10160.5*			

Oldcastle Infrastructure
A CRH COMPANY

MaxWell®

Deep Infiltration System

Design Summary



PROJECT INFORMATION

PROJECT NAME: Perris North

PROJECT CITY: Perris

PROJECT STATE: California

COMPANY: The Orden Company

SITE TYPE: Industrial

SYSTEM DESIGN

Inputs

System Type	Name of Drainage Area	Measured Infiltration Rate	Factor of Safety	Water Quality Volume (or Flow Rate)	Required Drawdown Time	Min Depth to Infiltration	Depth to Groundwater	Depth to Deepest Inlet Below Rim	Cover Type
		(in/hr)		(cf) or (cfs)	(hrs)	(ft)	(ft)	(ft)	
Maxwell IV	DMA C	4.70	2.00	499.60	72.0	5.0	30.00	N/A	Grate Inlet

System Design

Name of Drainage Area	# of Drywells Needed	Total Drywell Depth	Chamber Depth	Infiltration Flow Rate per Drywell	Volume Provided Per Drywell	Total Flow Rate	Total Volume Provided	Total Volume Infiltrated within Drawdown Time
		(ft)	(ft)	(cfs)	(cf)	(cfs)	(cf)	(cf)
DMA C	1	20	15	0.00683	213.5	0.00683	213.5	1,770

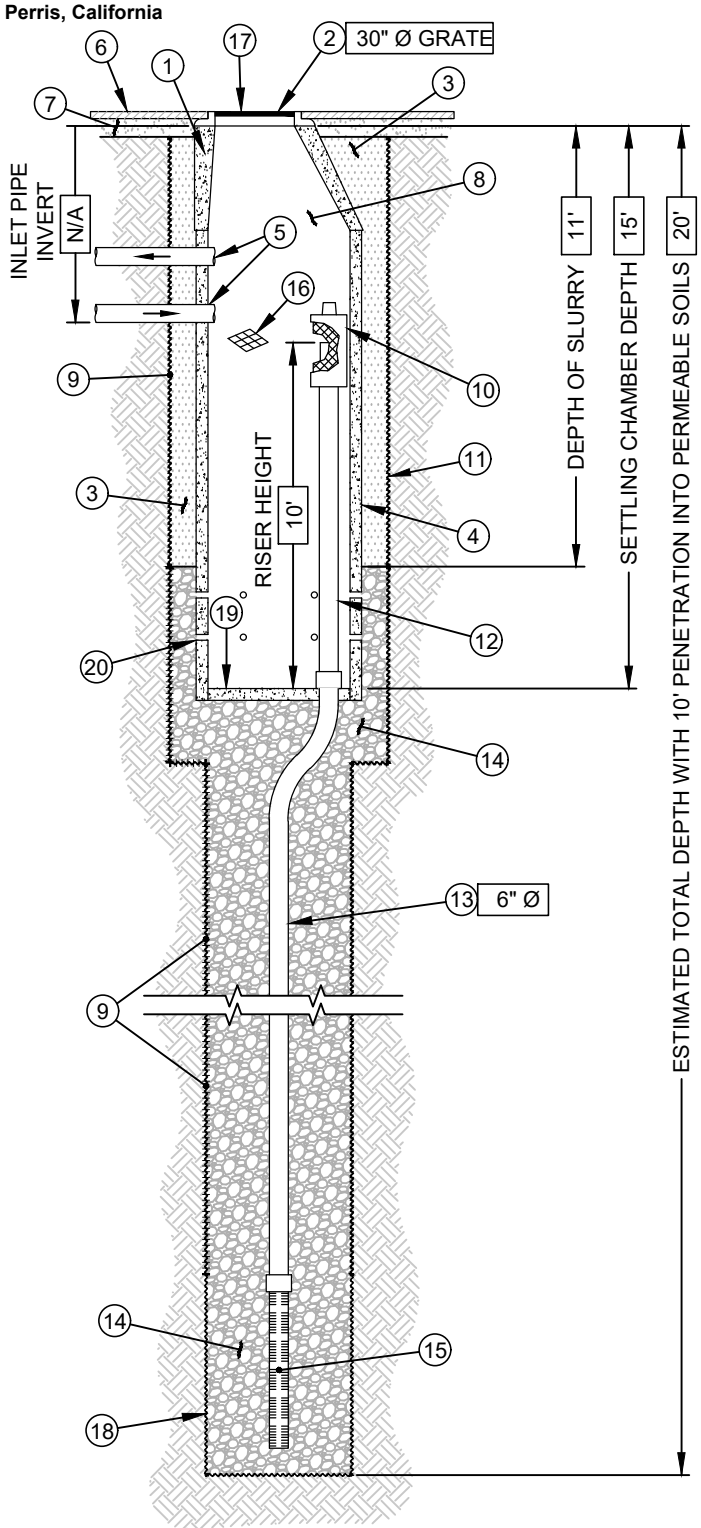
The MaxWell® IV

DRAINAGE SYSTEM DETAILS AND SPECIFICATIONS

Perris North:

Drainage Area 1 - DMA C

Perris, California



ITEM NUMBERS

1. **MANHOLE CONE** - MODIFIED FLAT BOTTOM.
2. **BOLTED RING & GRATE/COVER** - DIAMETER & TYPE AS SHOWN. CLEAN CAST IRON WITH WORDING **"STORM WATER ONLY"** IN RAISED LETTERS. **BOLTED IN 2 LOCATIONS** AND SECURED TO CONE WITH MORTAR. RIM ELEVATION ±0.02' OF PLANS.
3. **STABILIZED BACKFILL** - TWO-SACK SLURRY MIX.
4. **PRE-CAST LINER -** 4000 PSI CONCRETE 48" ID. X 54" OD. **CENTER IN HOLE** AND ALIGN SECTIONS **TO MAXIMIZE BEARING SURFACE.**
5. **NOT USED**
6. **GRADED BASIN OR PAVING** (BY OTHERS).
7. **COMPACTED BASE MATERIAL**, IF REQUIRED (BY OTHERS).
8. **FREEBOARD DEPTH VARIES** WITH INLET PIPE ELEVATION. INCREASE SETTLING CHAMBER DEPTH AS NEEDED TO MAINTAIN ALL INLET PIPE ELEVATIONS ABOVE RISER PIPE.
9. **NON-WOVEN GEOTEXTILE SLEEVE** - MIRAFI 140 NL. MIN. 6 FT Ø. HELD APPROX. 10 FEET OFF THE BOTTOM OF EXCAVATION.
10. **PUREFLO® DEBRIS SHIELD** - ROLLED 16 GA. STEEL X 24" LENGTH WITH VENTED ANTI-SIPHON AND INTERNAL 0.265" MAX. SWO FLATTENED EXPANDED STEEL SCREEN X 12" LENGTH. **FUSION BONDED EPOXY COATED**.
11. **MIN. 6' Ø DRILLED SHAFT.**
12. **RISER PIPE** - SCH. 40 PVC MATED TO DRAINAGE PIPE AT BASE SEAL.
13. **DRAINAGE PIPE** - ADS HIGHWAY GRADE OR SCH. 40 PVC WITH TRI-A COUPLER. SUSPEND PIPE DURING BACKFILL OPERATIONS. DIAMETER AS NOTED.
14. **ROCK** - WASHED, SIZED BETWEEN 3/8" AND 1-1/2".
15. **FLOFAST® DRAINAGE SCREEN** - SCH. 40 PVC 0.120" SLOTTED WELL SCREEN WITH 32 SLOTS PER ROW/FT. OVERALL LENGTH VARIES, UP TO 120" WITH TRI-B COUPLER.
16. **ABSORBENT** - HYDROPHOBIC PETROCHEMICAL SPONGE. MIN. 128 OZ. CAPACITY. TYPICAL, 2 PER CHAMBER.
17. **FABRIC SEAL** - U.V. RESISTANT GEOTEXTILE - **TO BE REMOVED BY CUSTOMER** AT PROJECT COMPLETION. GRATED ONLY.
18. **MIN 4' Ø DRILLED SHAFT.**
19. **BASE SEAL** - CONCRETE SLURRY
20. **6 PERFORATIONS MINIMUM PER FOOT, 2 ROWS MINIMUM.**

AZ Lic. ROC070465 A, ROC047067 B-4, ADWR 363
CA Lic. 886759, C-42, C-57, HAZ.
Also licensed in the following states: MT, NM, NV, OR, TX, UT, and WA.

U.S. Patent No. 4,923,330 - ™ Trademark 1974, 1990, 2004

DETAIL : IV-4-SS-CA	REVISED BY: OI	
DRAWN ON: 05-14-19	REVISED DATE: 12-01-23	SCALE: N.T.S

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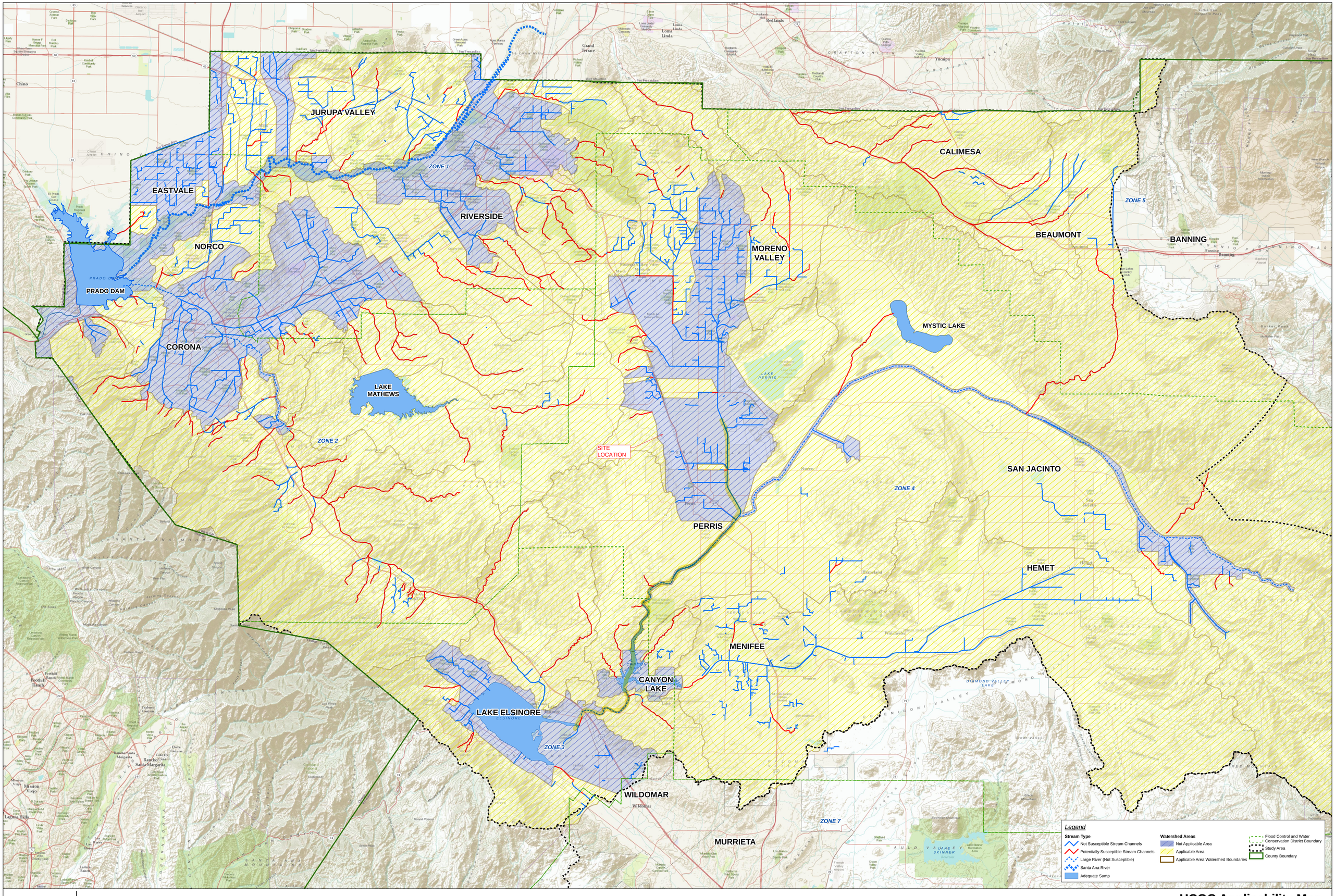
Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern



HCOC Applicability Map

Hydromodification Susceptibility Documentation Report and Mapping
Riverside County Flood Control and Water Conservation District

Map 2

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☒ **A. On-site storm drain inlets**	☒ **Locations of inlets.**	☒ **Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.**	☒ **Maintain and periodically repaint or replace inlet markings.** ☒ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ☒ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☐ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
☐ **B. Interior floor drains and elevator shaft sump pumps**		☐ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**
☐ **C. Interior parking garages**		☐ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ **D1. Need for future indoor & structural pest control**		☐ **Note building design features that discourage entry of pests.**	☐ **Provide Integrated Pest Management information to owners, lessees, and operators.**
☒ **D2. Landscape/ Outdoor Pesticide Use**	☐ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ☐ **Show self-retaining landscape areas, if any.** ☐ **Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)**	☐**State that final landscape plans will accomplish all of the following.** ☐ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ☒ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ☐ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ☐ **Consider using pest-resistant plants, especially adjacent to hardscape.** ☒ **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	☒ **Maintain landscaping using minimum or no pesticides.** ☒ **See applicable operational BMPs in "What you should know for…..Landscape and Gardening" at http://rcflood.org/stormwater/Downloads/LandscapeGardenBrochure.pdf** ☐ **Provide IPM information to new owners, lessees and operators.**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ **E. Pools, spas, ponds, decorative fountains, and other water features.**	☐ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)**	**If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	☐ **See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/**
☐ **F. Food service**	☐ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ☐ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	☐ **Describe the location and features of the designated cleaning area.** ☐ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	☐ **See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.**
☒ **G. Refuse areas**	☐ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ☒ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ☐ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	☐ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ☒ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	**State how the following will be implemented:** ☒ **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ H. Industrial processes.	☐ Show process area.	☐ If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	☐ See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	☐ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ☐ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ☐ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: • Hazardous Waste Generation • Hazardous Materials Release Response and Inventory • California Accidental Release (CalARP) • Aboveground Storage Tank • Uniform Fire Code Article 80 Section 103(b) & (c) 1991 • Underground Storage Tank www.cchealth.org/groups/hazmat/	☐ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ **J. Vehicle and Equipment Cleaning**	☐ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shutoff to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	☐ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ☐ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/** ☐**Car dealerships and similar may rinse cars with water only.**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ **K. Vehicle/Equipment Repair and Maintenance**	☐ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ☐ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ☐ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	☐ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ☐ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ☐ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ☐ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ☐ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ☐ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ **L. Fuel Dispensing Areas**	☐ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ☐ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		☐ **The property owner shall dry sweep the fueling area routinely.** ☐ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[6] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☒ **M. Loading Docks**	☒ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ☐ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ☐ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		☒ **Move loaded and unloaded items indoors as soon as possible.** ☒ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☐ N. Fire Sprinkler Test Water		☐ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☐ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
☐ O. Miscellaneous Drain or Wash Water or Other Sources ☐ Boiler drain lines ☐ Condensate drain lines ☐ Rooftop equipment ☐ Drainage sumps ☐ Roofing, gutters, and trim. ☐ Other sources		☐ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ☐ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☐ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ☐ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ☐ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. ☐ Include controls for other sources as specified by local reviewer.	

STORMWATER POLLUTANT SOURCES / SOURCE CONTROL CHECKLIST

1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Shown on WQMP Drawings	3 Permanent Controls—Listed in WQMP Table and Narrative	4 Operational BMPs—Included in WQMP Table and Narrative
☒ **P. Plazas, sidewalks, and parking lots.**			☒ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Contech® CMP Detention Inspection and Maintenance Guide

Underground stormwater detention and infiltration systems must be inspected and maintained at regular intervals for purposes of performance and longevity.

Inspection

Inspection is the key to effective maintenance of CMP detention systems and is easily performed. Contech recommends ongoing, annual inspections. Sites with high trash load or small outlet control orifices may need more frequent inspections. The rate at which the system collects pollutants will depend more on-site specific activities rather than the size or configuration of the system.

Inspections should be performed more often in equipment washdown areas, in climates where sanding and/or salting operations take place, and in other various instances in which one would expect higher accumulations of sediment or abrasive/corrosive conditions. A record of each inspection is to be maintained for the life of the system.

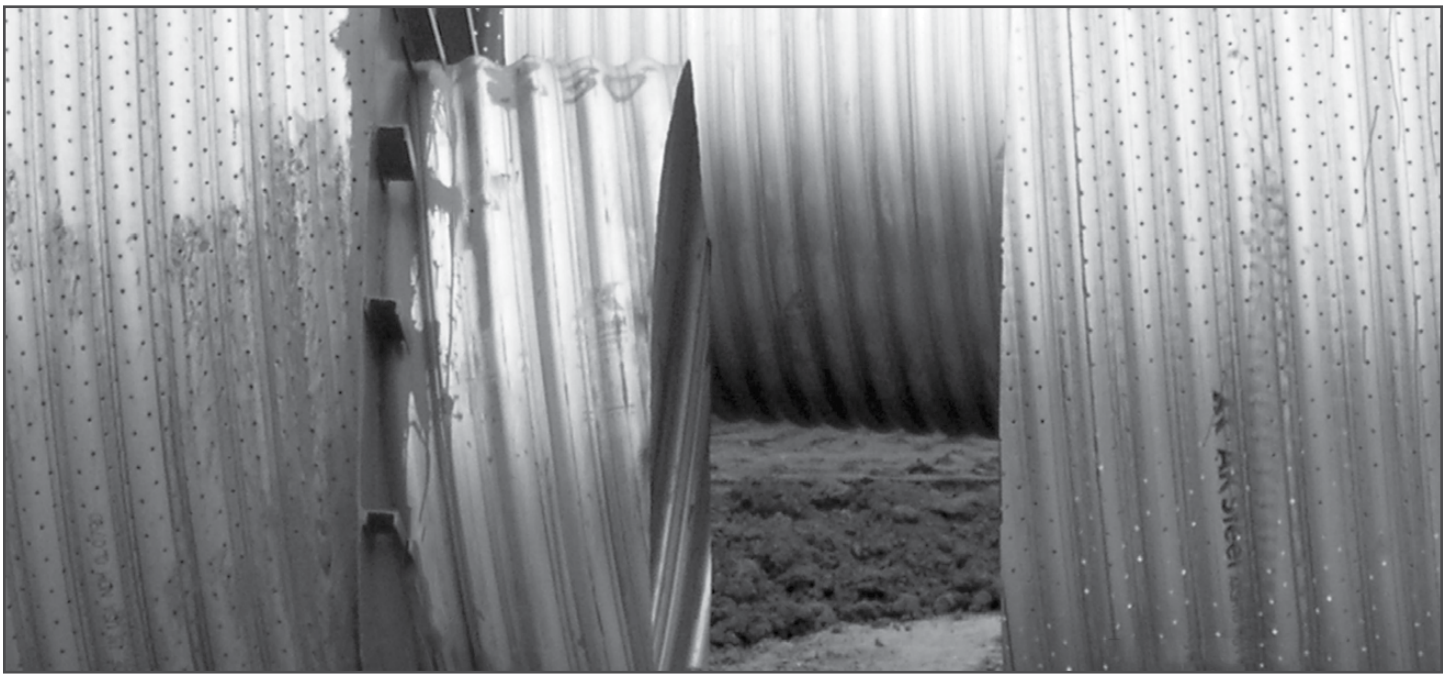
Maintenance

CMP detention systems should be cleaned when an inspection reveals accumulated sediment or trash is clogging the discharge orifice. Accumulated sediment and trash can typically be evacuated through the manhole over the outlet orifice. If maintenance is not performed as recommended, sediment and trash may accumulate in front of the outlet orifice. Manhole covers should be securely seated following cleaning activities. Contech suggests that all systems be designed with an access/inspection manhole situated at or near the inlet and the outlet orifice. Should it be necessary to get inside the system to perform maintenance activities, all appropriate precautions regarding confined space entry and OSHA regulations should be followed.

Annual inspections are best practice for all underground systems. During this inspection if evidence of salting/de-icing agents is observed within the system, it is best practice for the system to be rinsed, including above the spring line soon after the spring thaw as part of the maintenance program for the system.

Maintaining an underground detention or infiltration system is easiest when there is no flow entering the system. For this reason, it is a good idea to schedule the cleanout during dry weather.

The foregoing inspection and maintenance efforts help ensure underground pipe systems used for stormwater storage continue to function as intended by identifying recommended regular inspection and maintenance practices. Inspection and maintenance related to the structural integrity of the pipe or the soundness of pipe joint connections is beyond the scope of this guide.



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CMP DETENTION SYSTEMS

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Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

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CMP Detention and Infiltration Installation Guide



CMP Detention and Infiltration Installation Guide

Proper installation of a flexible underground detention system will ensure long-term performance. The configuration of these systems often requires special construction practices that differ from conventional flexible pipe construction. Contech recommends scheduling a preconstruction meeting with your local Contech Representative to determine if additional measures, not covered in this guide, are appropriate for your site.

Preconstruction Meeting

It is a best practice to have a pre-construction meeting with the installation contractor and Contech personnel. Included at the end of this guide is a preconstruction checklist to review prior to installation.

Proper Pipe Unloading, Handling and Placement

The pipe should be unloaded off the flatbed trailer with a fork lift, excavator, crane or other piece of construction equipment. The pipe should never be dropped or rolled off the flatbed trailer. Nylon slings or lifting lugs should be used to lift the pipe into place.

Normally the header row pipe section is placed on the downstream end. For detention systems with a single header row on one end and pipe with bulkheads on the other end; it is a best practice to start pipe placement on the header row end.



Lifting CMP off the flatbed with a front end loader and forks.



Lifting ALT2 CMP with nylon slings.



Lowering the header pipe section into place first.



Lifting polymer-coated CMP into place with nylon slings.

Foundation and Pipe Bedding

Construct a foundation that can support the design loading applied by the pipe and adjacent backfill weight as well as maintain its integrity during construction. If soft or unsuitable soils are encountered, remove the poor soils to a suitable depth and then replace with a competent granular material to the appropriate elevation. The granular material gradation should not allow the migration of fines, which can cause settlement of the detention system or pavement above. If the structural fill material is not compatible with the underlying soils a geotextile fabric should be used as a separator.

Grade the foundation subgrade to a uniform or slightly sloping grade. If the subgrade is clay or relatively non-porous and the construction sequence will last for an extended period of time, it is best to slope the grade to one end of the system. This will allow excess water to drain quickly, preventing saturation of the subgrade.

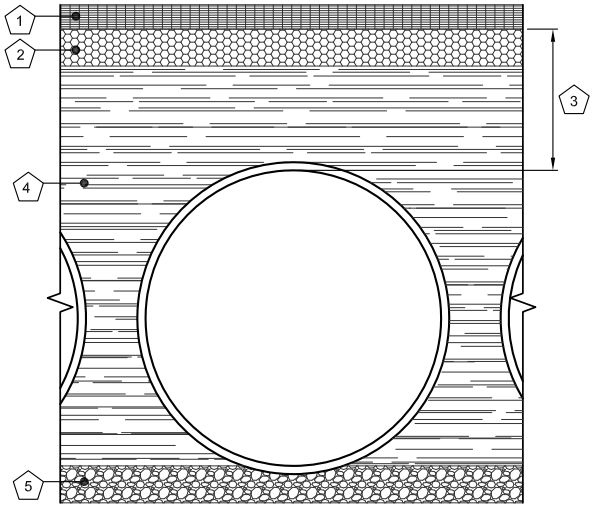
A 4" – 6" thick, well-graded granular material is preferred pipe bedding. If the existing foundation is made up of a course sand or other suitable granular material, imported bedding material will not be required.





Site conditions may require 4" – 6" of imported granular material as pipe bedding.

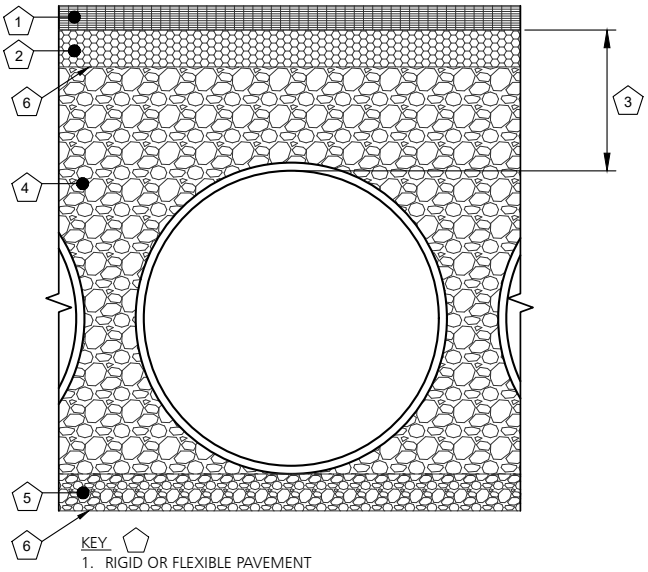
SOLIDWALL BACKFILL DETAIL



KEY ⬠

1. RIGID OR FLEXIBLE PAVEMENT
2. GRANULAR ROAD BASE
3. 12" MIN. FOR DIAMETERS THROUGH 96"
   18" MIN. FOR DIAMETERS FROM 102" AND LARGER MEASURED TO TOP OF RIGID OR BOTTOM OF FLEXIBLE PAVEMENT.
4. SELECT GRANULAR FILL PER AASHTO M145 A1, A2 OR A3 OR APPROVED EQUAL. PLACED IN 8" LIFTS (COMPACTED TO MIN. 90% STANDARD DENSITY PER AASHTO T99)
5. GRANULAR BEDDING, ROUGHLY SHAPED TO FIT THE BOTTOM OF PIPE, 4" TO 6" IN DEPTH.

PERFORATED BACKFILL DETAIL



KEY ⬠

1. RIGID OR FLEXIBLE PAVEMENT
2. GRANULAR ROAD BASE
3. 12" MIN. FOR DIAMETERS THROUGH 96"
   18" MIN. FOR DIAMETERS FROM 102" AND LARGER MEASURED TO TOP OF RIGID OR BOTTOM OF FLEXIBLE PAVEMENT.
4. FREE DRAINING ANGULAR WASHED STONE 3/4" - 2" MIN. PARTICLE SIZE.
5. GRANULAR BEDDING, ROUGHLY SHAPED TO FIT THE BOTTOM OF PIPE, 4" TO 6" IN DEPTH.
6. NON WOVEN GEOTEXTILE (IF REQUIRED), WRAPPING TRENCH ONLY. CONSULT GEOTECHNICAL EOR FOR PROJECT SPECIFIC BACKFILL REQUIREMENTS.

Connecting Bands

There are various types of connecting bands for connecting CMP. Hugger and corrugated bands are the most common. Flat gaskets or O-ring gaskets can also be used in conjunction with connecting bands to reduce leakage in the joints.



Installing a Hugger band on a perforated pipe.



Tightening bolts on a corrugated band.





Installation of band with flat neoprene gasket.







Some jobs may require special bands, such as rod and lug connection, flat bands, or dimple bands.

Geomembrane Barrier

An HDPE membrane liner will be placed on the crown of each pipe to provide an impermeable barrier against environmental changes that may adversely affect the system over time. The liner should extend beyond the 8 and 4 o'clock positions (crown) of the pipe. The HDPE liner is intended to help protect the pipe system from the potential adverse effects of de-icing salts, agricultural chemicals, including premature corrosion.





An HDPE liner is rolled out over the crown of the pipe prior to backfilling around the pipe.





For large diameter pipes, the liner is shipped in rolls that are folded in half. The liner is rolled out over the crown of the pipe, unfolded, and covered over the pipe from the nine and three o'clock position.

In-Situ Trench Wall

If excavation is required, the trench wall needs to be capable of supporting the load that the pipe sheds as the system is loaded. If soils are not capable of supporting these loads, the pipe can deflect. Perform a simple soil pressure check using the applied loads to determine the limits of excavation beyond the spring line of the outer most pipes.

In most cases, the requirements for a safe work environment and proper backfill placement and compaction take care of the concern. The contractor is responsible for the safety of his/her employees and agents.

Safe practices on construction work as outlined in the latest edition of the "Manual of Accident Prevention in Construction," published by the Associated General Contractors, shall be used as a guide and observed. The contractor shall comply with all applicable city, state, and federal safety codes in effect in the area where work is being performed. This conformance shall include the provisions of the current issue of the "OSHA Safety and Health Standards (29 CFR 1926/1910)" as published by the U.S. Department of Labor.

Backfill Material

Corrugated Steel Pipe is a flexible pipe. All buried flexible pipes are dependent on a quality backfill material for structural support. AASHTO refers to these pipe systems as, "Soil-Corrugated Metal Structure Interaction Systems". The best backfill material is an angular, well-graded, granular fill meeting the requirements of AASHTO A-1, A-2, or A-3. Aggregate materials that are free draining and compact easily such as crushed aggregate, crushed aggregate with fines, gravely sand, and coarse sand make good backfill. The aggregate particle size shall not exceed 3" in diameter.

For solid pipe, well graded or open graded granular material can be used as backfill. Infiltration pipe systems have a pipe perforation sized of 3/8" diameter. An open graded stone, with a particle size of ½" – 2 ½" diameter is recommended for backfill around perforated pipe.

Backfill using controlled low-strength material (CLSM, "flash fill", or "flowable fill") when the spacing between the pipes will not allow for placement and adequate compaction of the backfill.

EXAMPLES OF ACCEPTABLE BACKFILL MATERIAL



Course Sand



Crushed Limestone



Crushed Granite



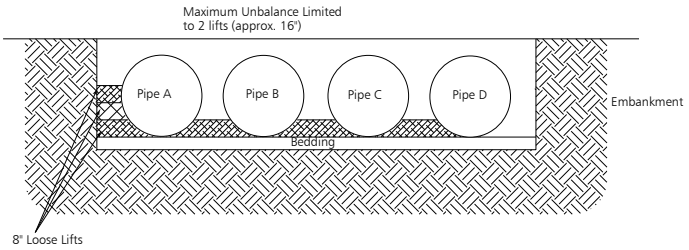
Crushed River Gravel

Backfill Placement

The backfill shall be placed in 8" +/- loose lifts and compacted to 90% AASHTO T99 standard proctor density. Material shall be worked into the pipe haunches by means of shovel-slicing, rodding, vibratory packer, or other effective methods. If AASHTO T99 procedures are determined infeasible by the geotechnical engineer of record, compaction is considered adequate when no further yielding of the material is observed under the compactor, or under foot, and the geotechnical engineer of record (or representative thereof) is satisfied with the level of compaction.

For large systems, conveyor systems, backhoes with long reaches may be used to place backfill. Once minimum cover for the construction loading across the entire width of the system is reached, advance the equipment to the end of the recently placed fill, and begin the sequence again until the system is completely backfilled. This type of construction sequence provides room for stockpiled backfill directly behind the backhoe, as well as the movement of construction traffic.

It is important to keep the elevation of backfill between pipes and side embankment evenly. As a rule of thumb, do not allow for backfill to exceed the elevation of one side of pipe to another pipe or one side of pipe to the outside trench/embankment by more than 24".

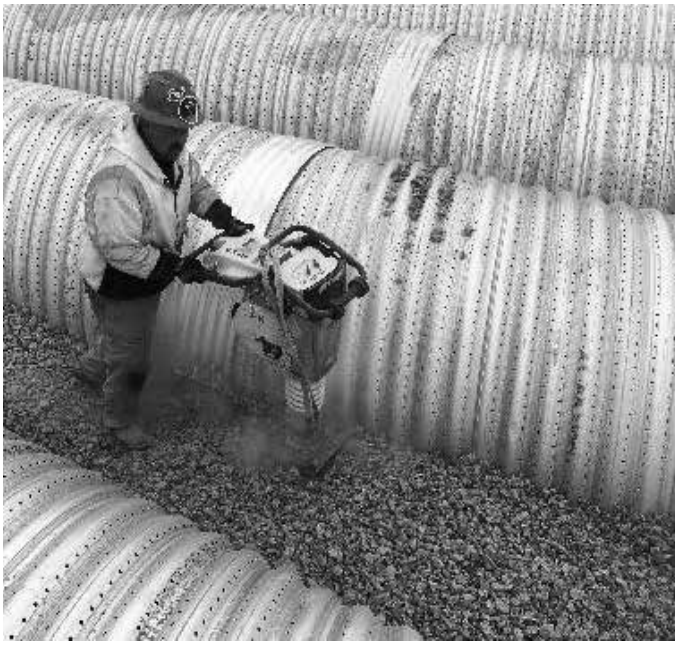


Material stockpiles on top of the backfilled detention system should be limited to 9' +/- high and must provide balanced loading across all barrels. To determine the proper minimum cover over the pipes to allow the movement of construction equipment, contact your local Contech Sales Engineer.

If CLSM or "flowable fill" is used as backfill, pipe flotation needs to be prevented. Typically, small lifts are placed between the pipes and then allowed to set-up prior to the placement of the next lift. The allowable thickness of the CLSM lift is a function of a proper balance between the uplift force of the CLSM, the opposing weight of the pipe, and the effect of other restraining measures. Your local Sales Engineer can help determine an appropriate lift thickness.



Placing backfill with a conveyor.



Compaction with vibratory equipment.

Final Cover Placement and Construction Loading

The minimum cover specified for a project normally assumes H-20 highway live loading. Backfill must be placed and fully compacted to the minimum cover level over the structure before the pipe is subjected to design loads. The minimum cover for AASHTO H-20 Live Loading per design section 12, is span of the pipe divided by eight plus asphalt pavement.

Construction loads often exceed design highway loading. During construction, keep heavy construction equipment that exceeds legal highway loads off the pipe. Light construction equipment on tracks such as a D-3 dozer (or lighter weight) may cross over the pipe when a minimum of 12" of compacted backfill is over pipe. Since construction equipment varies from job to job, it is best to address equipment specific minimum cover requirements with your local Contech Sales Engineer during your pre-construction meeting.

Minimum Height of Cover Requirements for Tracked Equipment
HEL-COR® Corrugated Steel Pipe[1]

Diameter (inches)	Minimum Cover (Ft)	Track Width (inches) Maximum Track Pressure at Surface (psi)			
		12	18	24	30
12 – 42	1.0	29	22	18	17
	1.5	58	41	34	30
	2.0	95	65	51	44
	2.5	138	91	70	59
	3.0	189	120	91	75
	4.0	321	195	143	115
48 – 66	1.0	10.6	8.0	6.9	6.2
	1.5	24	17	14.0	12.2
	2.0	39	26	21	18
	2.5	56	37	28	24
	3.0	77	49	37	30
	4.0	132	80	59	47
72 – 96	1.0	3.2	2.5	2.1	1.9
	1.5	8.8	6.2	5.0	4.4
	2.0	16	11.1	8.8	7.5
	2.5	24	15.0	12.0	10.1
	3.0	32	20	15	12.9
	4.0	56	34	25	20
102 – 120	1.0	2.8	2.1	1.7	1.6
	1.5	6.9	4.9	3.9	3.4
	2.0	14.8	10.1	8.0	6.7
	2.5	21	14.2	10.9	9.1
	3.0	29	18	14.1	11.6
	4.0	51	31	22	18
126 – 144	1.0	2.8	2.1	1.7	1.5
	1.5	6.0	4.3	3.5	3.0
	2.0	12.0	8.0	6.4	5.4
	2.5	21	14.0	10.6	8.9
	3.0	29	18	13.9	11.4
	4.0	50	30	22	18

1 *The values in this table represent the maximum ground pressure permitted when performing reasonable work over the pipes, using the manufacture's published equipment specifications. (Ground pressure for track equipment is the vehicle operating weight divided by the total ground contact area for both tracks.) This table is to be used as a guide. Talk to your Contech representative if you have questions about the equipment you plan on operating over the pipes. Care should be taken to maintain adequate cover depth during construction activities.*



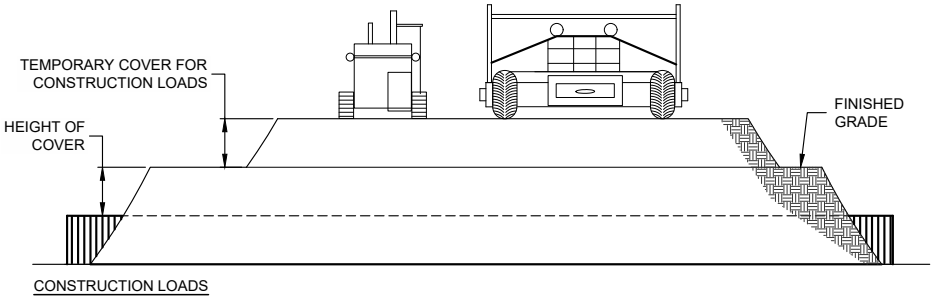


Examples of light, tracked, construction equipment used to place final cover over the pipe system.





Examples of heavy construction equipment that may require additional minimal cover. Contech can help evaluate minimum cover for the installation contractor for all the equipment on the site.



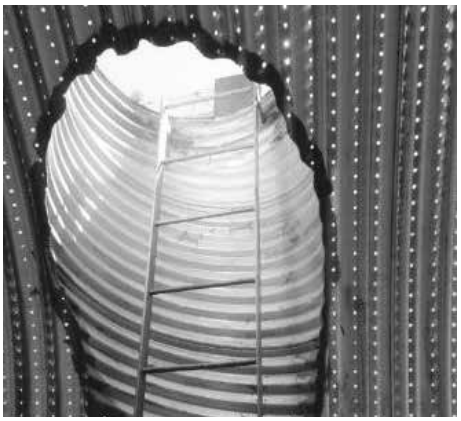
FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

Minimum Height of Cover Requirements for Rubber-Tired Equipment Over HEL-COR® CSP

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

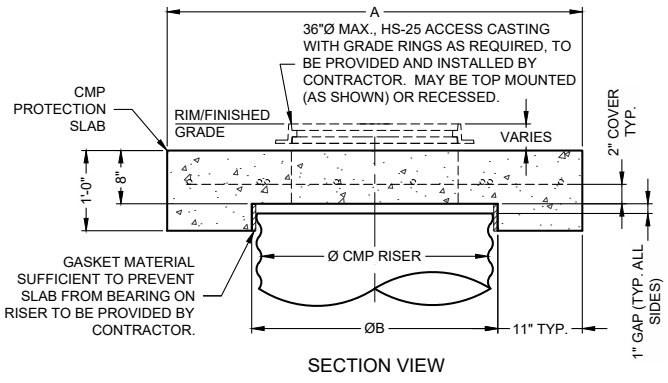
CMP Manhole Risers

CMP manhole risers allow easy access for future maintenance of the system. If the system is installed under a parking lot or road way subject to live loads, care must be taken to ensure loads are not applied directly to the riser structure. A pre-cast or cast-in-place slab should be installed above the riser. The manhole lid and frame should not rest directly on the CMP riser.









SECTION VIEW

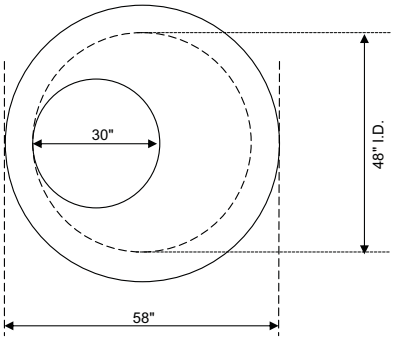
Reinforcing Table				
Ø CMP Riser	A	ØB	Reinforcing	Bearing Pressure** (psf)
24	4′Ø 4′ x 4′	26″	#5 @ 10″ OCEW #5 @ 10″ OCEW	2,540 1,900
30″	4′-6″Ø 4′-6″ x 4′-6″	32″	#5 @ 10″ OCEW #5 @ 9″ OCEW	2,260 1,670
36″	5′Ø 5′ x 5′	38″	#5 @ 9″ OCEW #5 @ 8″ OCEW	2,060 1,500
42″	5′-6″Ø 5′-6″ x 5′-6″	44″	#5 @ 8″ OCEW #5 @ 8″ OCEW	1,490 1,370
48″	6′Ø 6′ x 6′	50″	#5 @ 7″ OCEW #5 @ 7″ OCEW	1,210 1,270

*** Assumed soil bearing capacity.*

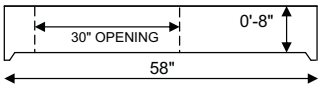
Precast Option for Manhole Riser Caps



PLAN VIEW



SECTION



NOTES:

A.) 4000 P.S.I. CONCRETE

B.) GRADE 60 REINFORCING PER ASTM A-615

C.) BUTYL SEALANT IN JOINTS

Additional Considerations

Because most systems are constructed below-grade, rainfall can rapidly fill the excavation; potentially causing floatation and movement of the previously placed pipes. To help mitigate potential problems, it is best to start the installation at the downstream end with the outlet already constructed to allow a route for the water to escape. Temporary diversion measures may be required for high flows due to the restricted nature of the outlet pipe.

CMP Preconstruction Checklist

Contech Field Contact and Phone: _____

Contech Plant Contact and Phone: _____

Contractor Contact and Phone: _____

Project Name: _____

Site Address: _____

Pre-con Attendees: _____

Topics to Review:

- ☐ Truck access and pipe storage availability/expectation
- ☐ Pipe unloading and handling safety, equipment and procedures
- ☐ System layout and shop drawing review
- ☐ Shipping schedule and installation sequence
- ☐ Joint configuration and assembly
- ☐ Connection with unlike storm sewer materials
- ☐ Backfill material selection and placement strategy
- ☐ Backfill sequence, lift thickness and balanced loading
- ☐ Compaction requirement (90%) and equipment
- ☐ Additional cover requirements for heavy construction loads
- ☐ CMP riser concrete cap installation

Notes: _____



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SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

CMP Detention Install Guide 11/23

Outdoor Loading/Unloading SC-30

Description

The loading/unloading of materials usually takes place outside on docks or terminals; therefore, materials spilled, leaked, or lost during loading/unloading may collect in the soil or on other surfaces and have the potential to be carried away by wind, stormwater runoff or when the area is cleaned. Additionally, rainfall may wash pollutants from machinery used to unload or move materials. Implementation of the following protocols will prevent or reduce the discharge of pollutants to stormwater from outdoor loading/unloading of materials.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- Park tank trucks or delivery vehicles in designated areas so that spills or leaks can be contained.
- Limit exposure of material to rainfall whenever possible.
- Prevent stormwater run-on.
- Check equipment regularly for leaks.



Good Housekeeping

- Develop an operations plan that describes procedures for loading and/or unloading.
- Conduct loading and unloading in dry weather if possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION®

- Cover designated loading/unloading areas to reduce exposure of materials to rain.
- Consider placing a seal or door skirt between delivery vehicles and building to prevent exposure to rain.
- Design loading/unloading area to prevent stormwater run-on, which would include grading or berming the area, and position roof downspouts so they direct stormwater away from the loading/unloading areas.
- Have employees load and unload all materials and equipment in covered areas such as building overhangs at loading docks if feasible.
- Load/unload only at designated loading areas.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections. Several drip pans should be stored in a covered location near the liquid transfer area so that they are always available, yet protected from precipitation when not in use. Drip pans can be made specifically for railroad tracks. Drip pans must be cleaned periodically, and drip collected materials must be disposed of properly.
- Pave loading areas with concrete instead of asphalt.
- Avoid placing storm drains inlets in the area.
- Grade and/or berm the loading/unloading area with drainage to sump; regularly remove materials accumulated in sump.



Spill Response and Prevention Procedures

- Keep your spill prevention and control plan up-to-date or have an emergency spill cleanup plan readily available, as applicable.
- Contain leaks during transfer.
- Store and maintain appropriate spill cleanup materials in a location that is readily accessible and known to all employees.
- Ensure that employees are familiar with the site's spill control plan and proper spill cleanup procedures.
- Use drip pans or comparable devices when transferring oils, solvents, and paints.



Material Handling and Waste Management

- Spot clean leaks and drips routinely to prevent runoff of spillage.
- Do not pour liquid wastes into floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections.

- Do not put used or leftover cleaning solutions, solvents, and automotive fluids in the storm drain or sanitary sewer.
- Collect leaking or dripping fluids in drip pans or containers. Fluids are easier to recycle if kept separate.
- Promptly transfer used fluids to the proper waste or recycling drums. Do not leave drip pans or other open containers lying around.
- Minimize the possibility of stormwater pollution from outside waste receptacles by doing at least one of the following:
  - ✓ Use only watertight waste receptacle(s) and keep the lid(s) closed.
  - ✓ Grade and pave the waste receptacle area to prevent run-on of stormwater.
  - ✓ Install a roof over the waste receptacle area.
  - ✓ Install a low containment berm around the waste receptacle area.
  - ✓ Use and maintain drip pans under waste receptacles.
- Post "no littering" signs.
- Perform work area clean-up and dry sweep after daily operations.



Employee Training Program

- Train employees (e.g., fork lift operators) and contractors on proper spill containment and cleanup.
- Have employees trained in spill containment and cleanup present during loading/unloading.
- Train employees in proper handling techniques during liquid transfers to avoid spills.
- Make sure forklift operators are properly trained on loading and unloading procedures.



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document activities performed, quantities of materials removed, and improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Establish procedures to complete logs and file them in the central office.
- Keep accurate logs of daily clean-up operations.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing and time limitations that may preclude implementation of BMPs. Provided below are typical limitations and recommended "work-arounds."

- Space and time limitations may preclude all transfers from being performed indoors or under cover.
  - ✓ Designate specific areas for outdoor loading and unloading.
  - ✓ Require employees to understand and follow spill and leak prevention BMPs.
- It may not be possible to conduct transfers only during dry weather.
  - ✓ Limit materials and equipment rainfall exposure to all extents practicable.
  - ✓ Require employees to understand and follow spill and leak prevention BMPs.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

Many facilities will already have indoor or covered areas where loading/unloading takes place and will require no additional capital expenditures.

If outdoor activities are required, construction of berms or other means to retain spills and leaks may require appropriate constructed systems for containment. These containment areas may require significant new capital investment.

Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

Most of the operations and maintenance activities associated with implementing this BMP are integrally linked to routine operations as previously described. Therefore additional O&M is not required.

- Conduct regular inspections and make repairs and improvements as necessary.
- Check loading and unloading equipment regularly for leaks.
- Conduct regular broom dry-sweeping of area. Do not wash with water.

Supplemental Information

Loading and Unloading of Liquids

- Loading or unloading of liquids should occur in the manufacturing building so that any spills that are not completely retained can be discharged to the sanitary sewer,

treatment plant, or treated in a manner consistent with local sewer authorities and permit requirements.

- For loading and unloading tank trucks to above and below ground storage tanks, the following procedures should be used:
  - ✓ The area where the transfer takes place should be paved. If the liquid is reactive with the asphalt, Portland cement should be used to pave the area.
  - ✓ The transfer area should be designed to prevent run-on of stormwater from adjacent areas. Sloping the pad and using a curb, like a speed bump, around the uphill side of the transfer area should reduce run-on.
  - ✓ The transfer area should be designed to prevent runoff of spilled liquids from the area. Sloping the area to a drain should prevent runoff. The drain should be connected to a dead-end sump or to the sanitary sewer. A positive control valve should be installed on the drain.
- For transfer from rail cars to storage tanks that must occur outside, use the following procedures:
  - ✓ Drip pans should be placed at locations where spillage may occur, such as hose connections, hose reels, and filler nozzles. Use drip pans when making and breaking connections.
  - ✓ Drip pan systems should be installed between the rails to collect spillage from tank cars.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

New Jersey Department of Environmental Protection, 2013. *Basic Industrial Stormwater General Permit Guidance Document NJPDES General Permit No NJ0088315*. Available online at: http://www.nj.gov/dep/dwq/pdf/5G2_guidance_color.pdf.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities.

Oregon Department of Environmental Quality, 2013. *Industrial Stormwater Best Management Practices Manual- BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.deq.state.or.us/wq/wqpermit/docs/IndBMP021413.pdf.

Sacramento Stormwater Management Program, *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Sacramento County Environmental Management Stormwater Program: *Best Management Practices*. Available online at: http://www.emd.saccounty.net/EnvHealth/Stormwater/Stormwater-BMPs.html.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp-w2k.com/.

US EPA. National Pollutant Discharge Elimination System – Industrial Fact Sheet Series for Activities Covered by EPA's Multi Sector General Permit. Available online at: http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm.

Waste Handling & Disposal SC-34

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, reuse, and recycling; and preventing run-on and runoff.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Accomplish reduction in the amount of waste generated using the following source controls:
  - ✓ Production planning and sequencing;
  - ✓ Process or equipment modification;
  - ✓ Raw material substitution or elimination;
  - ✓ Loss prevention and housekeeping;
  - ✓ Waste segregation and separation; and
  - ✓ Close loop recycling.
- ☐ Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- ☐ Recycle materials whenever possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- Use the entire product before disposing of the container.
- To the extent possible, store wastes under cover or indoors after ensuring all safety concerns such as fire hazard and ventilation are addressed.
- Provide containers for each waste stream at each work station. Allow time after shift to clean area.



Good Housekeeping

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater run-on and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain. Clean in a designated wash area that drains to a clarifier.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil or demarcate storm drains on the facility's property with prohibitive message regarding waste disposal.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- If possible, move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.



Preventative Maintenance

- Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent waste materials from directly contacting rain.

- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, vacuuming, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.



Spill Response and Prevention Procedures

- Keep your spill prevention and plan up-to-date.
- Have an emergency plan, equipment and trained personnel ready at all times to deal immediately with major spills.
- Collect all spilled liquids and properly dispose of them.
- Store and maintain appropriate spill cleanup materials in a location known to all near the designated wash area.
- Ensure that vehicles transporting waste have spill prevention equipment that can prevent spills during transport. Spill prevention equipment includes:
  - ✓ Vehicles equipped with baffles for liquid waste; and
  - ✓ Trucks with sealed gates and spill guards for solid waste.



Material Handling and Waste Management

Litter Control

- Post "No Littering" signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- Keep waste collection areas clean.

- ☐ Inspect solid waste containers for structural damage regularly. Repair or replace damaged containers as necessary.
- ☐ Secure solid waste containers; containers must be closed tightly when not in use.
- ☐ Do not fill waste containers with washout water or any other liquid.
- ☐ Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc., may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).
- ☐ Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal. Affix labels to all waste containers.

Chemical/Hazardous Wastes

- ☐ Select designated hazardous waste collection areas on-site.
- ☐ Store hazardous materials and wastes in covered containers and protect them from vandalism.
- ☐ Place hazardous waste containers in secondary containment.
- ☐ Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- ☐ Hazardous waste cannot be reused or recycled; it must be disposed of by a licensed hazardous waste hauler.



Employee Training Program

- ☐ Educate employees about pollution prevention measures and goals.
- ☐ Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- ☐ Train employees and subcontractors in proper hazardous waste management.
- ☐ Use a training log or similar method to document training.
- ☐ Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.



Quality Assurance and Record Keeping

- ☐ Keep accurate maintenance logs that document minimum BMP activities performed for waste handling and disposal, types and quantities of waste disposed of, and any improvement actions.
- ☐ Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.

- Establish procedures to complete logs and file them in the central office.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and the types of waste handled. Significant capital costs may be associated with reducing wastes by modifying processes or implementing closed-loop recycling.
- Many facilities will already have indoor covered areas where waste materials will be stored and will require no additional capital expenditures for providing cover.
- If outdoor storage of wastes is required, construction of berms or other means to prevent stormwater run-on and runoff may require appropriate constructed systems for containment.
- Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

New Jersey Department of Environmental Protection, 2013. *Basic Industrial Stormwater General Permit Guidance Document NJPDES General Permit No NJ0088315,* Revised. Available online at: http://www.nj.gov/dep/dwq/pdf/5G2_guidance_color.pdf.

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Oregon Department of Environmental Quality, 2013. *Industrial Stormwater Best Management Practices Manual- BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.deq.state.or.us/wq/wqpermit/docs/IndBMP021413.pdf.

Sacramento Stormwater Management Program. *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Sacramento County Environmental Management Stormwater Program: Best Management Practices. Available online at: http://www.emd.saccounty.net/EnvHealth/Stormwater/Stormwater-BMPs.html.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp-w2k.com/

US EPA. National Pollutant Discharge Elimination System – Industrial Fact Sheet Series for Activities Covered by EPA's Multi Sector General Permit. Available online at: http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm.

Building & Grounds Maintenance SC-41



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	
Organics	

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, abnormal pH, and oils and greases. Utilizing the protocols in this fact sheet will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Encourage proper lawn management and landscaping, including use of native vegetation.

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- Encourage use of Integrated Pest Management techniques for pest control.
- Encourage proper onsite recycling of yard trimmings.
- Recycle residual paints, solvents, lumber, and other material as much as possible.

Suggested Protocols

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used, and the surrounding area is paved, wash runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.
- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement.

Landscaping Activities

- Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, or by composting. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures on exposed soils.

Building Repair, Remodeling, and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paintbrushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.
- Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. This is particularly necessary on rainy days. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.

- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. If directed off-site, you should direct the water through hay bales and filter fabric or use other sediment filters or traps.
- Store toxic material under cover during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Mowing, Trimming, and Planting

- Dispose of leaves, sticks, or other collected vegetation as garbage, by composting or at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures when soils are exposed.
- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Consider an alternative approach when bailing out muddy water: do not put it in the storm drain; pour over landscaped areas.
- Use hand weeding where practical.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.
- Use less toxic pesticides that will do the job when applicable. Avoid use of copper-based pesticides if possible.
- Do not use pesticides if rain is expected.
- Do not mix or prepare pesticides for application near storm drains.
- Use the minimum amount needed for the job.
- Calibrate fertilizer distributors to avoid excessive application.
- Employ techniques to minimize off-target application (e.g., spray drift) of pesticides, including consideration of alternative application techniques.
- Apply pesticides only when wind speeds are low.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Dispose of empty pesticide containers according to the instructions on the container label.

- Use up the pesticides. Rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and County Agricultural Commissioner. Provide secondary containment for pesticides.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering and repair leaks in the irrigation system as soon as they are observed.

Training

- Educate and train employees on pesticide use and in pesticide application techniques to prevent pollution.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Be sure the frequency of training takes into account the complexity of the operations and the nature of the staff.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials, such as brooms, dustpans, and vacuum sweepers (if desired) near the storage area where it will be readily accessible.
- Have employees trained in spill containment and cleanup present during the loading/unloading of dangerous wastes, liquid chemicals, or other materials.
- Familiarize employees with the Spill Prevention Control and Countermeasure Plan.
- Clean up spills immediately.

Other Considerations

Alternative pest/weed controls may not be available, suitable, or effective in many cases.

Requirements

Costs

- Cost will vary depending on the type and size of facility.
- Overall costs should be low in comparison to other BMPs.

Maintenance

Sweep paved areas regularly to collect loose particles. Wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

Supplemental Information

Further Detail of the BMP

Fire Sprinkler Line Flushing

Building fire sprinkler line flushing may be a source of non-stormwater runoff pollution. The water entering the system is usually potable water, though in some areas it may be non-potable reclaimed wastewater. There are subsequent factors that may drastically reduce the quality of the water in such systems. Black iron pipe is usually used since it is cheaper than potable piping, but it is subject to rusting and results in lower quality water. Initially, the black iron pipe has an oil coating to protect it from rusting between manufacture and installation; this will contaminate the water from the first flush but not from subsequent flushes. Nitrates, poly-phosphates and other corrosion inhibitors, as well as fire suppressants and antifreeze may be added to the sprinkler water system. Water generally remains in the sprinkler system a long time (typically a year) and between flushes may accumulate iron, manganese, lead, copper, nickel, and zinc. The water generally becomes anoxic and contains living and dead bacteria and breakdown products from chlorination. This may result in a significant BOD problem and the water often smells. Consequently dispose fire sprinkler line flush water into the sanitary sewer. Do not allow discharge to storm drain or infiltration due to potential high levels of pollutants in fire sprinkler line water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Mobile Cleaners Pilot Program: Final Report. 1997. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Drainage System Maintenance SC-44

Description

As a consequence of its function, the stormwater drainage facilities on site convey stormwater that may contain certain pollutants either to the offsite conveyance system that collects and transports urban runoff and stormwater, or directly to receiving waters. The protocols in this fact sheet are intended to reduce pollutants leaving the site to the offsite drainage infrastructure or to receiving waters through proper on-site conveyance system operation and maintenance. The targeted constituents will vary depending on site characteristics and operations.

Approach

Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.
- ☐ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.

Good Housekeeping

Illicit Connections and Discharges

- ☐ Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- ✓ Identify evidence of spills such as paints, discoloring, odors, etc.
- ✓ Record locations of apparent illegal discharges/illicit connections.
- ✓ Track flows back to potential discharges and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- ✓ Eliminate the discharge once the origin of flow is established.

□ Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" or similar stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.

□ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.

Illegal Dumping

□ Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.

□ Establish a system for tracking incidents. The system should be designed to identify the following:

- ✓ Illegal dumping hot spots;
- ✓ Types and quantities (in some cases) of wastes;
- ✓ Patterns in time of occurrence (time of day/night, month, or year);
- ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills); and
- ✓ Responsible parties.

□ Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.

□ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.



Preventative Maintenance

Catch Basins/Inlet Structures

□ Staff should regularly inspect facilities to ensure compliance with the following:

- ✓ Immediate repair of any deterioration threatening structural integrity.
- ✓ Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.

- ☐ Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- ☐ Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Prioritize storm drain inlets; clean and repair as needed.
- ☐ Keep accurate logs of the number of catch basins cleaned.
- ☐ Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- ☐ Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- ☐ Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- ☐ Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- ☐ Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- ☐ Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- ☐ Conduct routine maintenance at each pump station.
- ☐ Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- ☐ Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- ☐ Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Wildlife. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Army Corps of Engineers and USFWS.



Spill Response and Prevention Procedures

- ☐ Keep your spill prevention control plan up-to-date.

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.



Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- Train employees and subcontractors in proper hazardous waste management.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - ✓ OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
  - ✓ OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
  - ✓ Procedural training (field screening, sampling, smoke/dye testing, TV inspection).



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for drainage system maintenance, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Keep accurate logs of illicit connections, illicit discharges, and illegal dumping into the storm drain system including how wastes were cleaned up and disposed.
- Establish procedures to complete logs and file them in the central office.

Potential Limitations and Work-Arounds

Provided below are typical limitations and recommended "work-arounds" for drainage system maintenance:

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.

  - ✓ Perform all maintenance onsite and do not flush accumulated material downstream to private property or riparian habitats.

- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, and liquid/sediment disposal.

  - ✓ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.

- Regulations may include adoption of substantial penalties for illegal dumping and disposal.

  - ✓ Do not dump illegal materials anywhere onsite.

  - ✓ Identify illicit connections, illicit discharge, and illegal dumping.

  - ✓ Cleanup spills immediately and properly dispose of wastes.

- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the sanitary sewer system.

  - ✓ Collect all materials and pollutants accumulated in drainage system and dispose of according to local regulations.

  - ✓ Install debris excluders in areas with a trash TMDL.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and characteristics of the drainage system. Significant capital costs may be associated with purchasing water trucks, vacuum trucks, and any other necessary cleaning equipment or improving the drainage infrastructure to reduce the potential .

- Developing and implementing a site specific drainage system maintenance plan will require additional capital if a similar program is not already in place.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.
- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Supplemental Information

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used if allowed or that fire hydrant line flushing coincide with storm sewer flushing.

References and Resources

City of Seattle, Seattle Public Utilities Department of Planning and Development, 2009. *Stormwater Manual Vol. 1 Source Control Technical Requirements Manual.*

Knox County Tennessee *Stormwater Management Manual* Chapter 5 Drainage System Maintenance, 2008. Available online at: http://www.knoxcounty.org/stormwater/manual/Volume%201/knoxco_swmm_v1_chap5_jan2008.pdf.

US EPA. Storm Drain System Cleaning, 2012. Available online at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=102.

Thrifty Oil Warehouse

(PPT230048, PDA8407, OAPL2300972)

NOISE AND VIBRATION ANALYSIS

COUNTY OF RIVERSIDE

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FEBRUARY 29, 2024

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LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
MARB/IPA	March Air Reserve Base/Inland Port Airport
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Thrifty Oil Warehouse
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Thrifty Oil Warehouse development ("Project"). The Project site is located on the southeast corner of Tobacco Road and Placentia Avenue at 23641 Placentia Avenue in unincorporated County of Riverside. The proposed Project includes the development of a 186,695-square-foot warehouse building which includes 171,695 square feet of warehousing use and 15,000 square feet of office space (7,500 square feet on first and second floors). This noise study has been prepared to satisfy applicable County of Riverside noise standards and significance criteria based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

The results of this Noise and Vibration Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	7	*Less Than Significant*	-
Operational Noise	9	*Less Than Significant*	-
Project Construction Noise	10	*Less Than Significant*	-
Nighttime Concrete Pour		*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Thrifty Oil Warehouse ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed project is located on the southeast corner of Tobacco Road and Placentia Avenue at 23641 Placentia Avenue in unincorporated County of Riverside, as shown on Exhibit 1-A.

1.2 PROJECT DESCRIPTION

The proposed Project includes the development of a 186,695-square-foot warehouse building which includes 171,695 square feet of warehousing use and 15,000 square feet of office space (7,500 square feet on first and second floors). A preliminary site plan for the proposed Project is shown on Exhibit 1-B. The Project is anticipated to have an Opening Year of 2026

The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, parking lot vehicle activities, trash enclosure activity, and truck movements. This noise analysis is intended to describe the noise level impacts associated with the expected typical operational activities at the Project site.

EXHIBIT 1-A: LOCATION MAP

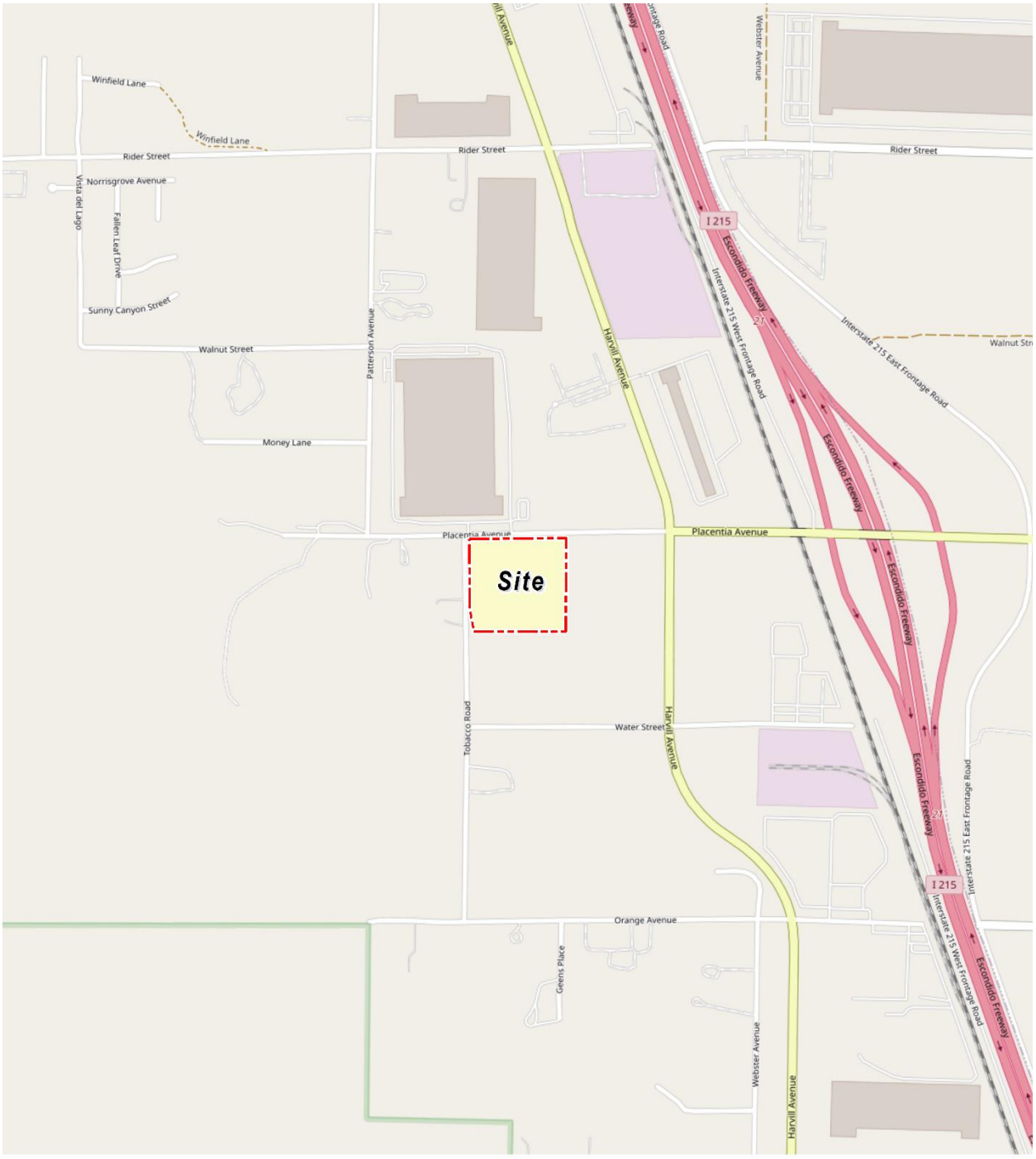
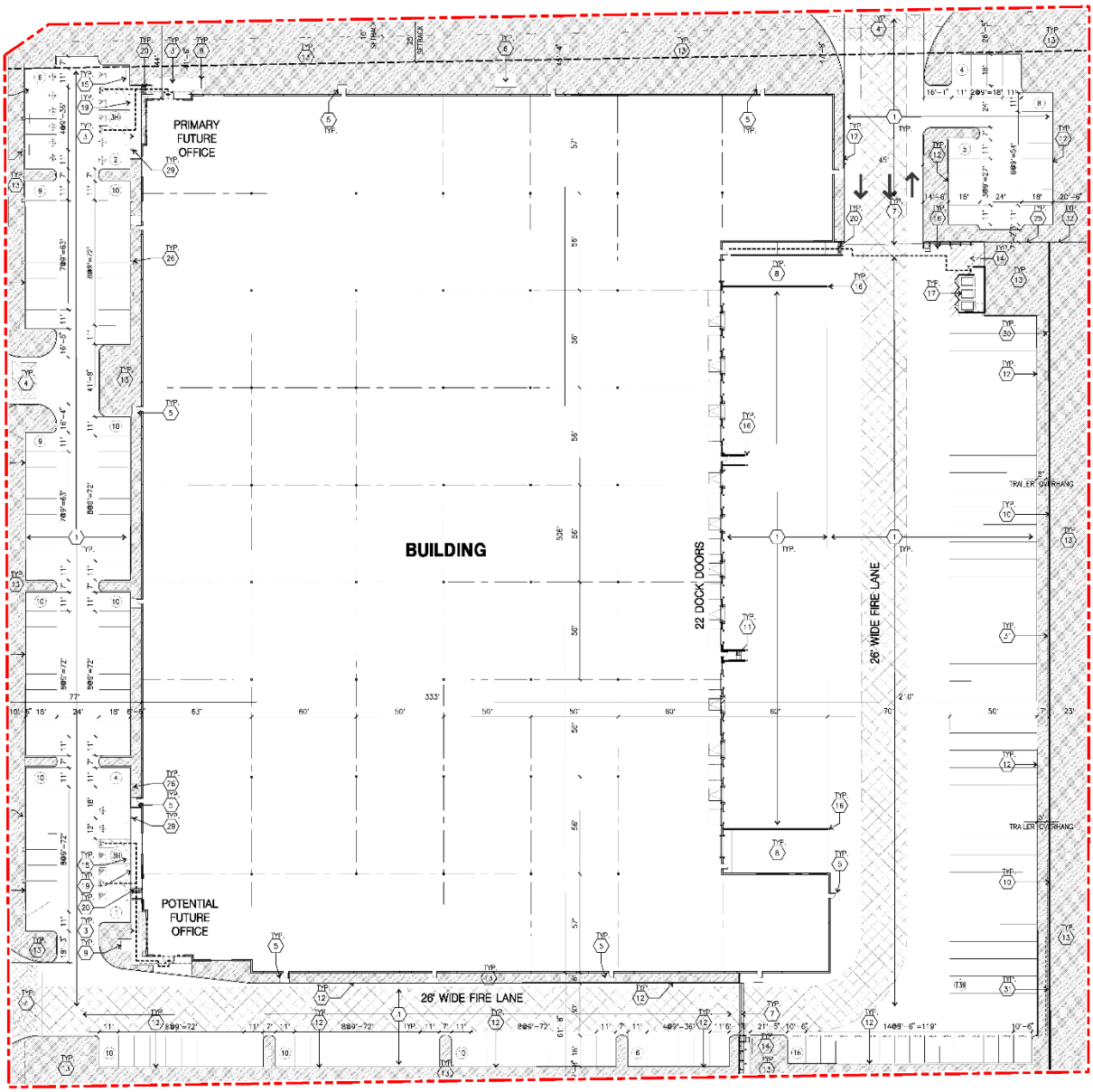


EXHIBIT 1-B: PRELIMINARY SITE PLAN



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2 FUNDAMENTALS

Noise is simply defined as *unwanted sound*. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (2) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 1,000 feet, which can cause serious discomfort. (3) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used metric is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when noise can become more intrusive. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The County of Riverside relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (2)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually

sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (4)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (2)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of-sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure. (5)

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must block the line-of-sight path of sound from the noise source.

2.6 LAND USE COMPATIBILITY WITH NOISE

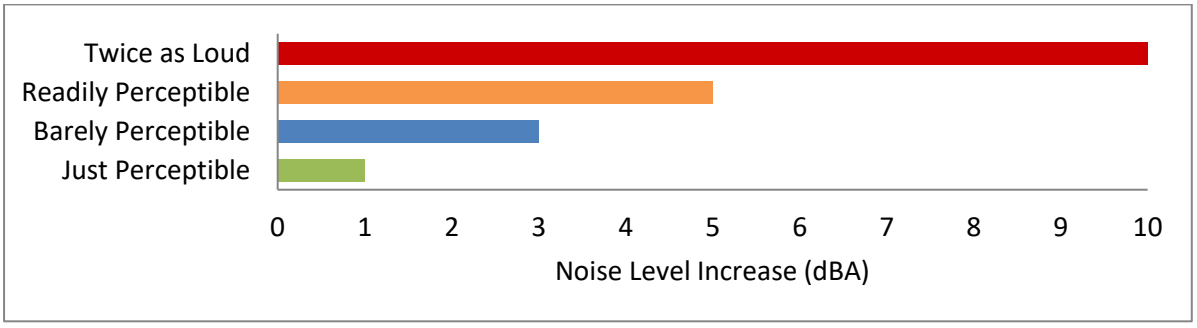
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (6)

2.7 COMMUNITY RESPONSE TO NOISE

Approximately sixteen percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints may occur. Twenty to thirty percent of the population will not complain even in very severe noise environments. (7 pp. 8-6) Thus, a variety of reactions can be expected from people exposed to any given noise environment.

Surveys have shown that community response to noise varies from no reaction to vigorous action for newly introduced noises averaging from 10 dB below existing to 25 dB above existing. (8) According to research originally published in the Noise Effects Handbook (7), the percentage of high annoyance ranges from approximately 0 percent at 45 dB or less, 10 percent are highly annoyed around 60 dB, and increases rapidly to approximately 70 percent being highly annoyed at approximately 85 dB or greater. Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA is considered barely perceptible, and changes of 5 dBA are considered readily perceptible. (4)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



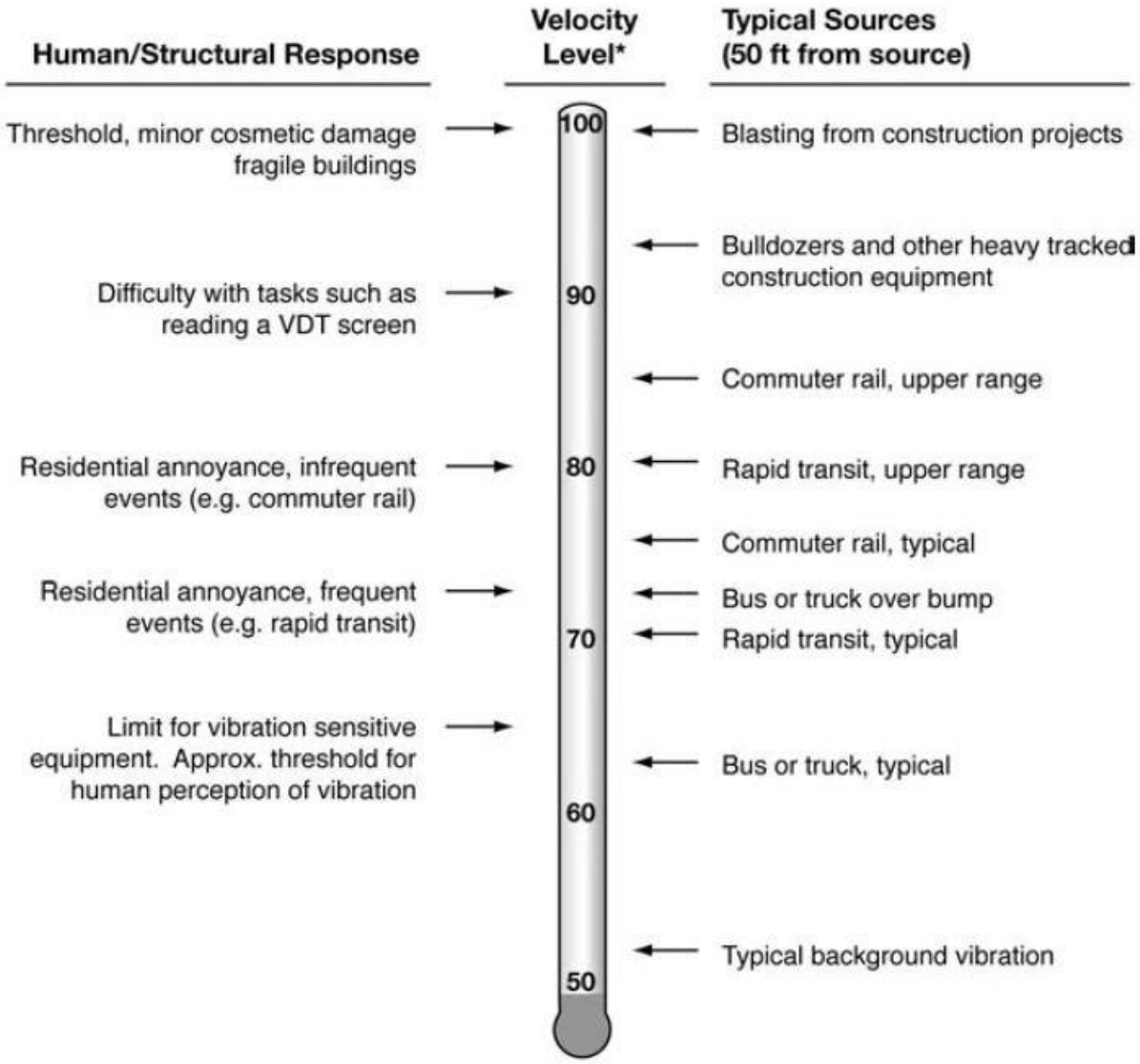
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual*, vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

Additionally, in contrast to airborne noise, ground-borne vibration outdoors is not a common environmental problem and annoyance from ground-borne vibration is almost exclusively an indoor phenomenon (8). Therefore, the effects of vibrations should only be evaluated at a structure and the effects of the building structure on the vibration should be considered. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. In contrast, large masonry buildings with spread footings have a low response to ground vibration (8). In general, the heavier a building is, the lower the response will be to the incident vibration energy. However, all structurers reduce vibration levels due to the coupling of the building to the soil. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal (8). The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body (8). However, the RMS amplitude and PPV are related mathematically, and the RMS amplitude of equipment is typically calculated from the PPV reference level. The RMS amplitude is approximately 70% of the PPV (9). Thus, either can be used in the description of vibration impacts.

While not universally accepted, vibration decibel notation (VdB) is another vibration notation developed and used by the FTA in their guidance manual to describe vibration levels and provide a background of common vibration levels and set vibration limits. (8) Decibel notation (VdB) serves to reduce the range of numbers used to describe vibration levels and is used in this report to describe vibration levels. As stated in the FTA guidance manual, the background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual.

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (10) OPR identifies suggested land use noise compatibility levels as part of its General Plan Guidelines. These suggested guidelines provide planners with a tool to gauge the compatibility of land uses relative to existing and future noise levels. The guidelines identify normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable noise levels for various land uses. The land use compatibility guidelines are intended to be an advisory resource when considering changes in land use and policies, such as zoning modifications. In addition, the State through the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 COUNTY OF RIVERSIDE GENERAL PLAN NOISE ELEMENT

The County of Riverside has adopted a Noise Element of the General Plan to control and abate environmental noise, and to protect the citizens of the County of Riverside from excessive exposure to noise. (11) The Noise Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies several polices to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect County of Riverside residents from excessive noise, the Noise Element contains the following policies related to the Project:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

N 1.3 Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:

- *Schools*

- *Hospitals*
- *Rest Homes*
- *Long Term Care Facilities*
- *Mental Care Facilities*
- *Residential Uses*
- *Libraries*
- *Passive Recreation Uses*
- *Places of Worship*

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

N 4.1 Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels:

a. 45 dBA 9-minute L_{eq} between 10:00 p.m. and 7:00 a.m.;

b. 65 dBA 9-minute L_{eq} between 7:00 a.m. and 10:00 p.m.

N 13.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.

N 13.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.

N 13.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the [County] for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

i. Temporary noise attenuation fences;

ii. Preferential location and equipment; and

iii. Use of current noise suppression technology and equipment.

N 14.1 Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows, and dense construction materials.

N 16.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.

To ensure noise-sensitive land uses are protected from high levels of noise (N 1.1), Table N-1 of the Noise Element identifies guidelines to evaluate proposed developments based on exterior and interior noise level limits for land uses and requires a noise analysis to determine needed mitigation measures if necessary. The Noise Element identifies residential use as noise-sensitive land use (N 1.3) and discourages new development in areas with transportation related levels of 65 dBA CNEL or greater existing ambient noise levels. To prevent and mitigate noise impacts for its residents (N 1.5), County of Riverside requires exterior noise attenuation measures for sensitive land use exposed to transportation related noise levels higher than 65 dBA CNEL. In addition, the County of Riverside had adopted an interior noise level limit of 45 dBA CNEL (N 14.1).

Policy N 4.1 of the Noise Element sets a stationary-source exterior noise limit to not to be exceeded for a cumulative period of more than ten minutes in any hour of 65 dBA L_{eq} for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. To prevent high levels of construction noise from impacting noise-sensitive land uses, policies N 13.1 through 13.3 identify construction noise mitigation requirements for new development located near existing noise-sensitive land uses. (11)

3.2.1 LAND USE COMPATIBILITY GUIDELINES

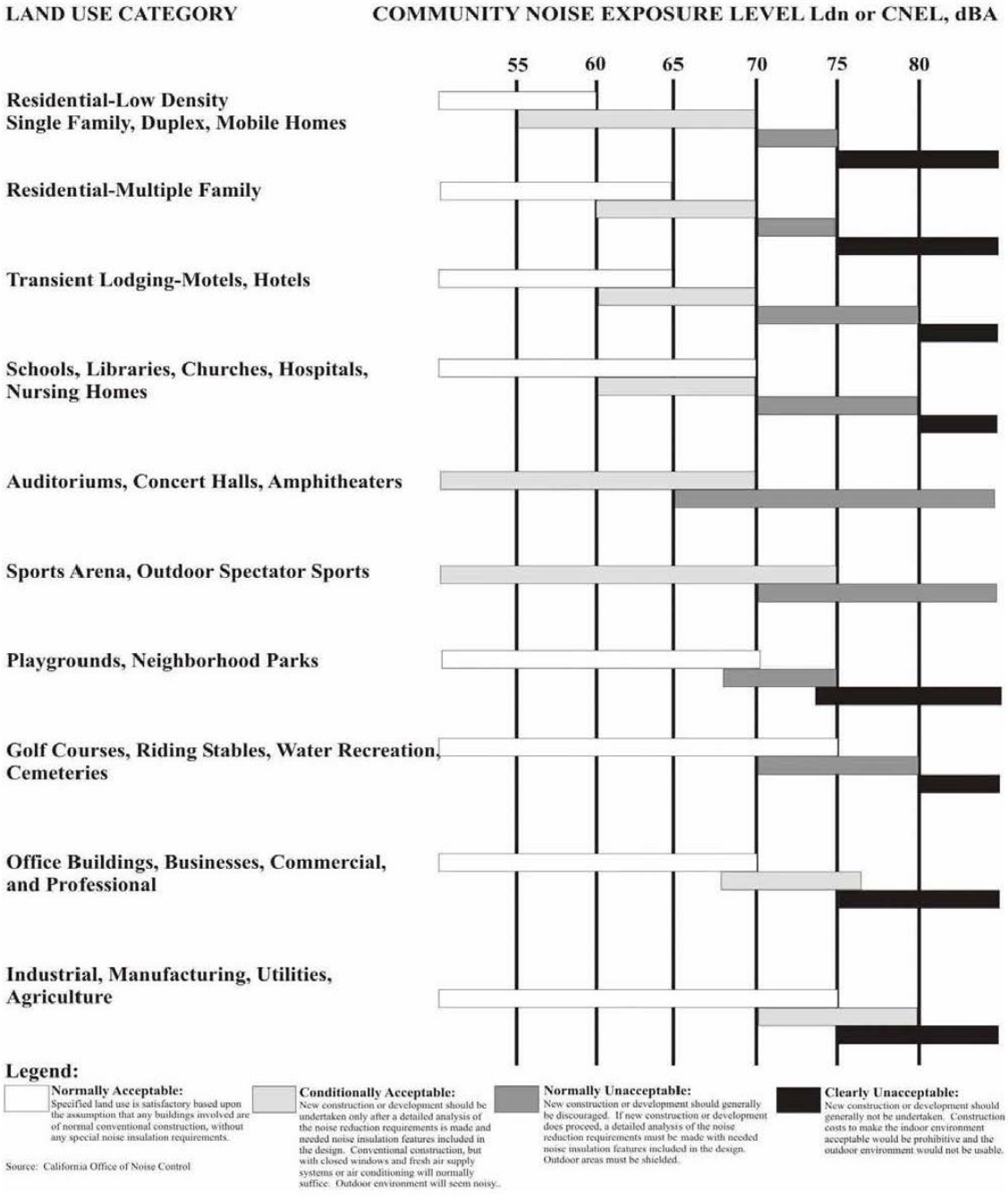
The noise criteria identified in the County of Riverside Noise Element (Table N-1) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the County with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels. The *Land Use Compatibility for Community Noise Exposure* matrix describes categories of compatibility and not specific noise standards. Non-noise sensitive light industrial use of the Project is considered *normally acceptable* with unmitigated exterior noise levels of less than 75 dBA CNEL based on the *Industrial, Manufacturing, Utilities, Agriculture* land use compatibility criteria shown on Exhibit 3-A. Noise sensitive residential designated land uses in the Project study area are considered *normally acceptable* with exterior noise levels below 60 dBA CNEL, and *conditionally acceptable* with exterior noise levels of up to 70 dBA CNEL. (11)

3.3.2 COUNTY OF RIVERSIDE STATIONARY NOISE STANDARDS

The County of Riverside has set stationary-source hourly average L_{eq} exterior noise limits to control loading dock activity, roof-top air conditioning units, parking lot vehicle activities, trash enclosure activity, and truck movements associated with the development of the proposed Thrifty Oil Warehouse. The County considers noise generated using motor vehicles to be a stationary noise source when operated on private property such as at a loading dock. These facility-related noises, as projected to any portion of any surrounding property containing a *habitable dwelling, hospital, school, library or nursing home*, must not exceed the following worst-case noise levels. Policy N 4.1 of the County of Riverside General Plan Noise Element sets a stationary-source average L_{eq} exterior noise limit not to be exceeded for a cumulative period of more than ten minutes in any hour of 65 dBA L_{eq} for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. (11)

The County of Riverside County Code Section 9.52.040 *General sound level standards* (included in Appendix 3.1) summarizing Ordinance No. 847 *Regulating Noise* identify lower, more restrictive exterior noise level standards, which for the purpose of this report, are used to evaluate potential Project-related operational noise level limits instead of the higher General Plan exterior noise level standards previously identified. The County of Riverside County Code identifies residential exterior noise level limits of 55 dBA L_{eq} during the daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m., commercial exterior noise level limits of 65 dBA L_{eq} during the daytime hours, and 55 dBA L_{eq} during the noise-sensitive nighttime hours, and public facility exterior noise level limits of 65 dBA L_{eq} during the daytime hours, and 45 dBA L_{eq} during the noise-sensitive nighttime hours. (12).

EXHIBIT 3-A: LAND USE COMPATIBILITY FOR COMMUNITY NOISE EXPOSURE



Source: County of Riverside General Plan Noise Element, Table N-1.

Based on several discussions with the County of Riverside Department of Environmental Health (DEH), Office of Industrial Hygiene (OIH), it is important to recognize that the County of Riverside County Code noise level standards, incorrectly identify maximum noise level (L_{max}) standards that should instead reflect the average L_{eq} noise levels. Moreover, the County of Riverside DEH OIH's April 15th, 2015, *Requirements for determining and mitigating, non-transportation noise source impacts to residential properties* also identifies operational (stationary-source) noise level limits using the L_{eq} metric, consistent with the direction of the County of Riverside General Plan guidelines and standards provided in the Noise Element. Therefore, this report has been prepared consistent with direction of the County of Riverside DEH OIH guidelines and standards using the average L_{eq} noise level metric for stationary-source (operational) noise level evaluation.

3.3 CONSTRUCTION NOISE STANDARDS

To control noise impacts associated with the construction of the proposed Project, the County of Riverside has established limits to the hours of construction activities. Riverside County Ordinance No. 847 Regulating Noise Section 2i (Code Section 9.52.020[I]) indicates that noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (12) Neither the County's General Plan nor County Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use with a nighttime exterior construction noise level of 70 dBA L_{eq}. (8 p. 179)

3.4 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (8) To analyze vibration impacts originating from the operation and construction of the Thrifty Oil Warehouse, vibration-generating activities are appropriately evaluated against standards established under the Municipal Code if such standards exist.

However, the County of Riverside does not identify specific construction vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (9 p. 38) Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

3.5 MARCH AIR RESERVE BASE/INLAND PORT AIRPORT LAND USE COMPATIBILITY

The March Air Reserve Base/Inland Port Airport (MARB/IPA) runway is located approximately 2.9 miles northeast of the Project site. The *Riverside County Airport Land Use Compatibility Plan Policy Document* (RC ALUCP) includes the policies for determining the land use compatibility of the Project. Policy 4.1.5 *Noise Exposure for Other Land Uses* of the RC ALUCP requires that land uses demonstrate compatibility with the acceptable noise levels on Table 2B. The Table 2B *Supporting Compatibility Criteria: Noise* matrix is shown on Exhibit 3-B and indicates that the Project's industrial land uses experience *clearly acceptable* exterior noise levels below 60 dBA CNEL. *Normally acceptable* noise levels for industrial land use range from 60 to 65 dBA CNEL. *Marginally acceptable* noise levels at industrial land uses range from 65 to 70 dBA CNEL. (14)

The 70, 65 and 60 dBA CNEL noise contour boundaries used to determine the potential aircraft-related noise impacts at the Project site are found on Figure 6-9 of the *March Air Reserve Base 2018 Final Air Installations Compatible Uses Zones Study* and are presented on Exhibit 3-C of this report. (15) Based on the 2018 noise level contours for the MARB/IPA, the Project development area is located outside the 60 dBA CNEL noise level contour boundaries and the Project's industrial land uses are considered *clearly acceptable.*

EXHIBIT 3-B: RC ALUCP SUPPORTING COMPATIBILITY CRITERIA: NOISE

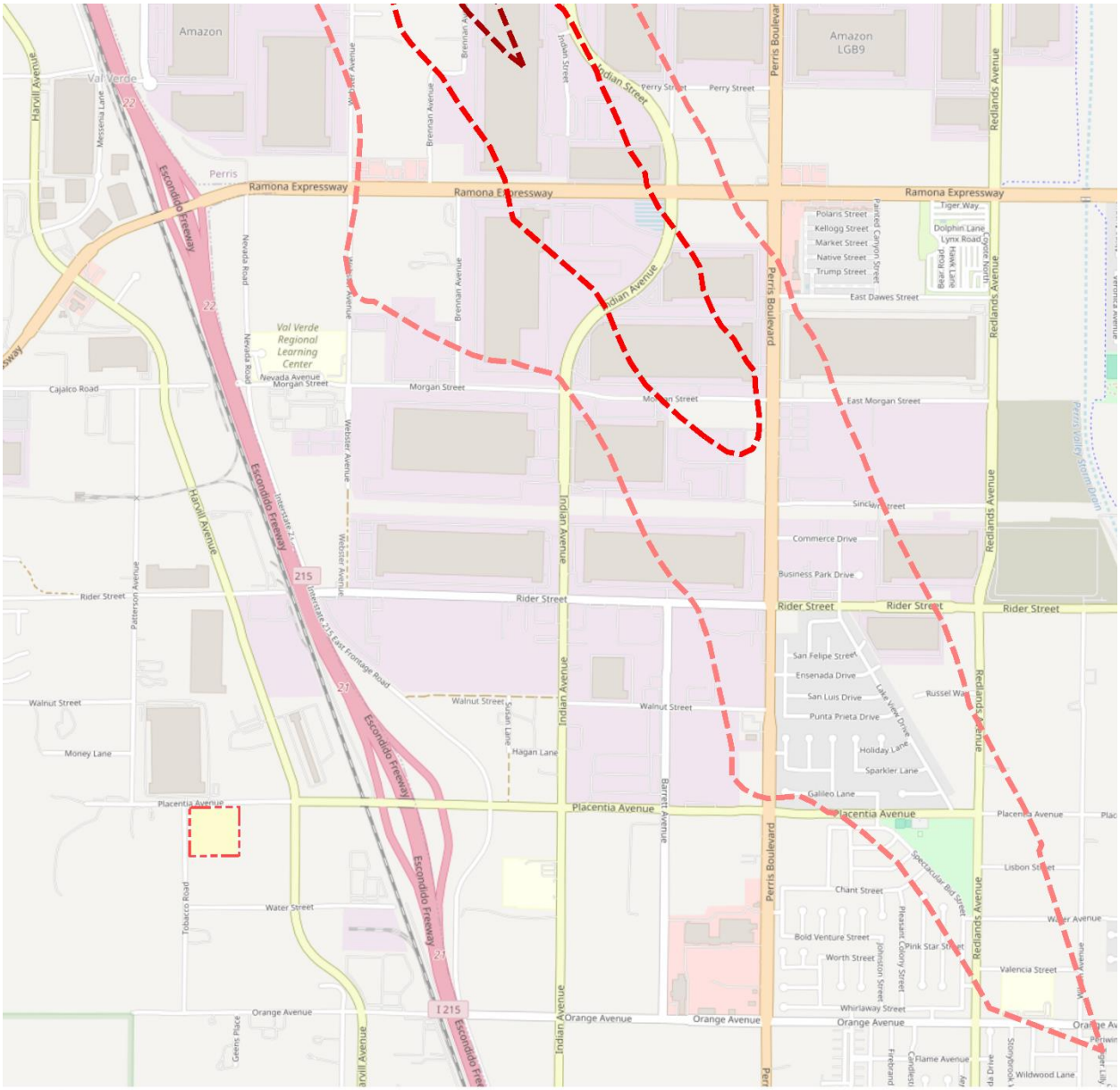
Land Use Category	CNEL (dB) 50–55	55–60	60–65	65–70	70–75
Residential *					
single-family, nursing homes, mobile homes	++	o	–	– –	– –
multi-family, apartments, condominiums	++	+	o	– –	– –
Public					
schools, libraries, hospitals	+	o	–	– –	– –
churches, auditoriums, concert halls	+	o	o	–	– –
transportation, parking, cemeteries	++	++	++	+	o
Commercial and Industrial					
offices, retail trade	++	+	o	o	–
service commercial, wholesale trade, warehousing, light industrial	++	++	+	o	o
general manufacturing, utilities, extractive industry	++	++	++	+	+
Agricultural and Recreational					
cropland	++	++	++	++	+
livestock breeding	++	+	o	o	–
parks, playgrounds, zoos	++	+	+	o	–
golf courses, riding stables, water recreation	++	++	+	o	o
outdoor spectator sports	++	+	+	o	–
amphitheaters	+	o	–	– –	– –

Land Use Acceptability		Interpretation/Comments
++	*Clearly Acceptable*	The activities associated with the specified land use can be carried out with essentially no interference from the noise exposure.
+	*Normally Acceptable*	Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities.
o	*Marginally Acceptable*	The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.
–	*Normally Unacceptable*	Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.
– –	*Clearly Unacceptable*	Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved.

* Subtract 5 dB for low-activity outlying airports (Chiriaco Summit and Desert Center)

Source: Riverside County Airport Land Use Compatibility Plan, Table 2B.

EXHIBIT 3-C: MARB/IPA FUTURE AIRPORT NOISE CONTOURS



LEGEND:

Unmitigated MARB Noise Level Contour Boundaries

- Project Site Boundary
- 70 dBA CNEL
- 60 dBA CNEL
- 65 dBA CNEL

Source: Figure 6-9 of the March Air Reserve Base 2018 Final Air Installations Compatible Uses Zones Study.

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders a noise impact significant.* (16) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will typically be judged.

4.1.1 NOISE-SENSITIVE RECEIVERS

The Federal Interagency Committee on Noise (FICON) (17) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders a noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (16) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the without project noise levels are below 60 dBA. Per the FICON, in areas where the without project noise levels

range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in baseline ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project (baseline) noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance at noise sensitive receiver locations are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (18 p. 2_48).

In addition to the FICON criteria, this analysis relies on the Caltrans *substantial* noise level increase threshold of 12 dBA to account for conditions where an existing unimproved roadway segment experiences an off-site traffic noise level increase due to a lack of existing traffic volumes. According to Caltrans, a traffic impact occurs when the future noise levels *substantially* exceed the existing noise level. In California a substantial noise increase is considered to occur when the project's predicted noise level exceeds the existing noise level by 12 dBA or more. The use of 12 dB was established in California many years ago and is based on the concept that a 10 dB increase generally is perceived as a doubling of loudness. (18 pp. 3-2)

4.1.2 NON-NOISE-SENSITIVE RECEIVERS

The County of Riverside General Plan Noise Element, Table N-1, *Land Use Compatibility for Community Noise Exposure* was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, the *normally acceptable* exterior noise level for non-noise-sensitive land use is 75 dBA CNEL. Noise levels greater than 75 dBA CNEL are considered *conditionally acceptable* per the *Land Use Compatibility for Community Noise Exposure*. (11)

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *barely perceptible* 3 dBA criteria is used. When the without Project noise levels are greater than the *normally acceptable* 75 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds for noise-sensitive land uses but instead rely on the County of Riverside General Plan Noise Element, Table N-1, *Land Use Compatibility for Community Noise Exposure normally acceptable* 75 dBA CNEL exterior noise level criteria.

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.4, the vibration impacts originating from the construction of Thrifty Oil Warehouse, vibration-generating activities are appropriately evaluated using the Caltrans vibration damage thresholds to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive buildings adjacent to the Project site can best be described as "older residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

The closest airport which would require additional noise analysis under CEQA Appendix G Guideline C is the MARB/IPA. As previously indicated in Section 3.5, the noise contour boundaries of MARB/IPA presented on Exhibit 3-C of this report show that the Project's industrial land use are considered *normally acceptable* since the development area is located outside the 60 dBA CNEL contour. Therefore, the Project impacts are considered *less than significant,* and no further noise analysis is provided under CEQA Significance Criteria C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix that includes the allowable criteria used to identify potentially significant incremental noise level increases.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic	Noise-Sensitive[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
	Non-Noise-Sensitive[2]	If ambient is > 75 dBA CNEL	≥ 3 dBA CNEL Project increase	
	All	Unimproved Roadway[3]	≥ 12 dBA CNEL Project increase	
Operational	Noise-Sensitive	Exterior Noise Level Standards[4]	55 dBA L_{eq}	45 dBA L_{eq}
		If ambient is < 60 dBA Leq[1]	≥ 5 dBA L_{eq} Project increase	
		If ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA L_{eq} Project increase	
		If ambient is > 65 dBA Leq[1]	≥ 1.5 dBA L_{eq} Project increase	
Construction	Noise-Sensitive	Noise Level Threshold[5]	80 dBA L_{eq}	70 dBA L_{eq}
		Vibration Level Threshold[6]	0.3 PPV (in/sec)	

[1] FICON, 1992.
[2] County of Riverside General Plan Noise Element, Table N-1.
[3] Caltrans Traffic Noise Analysis Protocol, April 2020.
[4] County of Riverside General Plan Municipal Code, Section 9.52.040.
[5] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[6] Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at three locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, long-term noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, January 24, 2024. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the equivalent daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (19)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing equivalent hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (2) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (8)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (8) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting noise level measurements at the nearby sensitive receiver

locations allows for a comparison of the before and after Project noise levels and is necessary to assess potential noise increase due to the Project's contribution to the ambient noise levels. This approach is necessary to calculate the temporary or permanent increase in *ambient* noise levels as required by the CEQA Guidelines Environmental Checklist.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the equivalent or the energy average hourly sound levels (L_{eq}) to describe the existing *ambient* conditions. The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

TABLE 5-1: AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	
L1	Located west of the site near the residence at 20601 Tobacco Rd.	53.0	51.5	68.6
L2	Located west of the site near the residence at 23551 Placentia Av.	57.7	52.5	60.3
L3	Located south of the site near the residence at 20800 Tobacco Rd.	53.0	47.9	56.0

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the equivalent noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



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6 TRAFFIC NOISE METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future transportation related noise environment. Consistent with County of Riverside Noise Guidelines for Land Use Planning (see Exhibit 3-A), all transportation related noise levels are presented in terms of the 24-hour CNEL's.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (20) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (21) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (22)

6.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the three off-site study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the County of Riverside General Plan Circulation Element, and the vehicle speeds. The ADT volumes used in this study area presented on Table 6-2 are based on the *Thrifty Oil Warehouse Focused Traffic Assessment*, prepared by Urban Crossroads, Inc. for the following traffic scenarios (22).

- Existing (E)
- Existing plus Project (E+P)

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. This analysis relies on a comparative evaluation of the off-site traffic noise impacts at the boundary of the right-of-way of the receiving adjacent land use, without and with project ADT traffic volumes from the Project traffic analysis. The Project is anticipated to generate a net total of 322 two-way trips per day (actual vehicles) that includes 114 truck trips.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Classification[1]	Receiving Land Use[2]	Distance from Centerline to Receiving Land Use (Feet)[3]	Vehicle Speed (mph)
1	Tobacco Rd.	s/o Placentia Av.	Collector	Sensitive	37'	40
2	Placentia Av.	w/o Tobacco Rd.	Secondary	Sensitive	50'	40
3	Placentia Av.	e/o Tobacco Rd.	Secondary	Sensitive	50'	40

[1] Thrifty Oil Warehouse Focused Traffic Assessment, Urban Crossroads, Inc.
[2] Based on a review of existing aerial imagery.
[3] Distance to receiving land use is based upon the right-of-way distances.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]					
			Existing (2023)		EAC (2026)		HY (2045)	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Tobacco Rd.	s/o Placentia Av.	91	335	21	265	41	285
2	Placentia Av.	w/o Tobacco Rd.	762	866	22	126	42	146
3	Placentia Av.	e/o Tobacco Rd.	991	1,131	23	163	43	183

[1] Thrifty Oil Warehouse Focused Traffic Assessment, Urban Crossroads, Inc.

To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix. Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. The daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Thrifty Oil Warehouse Focused Traffic Assessment*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Table 6-5 shows the vehicle mixes used for the with Project traffic scenarios.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	75.50%	14.00%	10.50%	100.00%
Medium Trucks	48.00%	2.00%	50.00%	100.00%
Heavy Trucks	48.00%	2.00%	50.00%	100.00%

[1] County of Riverside Office of Industrial Hygiene. Values rounded to the nearest one-hundredth. Vehicle mix percentage values rounded to the nearest one-hundredth. "Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: WITHOUT PROJECT VEHICLE MIX

Classification	Total % Traffic Flow[1]			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	92.00%	3.00%	5.00%	100.00%

[1] County of Riverside Office of Industrial Hygiene. Values rounded to the nearest one-hundredth. Vehicle mix percentage values rounded to the nearest one-hundredth.

Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments.

TABLE 6-5: EXISTING WITH PROJECT VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Tobacco Rd.	s/o Placentia Av.	80.82%	3.80%	15.38%	100.00%
2	Placentia Av.	w/o Tobacco Rd.	92.96%	2.64%	4.40%	100.00%
3	Placentia Av.	e/o Tobacco Rd.	87.95%	3.51%	8.54%	100.00%

[1] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

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7 OFF-SITE TRAFFIC NOISE ANALYSIS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on *the Thrifty Oil Warehouse Focused Traffic Assessment* prepared by Urban Crossroads, Inc. (22) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at receiving land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA CNEL noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 through 7-6 present a summary of the exterior traffic noise levels without barrier attenuation for each traffic condition. Appendix 7.1 includes the traffic noise level contours worksheets for each traffic condition.

TABLE 7-1: EXISTING WITHOUT PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Tobacco Rd.	s/o Placentia Av.	Sensitive	53.9	56	122	262
2	Placentia Av.	w/o Tobacco Rd.	Sensitive	61.5	RW	111	240
3	Placentia Av.	e/o Tobacco Rd.	Sensitive	62.7	RW	75	161

[1] Based on a review of existing aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Tobacco Rd.	s/o Placentia Av.	Sensitive	63.6	RW	RW	65
2	Placentia Av.	w/o Tobacco Rd.	Sensitive	61.6	RW	RW	64
3	Placentia Av.	e/o Tobacco Rd.	Sensitive	65.1	RW	51	110

[1] Based on a review of existing aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING PROJECT TRAFFIC NOISE LEVEL INCREASES

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report for informational purposes and to fully analyze all the existing traffic scenarios identified in the Traffic Analysis prepared by Urban Crossroads, Inc. However, the analysis of existing off-site traffic noise levels plus traffic noise generated by the proposed Project scenario will not actually occur since the Project would not be fully constructed and operational until Year 2026 conditions. Table 7-1 shows the Existing without Project conditions CNEL noise levels. The Existing without Project exterior noise levels range from 53.9 to 62.7 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project conditions ranging from 61.6 to 65.1 dBA CNEL. Table 7-3 shows that the Project off-site traffic noise level increases range from 0.1 to 9.7 dBA CNEL on the study area roadway segments.

7.3 PROJECT OFF-SITE TRAFFIC NOISE IMPACTS

The off-site traffic noise analysis recognizes that the Project would generate a noise level increase of up to 9.7 dBA CNEL on the existing and unimproved Tobacco Road. This noise level increase affects two existing residences located at 23551, 20601 Tobacco Road and is largely due to the lack of existing traffic volume on the unimproved roadway segment. The existing traffic noise levels on this segment are calculated at 53.9 dBA CNEL. The addition of near-term Project traffic is expected to increase the off-site traffic noise levels to 63.6 dBA CNEL resulting in a project incremental traffic noise level increase of 9.7 dBA CNEL. According to Caltrans, a traffic impact occurs when the future noise level substantially exceeds the existing noise level. In California a substantial noise increase is considered to occur when the project's predicted noise level exceeds the existing noise level by 12 dBA or more. The use of 12 dB was established in California many years ago and is based on the concept that a 10 dB increase generally is perceived as a doubling of loudness. (23 pp. 3-2)

While the relative incremental increase due to the off-site Project traffic noise on Tobacco Road may be considered a doubling of the existing traffic noise levels, it does not exceed the Caltrans 12 dB substantial noise level increase threshold or the County of Riverside General Plan Noise Element Policy N 1.3 exterior noise level criteria of 65 dBA CNEL for noise sensitive residential land uses. (10) Further, the thresholds of significance do not specifically identify what portion of the residential land use that is considered "noise sensitive." Noise-sensitive land use is generally limited to private outdoor living areas since it is unlikely that humans will be frequently occupying the front yard areas abutting the right-of-way boundary of Tobacco Road. This assumption is supported based upon analyses undertaken by other agencies. According to FHWA guidance, outdoor living areas are generally limited to outdoor living areas of frequent human use (e.g., private backyards of single-family homes). Therefore, front and side yards of residences adjacent to off-site roadway segments do not represent noise sensitive areas of frequent human use that require exterior noise mitigation.

TABLE 7-3: EXISTING WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]			Incremental Noise Level Increase Threshold[3]	
				Without Project	With Project	Project Addition	Limit	Exceeded?
1	Tobacco Rd.	s/o Placentia Av.	Sensitive	53.9	63.6	9.7	12.0	No
2	Placentia Av.	w/o Tobacco Rd.	Sensitive	61.5	61.6	0.1	3.0	No
3	Placentia Av.	e/o Tobacco Rd.	Sensitive	62.7	65.1	2.4	3.0	No

[1] Based on a review of existing aerial imagery. Noise sensitive uses limited to existing residential land uses.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[3] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

In addition, the ambient noise level measurements presented on Table 5-1 show that the existing residences adjacent to Tobacco Road already experience exterior noise levels ranging from 60.3 to 68.6 dBA CNEL. Since the existing ambient noise levels far exceed the calculated existing without Project traffic noise levels, likely due to background traffic noise from the I-215 Freeway and aircraft noise from the MARB/IPA, it expected that the noise sensitive land uses adjacent to the Tobacco Road will not perceive a significant off-site incremental traffic noise level increase due to the Project traffic. Therefore, this analysis demonstrates that the land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases on receiving land uses due to the Project traffic.

8 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 8-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, three receiver locations in the vicinity of the Project site were identified. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: Location R1 represents the existing residence at 20601 Tobacco Road, approximately 188 feet west of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receptor R1 is placed at the building façade. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing residence at 23551 Placentia Avenue, approximately 115 feet west of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receptor R2 is placed at the building façade. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the existing residence at 20800 Tobacco Road, approximately 1,011 feet south of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R3 is placed at the building façade. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

EXHIBIT 8-A: RECEIVER LOCATIONS



9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 8, resulting from the operation of the proposed Thrifty Oil Warehouse Project. Exhibit 9-A of the Noise Study includes over 27 individual noise sources to fully describe the potential reasonable worst-case noise environment.

9.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. Consistent with similar warehouse uses, the Project business operations would primarily be conducted within the enclosed building, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, parking lot vehicle activities, trash enclosure activity, and truck movements.

9.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the reasonable worst-case noise environment with the typical noise sources operating at the same time. These sources of noise activity will likely vary throughout the day.

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precision sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (19)

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

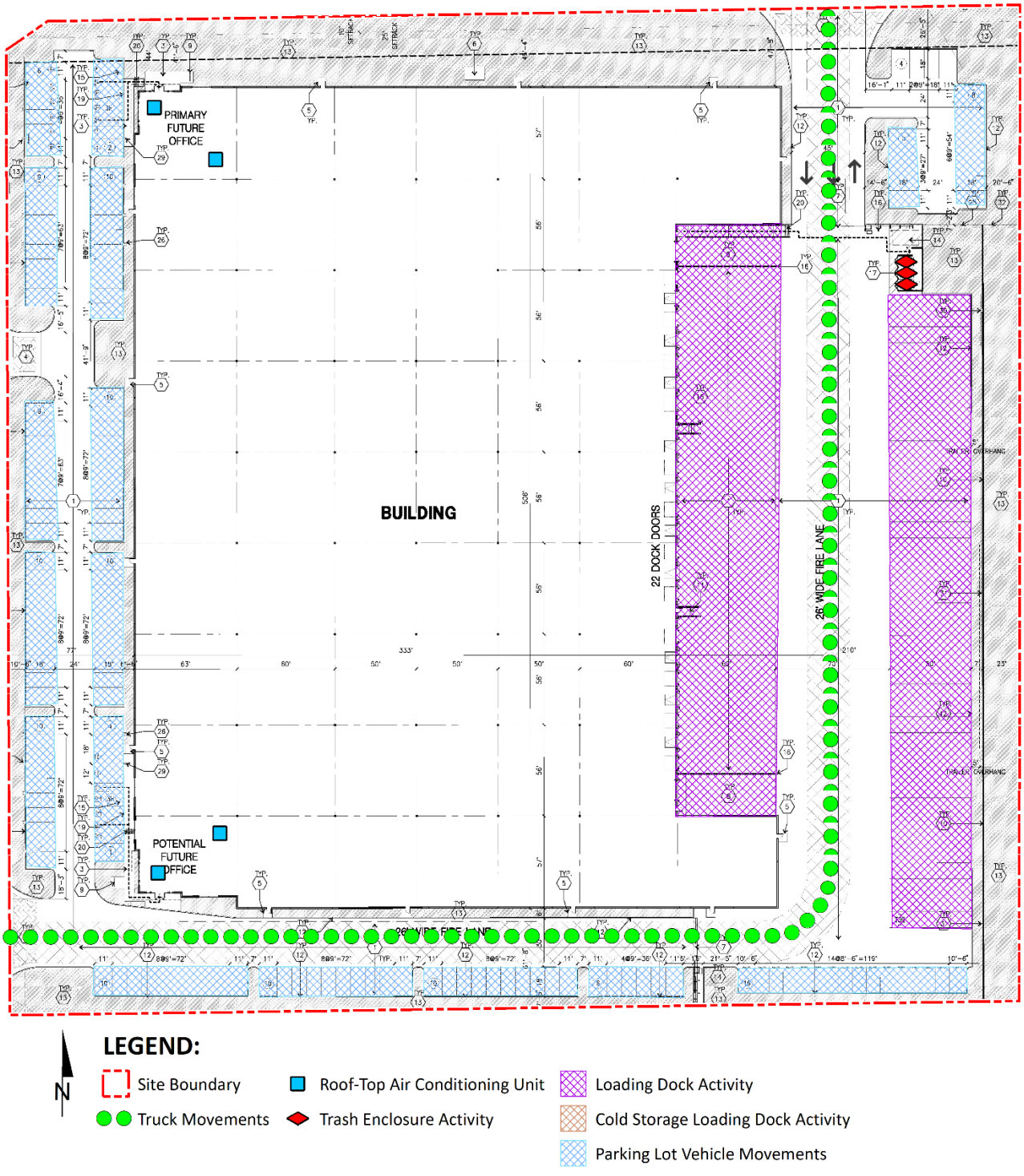

TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Reference Noise Source	Noise Source Height (Feet)	Min./ Hour[1]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[2]
		Day	Night		
Loading Dock Activity	8'	60	60	62.8	103.4
Parking Lot Vehicle Movements	5'	60	60	52.6	81.1
Roof-Top Air Conditioning Units	5'	39	28	57.2	88.9
Trash Enclosure Activity	5'	60	30	57.3	89.0
Truck Movements	8'	60	60	59.8	93.2

[1] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

[2] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

9.2.2 LOADING DOCK ACTIVITY

The reference dry goods loading dock activities are intended to describe the typical operational noise source levels associated with the Project. This includes truck idling, deliveries, backup alarms, unloading/loading, docking including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations. At a uniform reference distance of 50 feet, Urban Crossroads collected a reference noise level of 62.8 dBA L_{eq}. The loading dock activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of activity. The reference noise level measurement includes employees unloading a docked truck container included the squeaking of the truck's shocks when weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm. In addition, during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine, idling, air brakes noise, in addition to on-going idling of an already docked truck. Loading dock activity is estimated during all the daytime, evening, and nighttime hours.

9.2.3 ROOF-TOP AIR CONDITIONING UNITS

The noise level measurements describe a single mechanical roof-top air conditioning unit. The reference noise level represents a Lennox SCA120 series 10-ton model packaged air conditioning unit. At the uniform reference distance of 50 feet, the reference noise level is 57.2 dBA L_{eq}. Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings.

9.2.4 PARKING LOT VEHICLE MOVEMENTS

To describe the on-site parking lot activity, a long-term reference noise level measurement was collected in the center of activity within the staff parking lot of a warehouse distribution center. At 50 feet from the center of activity, the parking lot produced a reference noise level of 52.6 dBA L_{eq}. Parking activities are expected to take place during the full hour (60 minutes) throughout the daytime and evening hours. The parking lot noise levels are mainly due to cars pulling in and out of parking spaces in combination with car doors opening and closing.

9.2.5 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project Site. The measured reference noise level at the uniform 50-foot reference distance is 57.3 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building.

9.2.6 TRUCK MOVEMENTS

The truck movements reference noise level measurement was collected over a period of 1 hour and 28 minutes and represent multiple heavy trucks entering and exiting the outdoor loading dock area producing a reference noise level of 59.8 dBA L_{eq} at 50 feet. The noise sources included at this measurement location account for trucks entering and existing the Project driveways and maneuvering in and out of the outdoor loading dock activity area.

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels. Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources.

While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute

value that is not affected by the environment. The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the CadnaA noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 9.1 includes the detailed noise model inputs including the planned screenwall used to estimate the Project operational noise levels presented in this section.

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, roof-top air conditioning units, parking lot vehicle activities, trash enclosure activity, and truck movements, Urban Crossroads, Inc. calculated the unmitigated operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 9-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 39.4 to 45.0 dBA L_{eq}.

TABLE 9-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)		
	R1	R2	R3
Loading Dock Activity	27.5	27.6	38.3
Parking Lot Vehicle Movements	39.0	41.8	27.6
Roof-Top Air Conditioning Units	39.7	41.8	28.3
Trash Enclosure Activity	14.2	15.0	19.2
Truck Movements	36.3	26.6	28.4
Total (All Noise Sources)	**43.4**	**45.0**	**39.4**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

Table 9-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 39.3 to 44.0 dBA L_{eq}. The differences between the daytime and nighttime noise levels are largely related to the estimated duration of noise activity as outlined in Table 9-1 and Appendix 9.1.

TABLE 9-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)		
	R1	R2	R3
Loading Dock Activity	27.5	27.6	38.3
Parking Lot Vehicle Movements	39.0	41.8	27.6
Roof-Top Air Conditioning Units	37.3	39.4	25.9
Trash Enclosure Activity	10.2	11.0	15.2
Truck Movements	36.3	26.6	28.4
Total (All Noise Sources)	**42.6**	**44.0**	**39.3**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 9.1.

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the mitigated Project-only operational noise levels are evaluated against exterior noise level thresholds based on the County of Riverside exterior noise level standards at the existing nearby noise-sensitive receiver locations. Table 9-4 shows that the mitigated operational noise levels associated with Project will not exceed the County of Riverside daytime and nighttime exterior noise level standards at the existing nearby noise-sensitive receiver locations. Therefore, the mitigated operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 9-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	43.4	42.6	55	45	No	No
R2	45.0	44.0	55	45	No	No
R3	39.4	39.3	55	45	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project unmitigated operational noise levels as shown on Tables 9-2 and 9-3.
[3] Exterior noise level standards, as shown on Table 4-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.

9.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby receiver locations that may be potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 9-5 and 9-6, respectively. As indicated on Table 9-5, the Project will generate a daytime operational noise level increase ranging from 0.2 to 0.5 dBA L_{eq} at the nearest receiver locations. Table 9-6 shows that the Project will generate a nighttime operational noise level increase ranging from 0.5 to 0.6 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will not exceed the operational noise level increase significance criteria presented in Table 4-1. Therefore, Project related operational noise level increases at the sensitive receiver locations will be *less than significant.*

TABLE 9-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	43.4	L1	53.0	53.5	0.5	5.0	No
R2	45.0	L2	57.7	57.9	0.2	5.0	No
R3	39.4	L3	53.0	53.2	0.2	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project mitigated daytime operational noise levels as shown on Table 9-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

TABLE 9-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	42.6	L1	51.5	52.0	0.5	5.0	No
R2	44.0	L2	52.5	53.1	0.6	5.0	No
R3	39.3	L3	47.9	48.5	0.6	5.0	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project nighttime mitigated operational noise levels as shown on Table 9-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

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10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the on-site construction noise source activity including the off-site roadway and utility improvements in relation to the nearest sensitive receiver locations previously described in Section 8. According to Riverside County Ordinance No. 847 Regulating Noise Section 2i (Code Section 9.52.020[I]), noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (12)

10.1 CONSTRUCTION NOISE LEVELS

The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed during that stage. As a result of the equipment mix, each stage has its own noise characteristics; some stages have higher continuous noise levels than others, and some have higher impact noise levels than others. The Project construction activities are expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (24) The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE LOCATIONS



10.3 ON-SITE CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. Consistent with FTA guidance for detailed construction noise assessment, Table 10-1 presents the combined noise levels for the loudest construction equipment, assuming all equipment operates at the same time. To account for the dynamic nature of construction activities, the CadnaA construction noise analysis evaluates the equipment as multiple moving point sources within the construction area (Project site boundary). Construction impacts are based on the highest noise level calculated at each receiver location. As shown on Table 10-2, the construction noise levels are expected to range from 50.6 to 77.2 dBA L_{eq} at the nearby receiver locations. Appendix 10.1 includes the detailed CadnaA construction noise model inputs.

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Equipmnet[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Composite Reference Noise Level (dBA L_{eq})[2]	Reference Power Level (dBA L_w)[3]
Site Preparation	Tractor	80	84.0	115.6
	Backhoe	74		
	Grader	81		
Grading	Scraper	80	83.3	114.9
	Excavator	77		
	Dozer	78		
Building Construction	Crane	73	80.6	112.2
	Generator	78		
	Front End Loader	75		
Paving	Paver	74	77.8	109.5
	Dump Truck	72		
	Roller	73		
Architectural Coating	Man Lift	68	76.2	107.8
	Compressor (air)	74		
	Generator (<25kVA)	70		

[1] FHWA Road Construction Noise Model.
[2] Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings.

TABLE 10-2: ON-SITE CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	67.3	66.6	63.9	61.2	59.5	70.1
R2	68.9	68.2	65.5	62.8	61.1	71.7
R3	58.4	57.7	55.0	52.3	50.6	61.2

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 10.1.

10.4 PROJECT SITE CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown on Table 10-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

TABLE 10-3: PROJECT SITE CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	70.1	80	No
R2	71.7	80	No
R3	61.2	80	No

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 10-2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.5 NIGHTTIME CONCRETE POUR NOISE ANALYSIS

It is our understanding that nighttime concrete pouring activities will occur as a part of Project building construction activities. Nighttime concrete pouring activities are often used to support reduced concrete mixer truck transit times and lower air temperatures than during the daytime hours and are generally limited to the actual building pad area. Since the nighttime concrete pours will take place outside the permitted by Riverside County Ordinance No. 847 Regulating Noise Section 2i (Code Section 9.52.020[I]), the Project Applicant will be required to obtain authorization for nighttime work from the County of Riverside. Any nighttime construction noise activities are evaluated against the FTA nighttime exterior construction noise level threshold of 70 dBA L_{eq} for noise sensitive residential land use. (8 p. 179)

10.5.1 NIGHTTIME CONCRETE POUR REFERENCE NOISE LEVEL MEASUREMENTS

To estimate the noise levels due to nighttime concrete pouring activities, sample reference noise level measurements were taken during a nighttime concrete pouring at a construction site. Urban Crossroads, Inc. collected short-term nighttime concrete pour reference noise level measurements during the noise-sensitive nighttime hours between 1:00 a.m. to 2:00 a.m. at 27334 San Bernardino Avenue in the City of Redlands. The reference noise levels describe the expected concrete pour noise sources that may include concrete mixer truck movements and pouring activities, concrete paving equipment, rear mounted concrete mixer truck backup alarms, engine idling, air brakes, generators, and workers communicating/whistling. To describe the nighttime concrete pour noise levels associated with the construction of the Thrifty Oil Warehouse, this analysis relies on reference sound pressure level of 67.7 dBA L_{eq} at 50 feet representing a sound power level of 100.3 dBA L_w. While the Project noise levels will depend on the actual duration of activities and specific equipment fleet in use at the time of construction, the reference sound power level of 100.3 dBA L_w is used to describe the expected Project nighttime concrete pour noise activities.

10.5.2 NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

As shown on Table 10-4, the noise levels associated with the nighttime concrete pour activities are estimated to range from 43.1 to 53.6 dBA L_{eq} at the existing noise sensitive receiver locations. The analysis shows that the unmitigated nighttime concrete pour activities will not exceed the FTA 70 dBA L_{eq} nighttime residential noise level threshold at all the nearest noise sensitive receiver locations. Therefore, the noise impacts due to Project construction nighttime concrete pour noise activity are considered *less than significant* at all receiver locations with prior authorization for nighttime work from the County of Riverside. Appendix 10.3 includes the CadnaA nighttime concrete pour noise model inputs.

TABLE 10-4: NIGHTTIME CONCRETE POUR NOISE LEVEL COMPLIANCE

Receiver Location[1]	Concrete Pour Construction Noise Levels (dBA L_{eq})		
	Exterior Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	52.0	70	No
R2	53.6	70	No
R3	43.1	70	No

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Nighttime Concrete Pour noise model inputs are included in Appendix 10.2.
[3] Construction noise level thresholds as shown on Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

10.6 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. The operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground

vibration levels associated with various types of construction equipment are summarized on Table 10-5. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by the FTA. To calculate the vibration levles, the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 10-5: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089
Vibratory Roller	0.210

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 10-6 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 115 to 1,011 feet from Project construction activities, construction vibration velocity levels are estimated to range from 0.001 to 0.021 in/sec PPV. Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec), the typical Project construction vibration levels will fall below the building damage thresholds at all the noise sensitive receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site.

TABLE 10-6: PROJECT CONSTRUCTION VIBRATION LEVELS

Location[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]						Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jack-hammer	Loaded Trucks	Large bulldozer	Vibratory Roller	Highest Vibration Level		
R1	115'	0.000	0.004	0.008	0.009	0.021	0.021	0.3	No
R2	188'	0.000	0.002	0.004	0.004	0.010	0.010	0.3	No
R3	1,011'	0.000	0.000	0.000	0.000	0.001	0.001	0.3	No

[1] Construction noise source and receiver locations are shown on Exhibit 10-A.
[2] Distance from receiver building facade to Project construction boundary (Project site boundary).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 10-5).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

11 REFERENCES

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12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Thrifty Oil Warehouse Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 584-3148.

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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of San Diego • March, 2018
Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 3.1:

COUNTY OF RIVERSIDE MUNICIPAL CODE

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Chapter 9.52 NOISE REGULATION

Sections:

9.52.010 Intent.

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life. Pursuant to its police power, the board of supervisors declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish county-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established.

(Ord. 847 § 1, 2006)

9.52.020 Exemptions.

Sound emanating from the following sources is exempt from the provisions of this chapter:

A. Facilities owned or operated by or for a governmental agency;

B. Capital improvement projects of a governmental agency;

C. The maintenance or repair of public properties;

D. Public safety personnel in the course of executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes, without limitation, sound emanating from all equipment used by such personnel, whether stationary or mobile;

E. Public or private schools and school-sponsored activities;

F. Agricultural operations on land designated "Agriculture" in the Riverside County general plan, or land zoned A-l (light agriculture), A-P (light agriculture with poultry), A-2 (heavy agriculture), A-D (agriculture-dairy) or C/V (citrus/vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, without limitation, sound emanating from all equipment used during such operations, whether stationary or mobile;

G. Wind energy conversion systems (WECS), provided such systems comply with the WECS noise provisions of Riverside County Ordinance No. 348;

H. Private construction projects located one-quarter of a mile or more from an inhabited dwelling;

I. Private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that:

   1. Construction does not occur between the hours of six p.m. and six a.m. during the months of June through September, and

   2. Construction does not occur between the hours of six p.m. and seven a.m. during the months of October through May;

J. Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between the hours of seven a.m. and eight p.m.;

K. Motor vehicles, other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems;

L. Heating and air conditioning equipment;

M. Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare;

N. The discharge of firearms consistent with all state laws.

(Ord. 847 § 2, 2006)

9.52.030 Definitions.

As used in this chapter, the following terms shall have the following meanings:

"Audio equipment" means a television, stereo, radio, tape player, compact disc player, mp3 player, I-POD or other similar device.

"Decibel (dB)" means a unit for measuring the relative amplitude of a sound equal approximately to the smallest difference normally detectable by the human ear, the range of which includes approximately one hundred thirty (130) decibels on a scale beginning with zero decibels for the faintest detectable sound. Decibels are measured with a sound level meter using different methodologies as defined below:

1. "A-weighting (dBA)" means the standard A-weighted frequency response of a sound level meter, which de-emphasizes low and high frequencies of sound in a manner similar to the human ear for moderate sounds.

2. "Maximum sound level (L_{max})" means the maximum sound level measured on a sound level meter.

"Governmental agency" means the United States, the state of California, Riverside County, any city within Riverside County, any special district within Riverside County or any combination of these agencies.

"Land use permit" means a discretionary permit issued by Riverside County pursuant to Riverside County Ordinance No. 348.

"Motor vehicle" means a vehicle that is self-propelled.

"Motor vehicle sound system" means a stereo, radio, tape player, compact disc player, mp3 player, I-POD or other similar device.

"Noise" means any loud, discordant or disagreeable sound.

"Occupied property" means property upon which is located a residence, business or industrial or manufacturing use.

"Off-highway vehicle" means a motor vehicle designed to travel over any terrain.

"Public or private school" means an institution conducting academic instruction at the preschool, elementary school, junior high school, high school, or college level.

"Public property" means property owned by a governmental agency or held open to the public, including, but not limited to, parks, streets, sidewalks, and alleys.

"Sensitive receptor" means a land use that is identified as sensitive to noise in the noise element of the Riverside County general plan, including, but not limited to, residences, schools, hospitals, churches, rest homes, cemeteries or public libraries.

"Sound-amplifying equipment" means a loudspeaker, microphone, megaphone or other similar device.

"Sound level meter" means an instrument meeting the standards of the American National Standards Institute for Type 1 or Type 2 sound level meters or an instrument that provides equivalent data.

(Ord. 847 § 3, 2006)

9.52.040 General sound level standards.

No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standards set forth in Table 1.

TABLE 1

Sound Level Standards (Db L_{max})

GENERAL PLAN FOUNDATION COMPONENT	GENERAL PLAN LAND USE DESIGNATION	GENERAL PLAN LAND USE DESIGNATION NAME	DENSITY	MAXIMUM DECIBEL LEVEL	
				7 am—10 pm	10 pm—7 am
Community Development	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45
	MDR	Medium Density Residential	2—5	55	45
	MHDR	Medium High Density Residential	5—8	55	45
	HDR	High Density Residential	8—14	55	45
	VHDR	Very High Density Residential	14—20	55	45
	H'TDR	Highest Density Residential	20+	55	45
	CR	Retail Commercial		65	55
	CO	Office Commercial		65	55
	CT	Tourist Commercial		65	55
	CC	Community Center		65	55
	LI	Light Industrial		75	55
	HI	Heavy Industrial		75	75
	BP	Business Park		65	45
	PF	Public Facility		65	45
	SP	Specific Plan-Residential		55	45

		Specific Plan-Commercial		65	55
		Specific Plan-Light Industrial		75	55
		Specific Plan-Heavy Industrial		75	75
Rural Community	EDR	Estate Density Residential	2 AC	55	45
	VLDR	Very Low Density Residential	1 AC	55	45
	LDR	Low Density Residential	1/2 AC	55	45
Rural	RR	Rural Residential	5 AC	45	45
	RM	Rural Mountainous	10 AC	45	45
	RD	Rural Desert	10 AC	45	45
Agriculture	AG	Agriculture	10 AC	45	45
Open Space	C	Conservation		45	45
	CH	Conservation Habitat		45	45
	REC	Recreation		45	45
	RUR	Rural	20 AC	45	45
	W	Watershed		45	45
	MR	Mineral Resources		75	45

(Ord. 847 § 4, 2006)

9.52.050 Sound level measurement methodology.

Sound level measurements may be made anywhere within the boundaries of an occupied property. The actual location of a sound level measurement shall be at the discretion of the enforcement officials identified in Section 9.52.080 of this chapter. Sound level measurements shall be made with a sound level meter. Immediately before a measurement is made, the sound level meter shall be calibrated utilizing an acoustical calibrator meeting the standards of the American National Standards Institute. Following a sound level measurement, the calibration of the sound level meter shall be re-verified. Sound level meters and calibration equipment shall be certified annually.

(Ord. 847 § 5, 2006)

9.52.060 Special sound sources standards.

The general sound level standards set forth in Section 9.52.040 of this chapter apply to sound emanating from all sources, including the following special sound sources, and the person creating, or allowing the creation of, the sound is subject to the requirements of that section. The following special sound sources are also subject to the following additional standards, the failure to comply with which constitutes separate violations of this chapter:

A. Motor Vehicles.

1. Off-Highway Vehicles.

a. No person shall operate an off-highway vehicle unless it is equipped with a USDA-qualified spark arrester and a constantly operating and properly maintained muffler. A muffler is not considered constantly operating and properly maintained if it is equipped with a cutout, bypass or similar device.

b. No person shall operate an off-highway vehicle unless the noise emitted by the vehicle is not more than ninety-six (96) dBA if the vehicle was manufactured on or after January 1, 1986 or is not more than one hundred one (101) dBA if the vehicle was manufactured before January 1, 1986. For purposes of this subsection, emitted noise shall be measured a distance of twenty (20) inches from the vehicle tailpipe using test procedures established by the Society of Automotive Engineers under Standard J-1287.

2. Sound Systems. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, between the hours of ten p.m. and eight a.m., such that the sound system is audible to the human ear inside any inhabited dwelling. No person shall operate a motor vehicle sound system, whether affixed to the vehicle or not, at any other time such that the sound system is audible to the human ear at a distance greater than one hundred (100) feet from the vehicle.

B. Power Tools and Equipment. No person shall operate any power tools or equipment between the hours of ten p.m. and eight a.m. such that the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling in which the power tools or equipment may be located. No person shall operate any power tools or equipment at any other time such that the power tools or equipment are audible to the human ear at a distance greater than one hundred (100) feet from the power tools or equipment.

C. Audio Equipment. No person shall operate any audio equipment, whether portable or not, between the hours of ten p.m. and eight a.m. such that the equipment is audible to the human ear inside an inhabited dwelling other than a dwelling in which the equipment may be located. No person shall operate any audio equipment, whether portable or not, at any other time such that the equipment is audible to the human ear at a distance greater than one hundred (100) feet from the equipment.

D. Sound-Amplifying Equipment and Live Music. No person shall install, use or operate sound-amplifying equipment, or perform, or allow to be performed, live music unless such activities comply with the following requirements. To the extent that these requirements conflict with any conditions of approval attached to an underlying land use permit, these requirements shall control:

1. Sound-amplifying equipment or live music is prohibited between the hours of ten p.m. and eight a.m.

2. Sound emanating from sound-amplifying equipment or live music at any other time shall not be audible to the human ear at a distance greater than two hundred (200) feet from the equipment or music.

(Ord. 847 § 6, 2006)

9.52.070 Exceptions.

Exceptions may be requested from the standards set forth in Section 9.52.040 or 9.52.060 of this chapter and may be characterized as construction-related, single-event or continuous-events exceptions.

A. Application and Processing.

1. Construction-Related Exceptions. An application for a construction-related exception shall be made to and considered by the director of building and safety on forms provided by the building and safety department and shall be accompanied by the appropriate filing fee. No public hearing is required.

2. Single-Event Exceptions. An application for a single-event exception shall be made to and considered by the planning director on forms provided by the planning department and shall be accompanied by the appropriate filing fee. No public hearing is required.

3. Continuous-Events Exceptions. An application for a continuous-events exception shall be made to the planning director on forms provided by the planning department and shall be accompanied by the appropriate filing fee. Upon receipt of an application for a continuous-events exception, the planning director shall set the matter for public hearing before the planning commission, notice of which shall be given as provided in Section 18.26c of Riverside County Ordinance No. 348. Notwithstanding the above, an application for a continuous-events exception that is associated with an application for a land use permit shall be processed concurrently with the land use permit in the same manner that the land use permit is required to be processed.

B. Requirements for Approval. The appropriate decisionmaking body or officer shall not approve an exception application unless the applicant demonstrates that the activities described in the application would not be detrimental to the health, safety or general welfare of the community. In determining whether activities are detrimental to the health, safety or general welfare of the community, the appropriate decisionmaking body or officer shall consider such factors as the proposed duration of the activities and their location in relation to sensitive receptors. If an exception application is approved, reasonable conditions may be imposed to minimize the public detriment, including, but not limited to, restrictions on sound level, sound duration and operating hours.

C. Appeals. The director of building and safety's decision on an application for a construction-related exception is considered final. The planning director's decision on an application for a single-event exception is considered final. After making a decision on an application for a continuous-events exception, the appropriate decisionmaking body or officer shall mail notice of the decision to the applicant. Within ten (10) calendar days after the mailing of such notice, the applicant or an interested person may appeal the decision to the board of supervisors. Upon receipt of an appeal and payment of the appropriate appeal fee, the clerk of the board shall set the matter for hearing not less than five days nor more than thirty (30) days thereafter and shall give written notice of the hearing in the same manner as notice of the hearing was given by the appropriate hearing officer or body. The board of supervisors shall render its decision within thirty (30) days after the appeal hearing is closed.

D. Effect of a Pending Continuous-Events Exception Application. For a period of one hundred eighty (180) days from the effective date of this chapter, no person creating any sound prohibited by this chapter shall be considered in violation of this chapter if the sound is related to a use that is operating pursuant to an approved land use permit, if an application for a continuous-events exception has been filed to sanction the sound and if a decision on the application is pending.

(Ord. 847 § 7, 2006)

9.52.080 Enforcement.

The Riverside County sheriff and code enforcement shall have the primary responsibility for enforcing this chapter; provided, however, the sheriff and code enforcement may be assisted by the public health department. Violations shall be prosecuted as described in Section 9.52.100 of this chapter, but nothing in this chapter shall

prevent the sheriff, code enforcement or the department of public health from engaging in efforts to obtain voluntary compliance by means of warnings, notices, or educational programs.

(Ord. 847.1 § 1, 2007: Ord. 847 § 8, 2006)

9.52.090 Duty to cooperate.

No person shall refuse to cooperate with, or obstruct, the enforcement officials identified in Section 9.52.080 of this chapter when they are engaged in the process of enforcing the provisions of this chapter. This duty to cooperate may require a person to extinguish a sound source so that it can be determined whether sound emanating from the source violates the provisions of this chapter.

(Ord. 847 § 9, 2006)

9.52.100 Violations and penalties.

Any person who violates any provision of this chapter once or twice within a one hundred eighty (180) day period shall be guilty of an infraction. Any person who violates any provision of this chapter more than twice within a one hundred eighty (180) day period shall be guilty of a misdemeanor. Each day a violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. Penalties shall not exceed the following amounts:

A. For the first violation within a one hundred eighty (180) day period, the minimum mandatory fine shall be five hundred dollars ($500.00).

B. For the second violation within a one hundred eighty (180) day period, the minimum mandatory fine shall be seven hundred fifty dollars ($750.00).

C. For any further violations within a one hundred eighty (180) day period, the minimum mandatory fine shall be one thousand dollars ($1,000.00) or imprisonment in the county jail for a period not exceeding six months, or both.

(Ord. 847 § 10, 2006)

ORDINANCE NO. 847
(AS AMENDED THROUGH 847.1)
AN ORDINANCE OF THE COUNTY OF RIVERSIDE AMENDING
ORDINANCE NO. 847 REGULATING NOISE

The Board of Supervisors of the County of Riverside, State of California, ordains as follows:

Section 1. Findings. The Board of Supervisors finds that the unnecessary, excessive and annoying noises from various sources within the unincorporated territory of the County of Riverside control the health, safety and welfare of the residents of the County and that a comprehensive noise control ordinance is necessary to protect the public health, safety and welfare.

Section 2. Section 2 of Ordinance No. 847 is amended to read as follows:

The following words, phrases and terms shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

(a) "Ambient noise" means the all-encompassing noise associated with a given environment, usually a composite of sounds from many sources near and far, but does not include noise generated by the operation of a business or industry.

(b) "Commercial property" means any property used for the purpose of buying and selling goods and services, including, but not limited to, hotels, motels, offices, restaurants, theaters, retail stores, and shopping centers.

(c) "Construction" means any site preparation, assembly, erection, substantial repair, alteration, or similar action, but excluding demolition, of public or private rights-of-way, structures, utilities or similar property.

(d) "Decibel" means a unit for measuring the volume of sound, equal to twenty times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is twenty micropascals (20 micronewtons per square meter). Decibels are abbreviated "dB." Unless otherwise specified, the decibel value shall be measured by the "A" weighted scale ("dBA") which reflects the relative loudness perceived by the human ear. The "A" weighted scale is the scale used in the American National Standards Institute (ANSI) Publication S1.4-1983 (R2006) "Specification for Sound Level Meters" or the most recent publication of the ANSI specification for sound level meters. If the "A" weighted scale is not used, the scale shall be clearly indicated.

(e) "Emergency" means any occurrence or circumstance involving actual or imminent physical trauma or property damage which demands immediate action.

(f) "Emergency work" means any work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.

(g) "Fixed noise source" means a stationary device which creates sounds while fixed or motionless, including, but not limited to, residential, agricultural, industrial and commercial machinery and equipment, pumps, fans, compressors, air conditioners and refrigeration units.

(h) "Impulsive noise" means a noise characterized by brief excursions of pressure (acoustic impulses) lasting less than one second, as measured with a sound level meter set for fast response.

(i) "Industrial property" means any property used for the purpose of manufacturing goods and services, including, but not limited to, factories, refineries, and processing plants.

(j) "Mobile noise source" means any noise source other than a fixed noise source.

(k) "Multiple-family dwelling" means any property containing more than one dwelling unit, including, but not limited to, duplexes, apartments, condominiums, and townhouses.

(l) "Noise disturbance" means any sound which endangers or injures the safety or health of humans or animals, or annoys or disturbs a reasonable person of normal sensitivities, or endangers or injures personal or real property.

(m) "Noise level" means the maximum sound pressure level measured over a given period of time.

(n) "Noise sensitive area" means any area designated pursuant to the Noise Element of the General Plan, or any area containing a hospital, rest home, long-term care facility, mental care facility, or any area designated by the Board of Supervisors.

(o) "Person" means any person, firm, association, partnership, corporation, limited liability company, or any agency, district or political subdivision of the State of California or any agency of the federal government.

(p) "Public property" means any property owned by the County of Riverside, any city, any school district, any special district, the State of California, or the federal government.

(q) "Public right-of-way" means any street, avenue, boulevard, highway, sidewalk, alley or similar place which is owned or controlled by a public entity.

(r) "Residential property" means any property used for human habitation, including, but not limited to, single-family dwellings, multiple-family dwellings, mobile homes, and recreational vehicles.

(s) "Sound level meter" means an instrument, including a microphone, amplifier, and frequency weighting networks, for the measurement of sound levels which meets or exceeds the requirements pertinent for Type 2 meters in ANSI Publication S1.4-1983 (R2006) "Specification for Sound Level Meters" or the most recent publication of the ANSI specification for sound level meters.

(t) "Sound pressure level" means twenty times the logarithm to the base ten of the ratio of the pressure of a sound to the reference pressure, which is twenty micropascals (20 micronewtons per square meter). The sound pressure level is denoted in decibels.

(u) "Weekday" means any day, Monday through Friday, which is not a recognized holiday.

(v) "Weekend" means any Saturday, Sunday, or recognized holiday.

Section 3. Section 3 of Ordinance No. 847 is amended to read as follows:

Except as otherwise provided in this ordinance, it shall be unlawful for any person to make, continue, or cause to be made or continued any noise disturbance.

Section 4. Section 4 of Ordinance No. 847 is amended to read as follows:

Except as otherwise provided in this ordinance, the following acts, among others, are declared to be noise disturbances:

(a) Operating or causing the operation of any mobile noise source in such a manner as to create a noise level which exceeds the limits set forth for the receiving land use in Section 7 of this ordinance.

(b) Operating or causing the operation of any fixed noise source in such a manner as to create a noise level which exceeds the limits set forth for the receiving land use in Section 7 of this ordinance.

(c) Operating or causing the operation of any device that creates an impulsive noise in such a manner as to create a noise level which exceeds the limits set forth for the receiving land use in Section 7 of this ordinance.

(d) Operating or causing the operation of any device, other than a mobile noise source, that creates a noise level which exceeds the ambient noise level by more than 10 dB(A) when measured at the boundary of the property on which the device is located. If the ambient noise level is 65 dB(A) or greater, then the noise level created by the device shall not exceed the ambient noise level by more than 5 dB(A) when measured at the boundary of the property on which the device is located.

(e) Operating or causing the operation of any device that creates a vibration which is above the vibration perception threshold of an individual at or beyond the boundary of the property on which the device is located. For the purposes of this section, vibration perception threshold means the minimum ground- or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects.

(f) Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m. or at any time on weekends or holidays, such that the noise level created exceeds the noise level standards as set forth in Section 7 of this ordinance, except for emergency work of public service utilities or by variance issued pursuant to Section 12 of this ordinance.

(g) Operating or causing the operation of any equipment used in forestry maintenance on any day between the hours of 10:00 p.m. and 6:00 a.m., such that the noise level created exceeds the noise level standards as set forth in Section 7 of this ordinance.

(h) Any activity to which the provisions of Section 5 or 6 of this ordinance are applicable.

(i) Any activity to which the provisions of Section 8 of this ordinance are applicable.

(j) Any activity to which the provisions of Section 9 of this ordinance are applicable.

(k) Any activity to which the provisions of Section 10 of this ordinance are applicable.

(l) Any activity to which the provisions of Section 11 of this ordinance are applicable.

Section 5. Section 5 of Ordinance No. 847 is amended to read as follows:

(a) Except as otherwise provided in this ordinance, it shall be unlawful for any person to operate or cause the operation of any motor vehicle on any public right-of-way in such a manner as to create a noise level which exceeds the following limits:

(1) 80 dB(A) for a motor vehicle with a manufacturer's gross vehicle weight rating of 6,000 pounds or more, measured at a distance of 50 feet or more from the motor vehicle; or

(2) 76 dB(A) for a motor vehicle with a manufacturer's gross vehicle weight rating of less than 6,000 pounds, measured at a distance of 50 feet or more from the motor vehicle.

(b) Except as otherwise provided in this ordinance, it shall be unlawful for any person to operate or cause the operation of any motor vehicle on any public right-of-way in such a manner as to create a noise level which exceeds the following limits:

(1) 86 dB(A) for a motor vehicle with a manufacturer's gross vehicle weight rating of 6,000 pounds or more, measured at a distance of 50 feet or more from the motor vehicle; or

(2) 82 dB(A) for a motor vehicle with a manufacturer's gross vehicle weight rating of less than 6,000 pounds, measured at a distance of 50 feet or more from the motor vehicle.

(c) Except as otherwise provided in this ordinance, it shall be unlawful for any person to operate or cause the operation of any motor vehicle on any public right-of-way in such a manner as to create a noise level which exceeds the following limits:

(1) 92 dB(A) for a motor vehicle with a manufacturer's gross vehicle weight rating of 6,000 pounds or more, measured at a distance of 50 feet or more from the motor vehicle; or

(2) 88 dB(A) for a motor vehicle with a manufacturer's gross vehicle weight rating of less than 6,000 pounds, measured at a distance of 50 feet or more from the motor vehicle.

TABLE 1 SOUND LEVEL STANDARDS (Db L_{max})					
GENERAL PLAN FOUNDATION COMPONENT	GENERAL PLAN LAND USE DESIGNATION	GENERAL PLAN LAND USE DESIGNATION NAME	DENSITY	MAXIMUM DECIBEL LEVEL	
				7am-10pm	10pm-7am
	DR	D R d	2		
	DR	r d R d			
	DR	D R d	2		
	MDR	M d D R d	2		
	M DR	M d D R d			
	DR	D R d			
	DR	r D R d	2		
	DR	D R d	2		
	R	R r			
D		r			
		r r			
		r			
		d r			
		d r			
		r			
		R d			
		r			
		d r			
		d r			
R r	DR	D R d	2		
	DR	r D R d			
	DR	D R d	2		
R r	RR	R r R d			
	RM	R r M			
	RD	R r D r			
r r		r r			
		r			
		r			
	R	R r			
	R R	R r	2		
		r d			
	MR	M r R r			

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□□□□□□□□□□□□□□□□D□□□□□□□□□□□□R□□□□□□□□□□□□□□□□

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APPENDIX 5.1:

STUDY AREA PHOTOS

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15749_L1_O 1.North
33, 49' 16.940000", 117, 15' 1.870000"



15749_L1_O 2.South
33, 49' 16.970000", 117, 15' 1.810000"



15749_L1_O 3.East
33, 49' 16.940000", 117, 15' 1.790000"



15749_L1_O 4.West
33, 49' 16.900000", 117, 15' 1.840000"



15749_L2_P 1.North
33, 49' 22.000000", 117, 15' 2.250000"



15749_L2_P 2.South
33, 49' 21.910000", 117, 15' 2.140000"



15749_L2_P 3.East
33, 49' 21.860000", 117, 15' 2.090000"



15749_L2_P 4.West
33, 49' 21.890000", 117, 15' 1.980000"

JN:15749



15749_L3_T 1.North
33, 49' 9.600000", 117, 15' 2.110000"



15749_L3_T 2.South
33, 49' 9.580000", 117, 15' 2.170000"



15749_L3_T 3.East
33, 49' 9.610000", 117, 15' 2.110000"



15749_L3_T 4.West
33, 49' 9.640000", 117, 15' 2.250000"

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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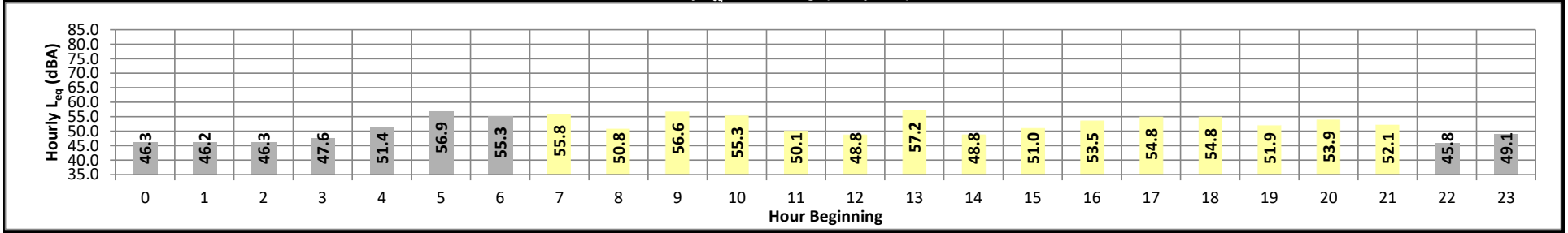
24-Hour Noise Level Measurement Summary

Date: Wednesday, January 24, 2024 *Location:* L1 - Located west of the site near the residence at 20601 *Meter:* Piccolo II *JN:* 15749

Project: Thrifty Oil *Source:* Tobacco Rd *Analyst:* Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	46.3	50.2	43.3	49.8	49.5	48.6	48.2	47.0	46.0	44.2	43.9	43.4	46.3	10.0	56.3
	1	46.2	53.9	41.8	53.7	53.2	50.7	49.7	46.1	44.7	42.8	42.4	42.0	46.2	10.0	56.2
	2	46.3	49.4	43.8	49.1	48.8	48.2	47.7	46.8	46.0	44.7	44.3	43.9	46.3	10.0	56.3
	3	47.6	50.3	45.5	50.1	49.9	49.4	49.0	48.1	47.4	46.2	45.9	45.6	47.6	10.0	57.6
	4	51.4	53.3	49.7	53.1	53.0	52.7	52.5	51.8	51.2	50.3	50.1	49.8	51.4	10.0	61.4
	5	56.9	58.5	55.7	58.3	58.1	57.8	57.6	57.2	56.8	56.2	56.0	55.8	56.9	10.0	66.9
	6	55.3	57.6	53.9	57.5	57.3	56.8	56.4	55.6	55.1	54.3	54.2	53.9	55.3	10.0	65.3
Day	7	55.8	58.7	54.3	58.4	58.0	57.5	57.0	56.1	55.5	54.7	54.6	54.4	55.8	0.0	55.8
	8	50.8	53.8	48.8	53.5	53.1	52.6	52.2	51.2	50.5	49.4	49.1	48.9	50.8	0.0	50.8
	9	56.6	64.2	43.0	63.9	63.6	62.8	62.5	57.8	47.5	43.6	43.3	43.1	56.6	0.0	56.6
	10	55.3	61.8	43.6	61.6	61.4	60.6	59.9	57.0	53.3	44.2	44.0	43.6	55.3	0.0	55.3
	11	50.1	57.6	43.4	57.0	56.3	54.9	53.9	51.2	48.2	44.5	44.1	43.6	50.1	0.0	50.1
	12	48.8	57.7	43.4	57.2	56.4	53.8	52.0	49.1	46.8	44.1	43.8	43.5	48.8	0.0	48.8
	13	57.2	65.3	44.0	65.0	64.9	64.4	63.4	57.8	50.5	44.9	44.5	44.2	57.2	0.0	57.2
	14	48.8	59.8	42.6	59.5	58.8	55.9	52.9	46.2	44.8	43.0	42.8	42.7	48.8	0.0	48.8
	15	51.0	62.8	44.6	62.4	61.4	58.5	54.6	47.6	46.3	45.1	44.9	44.7	51.0	0.0	51.0
	16	53.5	68.7	41.9	67.4	65.5	59.7	56.0	45.5	44.0	42.5	42.3	42.0	53.5	0.0	53.5
	17	54.8	58.3	53.4	58.1	57.7	56.8	56.1	55.1	54.6	53.8	53.6	53.4	54.8	0.0	54.8
	18	54.8	58.2	52.9	58.0	57.7	56.7	56.1	55.3	54.6	53.5	53.2	53.0	54.8	0.0	54.8
	19	51.9	54.8	50.0	54.6	54.4	53.7	53.2	52.4	51.7	50.5	50.3	50.1	51.9	5.0	56.9
	20	53.9	58.7	50.2	58.5	58.3	57.5	56.9	54.8	52.6	50.9	50.6	50.3	53.9	5.0	58.9
	21	52.1	59.0	43.9	58.7	58.5	57.8	57.3	53.2	48.3	44.7	44.4	44.0	52.1	5.0	57.1
Night	22	45.8	50.4	43.5	50.2	49.8	48.5	47.6	46.1	45.2	44.1	43.8	43.6	45.8	10.0	55.8
	23	49.1	52.1	46.7	51.8	51.6	51.1	50.7	49.6	48.8	47.5	47.2	46.9	49.1	10.0	59.1

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	48.8	53.8	41.9	53.5	53.1	52.6	52.0	45.5	44.0	42.5	42.3	42.0
	Max	57.2	68.7	54.3	67.4	65.5	64.4	63.4	57.8	55.5	54.7	54.6	54.4
Energy Average		53.8	Average:		59.6	59.1	57.5	56.3	52.7	50.0	47.3	47.0	46.8
Night	Min	45.8	49.4	41.8	49.1	48.8	48.2	47.6	46.1	44.7	42.8	42.4	42.0
	Max	56.9	58.5	55.7	58.3	58.1	57.8	57.6	57.2	56.8	56.2	56.0	55.8
Energy Average		51.5	Average:		52.6	52.3	51.5	51.0	49.8	49.0	47.8	47.5	47.2

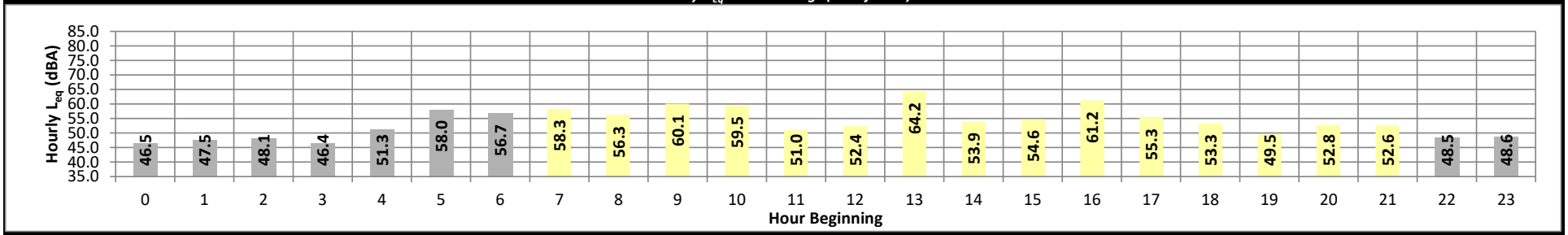
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
58.6	**53.8**	**51.5**

24-Hour Noise Level Measurement Summary

Date: Wednesday, January 24, 2024 *Location:* L2 - Located west of the site near the residence at 23551 *Meter:* Piccolo II *JN:* 15749

Project: Thrifty Oil *Source:* Placentia Av. *Analyst:* Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	46.5	50.5	43.9	50.1	49.6	48.7	48.2	47.0	46.1	44.7	44.4	44.0	46.5	10.0	56.5
	1	47.5	59.9	42.2	59.4	57.2	52.0	49.5	46.0	44.7	43.0	42.7	42.3	47.5	10.0	57.5
	2	48.1	60.9	42.8	59.6	57.8	53.0	50.7	45.7	44.9	43.6	43.3	42.9	48.1	10.0	58.1
	3	46.4	52.2	43.7	51.7	50.9	49.2	48.5	46.5	45.6	44.5	44.2	43.8	46.4	10.0	56.4
	4	51.3	55.1	49.6	54.7	54.2	53.0	52.6	51.7	51.0	50.1	49.9	49.7	51.3	10.0	61.3
	5	58.0	62.1	56.5	61.6	61.0	59.7	59.1	58.3	57.8	56.9	56.8	56.6	58.0	10.0	68.0
	6	56.7	62.5	54.8	62.0	61.2	59.5	58.5	56.8	56.1	55.2	55.0	54.8	56.7	10.0	66.7
Day	7	58.3	66.8	55.6	66.2	65.1	62.0	60.7	57.8	56.9	56.1	55.9	55.7	58.3	0.0	58.3
	8	56.3	65.9	50.1	65.4	64.5	61.9	59.9	55.5	54.1	51.7	51.4	50.4	56.3	0.0	56.3
	9	60.1	68.4	43.6	68.0	67.7	67.2	66.6	61.4	49.5	44.6	44.2	43.7	60.1	0.0	60.1
	10	59.5	66.1	43.7	65.8	65.5	64.9	64.5	62.1	55.7	44.6	44.2	43.9	59.5	0.0	59.5
	11	51.0	60.5	42.6	60.0	59.2	57.1	55.7	51.1	47.7	43.4	43.1	42.7	51.0	0.0	51.0
	12	52.4	62.8	44.3	62.3	61.6	59.3	56.9	51.2	48.7	45.1	44.7	44.4	52.4	0.0	52.4
	13	64.2	77.6	47.5	76.8	75.4	71.8	69.9	59.3	53.6	49.2	48.6	47.8	64.2	0.0	64.2
	14	53.9	64.6	42.5	63.9	63.2	60.6	58.6	53.1	49.7	43.3	42.9	42.6	53.9	0.0	53.9
	15	54.6	66.2	43.5	65.4	64.4	61.6	59.9	53.5	47.7	44.1	43.9	43.6	54.6	0.0	54.6
	16	61.2	77.6	41.5	75.8	73.6	67.5	62.3	51.6	46.6	42.7	42.0	41.6	61.2	0.0	61.2
	17	55.3	64.1	51.7	63.7	62.9	60.2	58.3	54.7	53.5	52.2	52.0	51.8	55.3	0.0	55.3
	18	53.3	62.7	48.0	62.1	61.1	58.4	56.9	53.5	51.0	48.8	48.5	48.1	53.3	0.0	53.3
	19	49.5	59.5	43.5	58.8	57.9	55.2	53.4	49.4	46.5	44.0	43.8	43.6	49.5	5.0	54.5
	20	52.8	61.3	45.6	60.8	60.1	58.5	57.2	53.3	49.8	46.6	46.1	45.6	52.8	5.0	57.8
	21	52.6	61.3	40.2	61.0	60.5	59.1	57.8	53.3	48.0	41.9	41.0	40.5	52.6	5.0	57.6
Night	22	48.5	58.9	43.3	58.5	57.8	55.5	52.9	46.3	45.0	43.9	43.6	43.4	48.5	10.0	58.5
	23	48.6	53.5	46.4	53.1	52.5	51.3	50.5	48.9	48.1	47.1	46.8	46.5	48.6	10.0	58.6

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	49.5	59.5	40.2	58.8	57.9	55.2	53.4	49.4	46.5	41.9	41.0	40.5
	Max	64.2	77.6	55.6	76.8	75.4	71.8	69.9	62.1	56.9	56.1	55.9	55.7
Energy Average		57.7	Average:		65.1	64.2	61.7	59.9	54.7	50.6	46.6	46.2	45.7
Night	Min	46.4	50.5	42.2	50.1	49.6	48.7	48.2	45.7	44.7	43.0	42.7	42.3
	Max	58.0	62.5	56.5	62.0	61.2	59.7	59.1	58.3	57.8	56.9	56.8	56.6
Energy Average		52.5	Average:		56.8	55.8	53.6	52.3	49.7	48.8	47.7	47.4	47.1

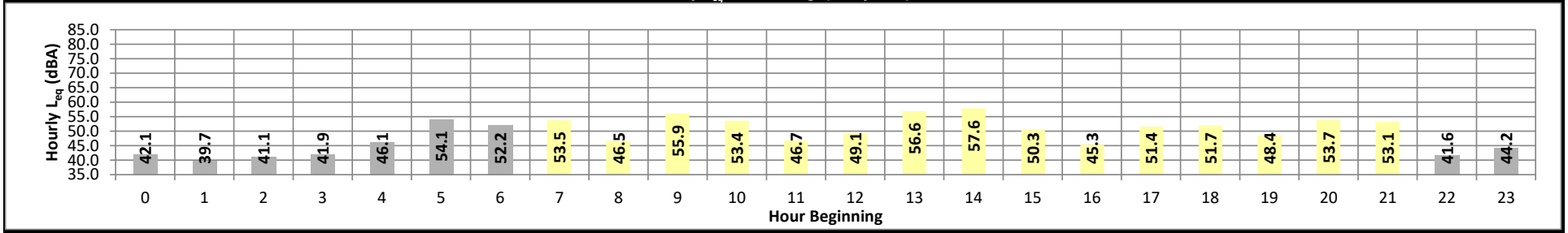
24-Hour CNEL	*Leq (dBA)* *Daytime (7am-10pm)*	*Nighttime (10pm-7am)*
60.3	**57.7**	**52.5**

24-Hour Noise Level Measurement Summary

Date: Wednesday, January 24, 2024 *Location:* L3 - Located south of the site near the residence at 20800 *Meter:* Piccolo II *JN:* 15749

Project: Thrifty Oil *Source:* Tobacco Rd. *Analyst:* Z. Ibrahim

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	42.1	45.5	39.6	45.2	44.8	44.1	43.7	42.6	41.7	40.4	40.1	39.7	42.1	10.0	52.1
	1	39.7	44.9	36.4	44.6	44.4	43.4	42.6	40.2	38.8	37.0	36.7	36.4	39.7	10.0	49.7
	2	41.1	45.0	37.9	44.6	44.3	43.7	43.3	41.9	40.7	38.9	38.5	38.0	41.1	10.0	51.1
	3	41.9	45.1	39.7	44.8	44.5	43.7	43.4	42.5	41.7	40.5	40.2	39.8	41.9	10.0	51.9
	4	46.1	49.1	44.3	48.9	48.6	47.8	47.4	46.6	45.9	44.8	44.6	44.4	46.1	10.0	56.1
	5	54.1	56.2	52.8	56.0	55.8	55.3	55.0	54.4	53.9	53.2	53.1	52.9	54.1	10.0	64.1
	6	52.2	56.2	50.5	56.0	55.6	54.2	53.5	52.4	51.8	51.0	50.7	50.6	52.2	10.0	62.2
Day	7	53.5	58.4	51.6	57.5	56.8	55.5	54.9	53.9	53.2	52.1	51.9	51.7	53.5	0.0	53.5
	8	46.5	50.0	43.9	49.7	49.4	48.8	48.5	47.4	46.3	44.4	44.2	44.0	46.5	0.0	46.5
	9	55.9	64.1	41.4	63.7	63.1	62.2	61.8	57.6	49.2	42.4	42.1	41.6	55.9	0.0	55.9
	10	53.4	60.9	41.6	60.4	59.8	58.5	57.9	54.9	51.8	42.6	42.2	41.8	53.4	0.0	53.4
	11	46.7	54.0	40.2	53.4	52.8	51.8	50.8	47.7	44.9	41.0	40.7	40.3	46.7	0.0	46.7
	12	49.1	58.7	40.9	58.2	57.3	54.6	52.8	49.5	46.3	42.0	41.5	41.0	49.1	0.0	49.1
	13	56.6	67.4	41.4	67.1	66.4	63.8	62.4	55.1	47.5	42.8	42.3	41.6	56.6	0.0	56.6
	14	57.6	70.2	39.6	69.8	69.1	64.2	62.7	54.1	42.6	40.3	40.0	39.7	57.6	0.0	57.6
	15	50.3	63.0	41.2	62.0	60.7	58.6	53.5	47.0	43.8	41.8	41.5	41.3	50.3	0.0	50.3
	16	45.3	54.9	40.9	54.5	53.8	50.7	48.2	44.5	42.9	41.5	41.3	41.0	45.3	0.0	45.3
	17	51.4	55.4	49.4	55.1	54.7	53.9	53.3	51.8	50.9	49.9	49.7	49.5	51.4	0.0	51.4
	18	51.7	54.5	49.4	54.3	54.1	53.7	53.5	52.5	51.3	49.9	49.7	49.5	51.7	0.0	51.7
	19	48.4	51.6	46.5	51.1	50.9	50.3	49.9	49.0	48.2	47.0	46.8	46.5	48.4	5.0	53.4
	20	53.7	59.6	46.2	59.3	59.1	58.4	58.0	55.5	50.7	47.1	46.8	46.3	53.7	5.0	58.7
	21	53.1	60.1	41.3	59.8	59.6	59.0	58.5	55.4	46.8	42.6	42.1	41.5	53.1	5.0	58.1
Night	22	41.6	44.5	39.7	44.2	43.8	43.3	43.0	42.0	41.3	40.3	40.1	39.8	41.6	10.0	51.6
	23	44.2	47.5	42.0	47.2	46.8	46.1	45.6	44.7	43.9	42.7	42.5	42.1	44.2	10.0	54.2

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	45.3	50.0	39.6	49.7	49.4	48.8	48.2	44.5	42.6	40.3	40.0	39.7
	Max	57.6	70.2	51.6	69.8	69.1	64.2	62.7	57.6	53.2	52.1	51.9	51.7
Energy Average		53.0	Average:		58.4	57.8	56.3	55.1	51.7	47.7	44.5	44.2	43.8
Night	Min	39.7	44.5	36.4	44.2	43.8	43.3	42.6	40.2	38.8	37.0	36.7	36.4
	Max	54.1	56.2	52.8	56.0	55.8	55.3	55.0	54.4	53.9	53.2	53.1	52.9
Energy Average		47.9	Average:		47.9	47.6	46.9	46.4	45.3	44.4	43.2	42.9	42.6

24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
56.0	**53.0**	**47.9**

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APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE LEVEL CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E
Road Name: Tobacco Rd.
Road Segment: s/o Placentia Av.
Project Name: Thrifty Oil
Job Number: 15749

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	91 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	9 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.851
Medium Trucks:	36.610
Heavy Trucks:	36.634

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-22.10	1.88	-1.20	-4.56	0.000	0.000
Medium Trucks:	77.72	-36.96	1.93	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-34.75	1.92	-1.20	-5.61	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	45.1	43.1	41.8	35.8	44.2	44.8
Medium Trucks:	41.5	37.5	29.7	38.9	45.1	45.1
Heavy Trucks:	49.0	45.0	37.2	46.4	52.6	52.6
Vehicle Noise:	51.0	47.6	43.3	47.4	53.8	53.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	3	7	14	31
CNEL:	3	7	14	31

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P
Road Name: Tobacco Rd.
Road Segment: s/o Placentia Av.
Project Name: Thrifty Oil
Job Number: 15749

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	335 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	34 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	37.0 feet
Centerline Dist. to Observer:	37.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	80.82%
Medium Trucks:	48.0%	2.0%	50.0%	3.80%
Heavy Trucks:	48.0%	2.0%	50.0%	15.38%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	36.851
Medium Trucks:	36.610
Heavy Trucks:	36.634

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-17.00	1.88	-1.20	-4.56	0.000	0.000
Medium Trucks:	77.72	-30.28	1.93	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-24.20	1.92	-1.20	-5.61	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.2	48.2	46.9	40.9	49.3	49.9
Medium Trucks:	48.2	44.2	36.4	45.6	51.8	51.8
Heavy Trucks:	59.5	55.5	47.8	57.0	63.1	63.1
Vehicle Noise:	60.3	56.5	50.5	57.4	63.6	63.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	30	64	138
CNEL:	14	30	65	139

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E
Road Name: Placentia Av.
Road Segment: w/o Tobacco Rd.
Project Name: Thrifty Oil
Job Number: 15749

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	762 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	76 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-12.87	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-27.74	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-25.52	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.8	50.7	49.4	43.4	51.8	52.5
Medium Trucks:	49.1	45.1	37.4	46.6	52.7	52.8
Heavy Trucks:	56.6	52.6	44.9	54.1	60.2	60.2
Vehicle Noise:	58.6	55.2	50.9	55.1	61.4	61.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	13	29	62	134
CNEL:	14	29	63	136

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P
Road Name: Placentia Av.
Road Segment: w/o Tobacco Rd.
Project Name: Thrifty Oil
Job Number: 15749

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	866 vehicles
Peak Hour Percentage:	10.00%
Peak Hour Volume:	87 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	92.96%
Medium Trucks:	48.0%	2.0%	50.0%	2.64%
Heavy Trucks:	48.0%	2.0%	50.0%	4.40%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-12.27	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-27.74	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-25.52	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.4	51.3	50.0	44.0	52.4	53.1
Medium Trucks:	49.1	45.1	37.4	46.6	52.7	52.8
Heavy Trucks:	56.6	52.6	44.9	54.1	60.2	60.2
Vehicle Noise:	58.8	55.5	51.4	55.1	61.5	61.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	14	29	63	136
CNEL:	14	30	64	138

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E
Road Name: Placentia Av.
Road Segment: e/o Tobacco Rd.
Project Name: Thrifty Oil
Job Number: 15749

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS	
Highway Data		***Site Conditions (Hard = 10, Soft = 15)***	
Average Daily Traffic (Adt):	991 vehicles	*Autos:*	15
Peak Hour Percentage:	10.00%	*Medium Trucks (2 Axles):*	15
Peak Hour Volume:	99 vehicles	*Heavy Trucks (3+ Axles):*	15
Vehicle Speed:	40 mph		
Near/Far Lane Distance:	36 feet		

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	92.00%
Medium Trucks:	48.0%	2.0%	50.0%	3.00%
Heavy Trucks:	48.0%	2.0%	50.0%	5.00%

Site Data		***Noise Source Elevations (in feet)***			
Barrier Height:	**0.0 feet**	*Autos:*	0.000		
Barrier Type (0-Wall, 1-Berm):	0.0	*Medium Trucks:*	2.297		
Centerline Dist. to Barrier:	50.0 feet	*Heavy Trucks:*	8.004	*Grade Adjustment:*	0.0
Centerline Dist. to Observer:	50.0 feet				
Barrier Distance to Observer:	0.0 feet	***Lane Equivalent Distance (in feet)***			
Observer Height (Above Pad):	5.0 feet	*Autos:*	46.915		
Pad Elevation:	0.0 feet	*Medium Trucks:*	46.726		
Road Elevation:	0.0 feet	*Heavy Trucks:*	46.744		
Road Grade:	0.0%				
Left View:	-90.0 degrees				
Right View:	90.0 degrees				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-11.73	0.31	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	77.72	-26.59	0.34	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-24.38	0.34	-1.20	*-5.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.9	51.9	50.6	44.6	53.0	53.6
Medium Trucks:	50.3	46.3	38.5	47.7	53.9	53.9
Heavy Trucks:	57.8	53.8	46.0	55.2	61.4	61.4
Vehicle Noise:	59.8	56.4	52.1	56.2	62.6	62.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	34	74	160
CNEL:	16	35	75	162

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (9/12/2021)

Scenario: E+P
Road Name: Placentia Av.
Road Segment: e/o Tobacco Rd.
Project Name: Thrifty Oil
Job Number: 15749

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS	
Highway Data		***Site Conditions (Hard = 10, Soft = 15)***	
Average Daily Traffic (Adt):	1,131 vehicles	*Autos:*	15
Peak Hour Percentage:	10.00%	*Medium Trucks (2 Axles):*	15
Peak Hour Volume:	113 vehicles	*Heavy Trucks (3+ Axles):*	15
Vehicle Speed:	40 mph		
Near/Far Lane Distance:	36 feet		

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	87.95%
Medium Trucks:	48.0%	2.0%	50.0%	3.51%
Heavy Trucks:	48.0%	2.0%	50.0%	8.54%

Site Data		***Noise Source Elevations (in feet)***			
Barrier Height:	**0.0 feet**	*Autos:*	0.000		
Barrier Type (0-Wall, 1-Berm):	0.0	*Medium Trucks:*	2.297		
Centerline Dist. to Barrier:	50.0 feet	*Heavy Trucks:*	8.004	*Grade Adjustment:*	0.0
Centerline Dist. to Observer:	50.0 feet				
Barrier Distance to Observer:	0.0 feet	***Lane Equivalent Distance (in feet)***			
Observer Height (Above Pad):	5.0 feet	*Autos:*	46.915		
Pad Elevation:	0.0 feet	*Medium Trucks:*	46.726		
Road Elevation:	0.0 feet	*Heavy Trucks:*	46.744		
Road Grade:	0.0%				
Left View:	-90.0 degrees				
Right View:	90.0 degrees				

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-11.35	0.31	-1.20	*-4.65*	0.000	0.000
Medium Trucks:	77.72	-25.33	0.34	-1.20	*-4.87*	0.000	0.000
Heavy Trucks:	82.99	-21.48	0.34	-1.20	*-5.43*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.3	52.3	51.0	44.9	53.4	54.0
Medium Trucks:	51.5	47.5	39.8	49.0	55.1	55.2
Heavy Trucks:	60.7	56.7	48.9	58.1	64.3	64.3
Vehicle Noise:	62.0	58.4	53.3	58.8	65.1	65.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	23	50	109	234
CNEL:	24	51	110	237

APPENDIX 9.1:

OPERATIONAL NOISE CALCULATIONS

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15749 - Thrifty Oil Warehouse

CadnaA Noise Prediction Model: 15749-02.cna
Date: 23.02.24
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**3048.00**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**1**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	43.5	42.6	49.3	55.0	45.0	0.0				5.00	a	6257654.23	2244001.83	5.00
RECEIVERS		R2	44.9	43.9	50.6	55.0	45.0	0.0				5.00	a	6257724.64	2244453.04	5.00
RECEIVERS		R3	39.5	39.3	46.0	55.0	45.0	0.0				5.00	a	6257931.41	2242887.95	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6257934.81	2243987.02	40.00
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6257973.14	2244011.72	40.00
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6257932.25	2244464.05	40.00
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	5.00	g	6257970.58	2244431.68	40.00
POINTSOURCE		TRASH01	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	a	6258400.76	2244368.14	5.00
POINTSOURCE		TRASH02	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	a	6258400.86	2244361.09	5.00
POINTSOURCE		TRASH03	89.0	89.0	89.0	Lw	89		900.00	0.00	270.00	5.00	a	6258401.05	2244353.93	5.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed		
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)	
LINESOURCE		TRUCK01	93.2	93.2	93.2	68.1	68.1	68.1	Lw	93.2									8	a

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
LINESOURCE	TRUCK01	8.00	a			6257842.09	2243946.98	8.00	0.00
						6258325.80	2243947.84	8.00	0.00
						6258332.22	2243951.35	8.00	0.00
						6258338.04	2243955.80	8.00	0.00
						6258343.11	2243961.09	8.00	0.00
						6258347.32	2243967.08	8.00	0.00
						6258350.57	2243973.65	8.00	0.00
						6258352.78	2243980.63	8.00	0.00
						6258353.91	2243987.87	8.00	0.00
						6258352.12	2244526.18	8.00	0.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
AREASOURCE		DOCK01	103.4	103.4	103.4	70.0	70.0	70.0	Lw	103.4					8	a
AREASOURCE		DOCK02	103.4	103.4	103.4	70.7	70.7	70.7	Lw	103.4					8	a
AREASOURCE		CAR01	81.1	81.1	81.1	60.0	60.0	60.0	Lw	81.1					5	a
AREASOURCE		CAR02	81.1	81.1	81.1	61.9	61.9	61.9	Lw	81.1					5	a
AREASOURCE		CAR03	81.1	81.1	81.1	57.9	57.9	57.9	Lw	81.1					5	a
AREASOURCE		CAR04	81.1	81.1	81.1	61.0	61.0	61.0	Lw	81.1					5	a
AREASOURCE		CAR05	81.1	81.1	81.1	58.9	58.9	58.9	Lw	81.1					5	a
AREASOURCE		CAR06	81.1	81.1	81.1	59.0	59.0	59.0	Lw	81.1					5	a
AREASOURCE		CAR07	81.1	81.1	81.1	59.2	59.2	59.2	Lw	81.1					5	a
AREASOURCE		CAR08	81.1	81.1	81.1	60.7	60.7	60.7	Lw	81.1					5	a
AREASOURCE		CAR09	81.1	81.1	81.1	60.9	60.9	60.9	Lw	81.1					5	a
AREASOURCE		CAR10	81.1	81.1	81.1	59.0	59.0	59.0	Lw	81.1					5	a
AREASOURCE		CAR11	81.1	81.1	81.1	58.6	58.6	58.6	Lw	81.1					5	a
AREASOURCE		CAR12	81.1	81.1	81.1	59.1	59.1	59.1	Lw	81.1					5	a
AREASOURCE		CAR13	81.1	81.1	81.1	58.6	58.6	58.6	Lw	81.1					5	a
AREASOURCE		CAR14	81.1	81.1	81.1	58.7	58.7	58.7	Lw	81.1					5	a
AREASOURCE		CAR15	81.1	81.1	81.1	58.8	58.8	58.8	Lw	81.1					5	a
AREASOURCE		CAR16	81.1	81.1	81.1	59.2	59.2	59.2	Lw	81.1					5	a
AREASOURCE		CAR17	81.1	81.1	81.1	59.1	59.1	59.1	Lw	81.1					5	a

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
AREASOURCE	DOCK01	8.00	a			6258257.01	2244390.43	8.00	0.00
						6258322.96	2244391.70	8.00	0.00
						6258319.79	2244022.61	8.00	0.00
						6258257.01	2244021.98	8.00	0.00
AREASOURCE	DOCK02	8.00	a			6258389.55	2244347.31	8.00	0.00
						6258440.92	2244347.31	8.00	0.00
						6258441.55	2243952.22	8.00	0.00
						6258392.09	2243952.85	8.00	0.00
AREASOURCE	CAR01	5.00	a			6258430.77	2244477.95	5.00	0.00
						6258449.80	2244479.22	5.00	0.00
						6258449.80	2244403.12	5.00	0.00
						6258432.04	2244404.39	5.00	0.00
AREASOURCE	CAR02	5.00	a			6258389.55	2244451.95	5.00	0.00
						6258406.67	2244451.32	5.00	0.00
						6258409.21	2244402.48	5.00	0.00
						6258390.19	2244401.85	5.00	0.00
AREASOURCE	CAR03	5.00	a			6258296.36	2243927.49	5.00	0.00
						6258438.67	2243928.45	5.00	0.00
						6258438.91	2243912.08	5.00	0.00
						6258295.88	2243912.32	5.00	0.00
AREASOURCE	CAR04	5.00	a			6258203.18	2243928.69	5.00	0.00
						6258261.45	2243928.21	5.00	0.00
						6258262.17	2243909.19	5.00	0.00
						6258203.18	2243909.91	5.00	0.00
AREASOURCE	CAR05	5.00	a			6257894.42	2243929.00	5.00	0.00
						6257990.55	2243929.00	5.00	0.00
						6257990.91	2243910.48	5.00	0.00
						6257894.07	2243910.84	5.00	0.00
AREASOURCE	CAR06	5.00	a			6257997.32	2243928.64	5.00	0.00
						6258092.73	2243928.28	5.00	0.00
						6258093.44	2243910.48	5.00	0.00
						6257997.67	2243909.77	5.00	0.00
AREASOURCE	CAR07	5.00	a			6258100.21	2243927.93	5.00	0.00
						6258195.62	2243927.93	5.00	0.00
						6258195.98	2243910.48	5.00	0.00
						6258100.21	2243910.48	5.00	0.00
AREASOURCE	CAR08	5.00	a			6257852.05	2244491.72	5.00	0.00
						6257871.15	2244493.05	5.00	0.00

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
						6257874.26	2244434.84	5.00	0.00
						6257852.94	2244433.95	5.00	0.00
AREASOURCE	CAR09	5.00	a			6257894.26	2244493.94	5.00	0.00
						6257912.48	2244494.38	5.00	0.00
						6257912.92	2244433.51	5.00	0.00
						6257893.37	2244434.84	5.00	0.00
AREASOURCE	CAR10	5.00	a			6257851.60	2244426.84	5.00	0.00
						6257872.04	2244427.29	5.00	0.00
						6257871.60	2244340.19	5.00	0.00
						6257851.60	2244340.19	5.00	0.00
AREASOURCE	CAR11	5.00	a			6257892.04	2244426.40	5.00	0.00
						6257912.03	2244427.29	5.00	0.00
						6257912.92	2244332.64	5.00	0.00
						6257893.81	2244332.64	5.00	0.00
						6257892.48	2244332.64	5.00	0.00
AREASOURCE	CAR12	5.00	a			6257851.60	2244281.54	5.00	0.00
						6257869.38	2244281.10	5.00	0.00
						6257872.49	2244194.45	5.00	0.00
						6257851.16	2244195.34	5.00	0.00
AREASOURCE	CAR13	5.00	a			6257892.48	2244289.54	5.00	0.00
						6257912.92	2244289.98	5.00	0.00
						6257913.37	2244194.01	5.00	0.00
						6257893.37	2244194.01	5.00	0.00
AREASOURCE	CAR14	5.00	a			6257851.60	2244187.79	5.00	0.00
						6257870.26	2244186.45	5.00	0.00
						6257872.04	2244092.70	5.00	0.00
						6257851.60	2244091.36	5.00	0.00
AREASOURCE	CAR15	5.00	a			6257892.93	2244185.56	5.00	0.00
						6257912.92	2244186.90	5.00	0.00
						6257912.92	2244092.25	5.00	0.00
						6257894.26	2244091.36	5.00	0.00
AREASOURCE	CAR16	5.00	a			6257894.26	2244084.25	5.00	0.00
						6257912.92	2244085.14	5.00	0.00
						6257913.37	2243994.05	5.00	0.00
						6257895.15	2243994.05	5.00	0.00
AREASOURCE	CAR17	5.00	a			6257851.16	2244084.70	5.00	0.00
						6257869.82	2244085.14	5.00	0.00
						6257870.71	2243990.05	5.00	0.00
						6257852.94	2243991.39	5.00	0.00

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height		Coordinates			
							Begin		x	y	z	Ground
							(ft)		(ft)	(ft)	(ft)	(ft)
BUILDING			BUILDING00001	x	0		35.00	a	6257921.53	2244473.51	35.00	0.00
									6258323.60	2244477.32	35.00	0.00
									6258322.96	2244391.70	35.00	0.00
									6258257.01	2244390.43	35.00	0.00
									6258257.01	2244021.98	35.00	0.00
									6258319.79	2244022.61	35.00	0.00
									6258320.43	2243965.53	35.00	0.00
									6257983.68	2243965.53	35.00	0.00
									6257983.04	2243973.14	35.00	0.00
									6257922.16	2243975.05	35.00	0.00
									6257919.62	2244002.32	35.00	0.00

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APPENDIX 10.1:

PROJECT CONSTRUCTION NOISE CALCULATIONS

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15749 - Thrifty Oil Warehouse

CadnaA Noise Prediction Model: 15749-02_Construction.cna
Date: 23.02.24
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**3048.00**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**1**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	67.3	-39.7	64.3	55.0	45.0	0.0				5.00	a	6257654.23	2244001.83	5.00
RECEIVERS		R2	68.9	-38.1	65.9	55.0	45.0	0.0				5.00	a	6257724.64	2244453.04	5.00
RECEIVERS		R3	58.4	-48.6	55.3	55.0	45.0	0.0				5.00	a	6257931.41	2242887.95	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
SITEBOUNDARY		CONSTRUCTION	122.6	15.6	15.6	77.0	-30.0	-30.0	PWL-Pt	115.6					8	a

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	CONSTRUCTION	8.00	a			6257839.90	2244500.02	8.00	0.00
						6257865.51	2244517.81	8.00	0.00
						6258471.81	2244528.24	8.00	0.00
						6258471.32	2243907.06	8.00	0.00
						6257842.28	2243898.12	8.00	0.00

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APPENDIX 10.2:

NIGHTTIME CONCRETE POUR NOISE CALCULATIONS

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15749 - Thrifty Oil Warehouse

CadnaA Noise Prediction Model: 15749-02_Pour.cna
Date: 23.02.24
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**3048.00**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**1**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	52.0	-55.0	49.0	55.0	45.0	0.0				5.00	a	6257654.23	2244001.83	5.00
RECEIVERS		R2	53.6	-53.4	50.6	55.0	45.0	0.0				5.00	a	6257724.64	2244453.04	5.00
RECEIVERS		R3	43.1	-63.8	40.0	55.0	45.0	0.0				5.00	a	6257931.41	2242887.95	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
SITEBOUNDARY		CONSTRUCTION	107.3	0.3	0.3	61.7	-45.3	-45.3	PWL-Pt	100.3					8	a

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	CONSTRUCTION	8.00	a			6257839.90	2244500.02	8.00	0.00
						6257865.51	2244517.81	8.00	0.00
						6258471.81	2244528.24	8.00	0.00
						6258471.32	2243907.06	8.00	0.00
						6257842.28	2243898.12	8.00	0.00

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MEMORANDUM

URBAN | CROSSROADS



DATE: January 30, 2025
TO: Kevin Tsang, County of Riverside
FROM: Charlene So, Urban Crossroads
JOB NO: 15749-07 TA Memo

THRIFTY OIL WAREHOUSE (PPT230048, PDA8407, OAPL2300972) FOCUSED TRAFFIC ASSESSMENT

Urban Crossroads has prepared this focused traffic assessment in support of the proposed Thrifty Oil Warehouse development (**Project**), which is located on the southeast corner of Tobacco Road and Placentia Avenue at 23641 Placentia Avenue in unincorporated County of Riverside (Assessor's Parcel Numbers **APNs** 317-260-017 & -018). The purpose of this focused traffic assessment is to evaluate potential traffic deficiencies under Existing plus Ambient Growth plus Project (**EAP**) (2026) traffic conditions at the proposed access points, evaluate the site adjacent intersection of Tobacco Road at Placentia Avenue, and to identify necessary improvements to address any intersection deficiencies. The following assessment follows the County of Riverside's Transportation Analysis Guidelines for Level of Service and Vehicle Miles Traveled (dated December 2020) (**County Guidelines**) and the approved scoping agreement. The approved Traffic Scoping Agreement is included in Attachment A.

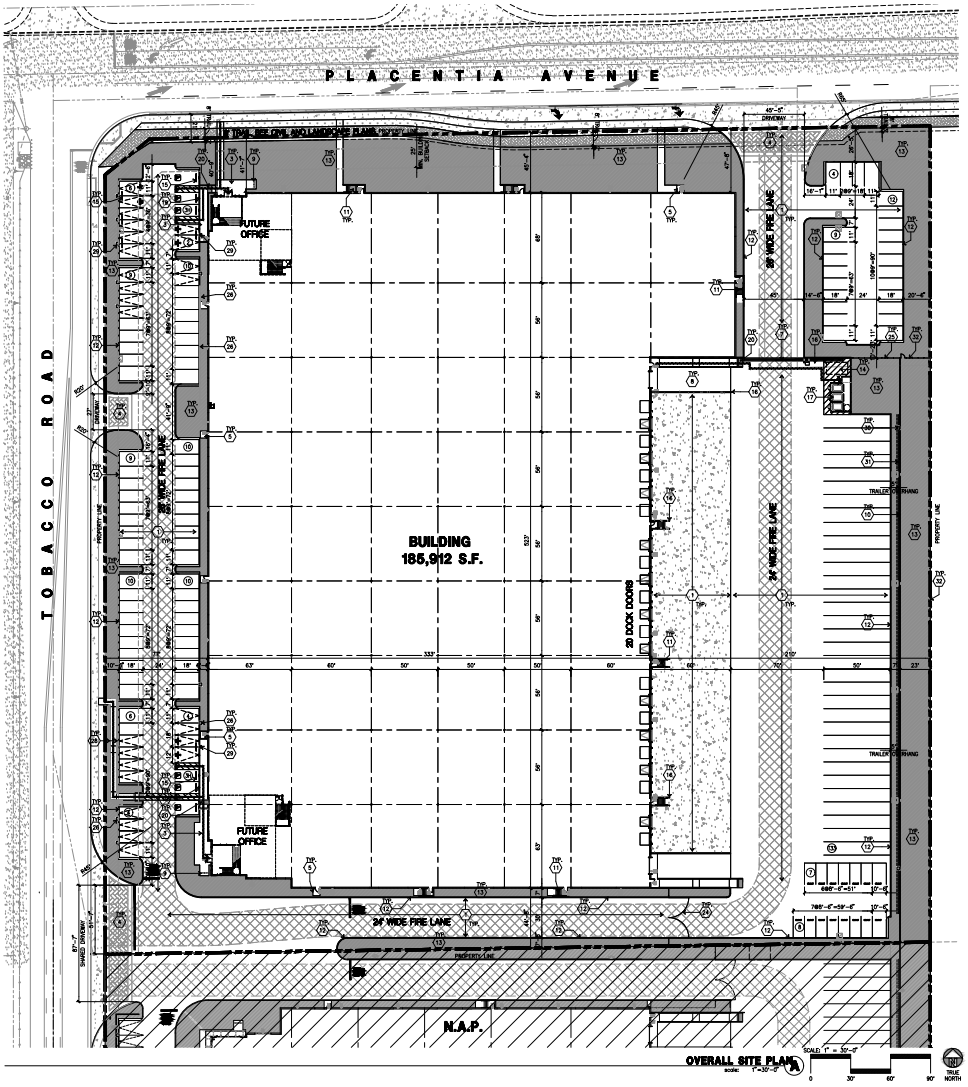
SUMMARY OF FINDINGS

The Project driveways and the intersection of Tobacco Road at Placentia Avenue are anticipated to operate at an acceptable LOS during the peak hours under EAP (2026) traffic conditions. No improvements have been identified for the study area intersections beyond those necessary to facilitate site access. Driveway 1 is currently designed to accommodate passenger cars, and no modifications are necessary. Similarly, Driveway 2 is currently designed as a shared driveway that will serve both the proposed Project and the southerly PPT220047 and does not require any modifications to accommodate either passenger cars or heavy trucks. Attachment F identifies specific curb radii improvements needed at the southwest and southeast corners of both Tobacco Road and Driveway 3 along Placentia Avenue for both the Opening Day and Ultimate roadway conditions. Lastly, no queuing issues are anticipated with the proposed striping (refer to Exhibits 1 and2 of Attachment F for concept striping) and turn pocket length recommendations under EAP (2026) traffic conditions. However, a painted two-way-left-turn lane is recommended in the vicinity of Driveway 3 and the adjacent Wellness Center driveway immediately to the east in order to accommodate left-turning vehicles adequately into both driveways.

PROJECT OVERVIEW

The proposed Project includes the development of a 185,912-square-foot warehouse building comprised of 176,912-square-feet of warehousing space, and 9,000-square-feet of office space (with 4,500-square-feet on each floor). However, in an effort to conduct a conservative analysis, this traffic assessment is based on the evaluation of a 186,695-square-foot warehouse building which includes 171,695-square-feet of warehousing use and 15,000-square-feet of office space (7,500-square-feet on first and second floors). The preliminary site plan for the proposed Project is shown on Exhibit 1. Access to the site would be accommodated via two full access driveways located on Tobacco Road and a full access driveway on Placentia Avenue (e.g., no turn restrictions). Trucks would have access via the Placentia Avenue driveway and the southerly driveway on Tobacco Road and passenger car traffic would have access to all three driveways. The southerly Project driveway on Tobacco Road is to be a shared driveway with PPT220047. Truck traffic to and from the site occurs along Placentia Avenue between the Project and the I-215 Freeway interchange at Placentia Avenue. The Project's anticipated opening year is 2026.

EXHIBIT 1: PRELIMINARY SITE PLAN



ASSUMPTIONS AND METHODOLOGIES

This section provides a review of the assumptions and methodologies utilized for this traffic assessment, consistent with the County Guidelines. The definitions of Level of Service (**LOS**) for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The 7th Edition Highway Capacity Manual (**HCM**) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

SIGNALIZED INTERSECTION OPERATIONS ANALYSIS METHODOLOGY

Intersection LOS operations are based on an intersection's average control delay. Control delays include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The traffic modeling and signal timing optimization software package Synchro 12 has been utilized to analyze signalized intersections. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

UNSIGNALIZED INTERSECTION OPERATIONS ANALYSIS METHODOLOGY

The LOS rating is based on the weighted average control delay expressed in seconds per vehicle. At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. Delay for the intersection is reported for the worst individual movement at a two-way stop-controlled intersection. For all-way stop controlled intersections, LOS is computed for the intersection as a whole (average delay).

LEVEL OF SERVICE (LOS) CRITERIA

The definition of an intersection deficiency has been obtained from the County of Riverside General Plan. Riverside County General Plan Policy C 2.1 states that the County will maintain the following County-wide target LOS:

The following minimum target levels of service have been designated for the review of development proposals in the unincorporated areas of Riverside County with respect to transportation impacts on roadways designated in the Riverside County Circulation Plan which are currently County maintained, or are intended to be accepted into the County maintained roadway system:

- *LOS C shall apply to all development proposals in any area of the Riverside County not located within the boundaries of an Area Plan, as well as those areas located within the following Area Plans: REMAP, Eastern Coachella Valley, Desert Center, Palo Verde Valley, and those non-Community Development areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley, and Temescal Canyon Area Plans.*

- *LOS D shall apply to all development proposals located within any of the following Area Plans: Eastvale, Jurupa, Highgrove, Reche Canyon/Badlands, Lakeview/Nuevo, Sun City/Menifee Valley, Harvest Valley/Winchester, Southwest Area, The Pass, San Jacinto Valley, Western Coachella Valley and those Community Development Areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*
- *LOS E may be allowed by the Board of Supervisors within designated areas where transit-oriented development and walkable communities are proposed.*

The applicable minimum LOS utilized for the purposes of this analysis is LOS D per the County-wide target LOS for projects located within the Mead Valley Area Plan.

DEFICIENCY CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. The following deficiency criteria have been utilized for the County of Riverside. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following will be utilized:

- A deficiency occurs at study area intersections if the pre-Project condition is at or better than LOS D (i.e., acceptable LOS), and the addition of project trips causes the peak hour LOS of the study area intersection to operate at unacceptable LOS (i.e., LOS E or F). Per the County of Riverside traffic study guidelines, for intersections currently operating at unacceptable LOS (LOS E or F), a deficiency will occur if the Project contributes peak hour trips to pre-project traffic conditions.

PROJECT TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network.

TRIP GENERATION

Trip generation represents the amount of traffic, which is both attracted to, and produced by, a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to, and produced by, the specific land uses being proposed for a given development.

In order to develop the traffic characteristics of the proposed Project, trip-generation statistics published in the Institute of Transportation Engineers (**ITE**) Trip Generation Manual (11th Edition, 2021) were used to estimate the trip generation. For purposes of this analysis, the following land use code and vehicle mix has been utilized:

- Warehousing – ITE Land Use Code 150 has been used to derive site-specific trip generation estimates for the proposed Project. The vehicle mix has also been obtained from the ITE's latest Trip Generation Manual. The truck percentages were further broken down by axle type per the following South Coast Air Quality Management District (**SCAQMD**) recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%.

As noted in Table 1, refinements to the raw trip generation estimates have been made to provide a more detailed breakdown of trips between passenger cars and trucks. Trip generation for heavy

trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 3 different truck types: 2-axle, 3-axle, and 4+-axle trucks. Passenger Car Equivalent (**PCE**) factors were applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCEs allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, to be used for the purposes of capacity and level of service analyses. The PCE factors are consistent with the recommended PCE factors in County Guidelines.

TABLE 1: TRIP GENERATION RATES

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicle Trip Generation Rates									
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars (AM=88.2%, PM=83.3%, Daily=64.9%)			0.120	0.030	0.150	0.034	0.116	0.150	1.110
2-Axle Trucks (AM=1.97%, PM=2.79%, Daily=5.86%)			0.002	0.001	0.003	0.003	0.002	0.005	0.100
3-Axle Trucks (AM=2.44%, PM=3.46%, Daily=7.27%)			0.002	0.002	0.004	0.003	0.003	0.006	0.124
4+-Axle Trucks (AM=7.39%, PM=10.45%, Daily=21.97%)			0.007	0.006	0.013	0.010	0.009	0.019	0.376
Passenger Car Equivalent (PCE) Trip Generation									
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars			0.120	0.030	0.150	0.034	0.116	0.150	1.110
2-Axle Trucks (PCE = 1.5)			0.003	0.002	0.005	0.005	0.003	0.008	0.150
3-Axle Trucks (PCE = 2.0)			0.004	0.004	0.008	0.006	0.006	0.012	0.248
4+-Axle Trucks (PCE = 3.0)			0.021	0.017	0.038	0.030	0.026	0.056	1.127

[1] Trip Generation & Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] TSF = thousand square feet

[3] Truck Mix: South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type.
Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks.

The Project is estimated to generate a total of 322 two-way trips per day on a typical weekday with approximately 30 AM peak hour trips and 35 PM peak hour as shown in Table 2 (actual vehicles). Consistent with the County Guidelines, the PCE values shown in Table 2 will be utilized for the purposes of determining if the Project requires peak hour intersection operations analyses. The Project is estimated to generate a total of 492 two-way PCE trips per day on a typical weekday with approximately 38 PCE AM peak hour trips and 43 PCE PM peak hour as shown in Table 2.

TABLE 2: PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicles:									
Warehousing	186.695	TSF							
Passenger Cars:			22	6	28	6	22	28	208
2-axle Trucks:			0	0	0	1	0	1	20
3-axle Trucks:			0	0	0	1	1	2	24
4+-axle Trucks:			1	1	2	2	2	4	70
Total Truck Trips (Actual Vehicles):			1	1	2	4	3	7	114
Total Trips (Actual Vehicles)[2]			**23**	**7**	**30**	**10**	**25**	**35**	**322**
Passenger Car Equivalent (PCE):									
Warehousing	186.695	TSF							
Passenger Cars:			22	6	28	6	22	28	208
2-axle Trucks:			1	0	1	1	1	2	28
3-axle Trucks:			1	1	2	1	1	2	46
4+-axle Trucks:			4	3	7	6	5	11	210
Total Truck Trips (PCE):			6	4	10	8	7	15	284
Total Trips (PCE)[2]			**28**	**10**	**38**	**14**	**29**	**43**	**492**

[1] TSF = thousand square feet

[2] Total Trips = Passenger Cars + Truck Trips.

TRIP DISTRIBUTION

The Project trip distribution represents the directional orientation of traffic to and from the Project site. Trip distribution is the process of identifying the probable destinations, directions, or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. In addition, truck routes for neighboring agencies have been taken into consideration in the development of the trip distribution patterns for heavy trucks. There are no weight restrictions on any of the surrounding roadways that lead to the I-215 Freeway (Tobacco Road and Placentia Avenue). However, per the County's Board Policy C3.8, trucks are to avoid driving through residential areas. As such, the Project's truck travel patterns are likely to be limited to Tobacco Road (Project to Placentia Avenue) and Placentia Avenue (Tobacco Road to I-215 Freeway). Based on the County's Board Policy, the Project could not send trucks west on Placentia Avenue, to Patterson Avenue, then to Rider Street as there are existing residential uses along one or more of these streets.

Exhibit 2 shows the Project truck trip distribution patterns while Exhibit 3 shows the Project passenger car trip distribution patterns. Per the County's comments, the truck trip distribution patterns assume Project trucks would utilize Placentia Avenue to access the I-215 Freeway.

EXHIBIT 2: PROJECT (TRUCK) TRIP DISTRIBUTION

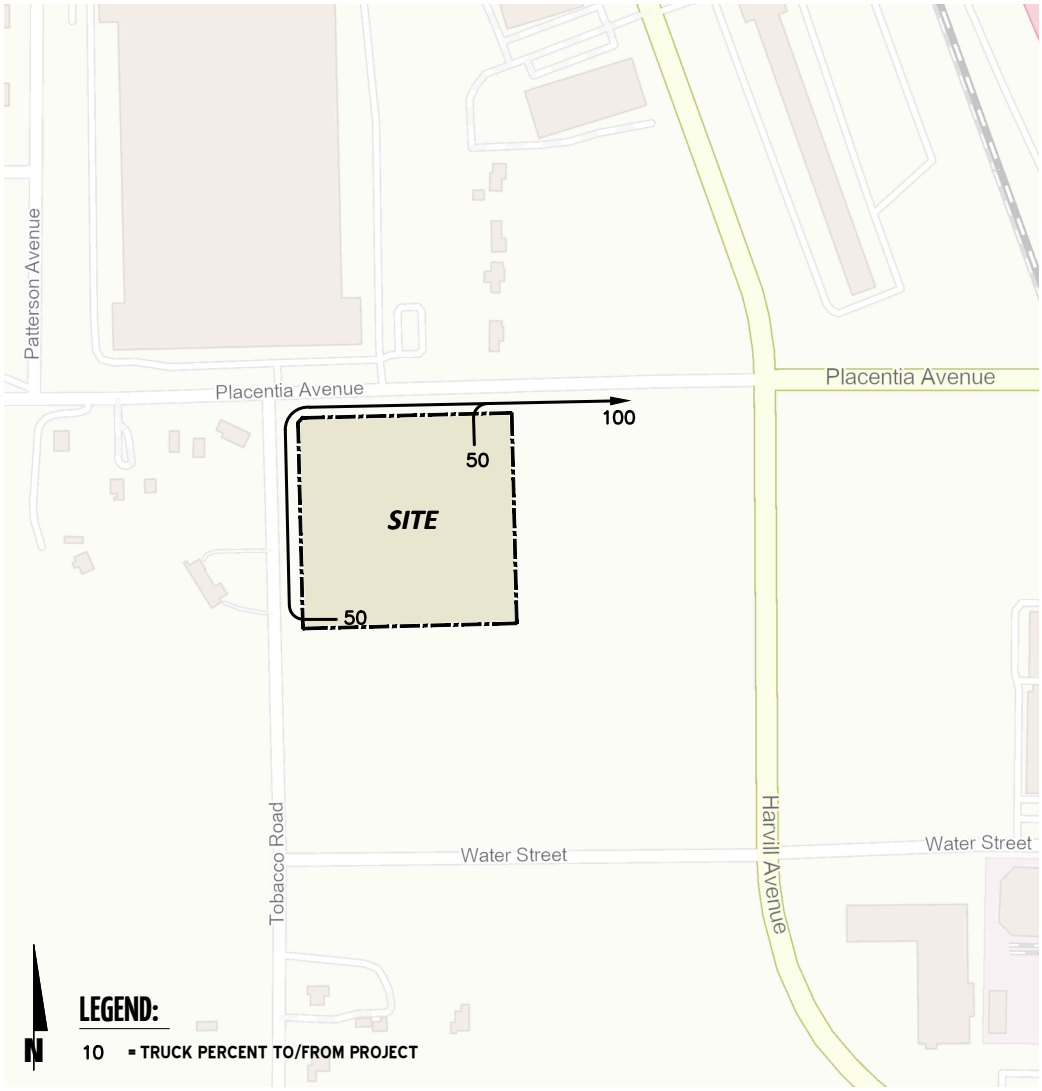
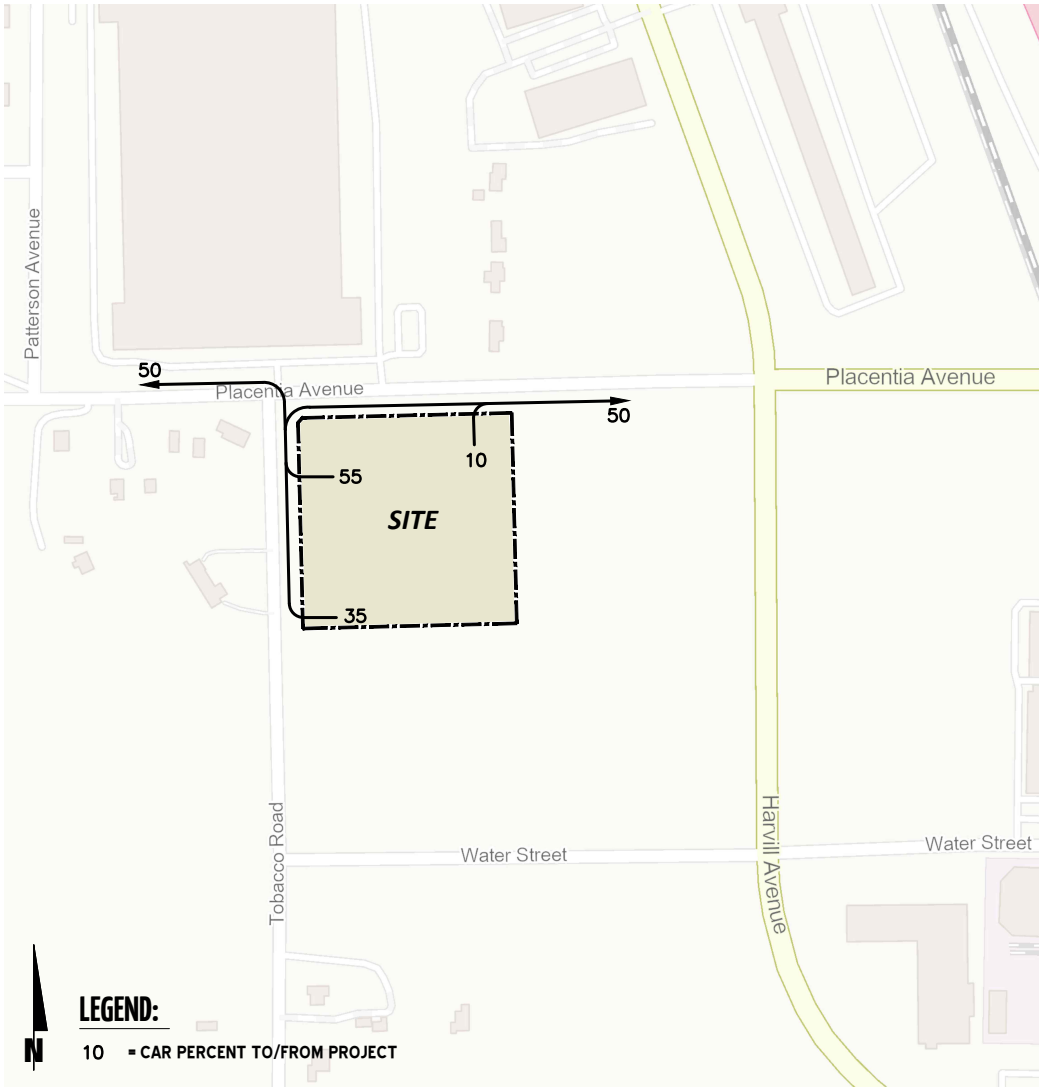


EXHIBIT 3: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION



PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, the Project only ADT and peak hour intersection turning movement volumes are shown in Exhibit 4.

EXHIBIT 4: PROJECT ONLY (PCE) TRAFFIC VOLUMES

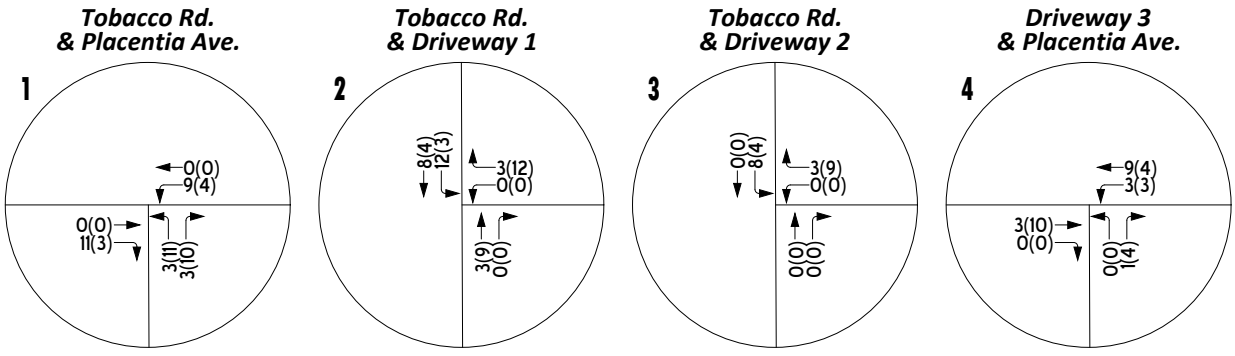


LEGEND:

1 = Existing Intersection Analysis Location

(1) = Future Intersection Analysis Location

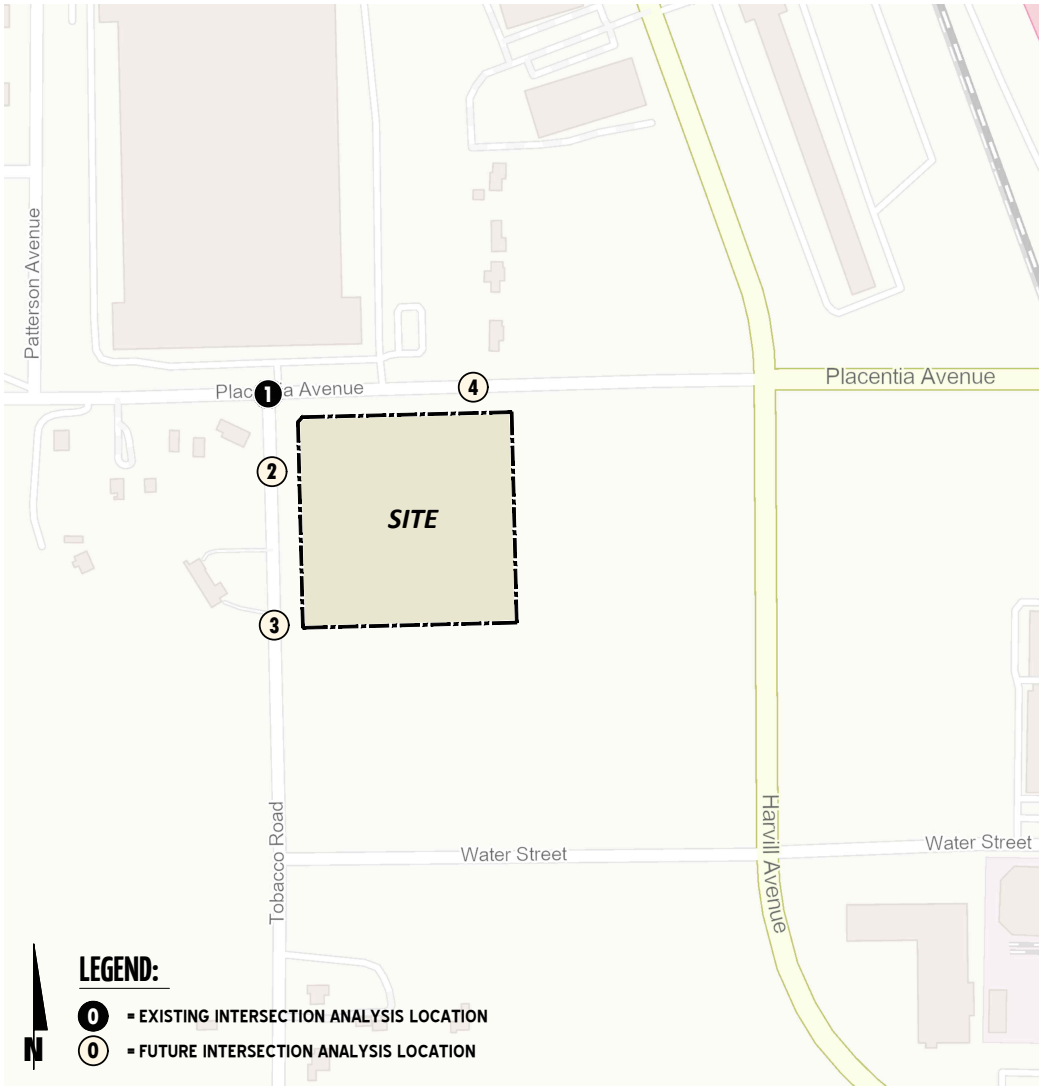
00 = Average Daily Traffic (ADT)



STUDY AREA

Exhibit 5 provides the study area for the proposed Project, which consists of Tobacco Road & Placentia Avenue, plus all Project driveways. The study area has been reviewed by County staff as part of the scoping process.

EXHIBIT 5: STUDY AREA



#	Intersections
1	Tobacco Rd. & Placentia Av.
2	Tobacco Rd. & Driveway 1
3	Tobacco Rd. & Driveway 2
4	Driveway 3 & Placentia Av.

EXISTING (2024) CONDITIONS

Traffic count data was collected for the intersection of Tobacco Road at Placentia Avenue in addition to daily traffic volumes along both Tobacco Road and Placentia Avenue. Existing traffic count data is provided in Attachment B along with volume development worksheets for all future analysis scenarios. Existing traffic volumes are also shown in Exhibit 6. The intersection operations analysis results are summarized in Table 3, which indicates that the existing study area intersection of Tobacco Road and Placentia Avenue is currently operating at an acceptable LOS during the peak hours. The intersection operations analysis worksheets are included in Attachment C.

TABLE 3: INTERSECTION ANALYSIS FOR EXISTING (2024) CONDITIONS

#	Intersection	Traffic Control[1]	Delay[2] (secs.)		Level of Service	
			AM	PM	AM	PM
1	Tobacco Rd. & Placentia Av.	CSS	9.1	9.1	A	A
2	Tobacco Rd. & Driveway 1		Future Intersection			
3	Tobacco Rd. & Driveway 2		Future Intersection			
4	Driveway 3 & Placentia Av.		Future Intersection			

1 CSS = Cross-Street Stop

2 Per the Highway Capacity Manual (7th Edition), for intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

EXHIBIT 6: EXISTING (2024) (PCE) TRAFFIC VOLUMES

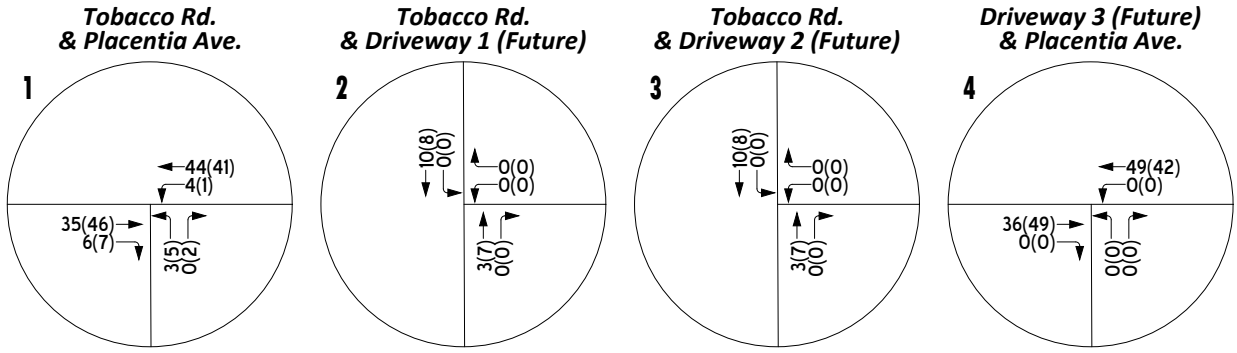


LEGEND:

① = Existing Intersection Analysis Location

(1) = Future Intersection Analysis Location

00 = Average Daily Traffic (ADT)



EAP (2026) CONDITIONS

This section discusses the traffic forecasts for EAP (2026) conditions and the resulting intersection operations and traffic signal warrant analyses.

VOLUME DEVELOPMENT

This scenario includes Existing (2024) traffic volumes plus an ambient growth factor of 4.04% and the addition of Project traffic. In addition, traffic associated with PPT220047 to the south, Barker Logistics, and Placentia Truck Lot have also been added as these uses are anticipated to be open and operational within the same timeframe as the proposed Project. The proposed County Wellness Center, which is located immediately to the east of the proposed Project, was also considered; however, no traffic from the Wellness Center is anticipated to travel to and from the west on Placentia Avenue. The weekday ADT and weekday AM and PM peak hour volumes for the study area intersections are provided in Attachment B and in Exhibit 7.

INTERSECTIONS

Table 4 provides the summary of the intersection operations analysis for EAP (2026) traffic conditions. As shown in Table 4, the study area intersections are anticipated to operate at an acceptable LOS during the peak hours. It should be noted that the intersection of Tobacco Road and Placentia Avenue assumes the implementation of an all-way stop controlled intersection in order to accommodate turning trucks. The intersection operations analysis worksheets for EAP (2026) traffic conditions are provided in Attachment D.

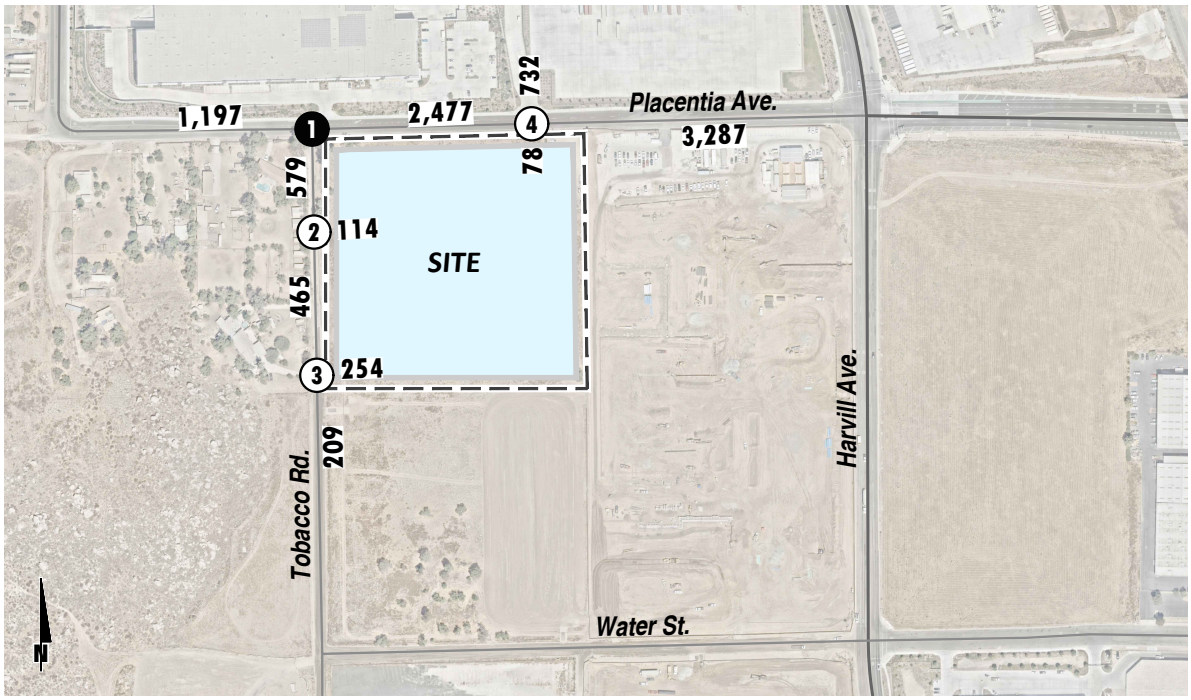
TABLE 4: INTERSECTION ANALYSIS FOR EAP (2026) CONDITIONS

#	Intersection	Traffic Control[1]	Delay[2] (secs.) AM	Delay[2] (secs.) PM	Level of Service AM	Level of Service PM
1	Tobacco Rd. & Placentia Av.	**AWS**	7.7	7.7	A	A
2	Tobacco Rd. & Driveway 1	**CSS**	8.4	8.5	A	A
3	Tobacco Rd. & Driveway 2	**CSS**	8.3	8.4	A	A
4	Driveway 3 & Placentia Av.	**CSS**	10.4	10.4	B	B

[1] CSS = Cross-Street Stop; AWS = All-Way Stop; **CSS** = Improvement

[2] Per the Highway Capacity Manual (7th Edition), for intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

EXHIBIT 7: EAP (2026) (PCE) TRAFFIC VOLUMES

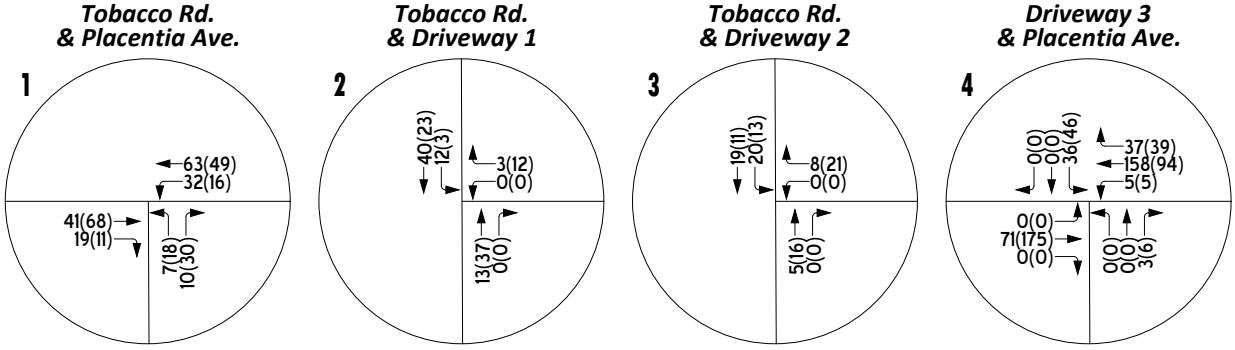


LEGEND:

0 = Existing Intersection Analysis Location

(0) = Future Intersection Analysis Location

00 = Average Daily Traffic (ADT)



TRAFFIC SIGNAL WARRANTS

The term "signal warrants" refers to the list of established criteria used by the California Department of Transportation (**Caltrans**) and other public agencies to quantitatively justify or determine the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This traffic assessment uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices (**CA MUTCD**). The CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, this focused traffic assessment utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for all future analysis scenarios. The study intersection has also been assessed regarding the potential need for a new traffic signal based on future Average Daily Traffic (**ADT**) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets. For the purposes of this assessment, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection. Urban warrants have been used as the posted speed limit along study area roadways is anticipated to be 40 miles per hour or lower.

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The unsignalized intersection of Tobacco Road and Placentia Avenue does not currently warrant a traffic signal under Existing traffic conditions. Traffic signal warrants have been evaluated for the future Project driveways under EAP (2026) traffic conditions based on the planning-level ADT volume-based warrants. The Project driveways are not expected to meet traffic signal warrants based on the EAP (2026) daily volumes. All traffic signal warrant analysis worksheets are provided in Attachment E.

TRUCK ACCESS

Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at each applicable Project driveway anticipated to be utilized by heavy trucks and the site adjacent intersection of Tobacco Road at Placentia Avenue in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers. A WB-67 truck (53-foot trailer) has been utilized for the purposes of this assessment. The proposed driveways are anticipated to accommodate the ingress and egress of heavy trucks under both interim and ultimate roadway conditions with the exception of:

- **Tobacco Road at Placentia Avenue** – A minimum 45-foot curb radius on the southeast corner should be accommodated under Opening Day and Ultimate roadway conditions in order to facilitate truck turns (refer to Exhibit 7 and Exhibit 11 of Attachment F). Ultimate roadway conditions also reflect an improved 35-foot curb radius on the southwest corner (Exhibit 11 in Attachment F). In the interim, trucks will be prohibited from making a northbound left turn from Tobacco Road onto Placentia Avenue and an eastbound right turn from Placentia Avenue to Tobacco Road.
- **Driveway 3 at Placentia Avenue** – The proposed curb radius on the southeast and southwest corners as currently designed will accommodate truck turns under Opening Day conditions (refer to Exhibit 8 of Attachment F). The proposed 45-foot curb radii on the southwest corner and the 65-foot curb radius on the southeast corner should be

accommodated under Ultimate roadway conditions in order to facilitate truck turns into and out of the site (refer to Exhibit 12 of Attachment F).

The interim roadway concept plan assumes existing lanes and the existing southwest corner at Tobacco Road and Placentia Avenue. The ultimate roadway concept plan identifies the future roadway improvements that would be in place per the County's standards if/when the southwestern property is developed.

With the developer being the owner of both the Project and the adjacent site to south on Tobacco Road (PPT220047) at the request of County staff, a proposed "joint use" driveway has been provided per the recommendation of County staff. Driveway 2 would require a reciprocal access agreement being approved between the two properties and put in place prior to the start of construction of the southerly building.

TRUCK STACKING

Using the WB-67 truck template, the truck stacking has been identified behind the gate and the public street at both Driveway 2 on Tobacco Road and Driveway 3 on Placentia Avenue as these are the two driveways anticipated to serve heavy trucks. As a tenant has not currently been identified for the proposed Project, the anticipated truck circulation for the building is unknown at this time. Stacking accommodated on-site is in excess to the stacking provided for other surrounding warehouse uses of comparable size in the immediate vicinity and is well more than the anticipated truck activity. Based on the Project's anticipated trip generation, no more than four (4) trucks are anticipated to arrive during either peak hour, which is approximately one (1) truck every 15 minutes. The intent of the gate operation is to remain open during business hours, however, should the tenant require gates to be closed during business operations, up to four (4) WB-67 trucks could be stored between the closed gate and Tobacco Road along Driveway 2 and up to four (4) WB-67 trucks could be stored between the gate and Placentia Avenue along Driveway 3 (refer to Exhibits 3 and 4 of Attachment F). Accommodating storage for four (4) trucks at both driveways on Tobacco Road and Placentia Avenue is significantly more truck storage space accommodated for any existing comparable site within the vicinity of the Project. A "Tenant Advisory" could be implemented to identify truck access points and stacking areas which can be supplemented with on-site signage (as needed).

SITE ACCESS/QUEUING ASSESSMENT

A queuing analysis was performed for all study area intersections under EAP (2026) traffic conditions. Queuing analysis findings are presented on Table 5. Turn pocket lengths are based on either existing or proposed lengths (refer to concept striping provided in Attachment F) and intersection locations are consistent with the measured distance between each location. As shown on Table 5, there are no movements that would experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows. Due to the proximity of the Project Driveway 3 and the proposed driveway serving the Wellness Center immediately to the east, it is recommended that the median be striped as a two-way-left-turn lane as opposed to striping in the left-turn pocket for either of these driveways. Worksheets for EAP (2026) traffic conditions queuing analysis are provided in Attachment G.

TABLE 5: PEAK HOUR QUEUING SUMMARY FOR EAP (2026) CONDITIONS

#	Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet) AM Peak Hour	95th Percentile Queue (Feet) PM Peak Hour	Acceptable?[1] AM	Acceptable?[1] PM
1	Tobacco Rd. & Placentia Av.	NBL/T/R	175	33	41	Yes	Yes
		SBL/T/R	50	30	47	Yes	Yes
		WBL	100	42	34	Yes	Yes
		WBT	480	41	43	Yes	Yes
2	Tobacco Rd. & Driveway 1	SBL/T	175	4	4	Yes	Yes
		WBL/R	40	14	33	Yes	Yes
3	Tobacco Rd. & Driveway 2	SBL	100	4	4	Yes	Yes
		WBL/R	170	28	40	Yes	Yes
4	Driveway 3 & Placentia Av.	NBL/T/R	140	13	17	Yes	Yes
		SBL/T/R	250	47	47	Yes	Yes
		WBL	50	4	9	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 25 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

CONCLUSION

Based on the results of the intersection operations analysis for EAP (2026) With Project traffic conditions, the Project driveways and the intersection of Tobacco Road at Placentia Avenue are anticipated to operate at an acceptable LOS during the peak hours. As such, no improvements have been identified for the study area intersections beyond those necessary to facilitate site access. Driveway 1 is currently designed to accommodate passenger cars, and no modifications are necessary. Similarly, Driveway 2 is currently designed as a shared driveway that will serve both the proposed Project and the southerly PPT220047 and does not require any modifications to accommodate either passenger cars or heavy trucks. Attachment F identifies the curb radii improvements currently reflected on the site plan on the southwest and southeast corners of Driveway 3 and Tobacco Road along Placentia Avenue for both the Opening Day and Ultimate roadway conditions are sufficient to accommodate the truck turns. Lastly, no queuing issues are anticipated with the proposed striping (refer to Exhibit 1 and Exhibit 2 of Attachment F for concept striping) and turn pocket length recommendations under EAP (2026) traffic conditions. However, a painted two-way-left-turn lane is recommended in the vicinity of Driveway 3 and the adjacent Wellness Center driveway immediately to the east in order to accommodate left-turning vehicles adequately into both driveways.

If you have any questions, please contact me directly at cso@urbanxroads.com.

ATTACHMENT A: APPROVED SCOPING AGREEMENT

MEMORANDUM

URBAN | CROSSROADS

DATE: January 30, 2024
TO: Kevin Tsang, County of Riverside
FROM: Charlene So, Urban Crossroads
JOB NO: 15749-02 TA Scope

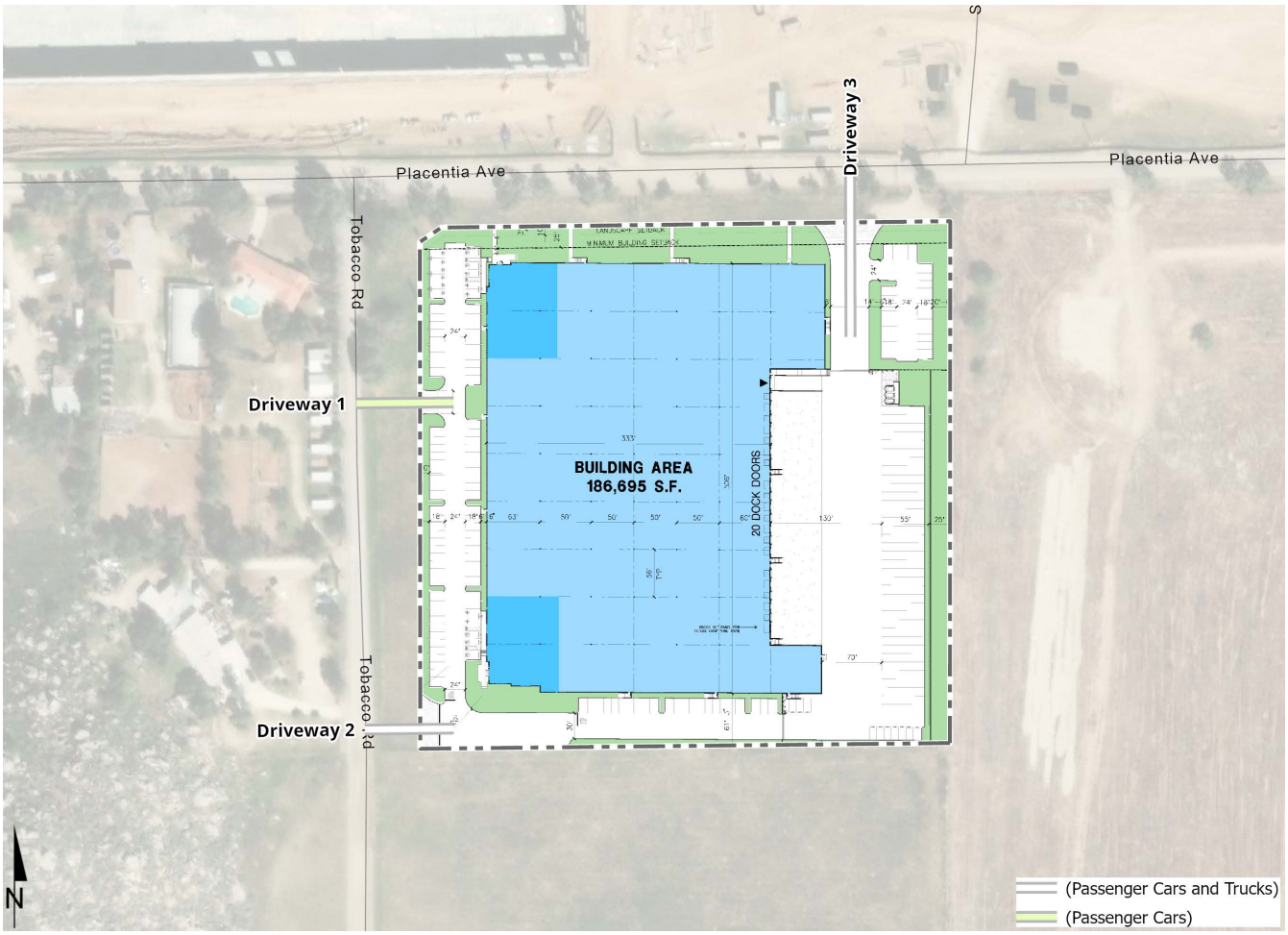
THRIFTY OIL WAREHOUSE (PPT230048, PDA8407, OAPL2300972) TRAFFIC STUDY SCOPING AGREEMENT

The firm of Urban Crossroads, Inc. is pleased to submit this scoping letter regarding the traffic analysis for Thrifty Oil Warehouse development (**Project**), which is located on the southeast corner of Tobacco Road and Placentia Avenue at 23641 Placentia Avenue in the County of Riverside (**County**) (Assessor's Parcel Number (**APN**) 317-260-017 & -018). This letter describes the proposed Project trip generation, trip distribution, and analysis methodology, which have been used to establish the draft proposed Project study area and analysis locations. The following scope of work is based on the County of Riverside's Transportation Analysis Guidelines for Level of Service and Vehicle Miles Traveled (dated December 2020) (**County Guidelines**).

PROPOSED PROJECT

The proposed Project includes the development of a 186,695 square foot warehouse building with 171,695 square feet of warehousing use and 15,000 square feet of office space (7,500 square feet on first and second floors). The preliminary site plan for the proposed Project is shown on Exhibit 1. Access to the site would be accommodated via two full access driveways located on Tobacco Road and a full access driveway on Placentia Avenue (e.g., no turn restrictions). Trucks would have access via the Placentia Avenue driveway and the southerly driveway on Tobacco Road and passenger car traffic would have access to all three driveways. Truck traffic to and from the site occurs along Placentia Avenue between the Project and the I-215 Freeway interchange at Placentia Avenue. The Project's anticipated opening year is 2026.

EXHIBIT 1: PRELIMINARY SITE PLAN



TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development.

In order to develop the traffic characteristics of the proposed Project, trip-generation statistics published in the Institute of Transportation Engineers (**ITE**) Trip Generation Manual (11th Edition, 2021) was used to estimate the trip generation. For purposes of this analysis, the following land use code and vehicle mix has been utilized:

- Warehousing – ITE Land Use Code 150 has been used to derive site specific trip generation estimates for the proposed Project. The vehicle mix has also been obtained from the ITE's latest Trip Generation Manual. The truck percentages were further broken down by axle type per the following South Coast Air Quality Management District (SCAQMD) recommended truck mix: 2-Axle = 16.7%; 3-Axle = 20.7%; 4+-Axle = 62.6%.

As noted in Table 1, refinements to the raw trip generation estimates have been made to provide a more detailed breakdown of trips between passenger cars and trucks. Trip generation for heavy trucks was further broken down by truck type (or axle type). The total truck percentage is comprised of 3 different truck types: 2-axle, 3-axle, and 4+-axle trucks. Passenger Car Equivalent (**PCE**) factors were applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCEs allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, to be used for the purposes of capacity and level of service analyses. The PCE factors are consistent with the recommended PCE factors in City's Guidelines.

TABLE 1: TRIP GENERATION RATES

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Actual Vehicle Trip Generation Rates									
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars (AM=88.2%, PM=83.3%, Daily=64.9%)			0.120	0.030	0.150	0.034	0.116	0.150	1.110
2-Axle Trucks (AM=1.97%, PM=2.79%, Daily=5.86%)			0.002	0.001	0.003	0.003	0.002	0.005	0.100
3-Axle Trucks (AM=2.44%, PM=3.46%, Daily=7.27%)			0.002	0.002	0.004	0.003	0.003	0.006	0.124
4+-Axle Trucks (AM=7.39%, PM=10.45%, Daily=21.97%)			0.007	0.006	0.013	0.010	0.009	0.019	0.376
Passenger Car Equivalent (PCE) Trip Generation									
Warehousing[3]	TSF	150	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars			0.120	0.030	0.150	0.034	0.116	0.150	1.110
2-Axle Trucks (PCE = 1.5)			0.003	0.002	0.005	0.005	0.003	0.008	0.150
3-Axle Trucks (PCE = 2.0)			0.004	0.004	0.008	0.006	0.006	0.012	0.248
4+-Axle Trucks (PCE = 3.0)			0.021	0.017	0.038	0.030	0.026	0.056	1.127

[1] Trip Generation & Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

[2] TSF = thousand square feet

[3] Truck Mix: South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type.
Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks.

The Project is estimated to generate a total of 322 two-way trips per day on a typical weekday with approximately 30 AM peak hour trips and 35 PM peak hour as shown in Table 2 (actual vehicles). Consistent with the County Guidelines, the PCE values shown in Table 2 will be utilized for the purposes of determining if the Project requires peak hour intersection operations analyses. The Project is estimated to generate a total of 492 two-way PCE trips per day on a typical weekday with approximately 38 PCE AM peak hour trips and 43 PCE PM peak hour as shown in Table 2.

TABLE 2: PROJECT TRIP GENERATION SUMMARY

			AM Peak Hour			PM Peak Hour			
Land Use	Quantity	Units[1]	In	Out	Total	In	Out	Total	Daily
Actual Vehicles:									
Warehousing	186.695	TSF							
Passenger Cars:			22	6	28	6	22	28	208
2-axle Trucks:			0	0	0	1	0	1	20
3-axle Trucks:			0	0	0	1	1	2	24
4+-axle Trucks:			1	1	2	2	2	4	70
Total Truck Trips (Actual Vehicles):			1	1	2	4	3	7	114
Total Trips (Actual Vehicles)[2]			**23**	**7**	**30**	**10**	**25**	**35**	**322**
Passenger Car Equivalent (PCE):									
Warehousing	186.695	TSF							
Passenger Cars:			22	6	28	6	22	28	208
2-axle Trucks:			1	0	1	1	1	2	28
3-axle Trucks:			1	1	2	1	1	2	46
4+-axle Trucks:			4	3	7	6	5	11	210
Total Truck Trips (PCE):			6	4	10	8	7	15	284
Total Trips (PCE)[2]			**28**	**10**	**38**	**14**	**29**	**43**	**492**

[1] TSF = thousand square feet

[2] Total Trips = Passenger Cars + Truck Trips.

TRIP DISTRIBUTION

The Project trip distribution represents the directional orientation of traffic to and from the Project site. Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. In addition, truck routes for neighboring agencies have been taken into consideration in the development of the trip distribution patterns for heavy trucks.

Exhibit 2 shows the Project truck trip distribution patterns while Exhibit 3 shows the Project passenger car trip distribution patterns. Per the County's comments, the truck trip distribution patterns assume Project trucks would utilize Placentia Avenue to access the I-215 Freeway.

STUDY AREA

Exhibit 3 provides the study area for the proposed Project, which consists of Tobacco Road & Placentia Avenue, plus the proposed Project driveways. The study area has been determined by comments provided by the County.

ANALYSIS SCENARIOS

Consistent with the County's Guidelines, intersection analysis will be provided for the following analysis scenarios:

- Existing (2024) Conditions
- Existing plus Ambient Growth plus Project (EAP) (2026) Conditions

All study area intersections will be evaluated using the Highway Capacity Manual (HCM) 6th Edition analysis methodology.

EXHIBIT 2: PROJECT (TRUCK) TRIP DISTRIBUTION

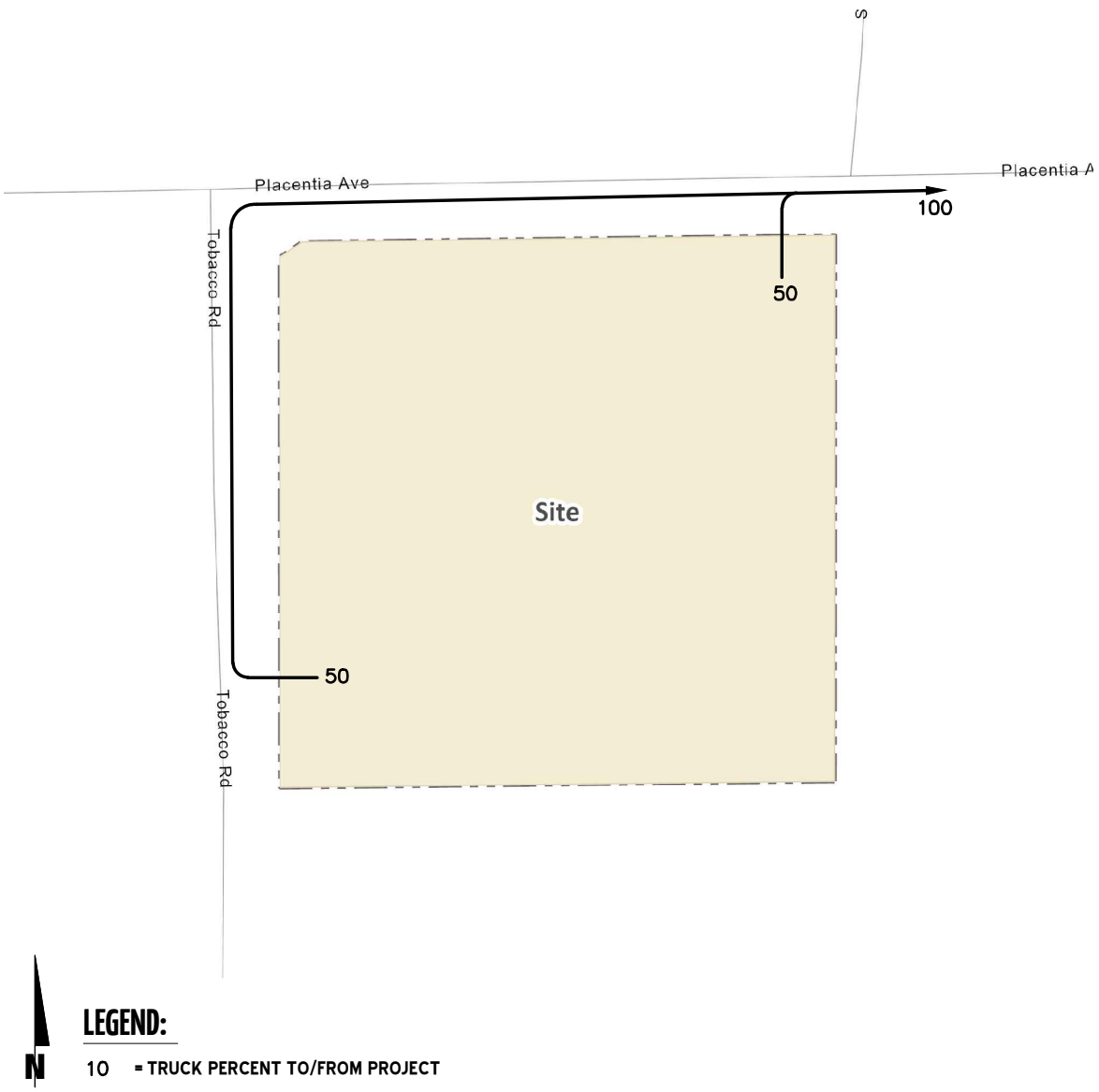


EXHIBIT 3: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION

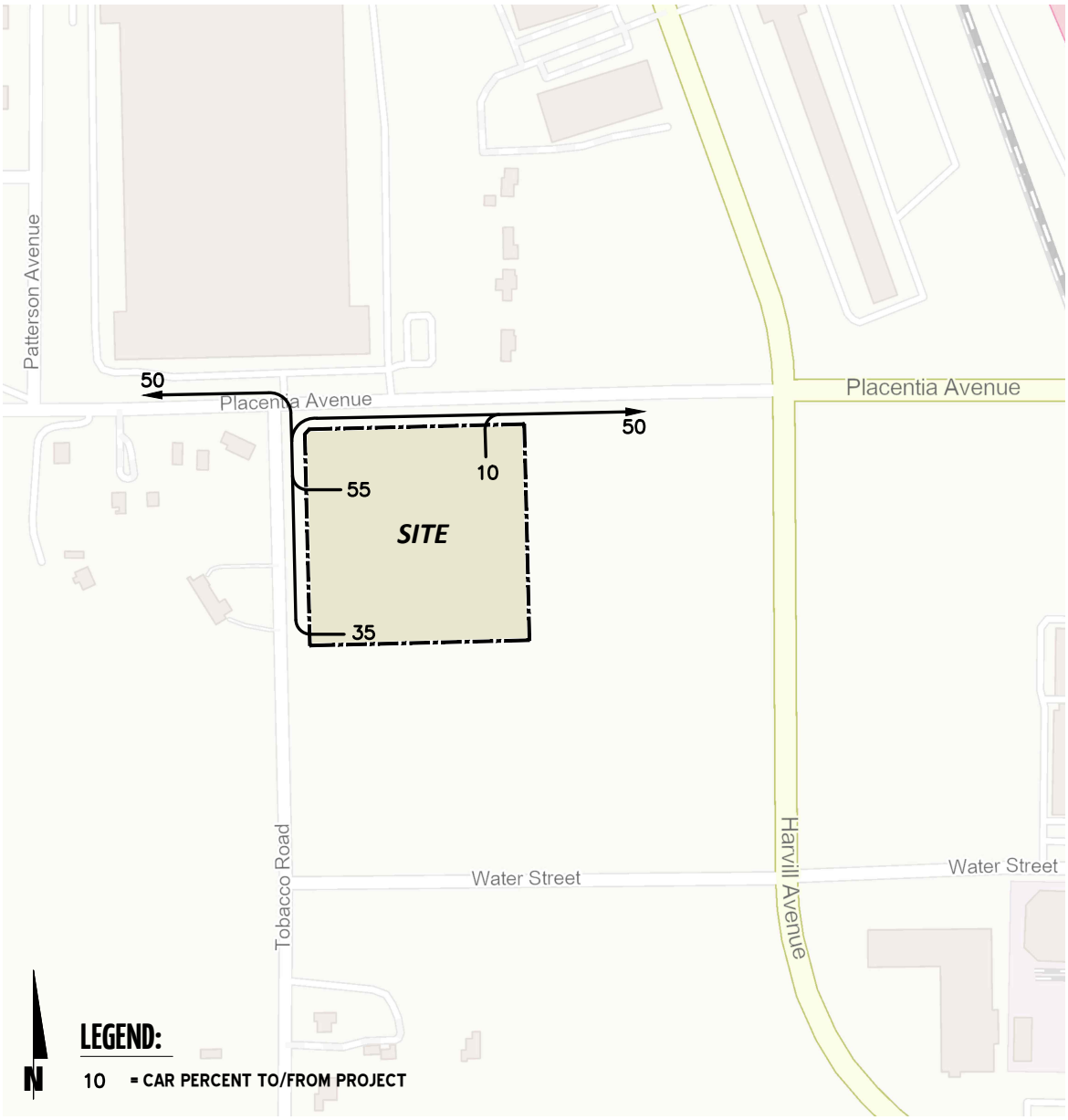
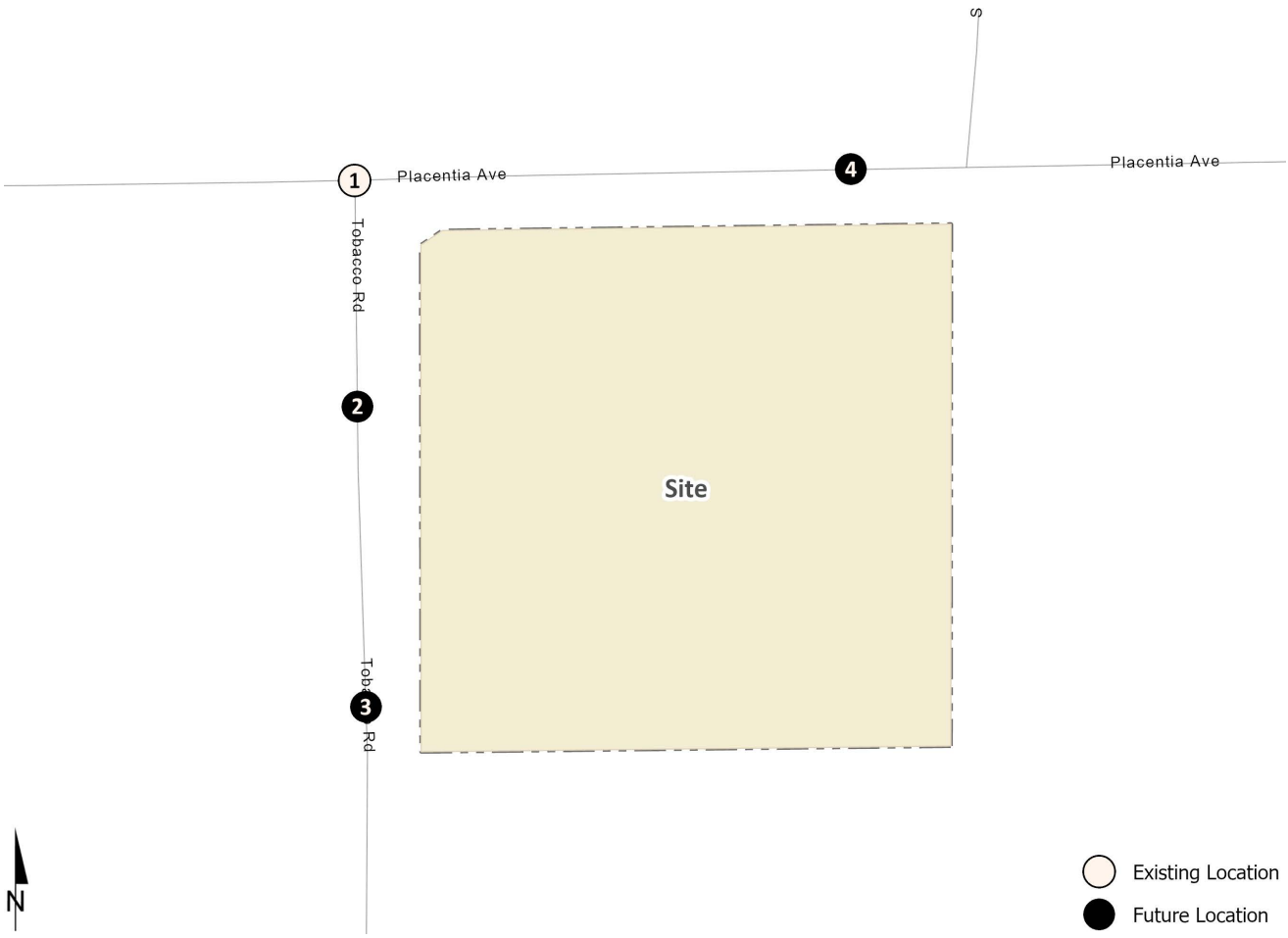


EXHIBIT 4: STUDY AREA



EXISTING COUNT DATA

Traffic counts for the existing study area intersection of Tobacco Road & Placentia Avenue were conducted on January 11, 2024, which was a typical weekday when local schools were open and operating on normal bell schedules. No additional adjustments are proposed for the purpose of establishing the existing baseline conditions. The traffic counts were collected for the following peak hours:

- Weekday AM Peak Hour (7:00-9:00 AM)
- Weekday PM Peak Hour (4:00-6:00 PM)

AMBIENT GROWTH

An ambient growth rate of 2% per year is proposed for the study area intersection to approximate background growth not identified by nearby cumulative development projects. As such, a total of 4.04% will be applied to the baseline (2% per year, compounded over 2 years).

SPECIAL ISSUES

The following special issues will also be addressed:

- VMT analysis will be evaluated in a separate document.
- Conduct traffic signal warrant analysis for all existing and future unsignalized study area intersections, which also includes all Project driveways proposed to have full access. 24-hour counts will be collected for intersections that meet peak hour warrants in order to conduct CA MUTCD Warrants 1 and 2.
- Conduct a queuing analysis of the Project driveways and the intersection of Tobacco Road & Placentia Avenue.
- Prepare truck turns at the applicable Project driveways. Truck turn templates for the site access driveways will be based on the WB-67 truck template. Pursuant to discussions with County staff, the southerly driveway to the Project on Tobacco Road will evaluate a shared driveway with the southerly property.
- Evaluate sight distance at the Project driveways and the intersection of Tobacco Road & Placentia Avenue. The sight distance analysis will be provided under a separate cover.

If you have any questions or comments, I can be reached at cso@urbanxroads.com.

ATTACHMENT A: SCOPING FORM

EXHIBIT B

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the Riverside County Transportation Department requirements for traffic impact analysis of the following project. The analysis must follow the Riverside County Transportation Department Traffic Study Guidelines dated December 2020.

Case No. PPT230048, PDA8407, OAPL2300972
Related Cases-
SP No.
EIR No.
GPA No.
CZ No.
Project Name: Thrifty Oil Warehouse
Project Address: southeast corner of Tobacco and Placentia (APN 317-260-017 & 317-260-018) - 23641 Placentia
Project Description: 186.695 square foot warehouse

	Consultant	Developer Representative
Name:	Urban Crossroads Inc. - Charlene So	Lilburn Corporation - Cheryl Tubbs
Address:	1133 Camelback Street, #8329	1905 Business Center Drive
	Newport Beach, CA 92658	San Bernardino, CA 92408
Telephone:	(949) 861-0177	
E-mail:	cso@urbanxroads.com	

A. Trip Generation Source: ITE, Trip Generation Manual, 11th Edition (2021)

Current GP Land Use	BP		Proposed Land Use	BP	
Current Zoning	I-P (Mead Valley)		Proposed Zoning	I-P (Mead Valley)	

	Current Trip Generation			Proposed Trip Generation			
	In	Out	Total	In	Out	Total	
AM Trips				**28**	**10**	**38**	(PCE)
PM Trips				**14**	**29**	**43**	(PCE)

Internal Trip Allowance ☐ Yes ■ No (0 % Trip Discount)
Pass-By Trip Allowance ☐ Yes ■ No (0 % Trip Discount)

A passby trip discount of 25% is allowed for appropriate land uses. The passby trips at adjacent study area intersections and project driveways shall be indicated on a report figure.

B. Trip Geographic Distribution:

N **N/A** % S **N/A** % E **N/A** % W **N/A** %

C. Background Traffic

Project Build-out Year: 2026 Annual Ambient Growth Rate: 2 %
Phase Year(s) N/A

Other area Projects to be analyzed: N/A
Model/Forecast Methodology: N/A

URBAN CROSSROADS

D. Study Intersections: *(NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments form other agencies).* (See Exhibit 2)

1.	Tobacco Rd. & Placentia Av.	11.	
2.	Tobacco Rd. & Driveway 1	12.	
3.	Tobacco Rd. & Driveway 2	13.	
4.	Driveway 3 & Placentia Av.	14.	
5.		15.	
6.		16.	
7.		17.	
8.		18.	
9.		19.	
10.		20.	

E. Study Roadway Segments: *(NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments form other agencies).*

1.	Not applicable	2.	

F. Other Jurisdictional Impacts

Is this project within a City's Sphere of influence or one mile radius of City boundaries? ■ Yes ☐ No

If so, name of City jurisdiction: Caltrans - I-215 Freeway; City of Perris

G. Site Plan (please attach reduced copy)

H. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by Transportation Department)
(NOTE: If the traffic study states that "a traffic signal is warranted" (or "a traffic signal appears to be warranted", or similar statement) at an existing unsignalized intersection under existing conditions, 8-hour approach traffic volume information must be submitted in addition to the peak hourly turning movement counts for that intersection.

I. Existing Conditions
Traffic count data must be new or recent. Provide traffic count dates if using other than new counts.
Date of counts: Thursday, January 11, 2024

***NOTE* Traffic Study Submittal Form and appropriate fee must be submitted with, or prior to submittal of this form. Transportation Department staff will not process the Scoping Agreement prior to receipt of the fee.**

Recommended by:

Charlene So — 12/20/2023

Consultant's Representative — Date

Approved Scoping Agreement:

Eva Cavarrubias — 1/31/2024

Riverside County Transportation Department — Date

Scoping Agreement Revised on 1/24/2024

URBAN CROSSROADS

ATTACHMENT B: EXISTING TRAFFIC COUNTS AND VOLUME DEVELOPMENT

Volume Development - AM Peak Hour

1: Tobacco Rd. & Placentia Av.

PHF: 0.817 Count Date: 1/11/2024

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Existing 2024:	3	0	0	1	0	0	0	31	5	3	41	1	85
2-Axle:	0	0	0	0	0	0	0	0	2	1	2	0	5
3-Axle:	0	0	0	0	0	0	0	0	0	0	0	0	0
4+-Axle:	0	0	0	0	0	0	0	2	0	0	1	0	3
Total Trucks:	0	0	0	0	0	0	0	2	2	1	3	0	8
Truck %:	0%	0%	0%	0%	0%	0%	0%	6%	40%	33%	7%	0%	
2024 PCE:	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**35**	**6**	**4**	**44**	**1**	**94**
RTOR													
Peds:													
Bikes:													
2024 ADT:		91			8			762			991		
2024 Pk-Daily:		12%			25%			11%			8%		
Project (Actual):	3	0	3	0	0	0	0	0	11	9	0	0	26
Project (PCE):	3	0	4	0	0	0	0	0	11	12	0	0	30
Project ADT:		244			0			104			140		
Other (Actual):	1	0	4	8	0	0	0	4	2	13	12	26	70
Other (PCE):	1	0	6	8	0	0	0	5	2	16	17	26	81
Other ADT:		212			572			300			1,040		
EAP 2026 (Actual):	7	0	7	9	0	0	0	36	18	25	55	27	184
EAP 2026 (PCE):	7	0	10	9	0	0	0	41	19	32	63	27	208
EAP 2026 ADT:		551			580			1,197			2,211		

2: Tobacco Rd. & Driveway 1

PHF: 0.920 Count Date:

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Existing 2024:		3			8								11
2-Axle:		0			3								3
3-Axle:		0			0								0
4+-Axle:		0			0								0
Total Trucks:	0	0	0	0	3	0	0	0	0	0	0	0	3
Truck %:	0%	0%	0%	0%	38%	0%	0%	0%	0%	0%	0%	0%	
2024 PCE:	**0**	**3**	**0**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**
RTOR													
Peds:													
Bikes:													
2024 ADT:		118			118			0			0		
2024 Pk-Daily:		9%			9%			0%			0%		
Project (Actual):	0	3	0	12	8	0	0	0	0	0	0	3	26
Project (PCE):	0	4	0	12	11	0	0	0	0	0	0	3	30
Project ADT:		130			244			0			114		
Other (Actual):	0	5	0	0	16	0	0	0	0	0	0	0	21
Other (PCE):	0	6	0	0	19	0	0	0	0	0	0	0	25
Other ADT:		212			212			0			0		
EAP 2026 (Actual):	0	11	0	12	32	0	0	0	0	0	0	3	58
EAP 2026 (PCE):	0	13	0	12	40	0	0	0	0	0	0	3	68
EAP 2026 ADT:		465			579			0			114		

Volume Development - AM Peak Hour

3: Tobacco Rd. & Driveway 2

PHF: 0.920 Count Date:

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Existing 2024:		3			8								11
2-Axle:		0			3								3
3-Axle:		0			0								0
4+-Axle:		0			0								0
Total Trucks:	0	0	0	0	3	0	0	0	0	0	0	0	3
Truck %:	0%	0%	0%	0%	38%	0%	0%	0%	0%	0%	0%	0%	
2024 PCE:	**0**	**3**	**0**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**
RTOR													
Peds:													
Bikes:													
2024 ADT:		118			118			0			0		
2024 Pk-Daily:		9%			9%			0%			0%		
Project (Actual):	0	0	0	8	0	0	0	0	0	0	0	3	11
Project (PCE):	0	0	0	11	0	0	0	0	0	0	0	4	15
Project ADT:		0			130			0			130		
Other (Actual):	0	2	0	6	9	0	0	0	0	0	0	2	19
Other (PCE):	0	2	0	9	9	0	0	0	0	0	0	4	24
Other ADT:		86			210			0			124		
EAP 2026 (Actual):	0	5	0	14	17	0	0	0	0	0	0	5	41
EAP 2026 (PCE):	0	5	0	20	19	0	0	0	0	0	0	8	52
EAP 2026 ADT:		209			463			0			254		

4: Driveway 3 & Placentia Av.

PHF: 0.920 Count Date:

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Existing 2024:								32			45		77
2-Axle:								0			3		3
3-Axle:								0			0		0
4+-Axle:								2			1		3
Total Trucks:	0	0	0	0	0	0	0	2	0	0	4	0	6
Truck %:	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	9%	0%	
2024 PCE:	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**36**	**0**	**0**	**49**	**0**	**85**
RTOR													
Peds:													
Bikes:													
2024 ADT:		0			0			699			699		
2024 Pk-Daily:		0%			0%			11%			11%		
Project (Actual):	0	0	1	0	0	0	0	3	0	3	9	0	16
Project (PCE):	0	0	3	0	0	0	0	4	0	5	12	0	24
Project ADT:		78			0			140			218		
Other (Actual):	0	0	0	21	0	0	0	22	0	0	75	24	142
Other (PCE):	0	0	0	36	0	0	0	30	0	0	96	37	199
Other ADT:		0			732			1,610			2,342		
EAP 2026 (Actual):	0	0	1	21	0	0	0	58	0	3	131	24	238
EAP 2026 (PCE):	0	0	3	36	0	0	0	71	0	5	158	37	311
EAP 2026 ADT:		78			732			2,477			3,287		

Volume Development - PM Peak Hour

1: Tobacco Rd. & Placentia Av.

		PHF:	0.902							Count Date:	1/11/2024		
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Existing 2024:	5	0	2	1	0	0	0	45	7	1	40	0	101
2-Axle:	0	0	0	0	0	0	0	2	0	0	1	0	3
3-Axle:	0	0	0	0	0	0	0	0	0	0	0	0	0
4+-Axle:	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Trucks:	0	0	0	0	0	0	0	2	0	0	1	0	3
Truck %:	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	3%	0%	
2024 PCE:	**5**	**0**	**2**	**1**	**0**	**0**	**0**	**46**	**7**	**1**	**41**	**0**	**103**
RTOR													
Peds:													
Bikes:													
2024 ADT:		91			8			762			991		
2024 Pk-Daily:		16%			13%			13%			9%		
Project (Actual):	11	0	10	0	0	0	0	0	3	4	0	0	28
Project (PCE):	11	0	12	0	0	0	0	0	3	6	0	0	32
Project ADT:		244			0			104			140		
Other (Actual):	2	0	14	34	0	0	0	15	1	6	6	13	91
Other (PCE):	2	0	16	34	0	0	0	20	1	9	7	13	102
Other ADT:		212			572			300			1,040		
EAP 2026 (Actual):	18	0	26	35	0	0	0	62	11	11	48	13	224
EAP 2026 (PCE):	18	0	30	35	0	0	0	68	11	16	49	13	241
EAP 2026 ADT:		551			580			1,197			2,211		

2: Tobacco Rd. & Driveway 1

		PHF:	0.920							Count Date:			
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Existing 2024:		7			8								15
2-Axle:		0			0								0
3-Axle:		0			0								0
4+-Axle:		0			0								0
Total Trucks:	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck %:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
2024 PCE:	**0**	**7**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**
RTOR													
Peds:													
Bikes:													
2024 ADT:		118			118			0			0		
2024 Pk-Daily:		13%			13%			0%			0%		
Project (Actual):	0	9	0	3	4	0	0	0	0	0	0	12	28
Project (PCE):	0	11	0	3	6	0	0	0	0	0	0	12	32
Project ADT:		130			244			0			114		
Other (Actual):	0	16	0	0	7	0	0	0	0	0	0	0	23
Other (PCE):	0	19	0	0	9	0	0	0	0	0	0	0	28
Other ADT:		212			212			0			0		
EAP 2026 (Actual):	0	32	0	3	19	0	0	0	0	0	0	12	67
EAP 2026 (PCE):	0	37	0	3	23	0	0	0	0	0	0	12	76
EAP 2026 ADT:		465			579			0			114		

Volume Development - PM Peak Hour

3: Tobacco Rd. & Driveway 2

		PHF:	0.920						Count Date:				
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Existing 2024:		7			8								15
2-Axle:		0			0								0
3-Axle:		0			0								0
4+-Axle:		0			0								0
Total Trucks:	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck %:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
2024 PCE:	**0**	**7**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**
RTOR													
Peds:													
Bikes:													
2024 ADT:		118			118			0			0		
2024 Pk-Daily:		13%			13%			0%			0%		
Project (Actual):	0	0	0	4	0	0	0	0	0	0	0	9	13
Project (PCE):	0	0	0	6	0	0	0	0	0	0	0	11	17
Project ADT:		0			130			0			130		
Other (Actual):	0	9	0	4	3	0	0	0	0	0	0	7	23
Other (PCE):	0	9	0	7	3	0	0	0	0	0	0	10	29
Other ADT:		86			210			0			124		
EAP 2026 (Actual):	0	16	0	8	11	0	0	0	0	0	0	16	52
EAP 2026 (PCE):	0	16	0	13	11	0	0	0	0	0	0	21	62
EAP 2026 ADT:		209			463			0			254		

4: Driveway 3 & Placentia Av.

		PHF:	0.920						Count Date:				
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
Existing 2024:								48			41		89
2-Axle:								2			1		3
3-Axle:								0			0		0
4+-Axle:								0			0		0
Total Trucks:	0	0	0	0	0	0	0	2	0	0	1	0	3
Truck %:	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	2%	0%	
2024 PCE:	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**49**	**0**	**0**	**42**	**0**	**91**
RTOR													
Peds:													
Bikes:													
2024 ADT:		0			0			699			699		
2024 Pk-Daily:		0%			0%			13%			13%		
Project (Actual):	0	0	4	0	0	0	0	10	0	3	4	0	21
Project (PCE):	0	0	6	0	0	0	0	12	0	5	6	0	29
Project ADT:		78			0			140			218		
Other (Actual):	0	0	0	29	0	0	0	93	0	0	36	23	181
Other (PCE):	0	0	0	46	0	0	0	112	0	0	45	39	242
Other ADT:		0			732			1,610			2,342		
EAP 2026 (Actual):	0	0	4	29	0	0	0	153	0	3	83	23	295
EAP 2026 (PCE):	0	0	6	46	0	0	0	175	0	5	94	39	365
EAP 2026 ADT:		78			732			2,477			3,287		

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Jan 11, 24

LOCATION: Perris
NORTH & SOUTH: Tobacco Rd
EAST & WEST: Placentia Ave

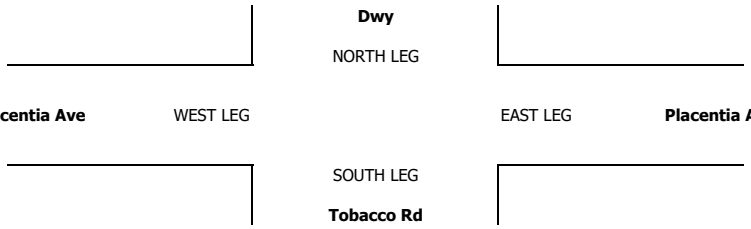
PROJECT #: SC4391
LOCATION #: 1
CONTROL: STOP N

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N
◄ W
E ►
S ▼

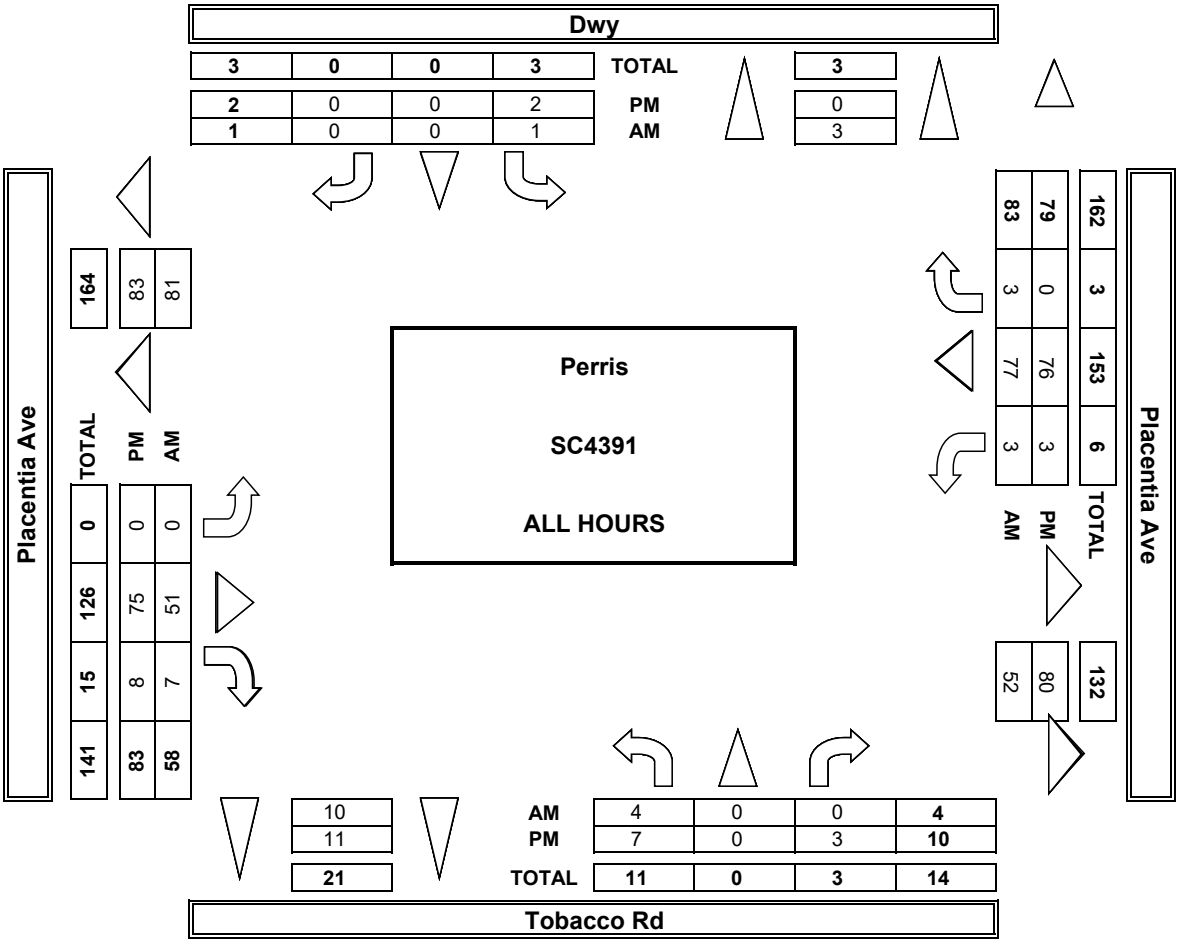
		NORTHBOUND (Tobacco Rd)			SOUTHBOUND (Dwy)			EASTBOUND (Placentia Ave)			WESTBOUND (Placentia Ave)				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	0	0	0	0	6	1	0	12	2	21	0	0	0	0	0
	7:15 AM	1	0	0	0	0	0	0	6	0	0	10	0	17	0	0	0	0	0
	7:30 AM	0	0	0	1	0	0	0	8	2	3	6	1	21	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	13	3	0	10	0	26	0	0	0	0	0
	8:00 AM	2	0	0	0	0	0	0	4	0	0	15	0	21	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	6	1	0	9	0	16	0	0	0	0	0
	8:30 AM	1	0	0	0	0	0	0	5	0	0	10	0	16	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	3	0	0	5	0	8	0	0	0	0	0
	VOLUMES	4	0	0	1	0	0	0	51	7	3	77	3	146	0	0	0	0	0
	APPROACH %	100%	0%	0%	100%	0%	0%	0%	88%	12%	4%	93%	4%						
	APP/DEPART	4	/	3	1	/	10	58	/	52	83	/	81	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	3	0	0	1	0	0	0	31	5	3	41	1	85					
	APPROACH %	100%	0%	0%	100%	0%	0%	0%	86%	14%	7%	91%	2%						
	PEAK HR FACTOR		0.375			0.250			0.563			0.750		0.817					
	APP/DEPART	3	/	1	1	/	8	36	/	32	45	/	44	0					
PM	4:00 PM	0	0	0	0	0	0	0	11	1	2	11	0	25	0	0	0	0	0
	4:15 PM	1	0	1	1	0	0	0	7	0	0	11	0	21	0	0	0	0	0
	4:30 PM	2	0	1	1	0	0	0	10	1	0	12	0	27	0	0	0	0	0
	4:45 PM	0	0	1	0	0	0	0	12	4	1	10	0	28	0	0	0	0	0
	5:00 PM	2	0	0	0	0	0	0	11	1	0	8	0	22	0	0	0	0	0
	5:15 PM	1	0	0	0	0	0	0	12	1	0	10	0	24	0	0	0	0	0
	5:30 PM	1	0	0	0	0	0	0	6	0	0	7	0	14	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	6	0	0	7	0	13	0	0	0	0	0
	VOLUMES	7	0	3	2	0	0	0	75	8	3	76	0	174	0	0	0	0	0
	APPROACH %	70%	0%	30%	100%	0%	0%	0%	90%	10%	4%	96%	0%						
	APP/DEPART	10	/	0	2	/	11	83	/	80	79	/	83	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	5	0	2	1	0	0	0	45	7	1	40	0	101					
	APPROACH %	71%	0%	29%	100%	0%	0%	0%	87%	13%	2%	98%	0%						
	PEAK HR FACTOR		0.583			0.250			0.813			0.788		0.902					
	APP/DEPART	7	/	0	1	/	8	52	/	48	41	/	45	0					

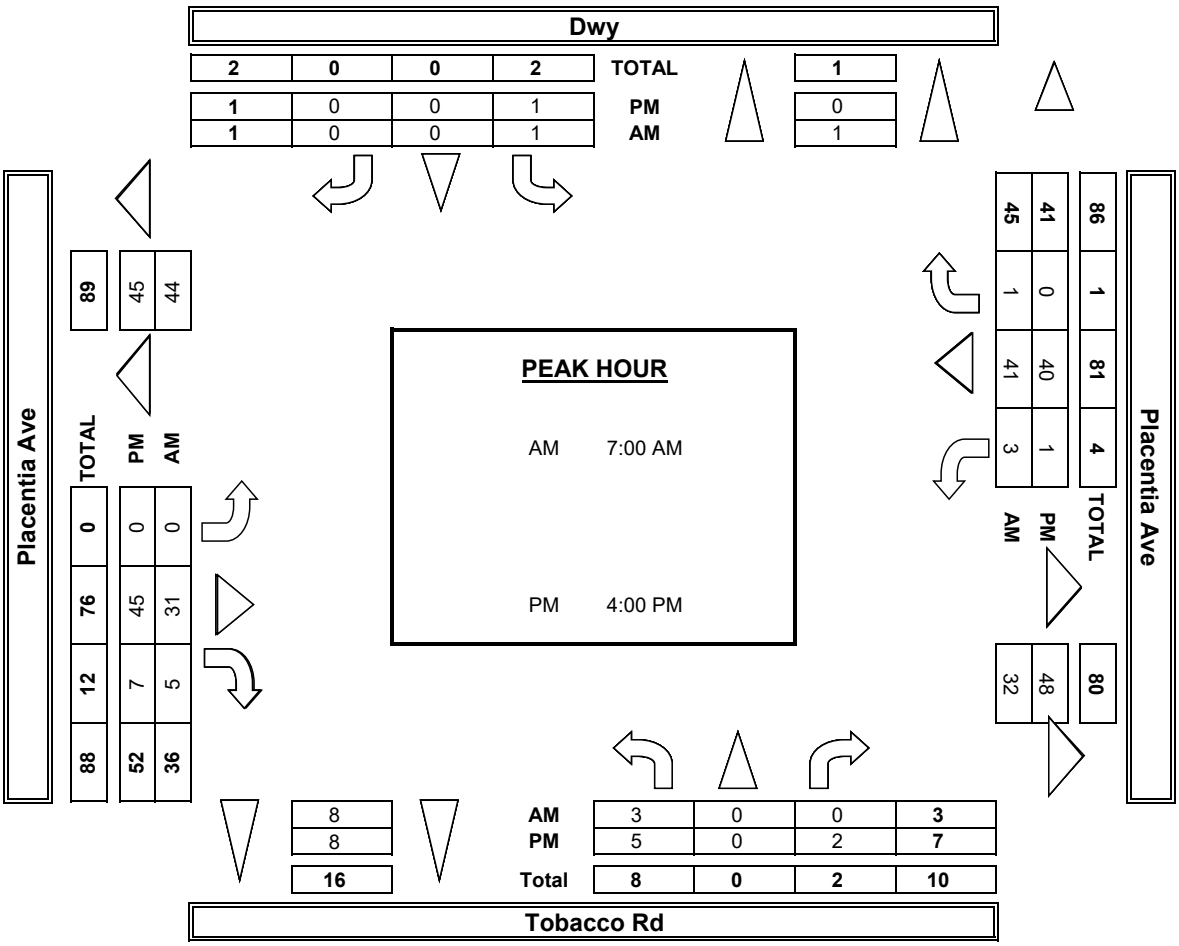


		ALL PED + BIKE & SCOOTER					PEDESTRIAN CROSSINGS					BICYCLE & SCOOTER CROSSINGS				
		N LEG	S LEG	E LEG	W LEG	TOTAL	N LEG	S LEG	E LEG	W LEG	TOTAL	NL	SL	EL	WL	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

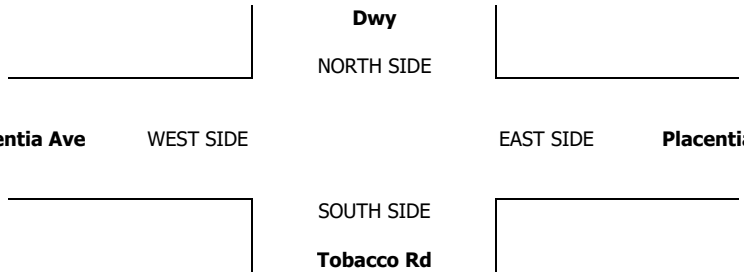
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Perris	PROJECT #:	SC4391
1/11/24	NORTH & SOUTH:	Tobacco Rd	LOCATION #:	1
THURSDAY	EAST & WEST:	Placentia Ave	CONTROL:	STOP N

CLASS 2:	NOTES:
2-AXLE WORK VEHICLES/ TRUCKS	

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

	NORTHBOUND Tobacco Rd			SOUTHBOUND Dwy			EASTBOUND Placentia Ave			WESTBOUND Placentia Ave				U-TURNS				
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 2	WR 0	TOTAL	NB	SB	EB	WB	TTL
AM																		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	0	2	1	2	0	5	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	100%	33%	67%	0%						
APP/DEPART	0	/	0	0	/	3	2	/	0	3	/	2	0					
BEGIN PEAK HR		7:00 AM																
VOLUMES	0	0	0	0	0	0	0	0	2	1	2	0	5					
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	100%	33%	67%	0%						
PEAK HR FACTOR		0.000			0.000			0.500			0.750		0.625					
APP/DEPART	0	/	0	0	/	3	2	/	0	3	/	2	0					
PM																		
4:00 PM	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	2	0	0	1	0	3	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	2	0	0	1	0	3	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	8	0	0	5	0	13	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%						
APP/DEPART	0	/	0	0	/	0	8	/	8	5	/	5	0					
BEGIN PEAK HR		4:00 PM																
VOLUMES	0	0	0	0	0	0	0	2	0	0	1	0	3					
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%						
PEAK HR FACTOR		0.000			0.000			0.500			0.250		0.375					
APP/DEPART	0	/	0	0	/	0	2	/	2	1	/	1	0					



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

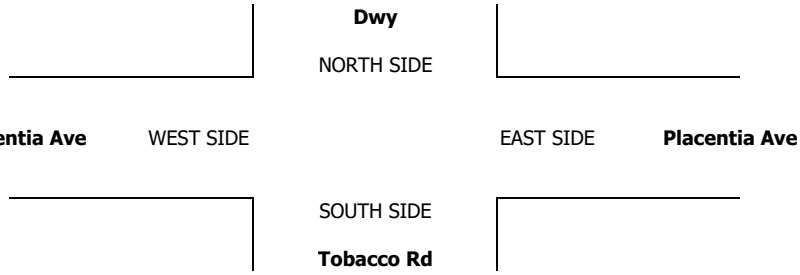
DATE:	LOCATION:	Perris	PROJECT #:	SC4391
1/11/24	NORTH & SOUTH:	Tobacco Rd	LOCATION #:	1
THURSDAY	EAST & WEST:	Placentia Ave	CONTROL:	STOP N

CLASS 3: 3-AXLE TRUCKS

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

	NORTHBOUND (Tobacco Rd)			SOUTHBOUND (Dwy)			EASTBOUND (Placentia Ave)			WESTBOUND (Placentia Ave)				U-TURNS				
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 2	WR 0	TOTAL	NB	SB	EB	WB	TTL
AM																		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%						
APP/DEPART	0	/	0	0	/	0	1	/	1	0	/	0	0					
BEGIN PEAK HR		7:00 AM																
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0					
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%						
PEAK HR FACTOR		0.000			0.000			0.000			0.000		0.000					
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0					
PM																		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%						
APP/DEPART	0	/	0	0	/	0	1	/	1	0	/	0	0					
BEGIN PEAK HR		4:00 PM																
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0					
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%						
PEAK HR FACTOR		0.000			0.000			0.000			0.000		0.000					
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0					



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

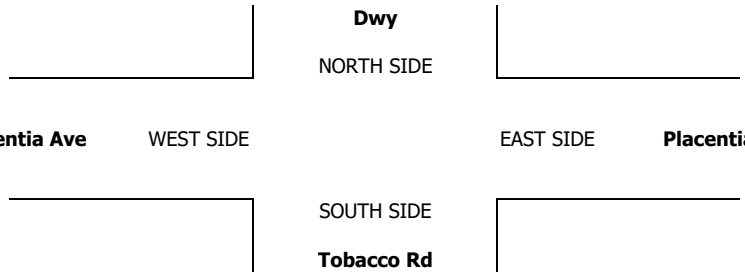
DATE:	LOCATION:	Perris	PROJECT #:	SC4391
1/11/24	NORTH & SOUTH:	Tobacco Rd	LOCATION #:	1
THURSDAY	EAST & WEST:	Placentia Ave	CONTROL:	STOP N

CLASS 4: 4 OR MORE AXLE TRUCKS

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

	NORTHBOUND (Tobacco Rd)			SOUTHBOUND (Dwy)			EASTBOUND (Placentia Ave)			WESTBOUND (Placentia Ave)				U-TURNS				
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 2	WR 0	TOTAL	NB	SB	EB	WB	TTL
AM																		
7:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	2	0	0	1	0	3	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%						
APP/DEPART	0	/	0	0	/	0	2	/	2	1	/	1	0					
BEGIN PEAK HR		7:00 AM																
VOLUMES	0	0	0	0	0	0	0	2	0	0	1	0	3					
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%						
PEAK HR FACTOR		0.000			0.000			0.250			0.250		0.375					
APP/DEPART	0	/	0	0	/	0	2	/	2	1	/	1	0					
PM																		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VOLUMES	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
APPROACH %	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%						
APP/DEPART	0	/	0	0	/	0	1	/	1	0	/	0	0					
BEGIN PEAK HR		4:00 PM																
VOLUMES	0	0	0	0	0	0	0	0	0	0	0	0	0					
APPROACH %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%						
PEAK HR FACTOR		0.000			0.000			0.000			0.000		0.000					
APP/DEPART	0	/	0	0	/	0	0	/	0	0	/	0	0					



A102423

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: Thursday, January 11, 2024 **CITY:** Perris

JOB #: SC4391 **LOCATION:** CLASS2 Tobacco Rd south of Placentia Ave

AM TIME	COMBINED 1	2	3	4	5	6	TOTAL	PM Time	COMBINED 1	2	3	4	5	6	TOTAL
0:00	0	0	0	0	0	0	0	12:00	0	0	0	0	0	0	0
0:15	0	0	0	0	0	0	0	12:15	2	0	0	0	0	0	2
0:30	0	0	0	0	0	0	0	12:30	2	0	0	0	0	0	2
0:45	0	0	0	0	0	0	0	12:45	0	0	0	1	0	0	1
1:00	0	0	0	0	0	0	0	13:00	1	1	0	0	0	0	2
1:15	0	0	0	0	0	0	0	13:15	0	1	0	0	0	0	1
1:30	0	0	0	0	0	0	0	13:30	2	0	0	0	0	0	2
1:45	0	0	0	0	0	0	0	13:45	1	0	0	0	0	0	1
2:00	0	0	0	0	0	0	0	14:00	2	0	0	0	0	0	2
2:15	0	0	0	0	0	0	0	14:15	1	0	0	0	0	0	1
2:30	0	0	0	0	0	0	0	14:30	0	0	0	0	0	0	0
2:45	0	0	0	0	0	0	0	14:45	1	0	0	0	0	0	1
3:00	0	0	0	0	0	0	0	15:00	1	0	0	0	0	0	1
3:15	0	0	0	0	0	0	0	15:15	1	0	0	0	0	1	2
3:30	0	0	0	0	0	0	0	15:30	3	0	0	0	0	0	3
3:45	0	0	0	0	0	0	0	15:45	3	0	0	0	0	0	3
4:00	0	0	0	0	0	0	0	16:00	3	0	0	0	0	0	3
4:15	0	0	0	0	0	0	0	16:15	2	0	0	0	0	0	2
4:30	0	0	0	0	0	0	0	16:30	4	0	0	0	0	0	4
4:45	2	0	0	0	0	0	2	16:45	6	0	0	0	0	0	6
5:00	1	0	0	0	0	0	1	17:00	3	0	0	0	0	0	3
5:15	0	0	0	0	0	0	0	17:15	2	0	0	0	0	0	2
5:30	1	0	0	0	0	0	1	17:30	1	0	0	0	0	0	1
5:45	2	0	0	0	0	0	2	17:45	0	0	0	0	0	0	0
6:00	0	0	0	0	0	0	0	18:00	0	0	0	0	0	0	0
6:15	1	0	0	0	0	0	1	18:15	1	1	0	0	0	0	2
6:30	2	0	0	0	0	0	2	18:30	1	0	0	0	0	0	1
6:45	1	0	0	0	0	0	1	18:45	2	0	0	0	0	0	2
7:00	1	0	0	0	0	0	1	19:00	0	0	0	0	0	0	0
7:15	1	0	0	0	0	0	1	19:15	0	0	0	0	0	0	0
7:30	3	2	0	0	0	0	5	19:30	0	0	0	0	0	0	0
7:45	1	1	0	0	0	1	3	19:45	1	0	0	0	0	0	1
8:00	2	0	0	0	0	0	2	20:00	0	0	0	0	0	0	0
8:15	1	0	0	0	0	0	1	20:15	0	0	0	0	0	0	0
8:30	1	0	0	0	0	0	1	20:30	1	0	0	0	0	0	1
8:45	0	0	0	0	0	0	0	20:45	0	0	0	0	0	0	0
9:00	1	0	0	0	0	0	1	21:00	0	0	0	0	0	0	0
9:15	1	2	0	0	0	0	3	21:15	0	0	0	0	0	0	0
9:30	2	0	0	0	0	0	2	21:30	0	0	0	0	0	0	0
9:45	1	0	0	0	0	0	1	21:45	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	22:00	0	0	0	0	0	0	0
10:15	1	0	0	0	0	0	1	22:15	0	0	0	0	0	0	0
10:30	2	0	0	0	0	0	2	22:30	2	0	0	0	0	0	2
10:45	1	0	0	0	0	0	1	22:45	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	23:00	1	0	0	0	0	0	1
11:15	0	0	0	0	0	0	0	23:15	0	0	0	0	0	0	0
11:30	1	0	0	0	0	0	1	23:30	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	23:45	0	0	0	0	0	0	0
TOTAL	30	5	0	0	0	1	36	TOTAL	50	3	0	1	0	1	55

AM PEAK HOUR	7:30 AM
AM PEAK VOLUME	11

AM PEAK HOUR	4:30 PM
AM PEAK VOLUME	15

CLASS 1	PASSENGER VEHICLES
CLASS 2	2-AXLE TRUCKS
CLASS 3	3-AXLE TRUCKS
CLASS 4	4 OR MORE AXLE TRUCKS
CLASS 5	RV
CLASS 6	Buses

	1	2	3	4	5	6	TOTAL
TOTAL: AM+PM	80	8	0	1	0	2	91
% OF TOTAL	87.9%	8.8%	0.0%	1.1%	0.0%	2.2%	100.0%

A102423

24-HOUR ROADWAY SEGMENT COUNTS (WITH CLASSIFICATION)

Prepared by AimTD LLC tel. 714 253 7888 cs@aimtd.com

DATE: Thursday, January 11, 2024 **CITY:** Perris

JOB #: SC4391 **LOCATION:** CLASS1 Placentia Ave east of Tobacco Rd

AM TIME	COMBINED 1	2	3	4	5	6	TOTAL
0:00	1	0	0	0	0	0	1
0:15	3	0	0	0	0	0	3
0:30	0	0	0	0	0	0	0
0:45	1	0	0	0	0	0	1
1:00	0	0	0	0	0	0	0
1:15	1	0	0	0	0	0	1
1:30	0	0	0	0	0	0	0
1:45	4	0	0	0	0	0	4
2:00	2	0	0	2	0	0	4
2:15	0	0	0	0	0	0	0
2:30	1	0	0	0	0	0	1
2:45	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0
3:15	0	0	0	0	0	0	0
3:30	2	0	0	0	0	0	2
3:45	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0
4:15	1	0	0	0	0	0	1
4:30	5	0	0	0	0	0	5
4:45	2	1	0	0	0	0	3
5:00	8	0	0	0	0	0	8
5:15	2	0	0	0	0	0	2
5:30	3	0	0	1	0	0	4
5:45	11	0	0	2	0	0	13
6:00	7	0	0	0	0	0	7
6:15	6	1	0	0	0	0	7
6:30	7	0	0	0	0	0	7
6:45	12	3	0	0	0	1	16
7:00	17	1	0	2	0	0	20
7:15	16	0	0	0	0	0	16
7:30	18	1	0	0	0	0	19
7:45	21	1	0	1	0	0	23
8:00	19	0	0	0	0	0	19
8:15	15	0	0	0	0	0	15
8:30	14	0	1	0	0	0	15
8:45	8	0	0	0	0	0	8
9:00	12	3	0	0	0	0	15
9:15	13	1	0	0	0	0	14
9:30	7	0	0	0	0	0	7
9:45	10	1	0	0	0	0	11
10:00	7	1	0	0	0	0	8
10:15	9	1	0	0	0	0	10
10:30	17	1	0	0	0	0	18
10:45	6	1	0	0	0	0	7
11:00	15	1	0	1	0	0	17
11:15	10	0	0	0	0	0	10
11:30	12	1	0	0	0	0	13
11:45	12	1	0	0	0	0	13
TOTAL	337	20	1	9	0	1	368

AM PEAK HOUR	7:00 AM
AM PEAK VOLUME	78

PM Time	COMBINED 1	2	3	4	5	6	TOTAL
12:00	19	0	0	0	0	0	19
12:15	13	0	0	0	0	0	13
12:30	11	0	0	0	0	0	11
12:45	13	2	0	1	0	0	16
13:00	11	0	0	0	0	0	11
13:15	13	0	0	0	0	0	13
13:30	12	1	0	0	0	0	13
13:45	21	0	0	0	0	0	21
14:00	19	1	0	0	0	0	20
14:15	26	0	1	1	0	0	28
14:30	19	0	0	0	0	0	19
14:45	21	2	0	0	0	0	23
15:00	25	0	0	0	0	0	25
15:15	22	0	0	0	0	0	22
15:30	24	0	0	0	0	0	24
15:45	23	1	0	0	0	0	24
16:00	22	2	0	0	0	0	24
16:15	19	0	0	0	0	1	20
16:30	23	1	0	0	0	0	24
16:45	24	0	0	0	0	0	24
17:00	16	2	1	0	0	0	19
17:15	20	2	0	0	0	0	22
17:30	9	3	0	1	0	0	13
17:45	10	3	0	0	0	0	13
18:00	12	0	0	1	0	0	13
18:15	11	2	0	0	0	0	13
18:30	15	1	1	1	0	0	18
18:45	13	0	0	2	0	0	15
19:00	7	1	0	0	0	0	8
19:15	7	0	0	1	0	0	8
19:30	8	3	0	0	0	0	11
19:45	10	0	0	2	0	0	12
20:00	5	0	0	0	0	0	5
20:15	5	1	0	0	0	0	6
20:30	8	0	0	0	0	0	8
20:45	10	0	0	0	0	0	10
21:00	3	0	0	0	0	0	3
21:15	2	0	0	0	0	0	2
21:30	8	0	0	0	0	0	8
21:45	4	1	0	0	0	0	5
22:00	3	0	0	0	0	0	3
22:15	4	0	0	0	0	0	4
22:30	2	0	0	0	0	0	2
22:45	1	0	0	0	0	0	1
23:00	3	0	0	0	0	0	3
23:15	2	0	0	0	0	0	2
23:30	2	0	0	0	0	0	2
23:45	0	0	0	0	0	0	0
TOTAL	580	29	3	10	0	1	623

AM PEAK HOUR	3:00 PM
AM PEAK VOLUME	95

TOTAL: AM+PM		917	49	4	19	0	2	991
% OF TOTAL		92.5%	4.9%	0.4%	1.9%	0.0%	0.2%	100.0%

CLASS 1	PASSENGER VEHICLES
CLASS 2	2-AXLE TRUCKS
CLASS 3	3-AXLE TRUCKS
CLASS 4	4 OR MORE AXLE TRUCKS
CLASS 5	RV
CLASS 6	Buses

ATTACHMENT C: EXISTING (2024) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	35	6	4	44	1	3	0	0	1	0	0
Future Vol, veh/h	0	35	6	4	44	1	3	0	0	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	43	7	5	54	1	4	0	0	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	55	0	0	50	0	0	83	111	46	107	114	27
Stage 1	-	-	-	-	-	-	46	46	-	64	64	-
Stage 2	-	-	-	-	-	-	37	65	-	43	50	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.2	7.3	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1563	-	-	1570	-	-	905	783	1029	872	780	1048
Stage 1	-	-	-	-	-	-	972	860	-	945	846	-
Stage 2	-	-	-	-	-	-	980	845	-	977	857	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1563	-	-	1570	-	-	902	780	1029	869	777	1048
Mov Cap-2 Maneuver	-	-	-	-	-	-	902	780	-	869	777	-
Stage 1	-	-	-	-	-	-	972	860	-	942	843	-
Stage 2	-	-	-	-	-	-	977	842	-	977	857	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.61	9.01	9.15
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	902	1563	-	-	285	-	-	869
HCM Lane V/C Ratio	0.004	-	-	-	0.003	-	-	0.001
HCM Control Delay (s/veh)	9	0	-	-	7.3	0	-	9.1
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	46	0	1	41	0	5	0	2	1	0	0
Future Vol, veh/h	0	46	0	1	41	0	5	0	2	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	51	0	1	46	0	6	0	2	1	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	46	0	0	51	0	0	76	99	51	99	99	23
Stage 1	-	-	-	-	-	-	51	51	-	48	48	-
Stage 2	-	-	-	-	-	-	25	48	-	51	51	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.2	7.3	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1575	-	-	1568	-	-	914	795	1023	883	795	1055
Stage 1	-	-	-	-	-	-	967	856	-	966	859	-
Stage 2	-	-	-	-	-	-	995	859	-	967	856	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1575	-	-	1568	-	-	914	794	1023	880	794	1055
Mov Cap-2 Maneuver	-	-	-	-	-	-	914	794	-	880	794	-
Stage 1	-	-	-	-	-	-	967	856	-	965	858	-
Stage 2	-	-	-	-	-	-	994	858	-	965	856	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.18	8.85	9.09
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	942	1575	-	-	86	-	-	880
HCM Lane V/C Ratio	0.008	-	-	-	0.001	-	-	0.001
HCM Control Delay (s/veh)	8.9	0	-	-	7.3	0	-	9.1
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

ATTACHMENT D: EAP (2026) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	41	19	32	63	27	7	0	10	9	0	0
Future Vol, veh/h	0	41	19	32	63	27	7	0	10	9	0	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	50	23	39	77	33	9	0	12	11	0	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay, s/veh	7.4	7.9	7.2	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	41%	0%	100%	0%	100%
Vol Thru, %	0%	68%	0%	70%	0%
Vol Right, %	59%	32%	0%	30%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	17	60	32	90	9
LT Vol	7	0	32	0	9
Through Vol	0	41	0	63	0
RT Vol	10	19	0	27	0
Lane Flow Rate	21	73	39	110	11
Geometry Grp	2	4a	5	5	2
Degree of Util (X)	0.024	0.081	0.055	0.134	0.014
Departure Headway (Hd)	4.141	3.973	5.092	4.381	4.622
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	870	893	704	818	779
Service Time	2.141	2.036	2.821	2.11	2.623
HCM Lane V/C Ratio	0.024	0.082	0.055	0.134	0.014
HCM Control Delay, s/veh	7.2	7.4	8.1	7.8	7.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.2	0.5	0

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	13	0	12	40
Future Vol, veh/h	0	3	13	0	12	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	3	14	0	13	43

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	84	14	0	0	14	0
Stage 1	14	-	-	-	-	-
Stage 2	70	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	923	1072	-	-	1617	-
Stage 1	1014	-	-	-	-	-
Stage 2	958	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	915	1072	-	-	1617	-
Mov Cap-2 Maneuver	859	-	-	-	-	-
Stage 1	1014	-	-	-	-	-
Stage 2	950	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	8.37	0	1.67
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1072	415	-
HCM Lane V/C Ratio	-	-	0.003	0.008	-
HCM Control Delay (s/veh)	-	-	8.4	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	8	5	0	20	19
Future Vol, veh/h	0	8	5	0	20	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	9	5	0	22	21

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	70	5	0	0	5	0
Stage 1	5	-	-	-	-	-
Stage 2	64	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	940	1083	-	-	1629	-
Stage 1	1023	-	-	-	-	-
Stage 2	964	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	927	1083	-	-	1629	-
Mov Cap-2 Maneuver	864	-	-	-	-	-
Stage 1	1023	-	-	-	-	-
Stage 2	951	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	8.35	0	3.71
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1083	1629	-
HCM Lane V/C Ratio	-	-	0.008	0.013	-
HCM Control Delay (s/veh)	-	-	8.3	7.2	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	71	0	5	158	37	0	0	3	36	0	0
Future Vol, veh/h	0	71	0	5	158	37	0	0	3	36	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	50	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	77	0	5	172	40	0	0	3	39	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	212	0	0	77	0	0	260	300	39	241	280	192
Stage 1	-	-	-	-	-	-	77	77	-	203	203	-
Stage 2	-	-	-	-	-	-	183	223	-	39	77	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.9	7.3	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1370	-	-	1534	-	-	687	616	1031	707	632	855
Stage 1	-	-	-	-	-	-	929	835	-	804	737	-
Stage 2	-	-	-	-	-	-	824	723	-	977	835	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1370	-	-	1534	-	-	685	614	1031	703	630	855
Mov Cap-2 Maneuver	-	-	-	-	-	-	685	614	-	703	630	-
Stage 1	-	-	-	-	-	-	929	835	-	801	735	-
Stage 2	-	-	-	-	-	-	821	720	-	974	835	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.18	8.5	10.43
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1031	1370	-	-	1534	-	-	703
HCM Lane V/C Ratio	0.003	-	-	-	0.004	-	-	0.056
HCM Control Delay (s/veh)	8.5	0	-	-	7.4	-	-	10.4
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	68	11	16	49	13	18	0	30	35	0	0
Future Vol, veh/h	0	68	11	16	49	13	18	0	30	35	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	76	12	18	54	14	20	0	33	39	0	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay, s/veh	7.7	7.9	7.3	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	38%	0%	100%	0%	100%
Vol Thru, %	0%	86%	0%	79%	0%
Vol Right, %	63%	14%	0%	21%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	48	79	16	62	35
LT Vol	18	0	16	0	35
Through Vol	0	68	0	49	0
RT Vol	30	11	0	13	0
Lane Flow Rate	53	88	18	69	39
Geometry Grp	2	4a	5	5	2
Degree of Util (X)	0.06	0.101	0.026	0.087	0.049
Departure Headway (Hd)	4.047	4.142	5.208	4.56	4.558
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	890	853	682	779	790
Service Time	2.048	2.226	2.977	2.328	2.56
HCM Lane V/C Ratio	0.06	0.103	0.026	0.089	0.049
HCM Control Delay, s/veh	7.3	7.7	8.1	7.8	7.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.3	0.1	0.3	0.2

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	12	37	0	3	23
Future Vol, veh/h	0	12	37	0	3	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	13	40	0	3	25

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	72	40	0	0	40	0
Stage 1	40	-	-	-	-	-
Stage 2	32	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	937	1037	-	-	1582	-
Stage 1	987	-	-	-	-	-
Stage 2	996	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	935	1037	-	-	1582	-
Mov Cap-2 Maneuver	879	-	-	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	994	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	8.52	0	0.84
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1037	208	-
HCM Lane V/C Ratio	-	-	0.013	0.002	-
HCM Control Delay (s/veh)	-	-	8.5	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	4.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	21	16	0	13	11
Future Vol, veh/h	0	21	16	0	13	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	23	17	0	14	12

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	58	17	0	0	17	0
Stage 1	17	-	-	-	-	-
Stage 2	40	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	955	1067	-	-	1613	-
Stage 1	1011	-	-	-	-	-
Stage 2	987	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	946	1067	-	-	1613	-
Mov Cap-2 Maneuver	883	-	-	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	979	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	8.45	0	3.93
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1067	1613	-
HCM Lane V/C Ratio	-	-	0.021	0.009	-
HCM Control Delay (s/veh)	-	-	8.4	7.3	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	175	0	5	94	39	0	0	6	46	0	0
Future Vol, veh/h	0	175	0	5	94	39	0	0	6	46	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	50	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	190	0	5	102	42	0	0	7	50	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	145	0	0	190	0	0	303	346	95	229	324	123
Stage 1	-	-	-	-	-	-	190	190	-	134	134	-
Stage 2	-	-	-	-	-	-	113	155	-	95	190	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.3	6.5	6.9	7.3	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1450	-	-	1396	-	-	642	581	949	721	597	933
Stage 1	-	-	-	-	-	-	799	747	-	874	789	-
Stage 2	-	-	-	-	-	-	897	773	-	907	747	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1450	-	-	1396	-	-	640	578	949	713	594	933
Mov Cap-2 Maneuver	-	-	-	-	-	-	640	578	-	713	594	-
Stage 1	-	-	-	-	-	-	799	747	-	871	786	-
Stage 2	-	-	-	-	-	-	893	770	-	901	747	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.27	8.82	10.43
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	949	1450	-	-	1396	-	-	713
HCM Lane V/C Ratio	0.007	-	-	-	0.004	-	-	0.07
HCM Control Delay (s/veh)	8.8	0	-	-	7.6	-	-	10.4
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

ATTACHMENT E: TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

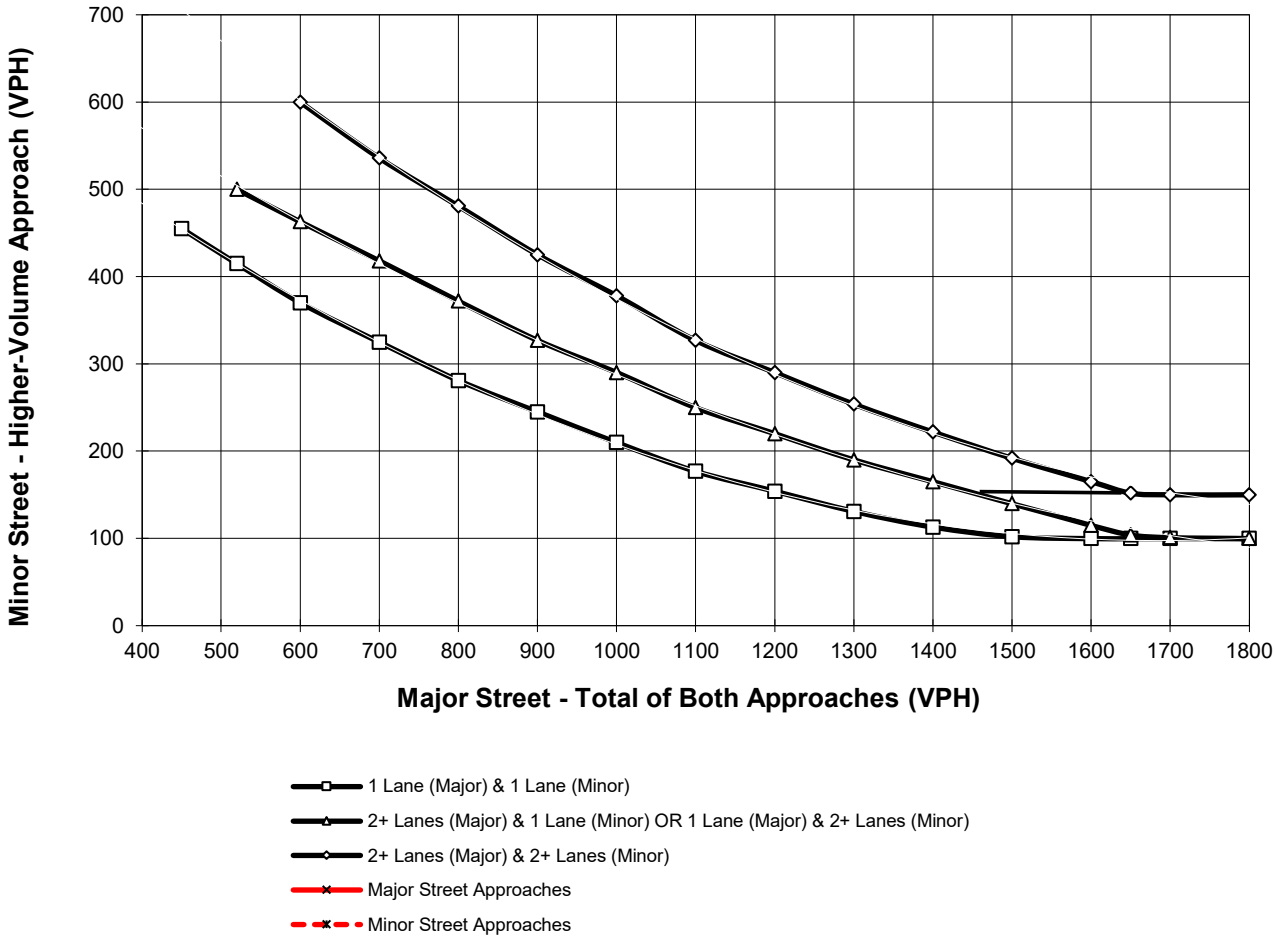
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **Existing (2024) Conditions - Weekday PM Peak Hour**

Major Street Name = **Placentia Av.**
Total of Both Approaches (VPH) = **95**
Number of Approach Lanes on Major Street = **2**

Minor Street Name = **Tobacco Rd.**
High Volume Approach (VPH) = **7**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

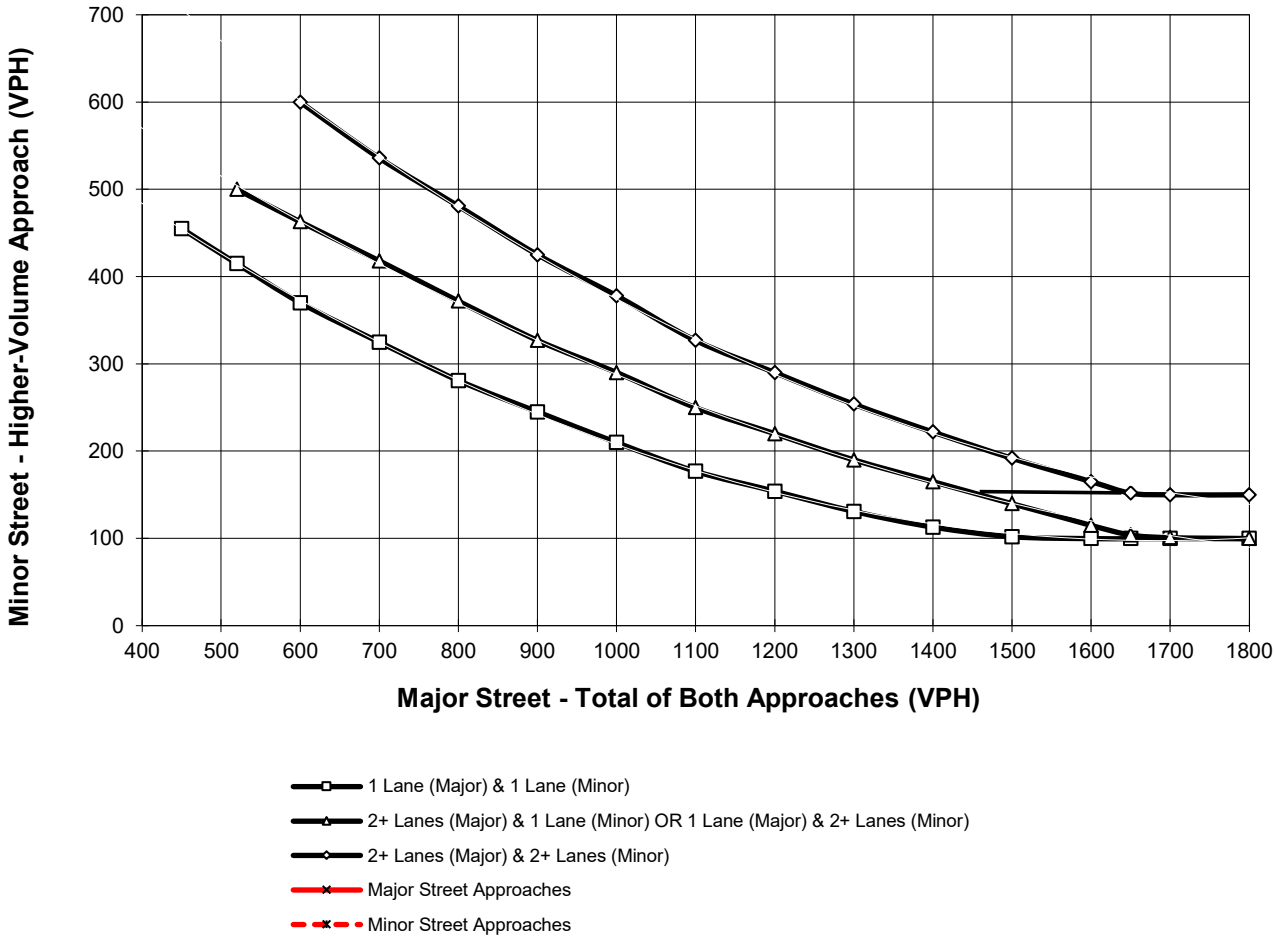
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **EAP (2026) Conditions - Weekday PM Peak Hour**

Major Street Name = **Placentia Av.**
Total of Both Approaches (VPH) = **157**
Number of Approach Lanes on Major Street = **2**

Minor Street Name = **Tobacco Rd.**
High Volume Approach (VPH) = **48**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	EAP
				CALC CS	DATE 02/14/24
Jurisdiction: **County of Riverside**				CHK CS	DATE 02/14/24
Major Street: **Tobacco Rd.**				Critical Approach Speed (Major)	25 mph
Minor Street: **Driveway 1**				Critical Approach Speed (Minor)	25 mph

Major Street Approach Lanes = **1** lane

Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **522** vpd

Minor Street Future ADT = **57** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……..

or

In built up area of isolated community of < 10,000 population ……

URBAN (U)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
CONDITION A - Minimum Vehicular Volume	Urban	Rural	Urban	Rural
Satisfied: XX / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street: *1* **522** / Minor Street: *1* **57**	8,000	5,600	2,400	1,680
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach				
Major Street: *1* **522** / Minor Street: *1* **57**	12,000	8,400	1,200	850
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 2% B: 4%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		EAP
				CALC CS	DATE	02/14/24
Jurisdiction: **County of Riverside**				CHK CS	DATE	02/14/24
Major Street: **Tobacco Rd.**				Critical Approach Speed (Major)		25 mph
Minor Street: **Driveway 2**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **335** vpd Minor Street Future ADT = **127** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **URBAN (U)**

In built up area of isolated community of < 10,000 population …… [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
CONDITION A - Minimum Vehicular Volume	Urban	Rural	Urban	Rural
Satisfied: XX				
Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street: 1 **335** / Minor Street: 1 **127**	8,000	5,600	2,400	1,680
Major Street: 2 + / Minor Street: 1	9,600	6,720	2,400	1,680
Major Street: 2 + / Minor Street: 2 +	9,600	6,720	3,200	2,240
Major Street: 1 / Minor Street: 2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Urban	Rural	Urban	Rural
Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street: 1 **335** / Minor Street: 1 **127**	12,000	8,400	1,200	850
Major Street: 2 + / Minor Street: 1	14,400	10,080	1,200	850
Major Street: 2 + / Minor Street: 2 +	14,400	10,080	1,600	1,120
Major Street: 1 / Minor Street: 2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied				
Not Satisfied: XX				
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 4% B: 3%	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		EAP	
				CALC	CS	DATE	02/14/24
Jurisdiction:	**County of Riverside**			CHK	CS	DATE	02/14/24
Major Street:	**Placentia Av.**			Critical Approach Speed (Major)		40	mph
Minor Street:	**Driveway 3**			Critical Approach Speed (Minor)		25	mph

Major Street Approach Lanes = **1** lane

Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **2,882** vpd

Minor Street Future ADT = **366** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……..

or

In built up area of isolated community of < 10,000 population ……

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
CONDITION A - Minimum Vehicular Volume	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied (XX)	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **2,882** / *1* **366**	8,000	5,600	2,400	1,680
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied (XX)	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **2,882** / *1* **366**	12,000	8,400	1,200	850
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied (XX)	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 15% B: 24%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

ATTACHMENT F: TRUCK TURNS

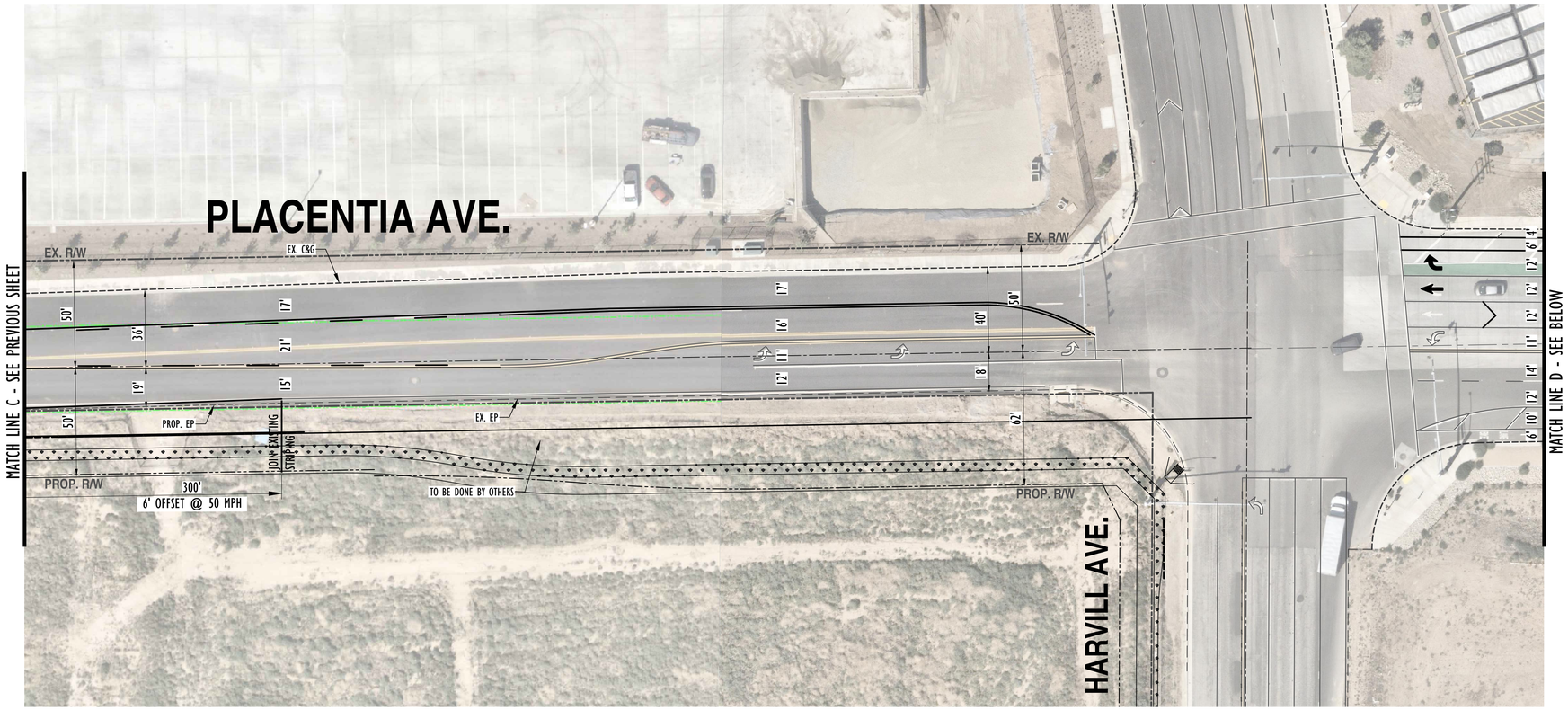
EXHIBIT 1: TOBACCO ROAD AT PLACENTIA AVENUE
OPENING DAY CONCEPT STRIPING IMPROVEMENTS

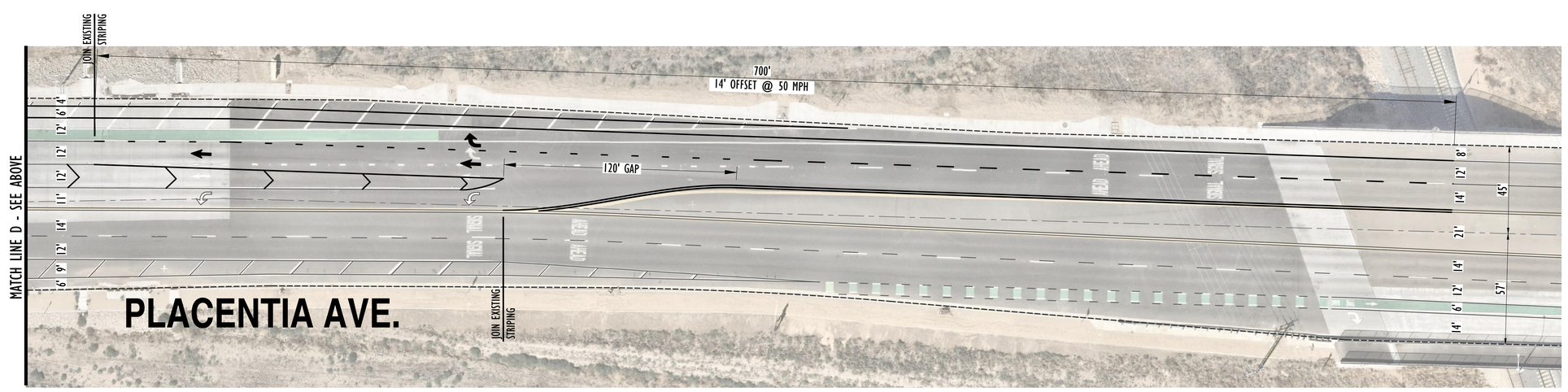
URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

SCALE: 1" = 30' (ON 24" x 36" SHEET)

0 15 30 60 90 120

15749 - ACAD\15749_E.dwg - 1/15/25 - JG





SCALE: 1" = 30' (ON 24" x 36" SHEET)

0 15 30 60 90 120

EXHIBIT 1: TOBACCO ROAD AT PLACENTIA AVENUE OPENING DAY CONCEPT STRIPING IMPROVEMENTS

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

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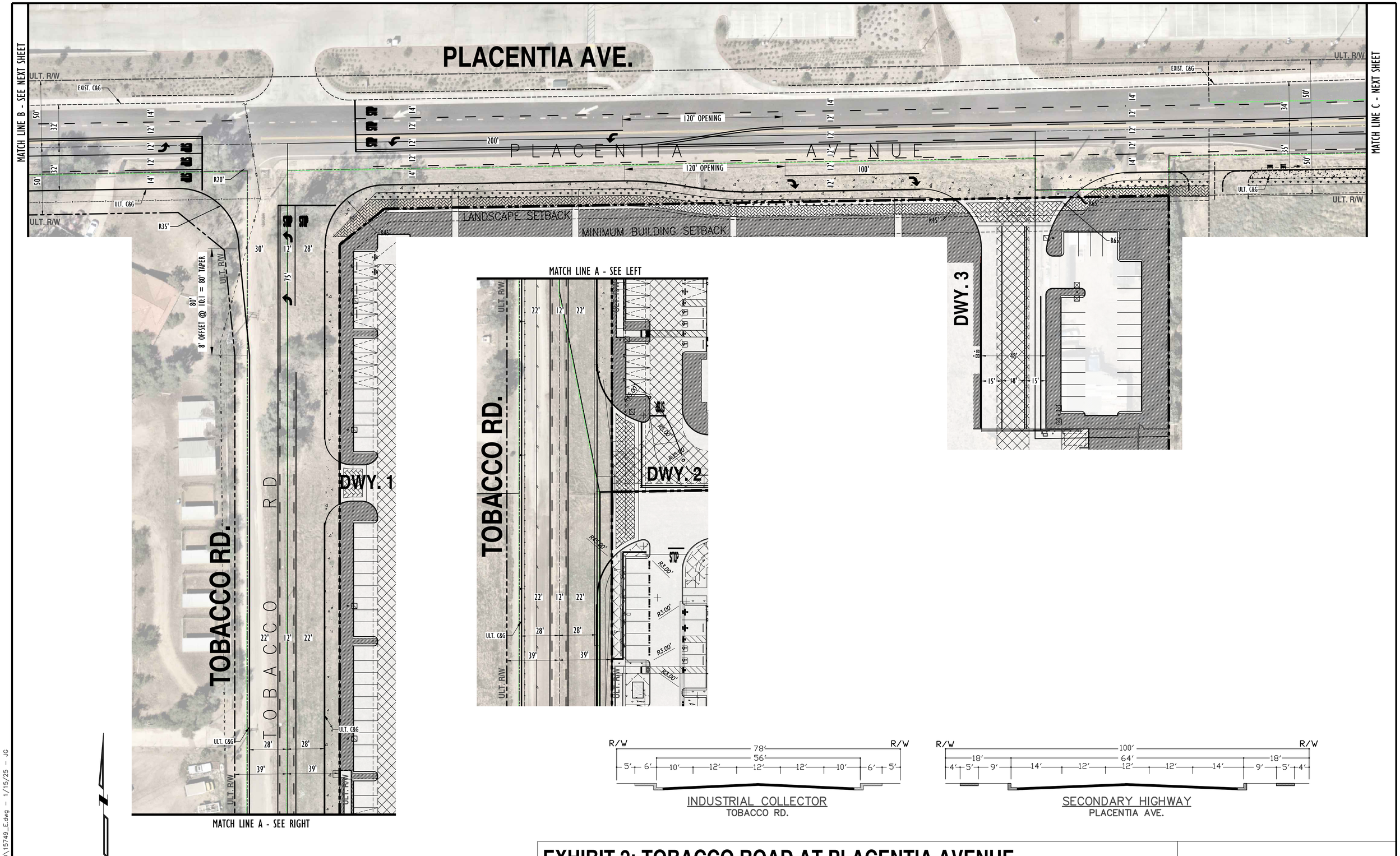

EXHIBIT 2: TOBACCO ROAD AT PLACENTIA AVENUE
ULTIMATE CONCEPT STRIPING IMPROVEMENTS

URBAN CROSSROADS

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TELEPHONE # 949-660-1994

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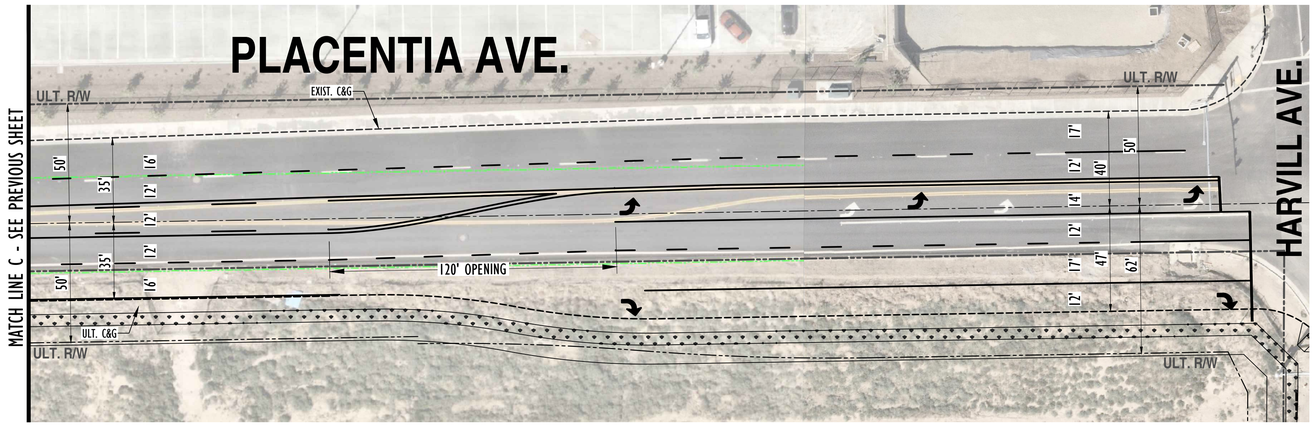
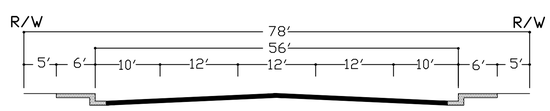
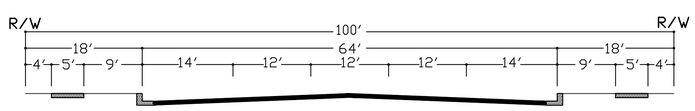




INDUSTRIAL COLLECTOR
TOBACCO RD.



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PLACENTIA AVE.

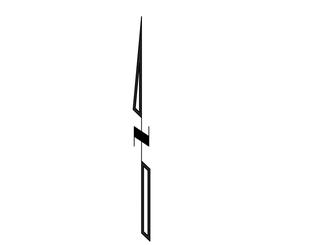

EXHIBIT 2: TOBACCO ROAD AT PLACENTIA AVENUE
ULTIMATE CONCEPT STRIPING IMPROVEMENTS

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

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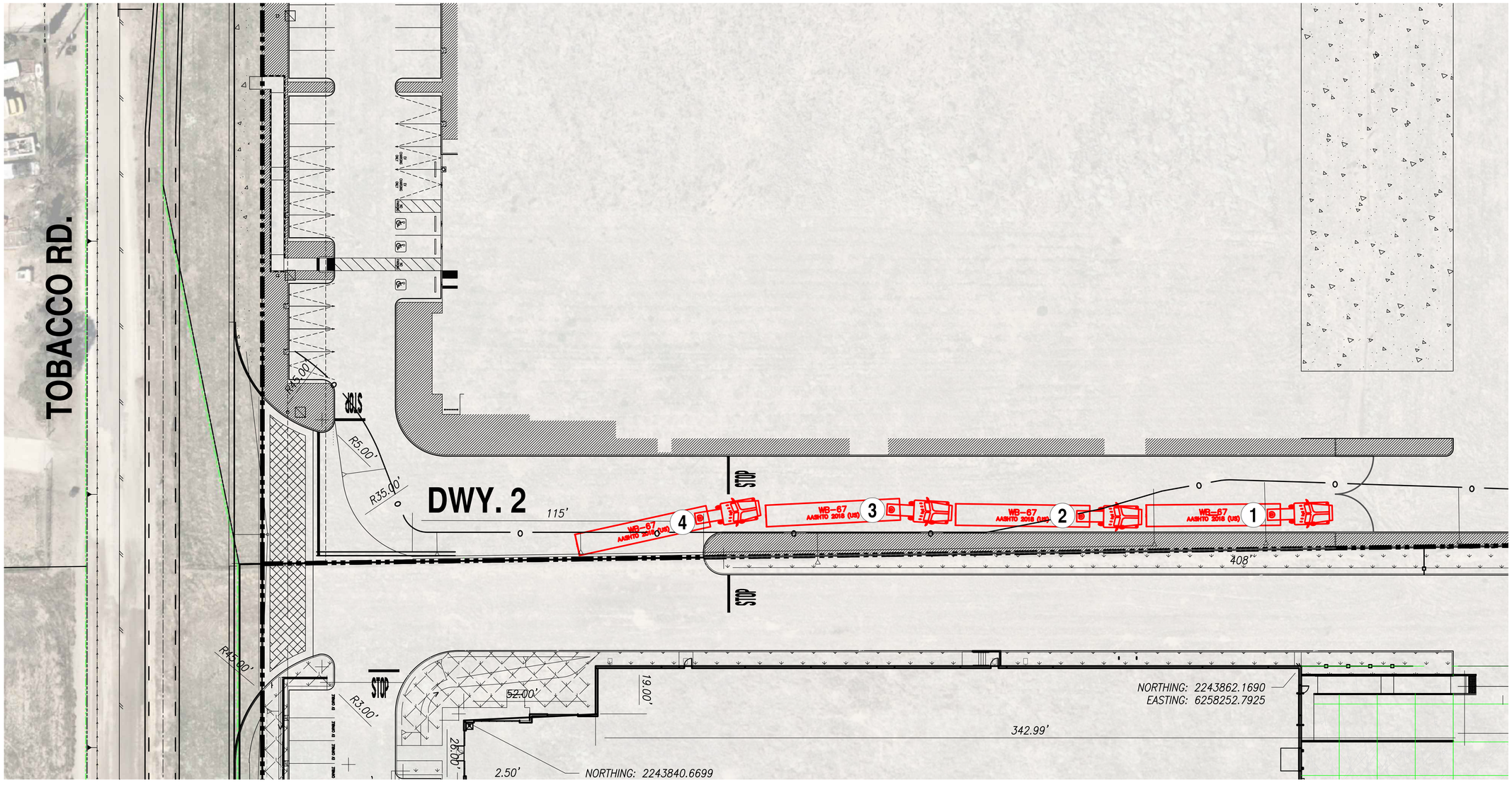

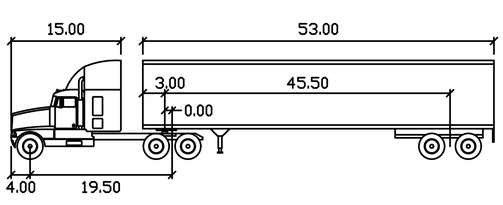

WB-67

	feet		
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.50	Steering Angle	28.4
Tractor Track	8.00	Articulating Angle	75.0
Trailer Track	8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 3: WB-67 TRUCK STACKING
TOBACCO ROAD AT PROJECT DRIVEWAY 2

URBAN CROSSROADS

WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

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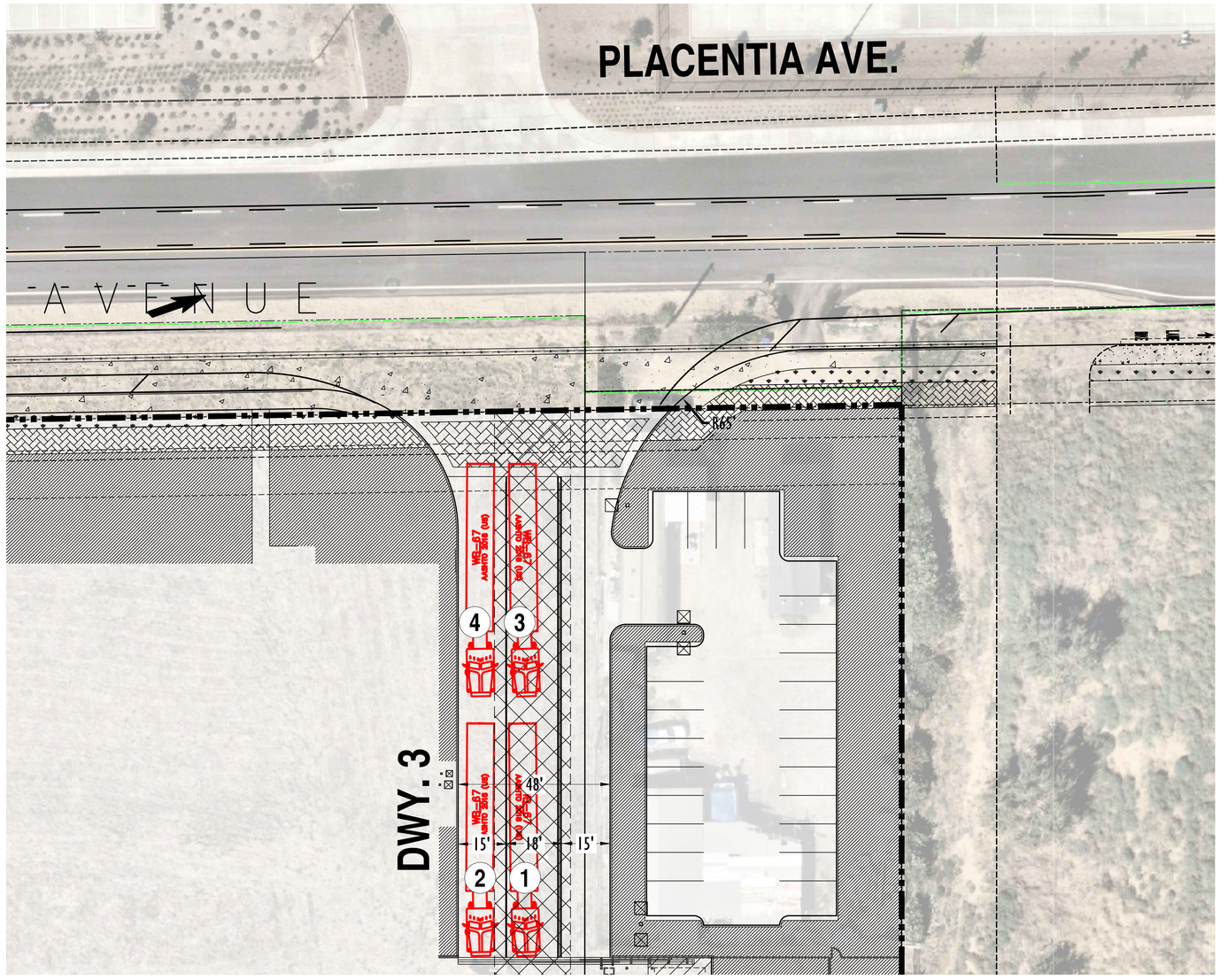



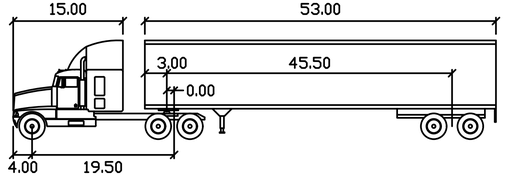

WB-67

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

EXHIBIT 4: WB-67 TRUCK STACKING
PLACENTIA AVENUE AT PROJECT DRIVEWAY 3

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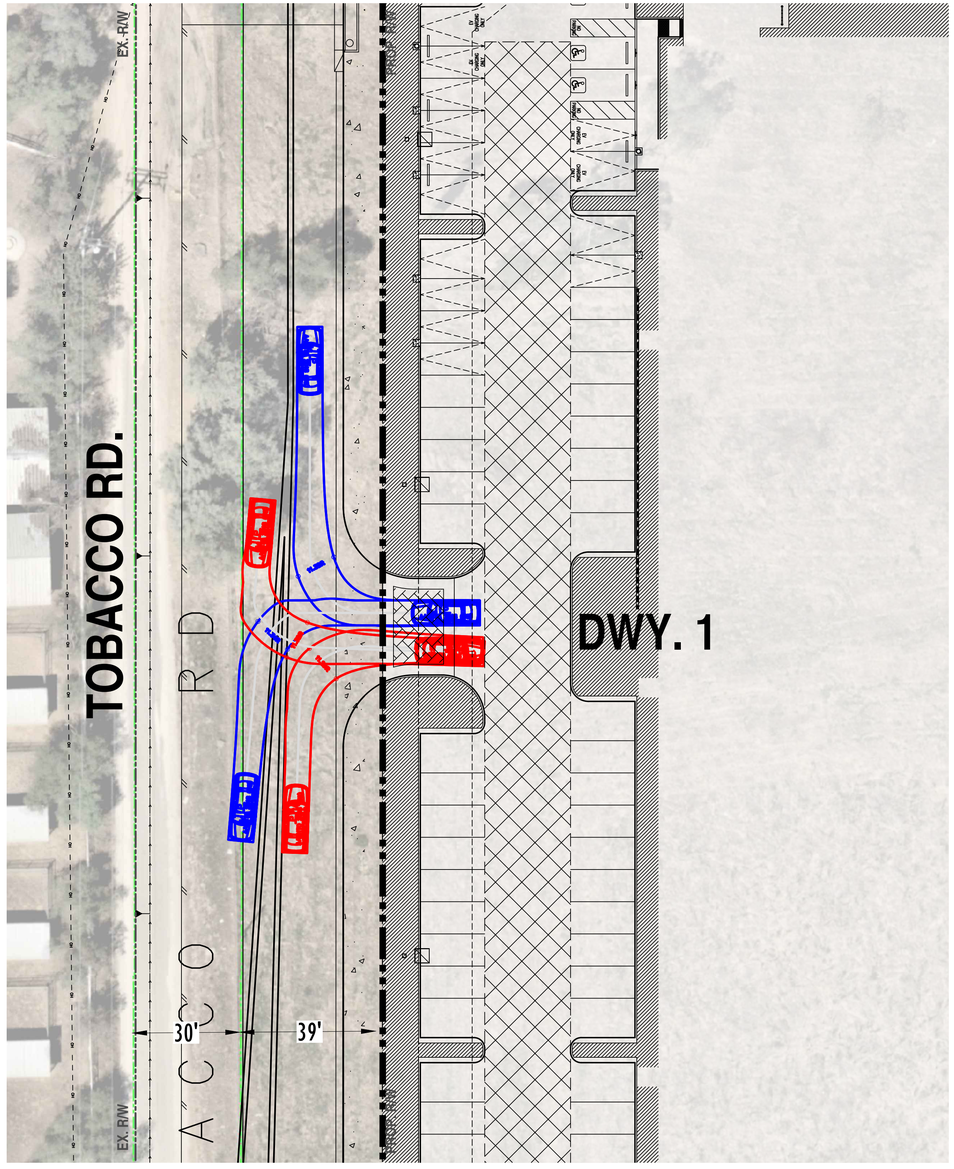

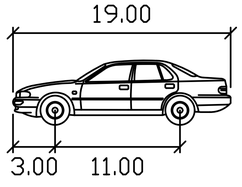

P

	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 5: PASSENGER CAR TURNING TEMPLATE
OPENING DAY TOBACCO ROAD AT PROJECT DRIVEWAY 1

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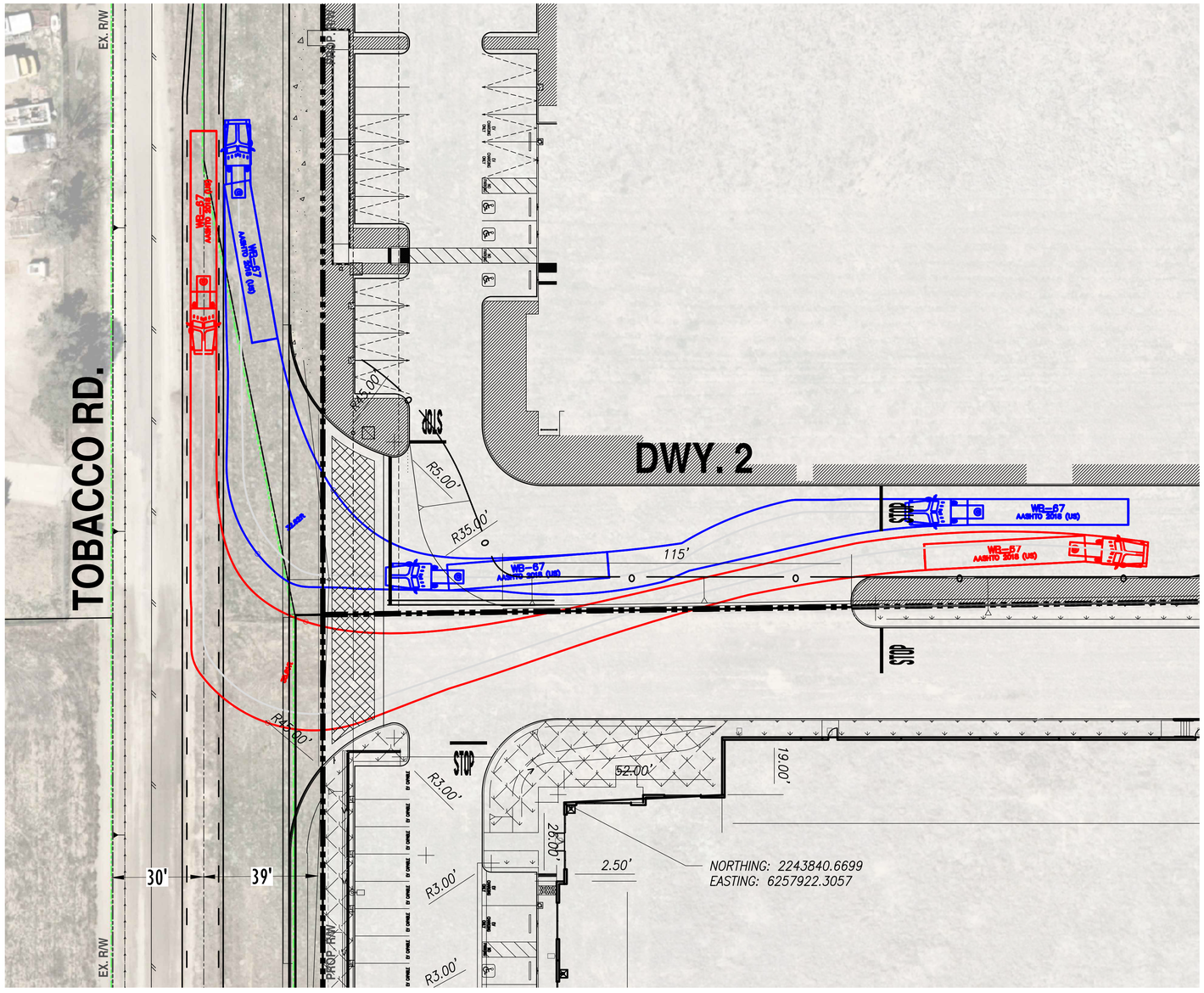
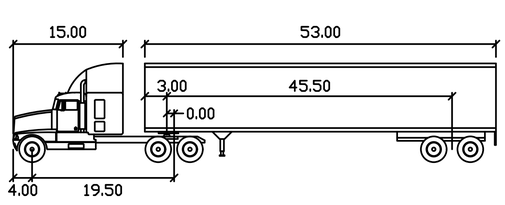




WB-67

SCALE: 1" = 20' (ON 24" x 36" SHEET)

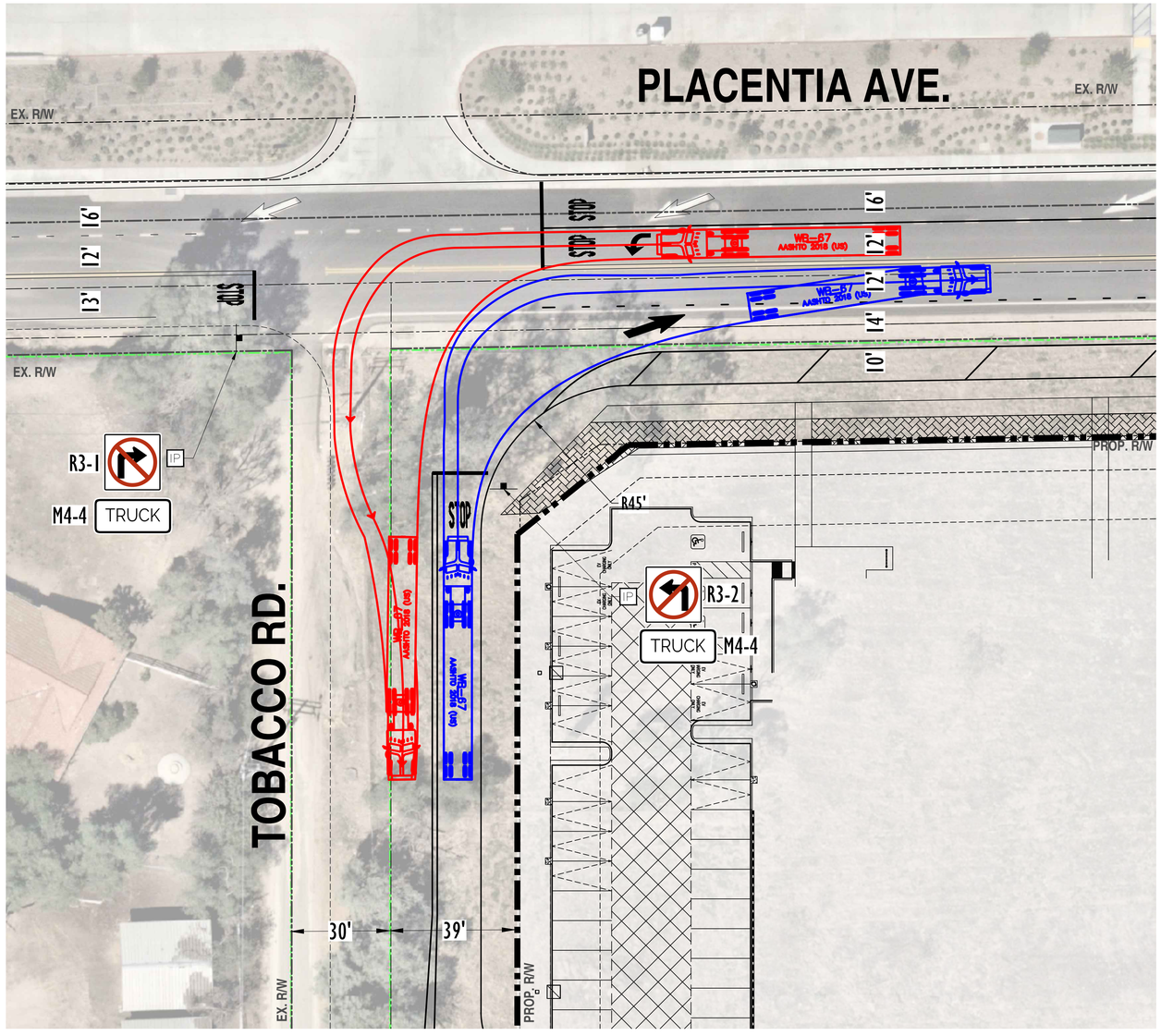
0 10 20 40 60 80

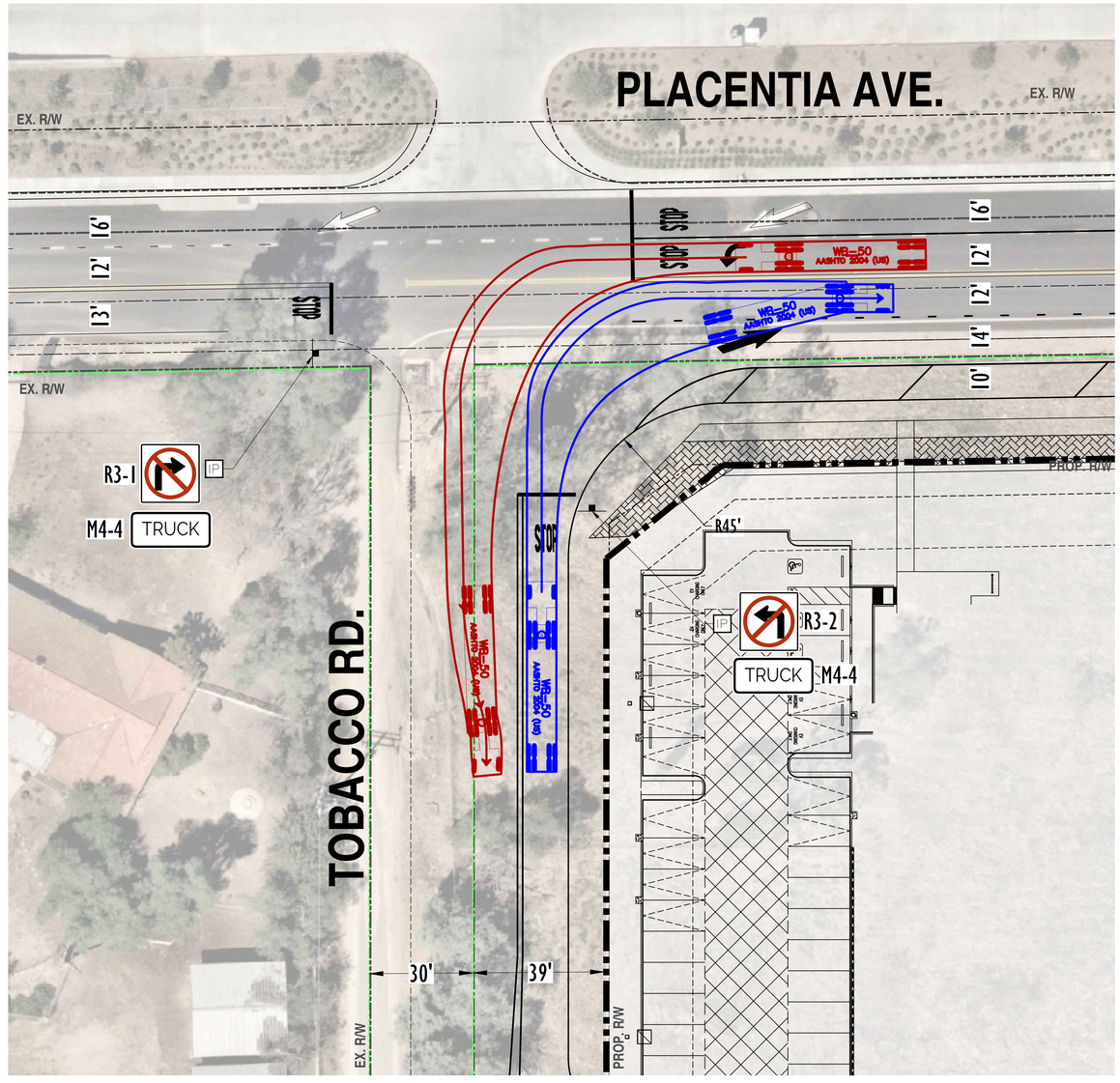
	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

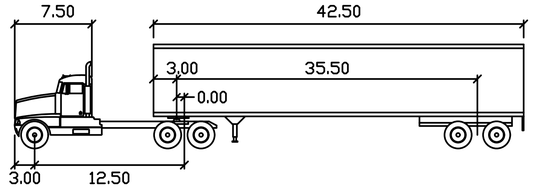
EXHIBIT 6: WB-67 TRUCK TURNING TEMPLATE
OPENING DAY TOBACCO ROAD AT PROJECT DRIVEWAY 2

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

15749 - ACAD\15749_E.dwg - 1/15/25 - JG

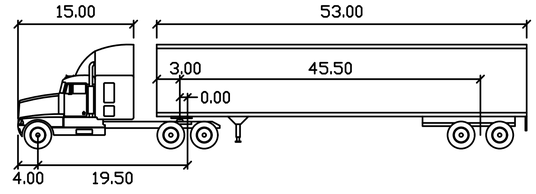






WB-50

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 17.7
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		



WB-67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

SIGNING CONSTRUCTION NOTES:

IP FURNISH AND INSTALL SIGN (AS NOTED) AND POST (IF NECESSARY) PER CITY STANDARDS.

EXHIBIT 7 : WB-67 TRUCK TURNING TEMPLATE
OPENING DAY TOBACCO ROAD AT PLACENTIA AVENUE

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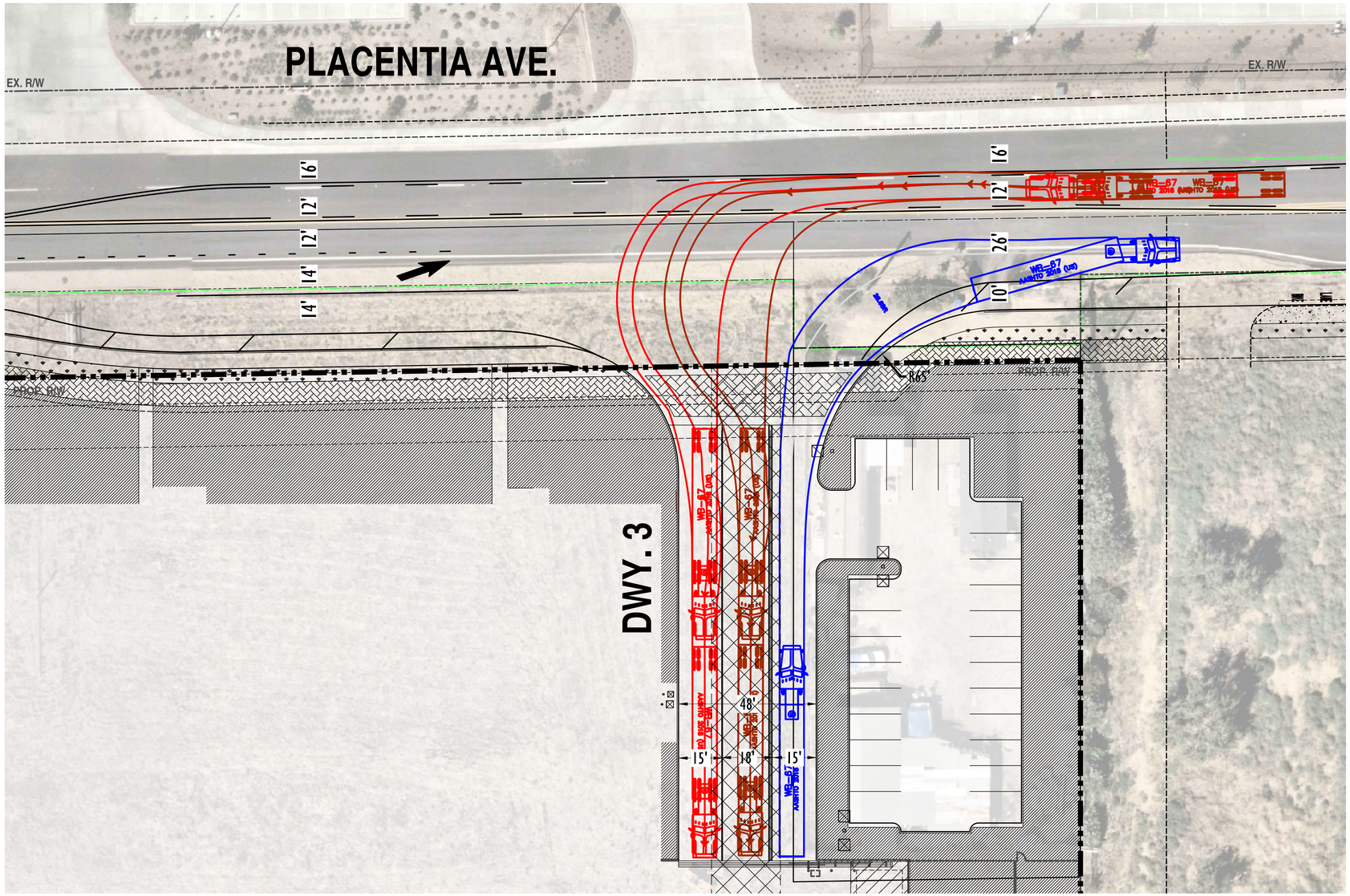
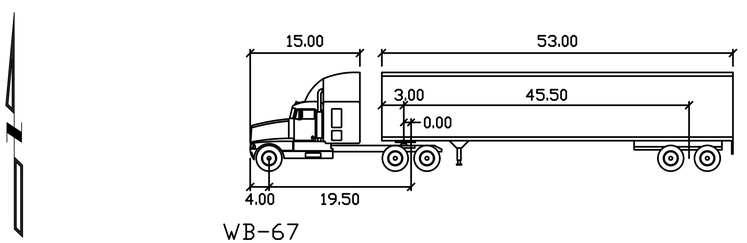
15749 - ACAD\15749_E3_EXHIBIT_7.dwg - 1/29/25 - JG





WB-67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 8: WB-67 TRUCK TURNING TEMPLATE
OPENING DAY PLACENTIA AVENUE AT PROJECT DRIVEWAY 3

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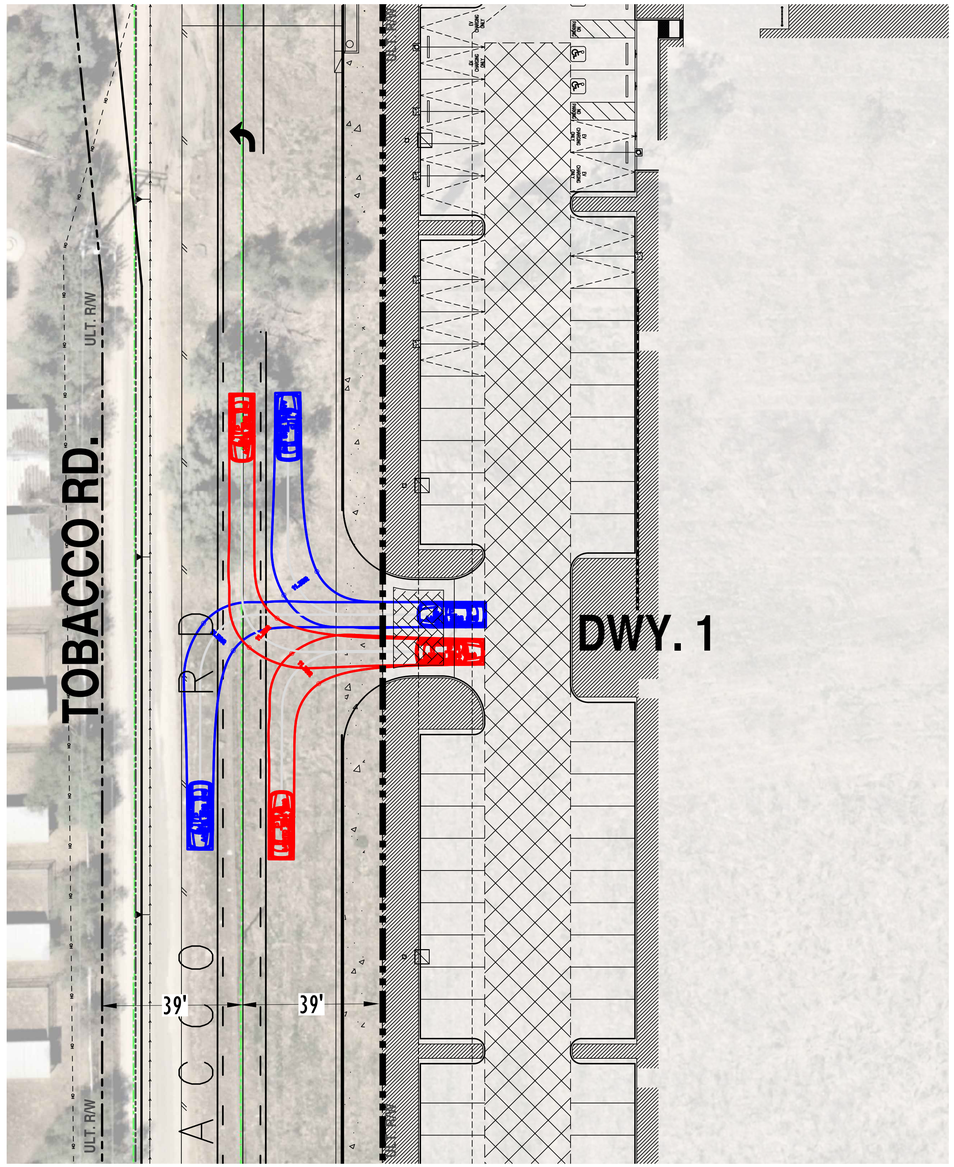
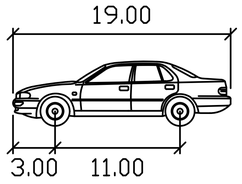
15749 - ACAD\15749_E.dwg - 1/15/25 - JG





P

	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 9: PASSENGER CAR TURNING TEMPLATE
ULTIMATE TOBACCO ROAD AT PROJECT DRIVEWAY 1

URBAN CROSSROADS

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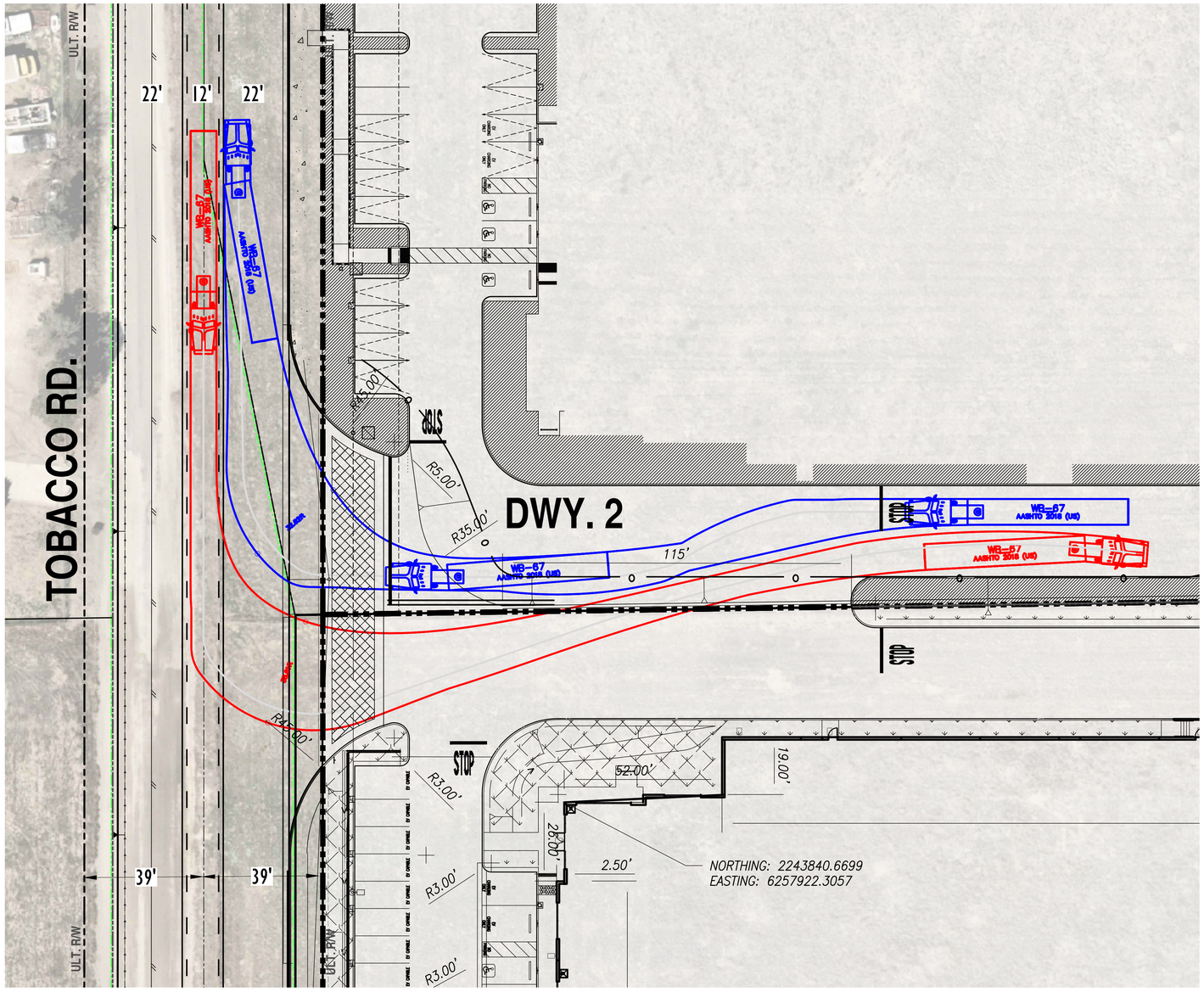

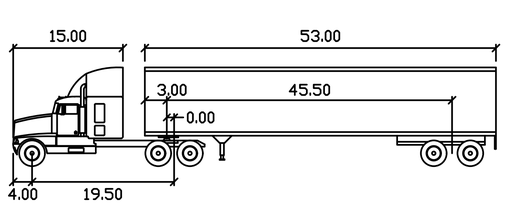

WB-67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 10: WB-67 TRUCK TURNING TEMPLATE
ULTIMATE TOBACCO ROAD AT PROJECT DRIVEWAY 2

URBAN CROSSROADS

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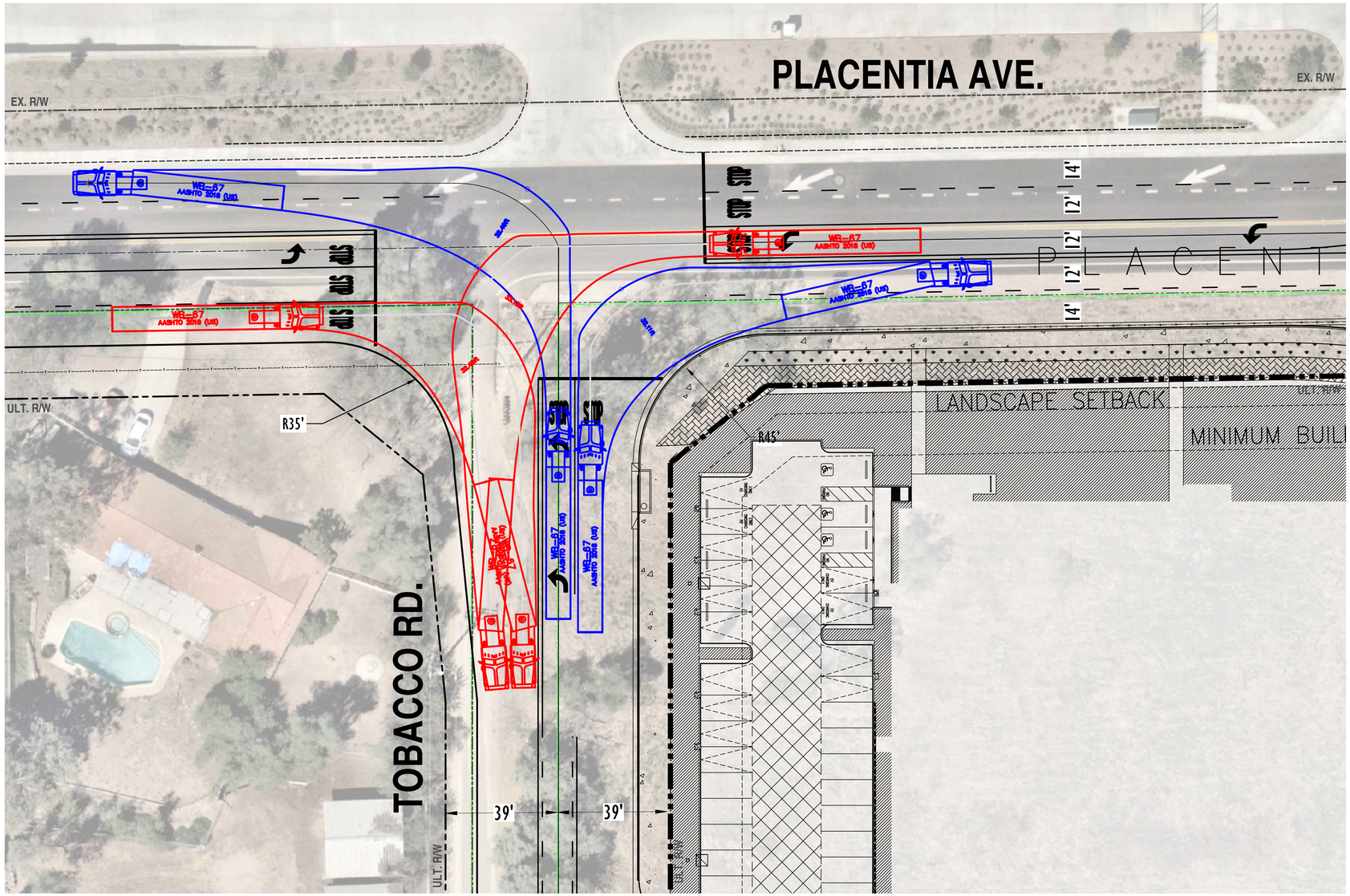
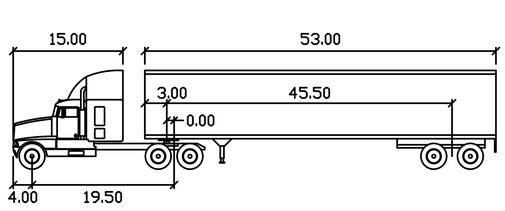
TELEPHONE # 949-660-1994

15749 - ACAD\15749_E.dwg - 1/15/25 - JG





WB-67

	feet		
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.50	Steering Angle	28.4
Tractor Track	8.00	Articulating Angle	75.0
Trailer Track	8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

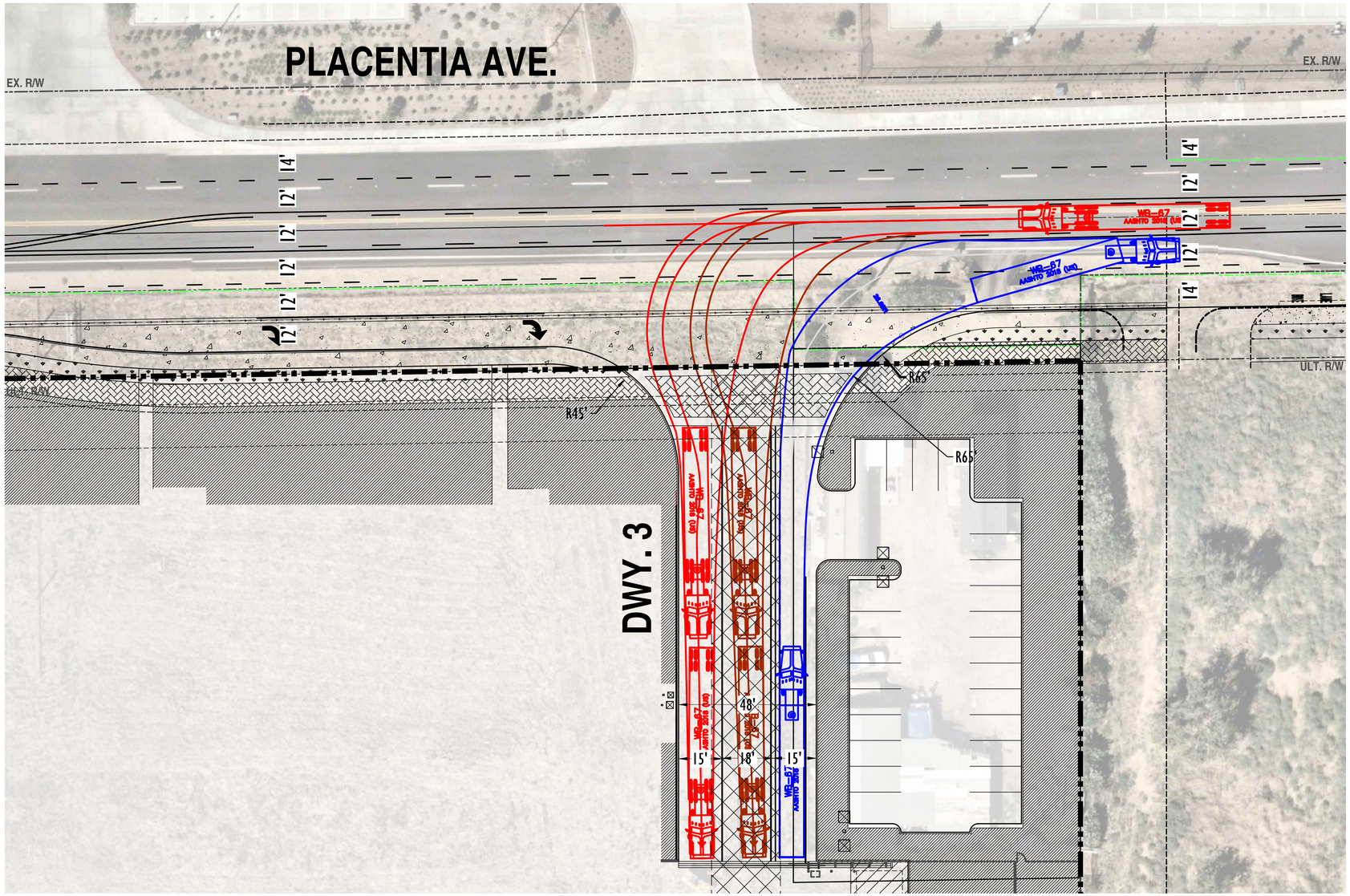
0 10 20 40 60 80

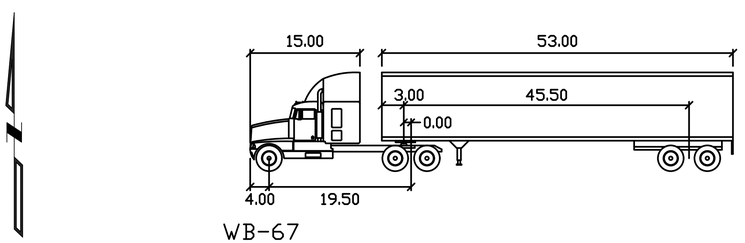
EXHIBIT 11: WB-67 TRUCK TURNING TEMPLATE
ULTIMATE TOBACCO ROAD AT PLACENTIA AVENUE

URBAN CROSSROADS

WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

15749 - ACAD\15749_E.dwg - 1/15/25 - JG





WB-67

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

SCALE: 1" = 20' (ON 24" x 36" SHEET)

0 10 20 40 60 80

EXHIBIT 12: WB-67 TRUCK TURNING TEMPLATE
ULTIMATE PLACENTIA AVENUE AT PROJECT DRIVEWAY 3

URBAN CROSSROADS
WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

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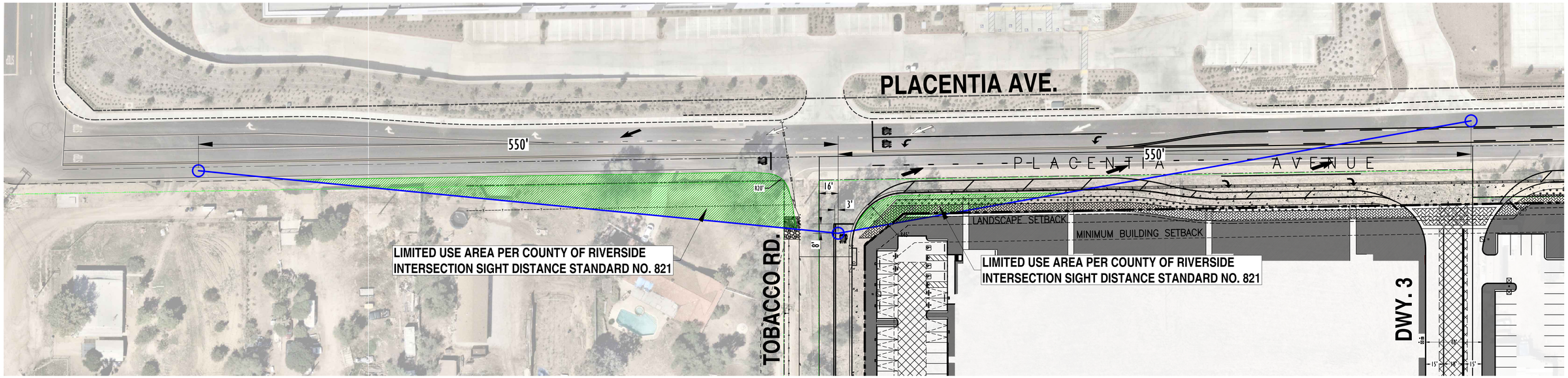
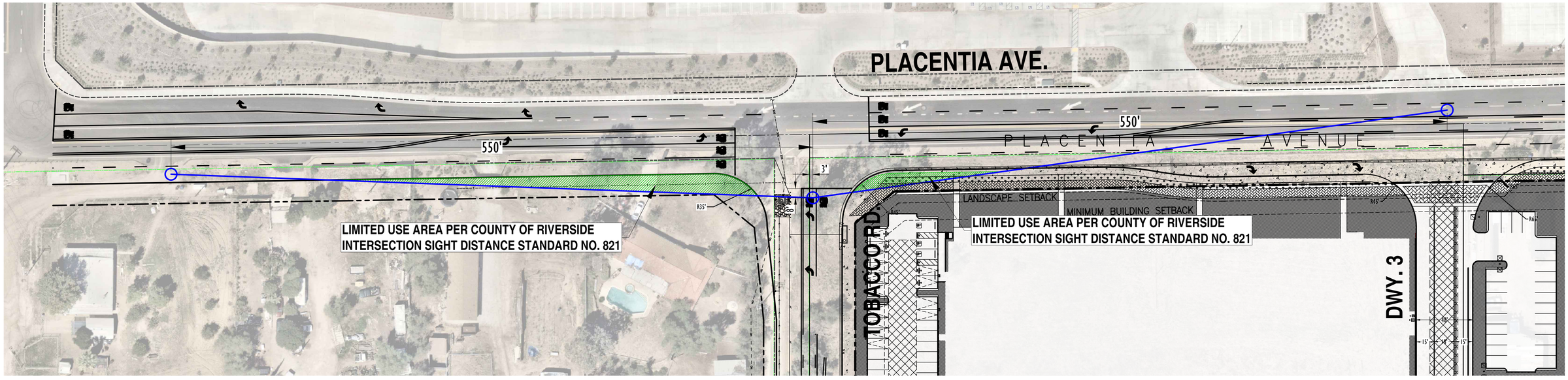
OPENING DAY



ULTIMATE



SCALE: 1" = 30' (ON 24" x 36" SHEET)

0 15 30 60 90 120

EXHIBIT 13: TOBACCO ROAD AT PLACENTIA AVENUE INTERSECTION SIGHT DISTANCE

URBAN CROSSROADS

WWW.URBANXROADS.COM
TELEPHONE # 949-660-1994

15749 – ACAD\15749_E.dwg – 1/15/25 – JG

ATTACHMENT G: EAP (2026) CONDITIONS QUEUING ANALYSIS WORKSHEETS

Intersection: 1: Tobacco Rd./Barker Dwy & Placentia Av.

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	49	34	51	28	30
Average Queue (ft)	26	22	27	11	8
95th Queue (ft)	45	42	41	33	30
Link Distance (ft)	632		483	174	78
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		100			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Tobacco Rd. & Driveway 1

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	23	6
Average Queue (ft)	2	0
95th Queue (ft)	14	4
Link Distance (ft)	40	174
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Tobacco Rd. & Driveway 2

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	30	6
Average Queue (ft)	7	0
95th Queue (ft)	28	4
Link Distance (ft)	169	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Driveway 3/Truck Lot Dwy & Placentia Av.

Movement	WB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	6	22	44
Average Queue (ft)	0	2	23
95th Queue (ft)	4	13	47
Link Distance (ft)		122	265
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	50		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Tobacco Rd./Barker Dwy & Placentia Av.

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	54	29	48	37	51
Average Queue (ft)	29	11	26	23	22
95th Queue (ft)	46	34	43	41	47
Link Distance (ft)	632		483	174	78
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		100			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Tobacco Rd. & Driveway 1

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	35	6
Average Queue (ft)	9	0
95th Queue (ft)	33	4
Link Distance (ft)	40	174
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Tobacco Rd. & Driveway 2

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	45	6
Average Queue (ft)	14	0
95th Queue (ft)	40	4
Link Distance (ft)	169	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Driveway 3/Truck Lot Dwy & Placentia Av.

Movement	WB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	17	22	49
Average Queue (ft)	1	4	25
95th Queue (ft)	9	17	47
Link Distance (ft)		122	265
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	50		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

RIVERSIDE COUNTY
PLANNING DEPARTMENT

John Hildebrand
Planning Director

February 24, 2025

RE: AB 52 Consultation Conclusion Letter for GPA230008, PPT230048

Dear Ms. Brierty,

An AB 52 notification for this project was sent to you via email on January 08, 2024. The Riverside County Planning Department ("Planning") received your request dated February 07, 2024, on behalf of the Morongo Band of Mission Indians for AB 52 consultation on the Project. On February 07, 2024, the Planning Department provided the following project information via email to you: "*A Phase I Cultural Resources Study for the Thrifty Oil Warehouse Project*", and the project conditions of approval. Several follow-up communications were sent to Morongo, the latest on February 04, 2025, and February 10, 2025. There were no responses to any of these communications.

At this time, Planning has not received any further communication or information from Morongo regarding this project. Planning welcomes input from Morongo regarding this Project, however, based on the information gathered by Planning and the information provided by you to date, Planning has concluded that there is no potential significant impact to Tribal Cultural Resources as defined in Section 21074 of the Public Resources Code because there are no physical Tribal Cultural Resources present.

Based on the above, and in accordance with Public Resource Code section 21080.3.2(b), Planning has acted in good faith and made reasonable efforts to consult with Morongo and considers AB 52 consultation concluded as of this letter's date. The final project conditions of approval are attached to this emailed letter. Planning will notify Morongo when the Project's environmental document is released for the public review period as well as when the Project is scheduled for a public hearing.

Sincerely,

Heather Thomson
County Archaeologist

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P.O. Box 1409, Riverside, California 92502-1409
(951) 955-3200 · Fax (951) 955-1811

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(760) 863-8277 · Fax (760) 863-7040

ADVISORY NOTIFICATION DOCUMENT

COUNTY OF RIVERSIDE
TRANSPORTATION AND LAND MANAGEMENT AGENCY

Charissa Leach, P.E.
Assistant CEO/TLMA Director

The following notifications are included as part of the recommendation of approval for PPT230048. They are intended to advise the applicant of various Federal, State and County regulations applicable to this entitlement and the subsequent development of the subject property.

Planning-CUL

Planning-CUL. 1 Human Remains

If human remains are found on this site, the developer/permit holder or any successor in interest shall comply with State Health and Safety Code Section 7050.5.

Planning-CUL. 2 PDA 8407 Accepted

County Archaeological Report (PDA) No. 8407 submitted for this project (PPT230048) was prepared by BFSA Environmental Services, a Perennial Company and is entitled: "A PHASE I CULTURAL RESOURCES STUDY FOR THE THRIFTY OIL WAREHOUSE PROJECT", dated January 16, 2024.
PDA concludes: The Phase I cultural resources assessment for the Thrifty Oil Warehouse Project did not identify any cultural resources. However, the property is located in proximity to multiple prehistoric and historic resources and has been impacted by agricultural use, partial development, and clearing. These impacts typically remove evidence of surface scatters of cultural artifacts.
Therefore, given the past impacts to the property coupled with the frequency of resources within the one mile, the obstructed ground visibility during the survey, and the noted historic occupation of the property, there still remains potential for the inadvertent discovery of archaeological resources during grading. As such, a cultural resources Mitigation Monitoring and Reporting
Program (MMRP) is recommended as a condition of approval for this property, which should include the monitoring of all ground-disturbing activities within the property by an archaeologist and Native American monitor.
PDA recommends: As a condition of project approval, a MMRP is recommended to identify any cultural resources that may be uncovered during grading and, subsequently, to mitigate potential impacts to any discovered archaeological resources evaluated as significant.
These documents are herein incorporated as a part of the record for project.

Planning-CUL. 3 Unanticipated Resources

ADVISORY NOTIFICATION DOCUMENT

The developer/permit holder or any successor in interest shall comply with the following for the life of this permit.

If during ground disturbance activities, unanticipated cultural resources* are discovered, the following procedures shall be followed:

All ground disturbance activities within 100 feet of the discovered cultural resource shall be halted and the applicant shall call the County Archaeologist immediately upon discovery of the cultural resource. A meeting shall be convened between the developer, the project archaeologist**, the Native American tribal representative (or other appropriate ethnic/cultural group representative), and the County Archaeologist to discuss the significance of the find. At the meeting with the aforementioned parties, a decision is to be made, with the concurrence of the County Archaeologist, as to the appropriate treatment (documentation, recovery, avoidance, etc.) for the cultural resource. Resource evaluations shall be limited to nondestructive analysis.

Further ground disturbance shall not resume within the area of the discovery until the appropriate treatment has been accomplished.

* A cultural resource site is defined, for this condition, as being a feature and/or three or more artifacts in close association with each other.

** If not already employed by the project developer, a County approved archaeologist shall be employed by the project developer to assess the significance of the cultural resource, attend the meeting described above, and continue monitoring of all future site grading activities as necessary.

Plan: PPT230048 Parcel: 317260017

60. Prior To Grading Permit Issuance

Planning-CUL

060 - Planning-CUL. 1 ECS sheet (cultural) Not Satisfied

Prior to issuance of grading permits: the developer/ applicant shall provide evidence to the Riverside County Planning Department that an Environmental Constraints Sheet has been included in the Grading Plans. This sheet shall indicate an area that will be used, if needed, for reburial of any artifacts that have been identified during grading and cannot be avoided. This area will be protected and not disturbed in the future. This is confidential information and the exact nature of this area will not be called out on the grading plans.

060 - Planning-CUL. 2 Native American Monitor Not Satisfied

Prior to the issuance of grading permits, the developer/permit applicant shall enter into an agreement with the consulting tribe(s) for a Native American Monitor.
The Native American Monitor(s) shall be on-site during all initial ground disturbing activities and excavation of each portion of the project site including clearing, grubbing, tree removals, grading and trenching. In conjunction with the Archaeological Monitor(s), the Native American Monitor(s) shall have the authority to temporarily divert, redirect or halt the ground disturbance activities to allow identification, evaluation, and potential recovery of cultural resources.
The developer/permit applicant shall submit a fully executed copy of the agreement to the County Archaeologist to ensure compliance with this condition of approval. Upon verification, the Archaeologist shall clear this condition.
This agreement shall not modify any condition of approval or mitigation measure.

060 - Planning-CUL. 3 Project Archaeologist Not Satisfied

Prior to issuance of grading permits: The applicant/developer shall provide evidence to the County of Riverside Planning Department that a County certified professional archaeologist (Project Archaeologist) has been contracted to implement a Cultural Resource Monitoring Program (CRMP). A Cultural Resource Monitoring Plan shall be developed that addresses the details of all activities and provides procedures that must be followed in order to reduce the impacts to cultural and historic resources to a level that is less than significant as well as address potential impacts to undiscovered buried archaeological resources associated with this project. A fully executed copy of the contract and a wet-signed copy of the Monitoring Plan shall be provided to the County Archaeologist to ensure compliance with this condition of approval.
Working directly under the Project Archaeologist, an adequate number of qualified Archaeological Monitors shall be present to ensure that all earth moving activities are observed and shall be on-site during all grading activities for areas to be monitored including off-site improvements. Inspections will vary based on the rate of excavation, the materials excavated, and the presence and abundance of artifacts and features. The frequency and location of inspections will be determined by the Project Archaeologist.

70. Prior To Grading Final Inspection

Planning-CUL

070 - Planning-CUL. 1 Artifact Disposition Not Satisfied

Prior to Grading Permit Final Inspection, the landowner(s) shall relinquish ownership of all cultural resources that are unearthed on the Project property during any ground-disturbing activities, including previous investigations and/or Phase III data recovery.
Historic Resources- all historic archaeological materials recovered during the archaeological investigations (this includes collections made during an earlier project, such as testing of

Plan: PPT230048 Parcel: 317260017

70. Prior To Grading Final Inspection

Planning-CUL

070 - Planning-CUL. 1 Artifact Disposition (cont.) Not Satisfied

archaeological sites that took place years ago), shall be curated at the Western Science Center, a Riverside County curation facility that meets State Resources Department Office of Historic Preservation Guidelines for the Curation of Archaeological Resources ensuring access and use pursuant to the Guidelines

Prehistoric Resources- One of the following treatments shall be applied.

a. Reburial of the resources on the Project property. The measures for reburial shall include, at least, the following: Measures to protect the reburial area from any future impacts. Reburial shall not occur until all required cataloguing, analysis and studies have been completed on the cultural resources, with an exception that sacred items, burial goods and Native American human remains are excluded. Any reburial processes shall be culturally appropriate. Listing of contents and location of the reburial shall be included in the confidential Phase IV Report. The Phase IV Report shall be filed with the County under a confidential cover and not subject to a Public Records Request.

b. If reburial is not agreed upon by the Consulting Tribes then the resources shall be curated at a culturally appropriate manner at the Western Science Center, a Riverside County curation facility that meets State Resources Department Office of Historic Preservation Guidelines for the Curation of Archaeological Resources ensuring access and use pursuant to the Guidelines. The collection and associated records shall be transferred, including title, and are to be accompanied by payment of the fees necessary for permanent curation. Evidence of curation in the form of a letter from the curation facility stating that subject archaeological materials have been received and that all fees have been paid, shall be provided by the landowner to the County. There shall be no destructive or invasive testing on sacred items, burial goods and Native American human remains.

070 - Planning-CUL. 2 Phase IV Monitoring Report Not Satisfied

Prior to Grading Permit Final Inspection, a Phase IV Cultural Resources Monitoring Report shall be submitted that complies with the Riverside County Planning Department's requirements for such reports for all ground disturbing activities associated with this grading permit. The report shall follow the County of Riverside Planning Department Cultural Resources (Archaeological) Investigations Standard Scopes of Work posted on the TLMA website. The report shall include results of any feature relocation or residue analysis required as well as evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting and evidence that any artifacts have been treated in accordance to procedures stipulated in the Cultural Resources Management Plan.

RIVERSIDE COUNTY
PLANNING DEPARTMENT

John Hildebrand
Planning Director

February 06, 2025

RE: AB 52 Consultation Conclusion Letter for GPA230008, PPT230048

Dear Mr. Ontiveros,

An AB 52 notification for this project was sent to you via email on January 08, 2024. The Riverside County Planning Department ("Planning") received your request on behalf of the Soboba Band of Luiseno Indians for AB 52 consultation on the Project. On February 08, 2024, the Planning Department provided the following project information via email to you: "*A Phase I Cultural Resources Study for the Thrifty Oil Warehouse Project*". Also attached to this communication were the project conditions of approval and the Advisory Notification Document. Meetings were held on February 14, 2024, April 03, 2024, and January 22, 2025, in which this project was discussed. Soboba told Planning that the project was situated within the boundaries of a Tribal Cultural Resource, CA-RIV-13300, or the *Q'axall'pah* cultural landscape. Soboba also provided specific information regarding the components of the landscape. Soboba provided TCR mitigation measure recommendations to mitigate impacts to the TCR landscape, which Planning agreed to. These included the following:

MM-TCR-01: Human Remains If human remains are found on this site, the developer/permit holder or any successor in interest shall comply with State Health and Safety Code Section 7050.5. Pursuant to State Health and Safety Code Section 7050.5, if human remains are encountered, no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to Public Resources Code Section 5097.98 (b), remains shall be left in place and free from disturbance until a final decision as to the treatment and their disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted by the Coroner within the period specified by law (24 hours). Subsequently, the Native American Heritage Commission shall identify the "Most Likely Descendant". The Most Likely Descendant shall then make recommendations and engage in consultation with the

property owner concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.

MM-TCR-02: Unanticipated Resource The developer/permit holder or any successor in interest shall comply with the following for the life of this permit. If during ground disturbance activities, unanticipated cultural resources* are discovered, the following procedures shall be followed:
• All ground disturbance activities within 100 feet of the discovered cultural resource shall be halted and the applicant shall call the Riverside County Planning Department, County Archaeologist immediately upon discovery of the cultural resource.
• A meeting shall be convened between the developer, the project archaeologist**, the Native American tribal representative(s) (or other appropriate ethnic/cultural group representative), the County Archaeologist or appropriate representative from the Riverside County Planning Department to discuss the significance of the find. At the meeting with the aforementioned parties, a decision is to be made, with the concurrence of the County Archaeologist or appropriate representative from the Riverside County Planning Department, as to the appropriate treatment (avoidance, documentation, recovery, etc.) for the Tribal Cultural Resource. All proposed evaluations shall be limited to nondestructive analysis, and subject to approval by the consulting tribe(s).
• Further ground disturbance shall not resume within the area of the discovery until the appropriate treatment has been accomplished.

MM-TCR-03: Native American Monitor Prior to the issuance of grading permits, the developer/permit applicant shall enter into agreement(s) with the consulting tribe(s) for the appropriate number of Native American Monitor(s). In conjunction with the Archaeological Monitor(s), the Native American Monitor(s) shall attend the pre-grading meeting with the contractors to provide Cultural Sensitivity Training for all construction personnel. In addition, an adequate number of Native American Monitor(s) shall be on-site during all initial ground disturbing activities and excavation of soils in each portion of the project site including clearing, grubbing, tree removals, grading and trenching. In conjunction with the Archaeological Monitor(s), the Native American Monitor(s) have the authority to temporarily divert, redirect or halt the ground disturbance activities to allow identification, evaluation, and potential recovery of Tribal Cultural Resources. Activities will be documented in Tribal Monitoring Notes which will be provided to the applicant on a regular basis and required to be submitted as part of the Phase IV Report to

the County Archaeologist prior to grading final inspection. The developer/permit applicant shall submit a fully executed copy of the agreement(s) to the County Archaeologist or appropriate representative form Riverside County Planning Department to ensure compliance with this mitigation measure and associated condition of approval. Upon verification, the Archaeologist shall clear this condition. This agreement shall not modify any condition of approval or mitigation measure.

Based on the above, and in accordance with Public Resource Code section 21080.3.2(b), Planning has acted in good faith and made reasonable efforts to consult with Soboba on this project and considers AB 52 consultation concluded as of this letter's date. Planning will notify Soboba when the Project's environmental document is released for the public review period as well as when the Project is scheduled for a public hearing.

Sincerely,



Heather Thomson
County Archaeologist

ADVISORY NOTIFICATION DOCUMENT

COUNTY OF RIVERSIDE
TRANSPORTATION AND LAND MANAGEMENT AGENCY

Charissa Leach, P.E.
Assistant CEO/TLMA Director

The following notifications are included as part of the recommendation of approval for PPT230048. They are intended to advise the applicant of various Federal, State and County regulations applicable to this entitlement and the subsequent development of the subject property.

Planning-CUL

Planning-CUL. 1 Human Remains

If human remains are found on this site, the developer/permit holder or any successor in interest shall comply with State Health and Safety Code Section 7050.5.

Planning-CUL. 2 PDA 8407 Accepted

County Archaeological Report (PDA) No. 8407 submitted for this project (PPT230048) was prepared by BFSA Environmental Services, a Perennial Company and is entitled: "A PHASE I CULTURAL RESOURCES STUDY FOR THE THRIFTY OIL WAREHOUSE PROJECT", dated January 16, 2024.
PDA concludes: The Phase I cultural resources assessment for the Thrifty Oil Warehouse Project did not identify any cultural resources. However, the property is located in proximity to multiple prehistoric and historic resources and has been impacted by agricultural use, partial development, and clearing. These impacts typically remove evidence of surface scatters of cultural artifacts.
Therefore, given the past impacts to the property coupled with the frequency of resources within the one mile, the obstructed ground visibility during the survey, and the noted historic occupation of the property, there still remains potential for the inadvertent discovery of archaeological resources during grading. As such, a cultural resources Mitigation Monitoring and Reporting
Program (MMRP) is recommended as a condition of approval for this property, which should include the monitoring of all ground-disturbing activities within the property by an archaeologist and Native American monitor.
PDA recommends: As a condition of project approval, a MMRP is recommended to identify any cultural resources that may be uncovered during grading and, subsequently, to mitigate potential impacts to any discovered archaeological resources evaluated as significant.
These documents are herein incorporated as a part of the record for project.

Planning-CUL. 3 Unanticipated Resources

ADVISORY NOTIFICATION DOCUMENT

The developer/permit holder or any successor in interest shall comply with the following for the life of this permit.

If during ground disturbance activities, unanticipated cultural resources* are discovered, the following procedures shall be followed:

All ground disturbance activities within 100 feet of the discovered cultural resource shall be halted and the applicant shall call the County Archaeologist immediately upon discovery of the cultural resource. A meeting shall be convened between the developer, the project archaeologist**, the Native American tribal representative (or other appropriate ethnic/cultural group representative), and the County Archaeologist to discuss the significance of the find. At the meeting with the aforementioned parties, a decision is to be made, with the concurrence of the County Archaeologist, as to the appropriate treatment (documentation, recovery, avoidance, etc.) for the cultural resource. Resource evaluations shall be limited to nondestructive analysis.

Further ground disturbance shall not resume within the area of the discovery until the appropriate treatment has been accomplished.

* A cultural resource site is defined, for this condition, as being a feature and/or three or more artifacts in close association with each other.

** If not already employed by the project developer, a County approved archaeologist shall be employed by the project developer to assess the significance of the cultural resource, attend the meeting described above, and continue monitoring of all future site grading activities as necessary.

Plan: PPT230048 Parcel: 317260017

60. Prior To Grading Permit Issuance

Planning-CUL

060 - Planning-CUL. 1 ECS sheet (cultural) Not Satisfied

Prior to issuance of grading permits: the developer/ applicant shall provide evidence to the Riverside County Planning Department that an Environmental Constraints Sheet has been included in the Grading Plans. This sheet shall indicate an area that will be used, if needed, for reburial of any artifacts that have been identified during grading and cannot be avoided. This area will be protected and not disturbed in the future. This is confidential information and the exact nature of this area will not be called out on the grading plans.

060 - Planning-CUL. 2 Native American Monitor Not Satisfied

Prior to the issuance of grading permits, the developer/permit applicant shall enter into an agreement with the consulting tribe(s) for a Native American Monitor.
The Native American Monitor(s) shall be on-site during all initial ground disturbing activities and excavation of each portion of the project site including clearing, grubbing, tree removals, grading and trenching. In conjunction with the Archaeological Monitor(s), the Native American Monitor(s) shall have the authority to temporarily divert, redirect or halt the ground disturbance activities to allow identification, evaluation, and potential recovery of cultural resources.
The developer/permit applicant shall submit a fully executed copy of the agreement to the County Archaeologist to ensure compliance with this condition of approval. Upon verification, the Archaeologist shall clear this condition.
This agreement shall not modify any condition of approval or mitigation measure.

060 - Planning-CUL. 3 Project Archaeologist Not Satisfied

Prior to issuance of grading permits: The applicant/developer shall provide evidence to the County of Riverside Planning Department that a County certified professional archaeologist (Project Archaeologist) has been contracted to implement a Cultural Resource Monitoring Program (CRMP). A Cultural Resource Monitoring Plan shall be developed that addresses the details of all activities and provides procedures that must be followed in order to reduce the impacts to cultural and historic resources to a level that is less than significant as well as address potential impacts to undiscovered buried archaeological resources associated with this project. A fully executed copy of the contract and a wet-signed copy of the Monitoring Plan shall be provided to the County Archaeologist to ensure compliance with this condition of approval.
Working directly under the Project Archaeologist, an adequate number of qualified Archaeological Monitors shall be present to ensure that all earth moving activities are observed and shall be on-site during all grading activities for areas to be monitored including off-site improvements. Inspections will vary based on the rate of excavation, the materials excavated, and the presence and abundance of artifacts and features. The frequency and location of inspections will be determined by the Project Archaeologist.

70. Prior To Grading Final Inspection

Planning-CUL

070 - Planning-CUL. 1 Artifact Disposition Not Satisfied

Prior to Grading Permit Final Inspection, the landowner(s) shall relinquish ownership of all cultural resources that are unearthed on the Project property during any ground-disturbing activities, including previous investigations and/or Phase III data recovery.
Historic Resources- all historic archaeological materials recovered during the archaeological investigations (this includes collections made during an earlier project, such as testing of

Plan: PPT230048 Parcel: 317260017

70. Prior To Grading Final Inspection

Planning-CUL

070 - Planning-CUL. 1 Artifact Disposition (cont.) Not Satisfied

archaeological sites that took place years ago), shall be curated at the Western Science Center, a Riverside County curation facility that meets State Resources Department Office of Historic Preservation Guidelines for the Curation of Archaeological Resources ensuring access and use pursuant to the Guidelines

Prehistoric Resources- One of the following treatments shall be applied.

a. Reburial of the resources on the Project property. The measures for reburial shall include, at least, the following: Measures to protect the reburial area from any future impacts. Reburial shall not occur until all required cataloguing, analysis and studies have been completed on the cultural resources, with an exception that sacred items, burial goods and Native American human remains are excluded. Any reburial processes shall be culturally appropriate. Listing of contents and location of the reburial shall be included in the confidential Phase IV Report. The Phase IV Report shall be filed with the County under a confidential cover and not subject to a Public Records Request.

b. If reburial is not agreed upon by the Consulting Tribes then the resources shall be curated at a culturally appropriate manner at the Western Science Center, a Riverside County curation facility that meets State Resources Department Office of Historic Preservation Guidelines for the Curation of Archaeological Resources ensuring access and use pursuant to the Guidelines. The collection and associated records shall be transferred, including title, and are to be accompanied by payment of the fees necessary for permanent curation. Evidence of curation in the form of a letter from the curation facility stating that subject archaeological materials have been received and that all fees have been paid, shall be provided by the landowner to the County. There shall be no destructive or invasive testing on sacred items, burial goods and Native American human remains.

070 - Planning-CUL. 2 Phase IV Monitoring Report Not Satisfied

Prior to Grading Permit Final Inspection, a Phase IV Cultural Resources Monitoring Report shall be submitted that complies with the Riverside County Planning Department's requirements for such reports for all ground disturbing activities associated with this grading permit. The report shall follow the County of Riverside Planning Department Cultural Resources (Archaeological) Investigations Standard Scopes of Work posted on the TLMA website. The report shall include results of any feature relocation or residue analysis required as well as evidence of the required cultural sensitivity training for the construction staff held during the required pre-grade meeting and evidence that any artifacts have been treated in accordance to procedures stipulated in the Cultural Resources Management Plan.

COUNTY OF RIVERSIDE
TRANSPORTATION AND LAND MANAGEMENT AGENCY
Rania Odenbaugh, MBA., MPM.
TLMA Agency Director

06/17/25, 2:55 pm **PPT230048**

ADVISORY NOTIFICATION DOCUMENT

The following notifications are included as part of the recommendation of approval for PPT230048. They are intended to advise the applicant of various Federal, State and County regulations applicable to this entitlement and the subsequent development of the subject property.

Advisory Notification

Advisory Notification. 1 AND - Preamble

This Advisory Notification Document is included as part of the justification for the recommendation of approval of General Plan Amendment No. 230008 (GPA230008), Change of Zone No. 2300030 (CZ2300030), and Plot Plan No. 230048 (PPT230048) and is intended to advise the applicant of various Federal, State and County regulations applicable to this entitlement and the subsequent development of the subject property in accordance with approval of that entitlement and are in addition to the applied conditions of approval.

Advisory Notification. 2 AND - Project Description & Operational Limits

Plot Plan (PPT) No. 230048 proposes to construct a 185,912 square foot (SF) concrete tilt up, non-refrigerated warehouse on 9.62 acres of vacant land designated as APN:317 260 017 and 317 260 018. The proposed Project would include one 176,912 SF warehouse with 23 dock doors and two 4,500 SF office spaces with mezzanines for a total square footage of 185,912 SF, with related landscaping, drainage basin, and parking. The Project site will be accessed via a shared driveway on Tobacco Avenue, will include 33 truck trailer parking spaces, and 126 parking spaces. The Project also includes dedication of approximately 0.90 acres for public right of way improvements to be built along Tobacco Road and Placentia Avenue, including a “multipurpose trail,” and off site utility improvements.

General Plan Amendment (GPA) No. 230008 is a proposal to change the General Plan Foundation Component and Land Use designation for two lots from Rural Community-Very Low Density Residential (RC-VLDR) to Community Development – Business Park (CD-BP).

Change of Zone (CZ) No. 2300030 is a proposal to change the zoning classification from and Rural Residential (R-R-1) to Industrial Park (I-P).

Advisory Notification. 3 AND - Design Guidelines

Compliance with applicable Design Guidelines:
1. County Wide Design Guidelines and Standards

Advisory Notification. 4 AND - Exhibits

The development of the premises shall conform substantially with that as shown on APPROVED EXHIBIT(S)

Exhibit A (Site Plan), dated 06/25/2025

ADVISORY NOTIFICATION DOCUMENT

Advisory Notification

Advisory Notification. 4 AND - Exhibits (cont.)

Exhibit B (Elevations), dated 06/25/2025
Exhibit C (Floor Plans), dated 06/25/2025
Exhibit D (Details), dated 06/25/2025
Exhibit G (Grading Plan), dated 06/25/2025
Exhibit H (Line of Sight Analysis), dated 06/25/2025
Exhibit L (Conceptual Landscaping and Irrigation Plans), dated 06/25/2025
Exhibit M (Material & Color Board), dated 06/25/2025
Exhibit P (Photometric Plan), dated 06/25/2025
Exhibit T(Truck Turning & Stacking) , dated 06/25/2025
Exhibit W (Wall & Fencing), dated 06/25/2025

Advisory Notification. 5 AND - Federal, State & Local Regulation Compliance

1. Compliance with applicable Federal Regulations, including, but not limited to:
   - National Pollutant Discharge Elimination System (NPDES)
     - Clean Water Act
     - Migratory Bird Treaty Act (MBTA)

2. Compliance with applicable State Regulations, including, but not limited to:
   - The current Water Quality Management Plan (WQMP) Permit issued by the applicable Regional Water Quality Control Board (RWQCB.)
   - Government Code Section 66020 (90 Days to Protest)
   - Government Code Section 66499.37 (Hold Harmless)
   - Native American Cultural Resources, and Human Remains (Inadvertent Find)
   - School District Impact Compliance
   - Current California Building Code (CBC)
   - Current California Fire Code Requirements
   - Public Resources Code Section 5097.94 & Sections 21073 et al - AB 52 (Native Americans: CEQA)

3. Compliance with applicable County Regulations, including, but not limited to:
   - Ord. No. 348 (Land Use Planning and Zoning Regulations)
   - Ord. No. 413 (Regulating Vehicle Parking)
   - Ord. No. 457 (Building Requirements)
   - Ord. No. 458 (Regulating Flood Hazard Areas & Implementing National Flood Insurance Program)
   - Ord. No. 460 (Division of Land)
   - Ord. No. 461 (Road Improvement Standards)
   - Ord. No. 484 (Control of Blowing Sand)
   - Ord. No. 655 (Regulating Light Pollution)
   - Ord. No. 671 (Consolidated Fees)
   - Ord. No. 787 (Fire Code)
   - Ord. No. 847 (Regulating Noise)
   - Ord. No. 857 (Business Licensing)
   - Ord. No. 859 (Water Efficient Landscape Requirements)
   - Ord. No. 915 (Regulating Outdoor Lighting)

ADVISORY NOTIFICATION DOCUMENT

Advisory Notification

Advisory Notification. 5 AND - Federal, State & Local Regulation Compliance (cont.)

4. Mitigation Fee Ordinances
   - Ord. No. 659 Development Impact Fees (DIF)
   - Ord. No. 663 Stephens Kangaroo Rat Habitat Conservation Plan (SKR)
   - Ord. No. 810 Western Riverside County Multiple Species Habitat Conservation Plan (WRCMSHCP)
   - Ord. No. 824 Western Riverside County Transportation Uniform Mitigation Fee (WR TUMF)

Advisory Notification. 6 AND - Graffiti Abatement

Any graffiti painted or marked upon the premises or on any adjacent area under the control of the Project shall be removed and/or abated within 24 hours.

Advisory Notification. 7 AND - Hold Harmless

The applicant/permittee or any successor in interest shall defend, indemnify, and hold harmless the County of Riverside or its agents, officers, and employees (COUNTY) from the following:

(a) any claim, action, or proceeding against the COUNTY to attack, set aside, void, or annul an approval of the COUNTY, its advisory agencies, appeal boards, or legislative body concerning PPT230048 or its associated environmental documentation; and,

(b) any claim, action or proceeding against the COUNTY to attack, set aside, void or annul any other decision made by the COUNTY concerning PPT230048 including, but not limited to, decisions made in response to California Public Records Act requests; and

(a) and (b) above are hereinafter collectively referred to as "LITIGATION."

The COUNTY shall promptly notify the applicant/permittee of any LITIGATION and shall cooperate fully in the defense. If the COUNTY fails to promptly notify the applicant/permittee of any such LITIGATION or fails to cooperate fully in the defense, the applicant/permittee shall not, thereafter, be responsible to defend, indemnify or hold harmless the COUNTY.

The obligations imposed by this condition include, but are not limited to, the following: the applicant/permittee shall pay all legal services expenses the COUNTY incurs in connection with any such LITIGATION, whether it incurs such expenses directly, whether it is ordered by a court to pay such expenses, or whether it incurs such expenses by providing legal services through its Office of County Counsel.

Payment for COUNTY's costs related to the LITIGATION shall be made on a deposit basis. Within thirty (30) days of receipt of notice from COUNTY that LITIGATION has been initiated against the Project, applicant/permittee shall initially deposit with the COUNTY’s Planning Department the total amount of Twenty Thousand Dollars ($20,000). Applicant/permittee shall deposit with COUNTY such additional amounts as COUNTY reasonably and in good faith determines, from time to time, are necessary to cover costs and expenses incurred by the COUNTY, including but not limited to, the Office of County Counsel, Riverside County Planning Department and the Riverside County Clerk of the Board associated with the LITIGATION. To the extent such costs are not recoverable under the California Public Records Act from the records requestor, applicant/permittee agrees that deposits under this section may also be used to cover staff time incurred by the COUNTY to compile, review, and redact records in response to a Public Records

ADVISORY NOTIFICATION DOCUMENT

Advisory Notification

Advisory Notification. 7 AND - Hold Harmless (cont.)

Act request made by a petitioner in any legal challenge to the Project when the petitioner is using the Public Records Act request as a means of obtaining the administrative record for LITIGATION purposes. Within ten (10) days of written notice from COUNTY, applicant/permittee shall make such additional deposits.

Advisory Notification. 8 AND - Mitigation Measures

Mitigation Measures from the project's Initial Study-Mitigated Negative Declaration have been incorporated as conditions of approval of this project where appropriate. Beyond these conditions of approval that have been incorporated, development of the project shall conform to the analysis, conclusions, and mitigation measures of the project's Initial Study-Mitigated Negative Declaration.

BS-Plan Check

BS-Plan Check. 1 Gen - Custom

NOTIFICATIONS:
CODE/ORDINANCE REQUIREMENTS:
The applicant shall obtain the required building permit(s) from the building department prior to any construction on the property. All building plans and supporting documentation shall comply with current adopted California Building Codes, Riverside County Ordinances regulations in effect at the time of building plan submittal and fee payment to the Building Department. All Building Department plan submittal and fee requirements shall apply.
NOTE: The new updated 2022 California Building Codes will be in effect as of January 1st, 2023, as mandated by the state of California. Any building plan and fee payment submitted to the building department on or after January 1st, 2023, will be subject to the new updated California Building Code(s).
PERMIT ISSUANCE:
Per section 105.1 (2022 California Building Code, CBC): Where any owner or authorized agent intends to construct, enlarge, alter , repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert, or replace any electrical, gas, mechanical, or plumbing system, the regulation of which is governed by this code, or to cause any such work to be done, shall first make application to the building official and obtain the required permit.
The applicant shall obtain the required building permit(s) from the building department prior to any construction or placement of any building, structure or equipment on the property.
The applicant shall obtain an approved final building inspection and certificate of occupancy from the building department prior to any use or occupancy of the building, or structure.
At no time shall the approval of the planning case exhibit allow for the construction or use of any building, structure, or equipment. In residential applications, each separate structure will require a separate building permit.
LIQUEFACTION
If this project is in an area with potential for soil liquefaction, per Section CBC Section 1803.5, a geotechnical assessment of this condition is required and, according to Section 1803, the assessment must be conducted by a licensed design professional. If the assessment indicates that the condition, if not corrected, would lead to structural defects, the assessment shall recommend corrective action which is likely to prevent structural damage.
Note: Per Section 1803.2, this assessment does not necessarily have to take the form of a full Soil Report. It

ADVISORY NOTIFICATION DOCUMENT

BS-Plan Check

BS-Plan Check. 1 Gen - Custom (cont.)

can take the form of a letter stating that the design professional of record for this project has assessed the site and has either provided corrective actions or that the specific site conditions do not warrant corrective action."
Flood Zones
If this project is in an area designated as a flood zone, the applicant will be required to contact the flood department for potential additional requirements, prior to the acceptance of building permit application(s). Requirements may include but be limited to: Flood elevation, flow velocity, high flow depth, scour depth, elevated pad or finish floor heights, and anchoring foundation systems. Where the proposed project is to be located in a high flow area within the flood zone, S.P.A. foundation plans may not be applicable, and an engineered foundation design would be required. Design parameter's necessary for the foundation system will be provided by the Flood Control Dept. The Riverside County Flood Control Department can be contacted @ (951) 955-1200 for further information.
HIGH FIRE SEVERITY ZONE
If this project is in A high fire zone area, CRC 337 OR CBC 7A shall apply.

E Health

E Health. 1 DEH-ECP COMMENT

Based on the information provided in the environmental assessment documents submitted for this project and with the provision that the information was accurate and representative of site conditions, Riverside County Department of Environmental Health – Environmental Cleanup Program (RCDEH-ECP) concludes no further environmental assessment is required for this project.

If previously unidentified contamination or the presence of a naturally occurring hazardous material is discovered at the site, assessment, investigation, and/or cleanup may be required. Contact Riverside County Environmental Health - Environmental Cleanup Programs at (951) 955-8980, for further information.

Fire

Fire. 1 Adverse Impact Mitigation - DIF

The Riverside County Fire Department, Fire Planning Division reviews proposed development projects throughout the county and its partner cities. Our evaluation focuses on ensuring compliance with departmental standards, including response times, existing fire station locations, equipment availability, and the anticipated impact on service requests resulting from these proposed developments.

Our department provides cooperative integrated regional fire protection services throughout Riverside County and its partner cities. The three closest Riverside County Fire Department and partner city fire stations by response times are as follows:

Fire Station 90 – 333 Placentia Avenue, Perris; it is approximately 4.05 minutes away.
Fire Station 101 – 105 South F Street, Perris; it is approximately 5.25 minutes away.
Fire Station 59 – 21510 Pinewood Street, Perris; it is approximately 5.48 minutes away.

This project will contribute to a cumulative adverse impact on the fire department's ability to provide an

ADVISORY NOTIFICATION DOCUMENT

Fire

Fire. 1 Adverse Impact Mitigation - DIF (cont.)

acceptable level of service. These impacts include an increased number of emergency and public service calls due to the increased number of structures, traffic, and population. These stations are currently operating at or above their optimal capacity. Generally, a station can sustain a maximum of around 3000 calls for service per year. To mitigate these impacts, the project will be subject to Development Impact Fees in accordance with the County's fee schedule.

If we can be of further assistance, please feel free to contact the Riverside County Fire Department, Office of the Fire Marshal, Fire Planning Division at (951) 955-4777 or rvcplanningsubmittals@fire.ca.gov.

Fire. 2 General Fire Department Advisory Comments

With respect to the planning conditions for the referenced project, the fire department requires the following fire protection measures be provided in accordance with Riverside County Ordinances, the 2022 California Fire Code (CFC) as adopted and amended by the County of Riverside and/or recognized fire protection standards.

These conditions are preliminary and further review will be conducted upon receipt of additional entitlement and/or construction submittals. Additional requirements may be required based upon the adopted codes at the time of submittal.

1. Fire Protection Water Supplies/Fire Flow - Minimum fire flow for the construction of all buildings is required per CFC Appendix B. Prior to building permit issuance for new construction, the applicant shall provide documentation to show there exists a water system capable of delivering the required fire flow. Specific design features may increase or decrease the required fire flow. Reference CFC 507.3.

2. Fire Protection Water Supplies/Hydrants - The minimum number of fire hydrants required, as well as the location and spacing of fire hydrants, shall comply with CFC Appendix C and NFPA 24. Fire hydrants shall be located no more than 400 feet from all portions of the exterior of the building along an approved route on a fire apparatus access road, unless otherwise approved by the Fire Department. Fire hydrants shall be at least 40 feet from the building it is serving. A fire hydrant shall be located within 20 to 100 feet of the fire department connection for buildings protected with a fire sprinkler system. The size and number of outlets required for the approved fire hydrants are 4” x 2 ½” x 2 ½” (super hydrant). Reference CFC 507.5, CFC Appendix C and NFPA 24.

3. Fire Department Access - Fire apparatus access roads shall be provided to within 150 feet of all exterior portions of buildings, unless otherwise approved by the Fire Department. Fire apparatus access roads shall have an unobstructed width of not less than 24 feet. Dead-end fire apparatus access roads in excess of 150 feet shall be provided with an approved turn around. The minimum required turning radius of a fire apparatus access road is 45 feet outside radius and 21 feet inside radius. The construction of the fire apparatus access roads shall be all weather and capable of sustaining 80,000 lbs. Unless otherwise approved, the grade of a fire apparatus access road shall not exceed 16 percent and the cross slope shall not exceed 2.5 percent. The angles of approach and departure for fire apparatus access roads shall be a maximum of 6 percent grade change for 25 feet of approach/departure. Reference CFC 503.1.1, 503.2.1 as amended by the County of Riverside and Riverside County Office of the Fire Marshal Guidelines.

4. Fire Department Access Turn Around - Dead-end fire apparatus access roads in excess of 150 feet in

ADVISORY NOTIFICATION DOCUMENT

Fire

Fire. 2 General Fire Department Advisory Comments (cont.)

length shall be provided with a bulb turnaround at the terminus measuring a minimum of 45 feet outside radius and 21 feet inside radius. Parallel parking around the perimeter of the bulb is acceptable provided the bulb outside turning radius is increased by 8 feet. In-lieu of a bulb, a hammer-head type turnaround is acceptable where the top of the "T" dimension is 120 feet with the stem in the center. Additional turnaround designs may be acceptable as approved by the Fire Department. Reference CFC 503.1.1, 503.2.1 as amended by the County of Riverside and Riverside County Office of the Fire Marshal Guidelines.

5. Secondary Access – Unless otherwise approved by the Fire Department, dead end fire apparatus access roads shall not exceed (660 feet for Very High Fire Hazard Severity Zone and High Fire Hazard Severity Zone areas. 800 feet for Moderate Fire Hazard Severity Zone. 1,320 feet). Secondary egress/access fire apparatus access roads shall provide independent egress/access from/to the area or as otherwise approved by the Fire Department. Secondary egress/access fire apparatus access roads shall be as remote as possible from the primary fire apparatus access road to reduce the possibility that both routes will be obstructed by a single emergency. Additional fire apparatus access roads based on the potential for impairment by vehicle congestion, condition of terrain, climatic conditions, anticipated magnitude of a potential incident, or other factors that could limit access may be required by the Fire Department. Reference CFC 503.1.2 and Riverside County Office of the Fire Marshal Guidelines.

6. Fire Department Building Construction Plan Review - Submittal of construction plans to the Fire Department will be required. Final fire and life safety conditions will be addressed when the Fire Department reviews the plans. These conditions will be based on California Fire Code, California Building Code (CBC), and related codes/standards adopted at the time of construction plan submittal. Reference CFC 105.1.

7. Fire Sprinkler System - All new commercial buildings and structures 3,600 square feet or larger will be required to install a fire sprinkler system. Reference CFC 903.2 as amended by the County of Riverside.

8. Fire Alarm and Detection System - A water flow monitoring system and/or fire alarm system may be required as determined at time of building construction plan review. Reference CFC 903.4 and CFC 907.2.

9. Unlimited Area Building - Based upon the building construction type and requirements of the California Building Code (CBC), 60 feet of open space (with some reductions permitted) may be required around the building. Consult with your architect for additional information. Reference CBC 507.

10. Traffic Calming Devices - Requests for installation of traffic calming designs/devices on fire apparatus access roads shall be submitted and approved by the Fire Code Official. Reference CFC 503.4.1.

11. Gate Access: All electronically operated gates shall be provided with Knox key switches and automatic sensors for access. These gates shall be provided with access to gate equipment or another method to open the gate if there is a power failure. (Manual gates shall not be locked unless a Knox Box containing the key to the lock is installed in an approved location on the approach side of the gate). A pedestrian gate, if used to provide access, shall be a minimum 3 feet wide and provided with a Knox Box/Padlock if locked. Reference CFC 506.1.

12. Fire Department Access Doors – If high piled storage will be utilized in the building, Fire Department

ADVISORY NOTIFICATION DOCUMENT

Fire

Fire. 2 General Fire Department Advisory Comments (cont.)

Access Doors may be required every 150 feet along all portions of the interior of the building that are along the fire apparatus access road. Reference CFC 3206.7.

13. Water Plans: If fire hydrants are required to be installed, applicant/developer shall furnish the water system fire hydrant plans to the Fire Department for review and approval prior to building permit issuance. Plans shall be signed by a registered civil engineer, and shall confirm hydrant type, location, spacing, and minimum fire flow. Once plans are signed and approved by the local water authority, the originals shall be presented to the Fire Department for review and approval. Reference CFC 105.4.1.

14. Emergency Responder Communication Coverage Systems - Projects that do not meet the exceptions set forth by the Riverside County Office of the Fire Marshal shall provide plans for an emergency responder radio coverage system. Reference CFC 510.1 and Riverside County Office of the Fire Marshal Guidelines.

Planning

Planning. 1 015 - Planning - Landscape Requirement

Landscape Requirement

This condition applies to both onsite and offsite (ROW) landscaping:

The developer/ permit holder shall:
1) Ensure all landscape and irrigation plans are in conformance with the APPROVED EXHIBITS;
2) Ensure all landscaping is provided with California Friendly landscaping and a weather-based irrigation controller(s) as defined by County Ordinance No. 859;
3) Ensure that irrigation plans which may use reclaimed water conform with the requirements of the local water purveyor; and,
4) Be responsible for maintenance, viability and upkeep of all slopes, landscaped areas, and irrigation systems until the successful completion of the twelve (12) month inspection or those operations become the responsibility of the individual property owner(s), a property owner's association, or any other successor-in-interest, whichever occurs later.

To ensure ongoing maintenance, the developer/ permit holder or any successor-in-interest shall:
1) Connect to a reclaimed water supply for landscape irrigation purposes when reclaimed water is made available.
2) Ensure that landscaping, irrigation and maintenance systems comply with the Riverside County Guide to California Friendly Landscaping, and Ordinance No. 859.
3) Ensure that all landscaping is healthy, free of weeds, disease and pests.

Planning. 2 Business Licensing

Every person conducting a business within the unincorporated area of Riverside County, as defined in Riverside County Ordinance No. 857, shall obtain a business license. For more information regarding business registration, contact the Business Registration and License Program Office of the Building and Safety Department.

ADVISORY NOTIFICATION DOCUMENT

Planning

Planning. 3 Causes for Revocation

In the event the use hereby permitted under this permit,
a) is found to be in violation of the terms and conditions of this permit,
b) is found to have been obtained by fraud or perjured testimony, or
c) is found to be detrimental to the public health, safety or general welfare, or is a public nuisance, this permit shall be subject to the revocation procedures.

Planning. 4 Ceased Operations

In the event the use hereby permitted ceases operation for a period of one (1) year or more, this approval shall become null and void.

Planning. 5 Construction Traffic Control

Project construction activities are required to comply with the California Manual on Uniform Traffic Control Devices, which specify that temporary traffic controls shall be provided during construction, such as a flag person, during all phases of construction to facilitate the flow of construction traffic on streets abutting the Project site.

Planning. 6 Expiration Date Use Case

This approved permit shall be used within NINE (9) years from the approval date; otherwise, the permit shall be null and void.

The term used shall mean the beginning of construction pursuant to a validly issued building permit for the use authorized by this approval. Prior to the expiration of the 9 years, the permittee/applicant may request an extension of time to use the permit. The extension of time may be approved by the Assistant TLMA Director upon a determination that a valid reason exists for the permittee not using the permit within the required period. If an extension is approved, the total time allowed for use of the permit shall not exceed ten (10) years.

Planning. 7 Fugitive Dust

The Project is required to comply with the provisions of the SCAQMD Rule 403 “Fugitive Dust.” Rule 403 requires implementation of best available dust control measures during construction activities that generate fugitive dust, such as earth moving, grading, and construction equipment travel on unpaved roads. To comply with Rule 403, and prior to grading permit issuance, the County of Riverside shall verify that notes are specified on the Project’s grading plans requiring Rule 403 compliance. Project construction contractors would be required to ensure compliance with the notes and permit periodic inspection of the construction site by County of Riverside staff or its designee to confirm compliance. To comply with Rule 403:

- In order to limit fugitive dust emissions, all clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 miles per hour (mph) per SCAQMD guidelines.
- The construction contractor(s) shall ensure that all distributed unpaved roads and disturbed areas

ADVISORY NOTIFICATION DOCUMENT

Planning

Planning. 7 Fugitive Dust (cont.)

within the Project site are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three (3) times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The construction contractor(s) shall ensure that traffic speeds on unpaved roads and the Project site area are reduced to 15 miles per hour or less.

Planning. 8 Industrial Occupant Change

Prior to initial occupancy, upon tenant/occupant change, or upon change in industrial use, the permit holder shall provide a letter from the Planning Department to Building & Safety verifying no need for further environmental, hazardous materials or air quality review as a result of the change.

Planning. 9 Logistics/Warehouse – General/Operational Measures

The following measures shall be complied with generally through design/permitting of the project and through continued operation of the project.

1. On-site speed bumps shall not be allowed. Truck loading bays and drive aisles shall be designed to minimize truck noise.

2. Facility operators shall prohibit truck drivers from idling more than five (5) minutes and require operators to turn off engines when not in use, in compliance with the California Air Resources Board regulations.

3. All lighting used in conjunction with a warehouse/distribution facility operations, shall be directed down into the interior of the site and not spill over onto adjacent properties.

4. Facility operators shall maintain records of their facility owned and operated fleet equipment and ensure that all diesel-fueled Medium-Heavy Duty Trucks (“MHDT”) and Heavy-Heavy Duty (“HHD”) trucks with a gross vehicle weight rating greater than 19,500 pounds accessing the site use year CARB compliant 2010 or newer engines. The records should be maintained on-site and be made available for inspection by the County.

5. Facility operators shall train their managers and employees on efficient scheduling and load management to eliminate unnecessary queuing and idling of trucks.

6. Facility operators shall coordinate with CARB and SCAQMD to obtain the latest information about regional air quality concentrations, health risks, and trucking regulations.

7. Facility operators shall establish specific truck routes between the facility and regular destinations, identifying the most direct routes to the nearest highway/freeway and avoid traveling near sensitive receptors.

8. Facility operators shall require their drivers to park and perform any maintenance of trucks in designated on-site areas and not within the surrounding community or on public streets.

9. Facility operators for sites that exceed 250 employees shall establish a rideshare program, in

ADVISORY NOTIFICATION DOCUMENT

Planning

Planning. 9 Logistics/Warehouse – General/Operational Measures (cont.)

accordance with AQMD rule 2202, with the intent of discouraging single-occupancy vehicle trips and promote alternate modes of transportation, such as carpooling and transit where feasible.

10. If a public address (PA) system is being used in conjunction with a warehouse/distribution facility operations, the PA system shall be oriented away from sensitive receptors and the volume set at a level not readily audible past the property line.

11. Facility Operation shall comply with the exterior noise decibel levels as required by Ord. 847 (Noise Ordinance), which includes a maximum exterior decibel level of 55 dba (between 7:00 a.m. and 10:00 p.m.) and 45 dba (between 10:00 p.m. and 7:00 a.m.) as measured on adjacent occupied residences, or as modified by the most current version of Ordinance No. 847.

12. Each Facility shall designate a Compliance Officer responsible for implementing the measures described herein and/or in the project conditions of approval and mitigation measures. Contact information should be provided to the County and updated annually, and signs should be posted in visible locations providing the contact information for the Compliance Officer to the surrounding community. These signs shall also identify the website and contact information for the South Coast Air Quality Management District.

13. On-site equipment, such as forklifts, shall be electric with the necessary electrical charging stations provided.

Planning. 10 No Outdoor Advertising

No outdoor advertising display, sign or billboard (not including on-site advertising or directional signs) shall be constructed or maintained within the property subject to this approval.

Planning. 11 No Resident Occupancy

No permanent occupancy shall be permitted within the property approved under this plot plan as a principal place of residence. No person shall use the premises as a permanent mailing address nor be entitled to vote using an address within the premises as a place of residence.

Planning. 12 Outside Storage

No outside storage is proposed as a part of this development proposal.

Planning. 13 Reclaimed Water

The permit holder shall connect to a reclaimed water supply for landscape watering purposes when secondary or reclaimed water is made available to the site.

Planning. 14 Review Fees

Any subsequent submittals required by these conditions of approval, including but not limited to grading plan, building plan, or mitigation and monitoring review, shall be reviewed on an hourly basis (research

ADVISORY NOTIFICATION DOCUMENT

Planning

Planning. 14 Review Fees (cont.)

fee), or other such review fee as may be in effect at the time of submittal, as required by Ordinance No. 671. Each submittal shall be accompanied with a letter clearly indicating which condition or conditions the submittal is intended to comply with.

Planning. 15 SCAQMD Rule 402

The Project is required to comply with the provisions of the SCAQMD Rule 402, "Nuisance" which requires that a person shall not discharge air contaminants or other materials that would cause health or safety hazards to any considerable number of persons or the public.

Planning. 16 Signage

A sign program is not a part of this Project proposal and when submitted shall be in compliance with Article XIX of Ordinance No. 348 in regards to commercial signage.

Planning-CUL

Planning-CUL. 1 Human Remains

If human remains are found on this site, the developer/permit holder or any successor in interest shall comply with State Health and Safety Code Section 7050.5.

Planning-CUL. 2 PDA 8407 Accepted

County Archaeological Report (PDA) No. 8407 submitted for this project (PPT230048) was prepared by BFSA Environmental Services, a Perennial Company and is entitled: "A PHASE I CULTURAL RESOURCES STUDY FOR THE THRIFTY OIL WAREHOUSE PROJECT", dated January 16, 2024.
PDA concludes: The Phase I cultural resources assessment for the Thrifty Oil Warehouse Project did not identify any cultural resources. However, the property is located in proximity to multiple prehistoric and historic resources and has been impacted by agricultural use, partial development, and clearing. These impacts typically remove evidence of surface scatters of cultural artifacts.
Therefore, given the past impacts to the property coupled with the frequency of resources within the one mile, the obstructed ground visibility during the survey, and the noted historic occupation of the property, there still remains potential for the inadvertent discovery of archaeological resources during grading. As such, a cultural resources Mitigation Monitoring and Reporting Program (MMRP) is recommended as a condition of approval for this property, which should include the monitoring of all ground-disturbing activities within the property by an archaeologist and Native American monitor.
PDA recommends: As a condition of project approval, a MMRP is recommended to identify any cultural resources that may be uncovered during grading and, subsequently, to mitigate potential impacts to any discovered archaeological resources evaluated as significant.
These documents are herein incorporated as a part of the record for project.

Planning-CUL. 3 Unanticipated Resources

The developer/permit holder or any successor in interest shall comply with the following for the life of this permit.

ADVISORY NOTIFICATION DOCUMENT

Planning-CUL

Planning-CUL. 3 Unanticipated Resources (cont.)

If during ground disturbance activities, unanticipated cultural resources* are discovered, the following procedures shall be followed:
All ground disturbance activities within 100 feet of the discovered cultural resource shall be halted and the applicant shall call the County Archaeologist immediately upon discovery of the cultural resource. A meeting shall be convened between the developer, the project archaeologist**, the Native American tribal representative (or other appropriate ethnic/cultural group representative), and the County Archaeologist to discuss the significance of the find. At the meeting with the aforementioned parties, a decision is to be made, with the concurrence of the County Archaeologist, as to the appropriate treatment (documentation, recovery, avoidance, etc.) for the cultural resource. Resource evaluations shall be limited to nondestructive analysis.
Further ground disturbance shall not resume within the area of the discovery until the appropriate treatment has been accomplished.
* A cultural resource site is defined, for this condition, as being a feature and/or three or more artifacts in close association with each other.
** If not already employed by the project developer, a County approved archaeologist shall be employed by the project developer to assess the significance of the cultural resource, attend the meeting described above, and continue monitoring of all future site grading activities as necessary.

Planning-GEO

Planning-GEO. 1 Gen - Custom

County Geologic Report GEO No. 240009, submitted for the project PPT230048, was prepared by GEO Environmental Resources, Inc., and is titled “Geotechnical Engineering Exploration and Analysis, propose Commercial Building, 23641 Placentia Ave, Perris, CA”, dated February 8, 2024. In addition, GEO Environmental Resources, Inc. prepared “Response to County Geologic Report Review, proposed Commercial Building, 23641 Placentia Ave, Perris, CA” dated November 4, 2024. This document is herein incorporated as a part of GEO240009.

GEO240009 concluded:

1. There are no active faults below the subject property.
2. The site does not lie within the boundaries of an “Earthquake Fault Zone” as defined by the State of California in the Alquist-Priolo Earthquake Fault Zoning Act.
3. The average ground water level is approximately 80 feet below existing ground surface.
4. The liquefaction potential of to cause damage to the structure is unlikely.
5.

GEO240009 recommended:

1. To develop a uniform sub-surface layer with increased support characteristics, following completion of the trees and vegetation removal, the proposed building area to be over-excavated to approximate depth of eight (8) feet below its proposed Rough Finished Grade (RFG) elevation or an equivalent of four (4) feet below the proposed foundation subgrade (whichever is lower in elevation).
2. To mitigate the future potential settlement, due to the presence of the collapsible soils, we are recommending that the proposed building pad be over-excavated to approximate depth of four (4) below bottom of its proposed footings grade.

ADVISORY NOTIFICATION DOCUMENT

Planning-GEO

Planning-GEO. 1 Gen - Custom (cont.)

GEO240009 is hereby approved for Planning purposes associated with PPT230048.

Transportation

Transportation. 1 RCTD - USE - General Transportation Conditions

With respect to the conditions of approval for the referenced tentative exhibit, the land divider shall provide all street improvements, street improvement plans and/or road dedications set forth herein in accordance with the Riverside County Road Improvement Standards (Ordinance No. 461.11). It is understood that the exhibit correctly shows acceptable centerline elevations, all existing easements, traveled ways, and drainage courses with appropriate Qs, and that their omission or unacceptability may require the exhibit to be resubmitted for further consideration. The County of Riverside applicable ordinances and all conditions of approval are essential parts and a requirement occurring in ONE is as binding as though occurring in all. All questions regarding the true meaning of the conditions shall be referred to the Transportation Department.

The Project shall submit a preliminary soils and pavement investigation report addressing the construction requirements within the road right-of-way.

A signing and striping plan is required for this project. The Project shall be responsible for any additional paving and/or striping removal caused by the striping plan or as approved by the Director of Transportation.

Alterations to natural drainage patterns shall require protecting downstream properties by means approved by the Transportation Department.

If the Transportation Department allows the use of streets for drainage purposes, the 10-year discharge shall be contained in the top of curb or asphalt concrete dikes, and the 100-year discharge shall be contained in the street right-of-way.

The Project shall install street name sign(s) in accordance with County Standard Nos. 1220/1221 and as directed by the Transportation Department.

All corner cutbacks shall be applied per Standard No. 805, Ordinance No. 461.11, except for corners at Entry streets intersecting with General Plan roads, they shall be applied per Exhibit C of the Countywide Design Guidelines.

All centerline intersections shall be at 90-degrees, plus or minus 5-degrees.

At intersections, local streets (below County Collector Road Standard) shall have a minimum 50 FT tangent, measured from flowline/curb-face to the end of the 50 FT tangent section.

The project shall comply with the most current ADA requirements. Ramps shall be constructed at all 4 legs of 4-way intersections and T-intersections per Standard No. 403, sheets 1 through 7 of Ordinance No. 461.11.

The off-site rights-of-way for access road(s) required by the project shall be accepted to vest title in the

ADVISORY NOTIFICATION DOCUMENT

Transportation

Transportation. 1 RCTD - USE - General Transportation Conditions (cont.)

name of the public if not already accepted.

If there are previously dedicated public roads and utility easements that were not accepted by the County, the Project shall file a separate application to the County of Riverside, Office of the County Surveyor, for the acceptance of the existing dedications by resolution and bear all costs thereof.

Additional information, standards, ordinances, policies, and design guidelines can be obtained from the Transportation Department Web site: https://rctlma.org/trans/. If you have questions, please call the Plan Check Section at (951) 955-6527.

Improvement plans for the required improvements must be prepared and shall be based upon a design profile extending a minimum of 300 feet beyond the limit of construction at a grade and alignment as approved by the Riverside County Transportation Department. Completion of road improvements does not imply acceptance for maintenance by County. Street Improvement Plans shall comply with Ordinance No. 461.11, Riverside County Improvement Plan Check Policies and Guidelines, which can be found online http://rctlma.org/trans.

Waste Resources

Waste Resources. 1 Waste - General

Hazardous materials are not accepted at Riverside County landfills. In compliance with federal, state, and local regulations and ordinances, any hazardous waste generated in association with the project shall be disposed of at a permitted Hazardous Waste disposal facility. Hazardous waste materials include, but are not limited to, paint, batteries, oil, asbestos, and solvents. For further information regarding the determination, transport, and disposal of hazardous waste, please contact the Riverside County Department of Environmental Health, Environmental Protection and Oversight Division.

AB 341 focuses on increased commercial waste recycling as a method to reduce greenhouse gas (GHG) emissions. The regulation requires businesses and organizations that generate four or more cubic yards of waste per week and multifamily units of 5 or more, to recycle. A business shall take at least one of the following actions in order to reuse, recycle, compost, or otherwise divert commercial solid waste from disposal:

- Source separate recyclable and/or compostable material from solid waste and donate or self-haul the material to recycling facilities.
- Subscribe to a recycling service with their waste hauler.
- Provide recycling service to their tenants (if commercial or multi-family complex).
- Demonstrate compliance with the requirements of California Code of Regulations Title 14.

For more information, please visit:
www.rivcowm.org/opencms/recycling/recycling_and_compost_business.html#mandatory

Consider xeriscaping and using drought tolerant/low maintenance vegetation in all landscaped areas of the project.
The use of mulch and/or compost in the development and maintenance of landscaped areas within the project boundaries is recommended. Recycle green waste through either onsite composting of grass, i.e., leaving the grass clippings on the lawn, or sending separated green waste to a composting facility.

ADVISORY NOTIFICATION DOCUMENT

Waste Resources

Waste Resources. 1 Waste - General (cont.)

AB 1826 requires businesses and multifamily complexes to arrange for organic waste recycling services. Those subject to AB 1826 shall take at least one of the following actions in order to divert organic waste from disposal:
-Source separate organic material from all other recyclables and donate or self-haul to a permitted organic waste processing facility.
-Enter into a contract or work agreement with gardening or landscaping service provider or refuse hauler to ensure the waste generated from those services meet the requirements of AB 1826.

Comply with SB 1383 which establishes regulations to reduce organics waste disposal and went into effect on January 1, 2022. This law establishes methane emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants caused by organics waste disposal.

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CASE: PPT230048
EXHIBIT: EJ Checklist
DATE: 6/25/2025
PLANNER: KMason
☐ Meeting ☐ Comment Agenda ☑ Final

PROJECT: PPT230068
PERRIS, CA
23641 PLACENTIA AVENUE, PERRIS

Health Risk Reduction	Mitigation Measure or Condition of Approval	Project Design Feature	Policy Not Applicable	Notes (Not to exceed 250 words)
HC 16.5 – Location to Sensitive Receptors. Evaluate the compatibility of unhealthy and polluting land uses being located near sensitive receptors including possible impacts on ingress, egress, and access routes. Similarly, encourage sensitive receptors, such as housing, schools, hospitals, clinics, and childcare facilities to be located away from uses that pose potential hazards to human health and safety.		X		**Compatible Through Project Design Feature:** As a Project Design Feature, the project was located in a primarily industrial area with a few sensitive receptors nearby. The facility will be designed to accommodate a variety of light industrial uses, with no significant unhealthy and polluting impacts. The building and related truck courts are designed to be as far away from sensitive receptors as possible. The EA/IS determined no significant impacts would occur related to Air Quality, Greenhouse Gas Emissions, or Health Risks. The Project was designed to ensure the bulk of the traffic would be directed away from sensitive receptors.
HC 16.6 – Good Neighbor Policy. For large scale logistics, warehouse and distribution projects, address the Good Neighbor Policy for Logistics and Warehouse/Distribution uses criteria adopted by the Board of Supervisors on November 19, 2019, and as may be subsequently amended.		X		**Compatible Through Project Design Feature**: While the Good Neighbor Policy is intended for buildings 300,000 SF and above, as a Project Design Feature, we are nonetheless addressing the intent of most of its guidelines. The Project includes a minimum 600 ft. buffer between the truck court and nearest sensitive receptors, while the County guidance is 300 ft. Applicant has engaged the community by way of community briefing at the MAC and engaged a dedicated community liaison so the neighbors are informed during the development process.
HC 16.10 – Compact Development. Plan for compact development projects in appropriate locations, including in existing communities and the clustering of affordable and mixed-income housing therein, that make the most efficient use of land and concentrate complementary uses close to transit or non-transit mobility options and advocate for expanded transit and non-transit mobility options to serve such areas.			X	**Policy Not Applicable**: Project is an industrial use and includes no housing.

HC 16.14 – Sensitive Receptors, Pesticides and Fertilizers. Assure that sensitive receptors are separated and protected from polluting point sources, as feasible, including agricultural businesses that produce or use pesticides and chemical fertilizers.			X	**Policy Not Applicable:** Project is an industrial use and includes no agricultural operations or use of pesticides or fertilizers other than for landscape maintenance..
HC 16.15 – Site Design and Industrial and Warehousing. Assure that site plan design protects people and land, particularly sensitive land uses such as housing and schools, from air pollution and other externalities associated with industrial and warehouse development through the use of barriers, distance, or similar solutions or measures from emission sources when possible.		X		**Compatible Through Project Design Feature:** As a Project Design Feature, the Project includes a minimum 600 ft buffer between the truck court and nearby sensitive receptors, while the County guidance is 300 ft. The building massing will serve to separate the truck court from the sensitive receptors, as described above. Truck traffic was designed to enter and exit on Placentia Avenue, and travel east to the 215/Placentia Avenue interchange, away from sensitive receptors. The EA/IS determined no significant impacts would occur related to Air Quality, Greenhouse Gas Emissions, or Health Risks.
HC 16.16 – Landscaping, Particulate Matter, and Air Pollution. Apply pollution control measures such as landscaping, vegetation, and green zones (in cooperation with the SCAQMD) and other materials, which trap particulate matter or control air pollution.		X		**Compatible Through Project Design Feature**: The Project is designed to comply with pollution control measures of SQAMD (South Coast Air Quality Management District) and uses materials and equipment to minimize air pollution. Landscaping is designed around the perimeter as well as within various parking areas. The facility will provide approximately 60,774 SF of landscaped area (approximately 15 percent of the net lot area), which meets the 15 percent (or 57,980 SF) minimum required by the County. The Project is consistent with the CAP (Riverside County Climate Action Plan) as it will implement many of the policies that reduce GHG (Greenhouse Gas) emissions. Project will result in approximately 1,706.88 MTCO 2e/yr. which is significantly below the County's screening threshold of 3,000 MTCO2e/yr.

HC 16.18 – Job Creation and Reduction of Vehicle Miles. Promote new development that emphasizes job creation and reduction in vehicle miles traveled in job- poor areas and does not otherwise contribute to onsite emissions to improve air quality.		X		**Compatible Through Project Design Feature:** With the development of the industrial building and in partnership with end user it is anticipated there will be approximately 181 local jobs created[1]. Placing the facility in fairly proximity to the housing rich and job-poor communities of Riverside County, therefore reducing employee commutes and distances traveled between consumer good distribution and retail outlets, which will ultimately lead to the reduction of vehicle miles traveled.
HC 16.22 – Industrial Water Use Discharges and Agriculture and Pesticide/Chemical Use. Discourage industrial uses which use large quantities of water in manufacturing or cooling processes that result in subsequent effluent discharges and encourage agricultural businesses to limit and reduce the production and use of pesticides and chemical fertilizers to the maximum extent possible thereby minimizing contaminated infiltration and runoff, including runoff to the Salton Sea and other standing bodies of water.		X		**Compatible Through Project Design Feature:** The ultimate light industrial and storage use is not expected to generate any industrial water discharge. The Project does not include the use of large quantities of water in manufacturing or cooling processes, nor does it include any agricultural uses. Project design includes underground detention basin to capture onsite storm water run off and grading design will route storm water runoff to this detention basin and ultimately contribute to replenishing the underlying groundwater aquifer. A Water Quality Management Plan (PWQMP) has been submitted for County review, that incorporates stormwater control for the postconstruction condition, and includes Low Impact Development (LID) site design, source control, and treatment control BMPs. The County will review and approve the PWQMP as part of the design for the building and approve design features that reduce runoff that could cause water quality impacts.
HC 16.23 – Industrial and Agriculture Uses and Toxic Contamination. Discourage industrial and agricultural uses which produce significant quantities of toxic emissions into the air, soil, and groundwater to prevent the contamination of these physical environments.			X	**Policy Not Applicable:** Light Industrial Warehouse end users will not be an agriculture use, nor a toxic industrial use, but a light industrial user.

[1] Based on building size and the County of Riverside Plan employee generation factor for every 1,030 SF of light industrial layout, the calculation results in an employee total of approximately 181 (Project layout is approximately 186,695 SF)

HC 16.24 – Compatibility Criteria for Industrial, Agricultural, And Adjacent Land Uses. Ensure compatibility between industrial development and agricultural uses and adjacent land uses. To achieve compatibility, industrial development and agricultural uses will be required to include criteria addressing noise, land, traffic, and greenhouse gas emissions to avoid or minimize creating adverse conditions for adjacent communities.		X		**Compatible Through Project Design Feature:** No significant compatibility issues were identified in the EA/IS related to any environmental resources or impacts to adjacent communities. Project and future occupants will abide by all county regulations including but not limited to those that limit impacts associated with noise, land use, traffic, and GHG.
HC 16.25 – Mining Projects and Compatibility. Require the conversion of mining operations into uses that are compatible with surrounding areas in accordance with the Surface Mining and Reclamation Act.			X	**Policy Not Applicable**: The policy does not apply to the project. Project does not propose development of, nor is it near any mining projects.
Food Access	**Mitigation Measure or Condition of Approval**	**Project Design Feature**	**Policy Not Applicable**	**Notes (Not to exceed 250 words)**
HC 17.2 – Building Setback and Activation of Sidewalks. Orient buildings closer to streets or provide landscaped promenades that connect buildings to bus stops with routes that provide access to shopping centers, grocery stores, and areas where farmer's markets are held.			X	**Policy Not Applicable:** The policy does not apply to the project. An industrial warehouse is proposed in an area without transit stops or commercial uses. However, this Project will be incorporating public streets and sidewalks along its perimeter and a public trail along Placentia Avenue.
HC 17.3 – Site Design and Interior Spaces. Encourage site design for new development to accommodate interior spaces for recreational and other neighborhood uses, such as community gardens and farmer's markets in order to increase access to fresh and healthy foods; and to render such spaces convenient and available to neighboring streets, neighborhoods, and other nearby facilities to fill the void or lack of small grocery stores and increase access to fresh and healthy foods within EJ Communities.			X	**Policy Not Applicable:** The policy does not apply to the project. No proposed recreational or neighborhood uses are feasible within an industrial building.
HC 17.5 – Diverse Food Establishments. Encourage the development of diverse food establishments prioritizing mom and pop healthy food establishments and community kitchens for homemade foods to be sold in areas with a high concentration of fast-food establishments, convenience stores, and liquor stores.			X	**Policy Not Applicable:** The policy does not apply to the project as is it a light industrial use, not a food establishment.

HC 17.6 – Affordable Access to Fruits and Vegetables. Work with local farmers and growers to develop a program to provide affordable access to fruits and vegetables grown in the area to the EJ communities. Identify and establish the location of grocery stores, healthy corner stores, farmer's markets all of which carry a complement of healthy foods to be located in close proximity to transit nodes and other active transportation system links.			X	**Policy Not Applicable**: The policy does not apply to the project as it is not produce related.
HC 17.7 – Edible Landscaping and Community Gardens. Promote edible landscaping and community gardens for suitable public and private land as well as for residential and mixed-use projects.			X	**Policy Not Applicable**: The policy does not apply to the project as it is not a community garden.

Safe & Sanitary Homes	**Mitigation Measure or Condition of Approval**	**Project Design Feature**	**Policy Not Applicable**	**Notes (Not to exceed 250 words)**
HC 18.7 – Polluting Uses and Noticing Requirements. Discourage industrial, agricultural, and other land uses that may pollute and cause health conflicts with residential land uses either directly or indirectly. Ensure that community members are properly notified and involved in the decision-making process for new land-use proposals.		X		**Compatible Through Project Design Feature:** As a light industrial and likely warehousing use, no significant impacts identified in EA/IS; however, to meet Environmental Justice Requirements, and to inform the community pro-actively about the project the Applicant has presented the project to the community at a meeting of the Mead Valley MAC.
HC 18.8 – Design to Limit Exposure of Residential Development. Work with the development community including small property and mobile home park owners so new residential development, particularly for low-income households, is designed to limit their exposure to high noise levels, pesticide and fertilizer exposure, dust pollution, and other potential impacts associated with adjacent industrial and agricultural uses.		X		**Compatible Through Project Design Feature:** As a light industrial and likely warehousing use, it's a use with low impact to the neighbors as identified in the EA/IS. However, to meet Environmental Justice Requirements and to inform the community proactively the project has been presented to Mead Valley MAC.
HC 18.9 – Design and Character of the Surrounding Area. Encourage the location and design of new developments to visually enhance and not degrade the character of the surrounding area through consideration of the following concepts.		X		**Compatible Through Project Design Feature:** The area is largely comprised of big box industrial facilities, or land planned and proposed to be developed into new industrial facilities. The currently undeveloped parcels consist largely of unimproved lots and/or obsolete improvements. The Project is proposed to be constructed consistent with the height limits per the zoning, the proposed building color is

				to be neutral earth tones to blend with the environment.. The Project design incorporates significant landscaping, roadway infrastructure, utility undergrounding, sidewalks and trails into the Project design features. The layering of landscaping between the Proposed building and the surrounding roadways would provide visual depth and distance between the roadways and Proposed structures, while functioning as a screen to trailer parking and truck yard.
a. Use of Design Standards. Using design standards of the appropriate Area Plan land use category.		X		**Compatible Through Project Design Feature:** The project was designed to meet standards specified in the Mead Valley Area Plan. Appropriate design modifications recommended by County staff have been incorporated. No significant aesthetics impacts have been identified in EA/IS.
b. Codes and Regulations. Construction of structures in accordance with the requirements of Riverside County's zoning, building, and other pertinent codes and regulations.		X		**Compatible Through Project Design Feature:** As a Project Design Feature all applicable state and Riverside County codes have been incorporated into the design of the Project as well as building construction requirements.
c. Landscaping Plan. Require that an appropriate landscape plan be submitted and implemented for development projects subject to discretionary review.		X		**Compatible Through Project Design Feature:** As a Project Design Feature Landscape Plans were developed to County standards and have been submitted for review and approval.

d. Drought Resistant Landscaping. Use of drought-tolerant landscaping that incorporates adequate drought conscious irrigation systems.		X		**Compatible Through Project Design Feature:** As a Project Design Feature Landscape Plans have been submitted that were developed to County standards and incorporate low impact development (LID) standards that includes water conservation. Drought tolerant plants are incorporated into the design, all being on the County of Riverside California Friendly Plant list.
e. Energy Efficiency in Design. Application of energy efficiency through street configuration, building orientation, and landscaping to capitalize on shading and facilitate solar energy.		X		**Compatible Through Project Design Feature:** As a Project Design Feature plans have been submitted and were developed to State and/or County standards to meet or exceed energy efficiency. A roof solar system and battery storage units will be included as part of the Project. Trees were incorporated into the landscape design not only for aesthetic purposes, but also to provide shade.
f. Water Conservation. Application of water conservation techniques, such as groundwater recharge basins, use of porous pavement, drought-tolerant landscaping, and water recycling, as appropriate.		X		**Compatible Through Project Design Feature:** As a Project Design Feature plans include appropriate water conservation techniques as well as incorporation of WQMP underground detention basin to both control run-off and recharge groundwater aquifers.
g. Innovative Design. Encourage innovative and creative design concepts.		X		**Compatible Through Project Design Feature:** As a Project Design Feature efforts were made by the Applicant to have an eye toward long term ownership, as such appropriate care was applied to the quality design and seamless operation of the proposed Project. Where feasible, architectural plans have incorporated innovative designs, (such as auto and truck EV charging stations) and creative design into the primary Project features. Care was exercised in the Project development to select an attractive upscale design, with colors appropriate for the surrounding landscape and community. The Project landscaping was likewise selected to be aesthetically pleasing and compatible with the surrounding land uses.

h. Public Art. Encourage the provision of public art that enhances the community's identity, which may include elements of historical significance and creative use of children's art.			X	**Policy Not Applicable:** Due to the project's light industrial use and location in a semi-rural area with very little vehicular and no expected pedestrian traffic, the provision of public art does not apply to Project design.
i. Signage. Include consistent and well-designed signage that is integrated with the building's architectural character.		X		**Compatible Through Project Design Feature:** Signage plans are not included in current plans, but will be designed by future tenant and subject to review and approval by the County.
j. Vehicular Access. Provide safe and convenient vehicular access and reciprocal access between adjacent commercial uses.		X		**Compatible Trough Project Design Feature:** There are no adjacent non-industrial commercial uses, however care was exercised to ensure the Project would not impact neighbors access to their properties. Above-standard truck stacking is being provided as part of the design.
k. Service Areas and Residential. Locate site entries and storage bays to minimize conflicts with adjacent residential neighborhoods.		X		**Compatible Through Project Design Feature:** There are approximately five rural residential uses west of the Project site across Tobacco Road. Therefore care was exercised to ensure the Project would not negatively impact the neighbors' access into their properties. The newly constructed road infrastructure will facilitate the residents' access to their properties. Above-standard truck stacking is being provided as part of the design and will be directed away from the residential areas.
l. Mitigation. Mitigate noise, odor, lighting, pollution exposure, and other impacts on surrounding properties.		X		**Compatible Through Project Design Feature:** All potential impacts have been addressed either through purposeful building design or by adherence to local, regional or state regulations. Noise was mitigated by placing truck courts away from residences, security lighting will be directed down and shielded from neighbors. Pollution and odors will be limited by the nature of the proposed light industrial and warehouse uses. Environmental review of the Project, as designed, determined no significant impacts related to noise, odor, lighting, pollution, or any potential impacts to adjacent properties.

m. Landscaping in Open Spaces and Parking Lots. Provide and maintain landscaping in open spaces and parking lots.		X		**Compatible Through Project Design Feature:** Landscaping in open spaces, around parking lots and Project perimeters is designed to exceed County standards. The project will facilitate ongoing maintenance by the installation of automated irrigation systems and adhering to Low Impact Development (LID) standards.
n. Drought Tolerant Landscaping. As feasible, maximize landscape coverage with an emphasis on drought tolerant landscaping.		X		**Compatible Through Project Design Feature:** Drought tolerant plants are incorporated into the design, all being on the County of Riverside California Friendly Plant list and design includes related irrigation.
o. Preservation of Natural Features. Preserve, as feasible, natural features, such as unique natural terrain, arroyos, canyons, and other drainage ways, and native vegetation, wherever possible, particularly where they provide continuity with more extensive regional systems.			X	**Policy Not Applicable:** The Project site is vacant, contains no drainages or waterways, or native vegetation other than weeds and grasses.
p. Pedestrian Activity.			X	**Policy Not Applicable:** Due to the Project being light industrial, this requirement does not apply. The Project will nonetheless incorporate sidewalks along public streets and a trail along Placentia Avenue to facilitate pedestrian activity.

q. Integration of Parking Lots. Design parking lots and structures to be functionally and visually integrated and connected.			X	**Policy Not Applicable:** Parking provided for the project is designed to meet industrial use needs including those for 4-axle trucks and trailers. Separation between passenger vehicle and truck/trailer parking is provided. Pedestrian, including ADA access in and around the building and parking lots, has been carefully designed to provide safe access around the project and between the building and parking lot.
r. Building Access Points. As feasible, site building access points along sidewalks, pedestrian areas, and bicycle routes, and include amenities that encourage pedestrian activity where such passthrough areas include wayfinding signage, street trees, grade and lateral separation from roads, all with consideration given to adequate safety lighting, and landscape screening.			X	**Policy Not Applicable:** Due to the Project being light industrial, this requirement does not apply. Nonetheless, as a Project Design Feature, sidewalks, a trail on Placentia Avenue, and bicycle storage onsite Have been designed. Security perimeter lighting and fencing around truck courts will be provided as well.
s. Pedestrian Crossings. Encourage safe and frequent pedestrian crossings and ensure that sidewalks and other pedestrian walkways provide continuity between land uses essential to a functional lifestyle, and as needed such sidewalks and pedestrian walkways should provide sufficient lighting and signage to ensure public safety.		X		**Compatible Through Project Design Feature:** Trails, sidewalks and pedestrian crossings have been incorporated into the project design.
t. Human Scale. Encourage the creation of a human-scale ground floor environment that includes public open areas that separate pedestrian space from auto traffic or where mixed, it does so with special regard to pedestrian safety.			X	**Policy Not Applicable:** Due to the Project being light industrial, this requirement does not apply.

u. Recognition of Open Space. Recognize open space, including hillsides, arroyos, riparian areas, and other natural features as amenities that add community identity, beauty, recreational opportunities, and monetary value to adjacent developed areas.			X	**Policy Not Applicable.** Project has no opportunity to provide for open space and does not impact any natural features considered community amenities.
v. Fire Hazards. Manage wildland fire hazards in the design of development proposals located adjacent to natural open space.			X	**Policy Not Applicable.** According to County of Riverside GIS database, and the County General Plan Figures the Project site is not within a High Fire Severity Zone. Riverside County Department of Building and Safety and the RCFD will review and approve building plans and conduct building inspections.
HC 18.12 – Safe Affordable Housing and Displacement. Prioritize the development of safe and affordable housing in EJ Communities while at the same time minimizing the displacement of existing residents consistent with Housing Element, Goal 2, Action 2.1h and as may be amended by the 6th Cycle Housing Element. Affordable housing projects should include various housing types that respond to community priorities and input.			X	**Policy Not Applicable.** The Project Site is largely undeveloped, though a small portion contains two occupied temporary housing or mobile home units will be removed as a result of the Project implementation. No housing is associated with development of the light industrial project.
HC 19.2 – Outdoor Recreation. Develop of high-quality parks, green space, hiking trails, recreational facilities and natural environments in areas where such facilities are lacking.			X	**Policy Not Applicable.** Project does not require provision of parks or other recreational facilities.

HC 19.6 – Local Trails. Plan for a system of local trails that enhances recreational opportunities and connects with regional trails.		X		**Compatible Through Project Design Feature:** The Project includes a public trail to be located on the south side of Placentia between Tobacco and Harvill. The trail will consist of a decomposed granite path suitable for equestrian or pedestrian uses. The proposed trail is part of the Riverside County master plan and will connect to other trails located on Patterson and Harvill allowing for the eventual completion of the plan.
HC 19.7 – Incorporate Recreation Opportunities. Incorporate open space, community greenbelt separators, and recreational amenities into development areas in order to enhance recreational opportunities and community aesthetics to improve the quality of life.			X	**Policy Not Applicable.** The Project does not require provision of parks or other recreational facilities. The Project Proponent has nonetheless contributed to area organizations that promote community events and youth sports, and fight hunger/homelessness.

Public Facilities	Mitigation Measure or Condition of Approval	Project Design Feature	Policy Not Applicable	Notes (Not to exceed 250 words)
HC 20.1 – Public Facilities and Supporting Infrastructure. New development should provide for public services including but not limited to solar street lighting, shading structures at bus stops, other supporting infrastructure, and extension of trash and recyclables pickup routes.		X		**Compatible Through Project Design Feature:** Project has been designed to meet required extension of public facilities as well as street lighting. More specifically public improvements including streets, sidewalks, streetlights and power, water, and sewer will be constructed on Tobacco Road and Placentia Avenue.. Existing power will poles will be removed and utilities placed underground. Existing area flooding conditions will be eliminated through the installation of a 2,700 foot storm drain system.

HC 20.2 – Development and Internal Pedestrian Circulation. New development should promote convenient internal pedestrian circulation among land uses (existing and proposed) within each neighborhood and connecting with existing adjacent developed areas and as applicable consistent with the Southern California Association of Governments Regional Transportation Plan/Sustainable Communities Strategy, and amendments thereto.			X	**Policy Not Applicable.** The project is industrial and does not require internal pedestrian circulation.
HC 20.4 - New development and conservation land uses should not infringe upon existing essential public facilities and public utility corridors, which include county regional landfills, fee-owned rights-of-way, and permanent easements, whose true land use is that of public facilities.		X		**Compatible Through Project Design Feature:** No County or any other public facilities or utilities existing, or planned are impacted by the Project.

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May 19, 2025

Krista Mason
Project Planner
Riverside County Planning Department
4080 Lemon Street, 12th Floor
Riverside, CA 92501

Via Email to:
kmason@rivco.org

Subject: Comments on Thrifty Oil North Business Center MND (SCH NO. 2025050128)

Dear Ms. Mason,

Thank you for the opportunity to comment on the Mitigated Negative Declaration (MND) for the proposed Thrifty Oil North Business Center Project. Please accept and consider these comments on behalf of Golden State Environmental Justice Alliance. Also, Golden State Environmental Justice Alliance formally requests to be added to the public interest list regarding any subsequent environmental documents, public notices, public hearings, and notices of determination for this project. Send all communications to Golden State Environmental Justice Alliance P.O. Box 79222 Corona, CA 92877.

Project Information

The Project proposes the construction and operation of a 185,912 square foot (s.f.) non-refrigerated warehouse on 9.62-acres (gross) / 8.68-acres (net) of vacant land designated as APN 317-260-017 and 317-260-018 on the southeast corner of Placentia Avenue and Tobacco Road in the unincorporated Mead Valley area of Riverside County. The building includes 9,000 s.f. of office space (including office mezzanines) and 176,912 s.f. of warehouse space with 23 truck/trailer docking doors. The Project also includes dedication of approximately 0.943 acres for public right of way improvements to be built along Placentia Avenue and Tobacco Road as a part of the Proposed Project, as well as off-site utility improvements.

The Project requires the following discretionary approvals to proceed:

1. General Plan Amendment No. 230008 (GPA 230008): Request to change the land use from Rural Community-Very Low Density Residential (RC-VLDR) to Community Development-Business Park (BP).
2. Change of Zone No. 230030 (CZ2300030): Request to change the zone from Rural Residential one-acre minimum lot size (R-R-1) to Industrial Park (I-P)

3. Plot Plan No. 230048 (PPT230048): Request to construct a 185,912 SF non-refrigerated warehouse with 9 bays, two grade level doors and 23 dock high doors on 8.72(net) acres and approximately 0.943 acres for street dedication and drainage improvements.

The MND does not include a floor plan, detailed site plan, or a grading plan. The basic components of a Planning Application include a detailed site plan, floor plan, conceptual grading plan, written narrative, and elevations. Providing the complete grading plan and earthwork quantity notes is vital as the MND states that, "The grading quantities are not anticipated to balance on site and a net import of 62,025 cubic yards of fill material is anticipated." The MND does not provide a grading plan for verification of the quantity of import/export material associated with project construction and/or site preparation. Verification of the import/export materials is vital as it directly informs the quantity of necessary truck hauling trips due to soil import/export during the grading phase of construction. An EIR must be prepared to include all project application items in their wholly accurate and detailed form for public review.

Additionally, the MND states that, "the floor area ratio (FAR) would be 0.44 based on the gross lot size." However, the General Plan[1] requires FAR to be calculated utilizing net lot size. The MND is erroneous and misleading to the public and decision makers. An EIR must be prepared to provide the project's FAR utilizing the net lot size in order to provide an adequate and accurate informational document.

Project Piecemealing

The MND does not accurately or adequately describe the project, meaning "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment" (CEQA § 15378). The proposed project is a piecemealed portion of a larger overall project to be developed within a larger Thrifty Oil industrial center in the County.

The MND misleads the public and decision makers by circumventing adequate and accurate environmental analysis for the whole of the action - construction and operation of all Thrifty Oil buildings as a whole. At minimum, piecemealed projects include a proposal to construct a 194,479 square foot industrial building known as Plot Plan No. 2200047 (PPT220047) and Variance #230002[2] on the property adjacent to the south of the project site (APNs 317-260-016 and 317-260-015). The MND states that the parcels adjacent to the south of the project site (AAPNs 317-260-016 and 317-260-015) are also owned by the project applicant. The MND for Plot Plan No.

[1] Riverside County General Plan Appendix A: Glossary
https://planning.rctlma.org/sites/g/files/aldnop416/files/migrated/Portals-14-genplan-general-plan-2016-appendices-Appendix-A-1-120815.pdf
[2] https://ceqanet.opr.ca.gov/2024020843

2200047 (PPT220047) and Variance #230002 utilized this information in its justification to conclude the project would meet the findings for a requested Variance. The Master Site Plan submitted to the Riverside County Airport Land Use Commissions (RC ALUC)[3] depicts construction of both new industrial buildings on all of the parcels. Appendix J-2 depicts a required shared driveway between the south side of the project site and the parcel adjacent to the south that will accommodate truck/trailer traffic for both projects. Notably, Appendix J: Traffic states that, "With the developer being the owner of both the Project and the adjacent site to the south on Tobacco Road (PPT220047) at the request of County staff, a proposed "joint use" driveway has been provided per the recommendation of County staff. Driveway 2 would require a reciprocal access agreement being approved between the two properties and put in place prior to the start of construction of the southerly building." This is required due to the southerly building's driveway on Water Avenue (Driveway 1) inability to accommodate "the ingress and egress of heavy trucks and requires a 65-foot curb radius on the northeast corner[4]." The dependency of the southerly building on the proposed project site for vehicular access further illustrates the piecemealing between the two projects.

A project EIR must be prepared that accurately represents the whole of the action without piecemealing the project into separate, smaller development projects to present unduly low environmental impacts. CEQA Section 15161 describes project EIRs as examining "the environmental impacts of a specific development project. This type of EIR should focus primarily on the changes in the environment that would result from the development project. The EIR shall examine all phases of the project including planning, construction, and operation." The specific development project is the construction and operation of all Thrifty Oil buildings.

Additionally, CEQA Section 15146 requires that the degree of specificity in an EIR "will correspond to the degree of specificity involved in the underlying activity which is described in the EIR. (a) An EIR on a construction project will necessarily be more detailed in the specific effects of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy." Because there are multiple proposed buildings as part of a single project, the project EIR must be more detailed in the specific effects of the project. A project EIR must be prepared which accurately represents the whole of the action without piecemealing the project into separate, smaller development projects or development areas to present unduly low environmental impacts.

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[3] Agenda Item 3.2 and Attachments https://rcaluc.org/sites/g/files/aldnop421/files/2025-03/Merge_for_Website_01-09-25.pdf

[4] Appendix J-2: Traffic for PPT220047 https://files.ceqanet.opr.ca.gov/296231-1/attachment/_jdWcF13nGqwKwUrhyTXSt68pwAqbVT6csCxZ7BfUAJXmAGoxignKSLzOk3BaiuyQ8rXGesL8JDjXP2d0

Air Quality, Energy, and Greenhouse Gas Emissions

The MND excludes from its analysis the project's required General Plan Amendment and Zone Change applications to allow development of industrial uses on the project site. The site was not anticipated to be developed with industrial development and is therefore not currently accounted for in regional and local plans adopted for purposes of avoiding or mitigating environmental effects, including the AQMP, RTP/SCS, General Plan, and/or the County's Climate Action Plan. An EIR must be prepared to include this information for analysis and include a finding of significance.

The MND does not include meaningful analysis of relevant environmental justice issues in reviewing potential impacts, including cumulative impacts from the proposed project. Providing this information and using it for analysis is vital as the project site is located in a SB 535 Disadvantaged Community and is designated as an Environmental Justice Area by the General Plan. This is in conflict with CEQA Guidelines Section 15131 (c), which requires that "Economic, social, and particularly housing factors shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment identified in the EIR. If information on these factors is not contained in the EIR, the information must be added to the record in some other manner to allow the agency to consider the factors in reaching a decision on the project." This is especially significant as the surrounding community is highly burdened by pollution. According to CalEnviroScreen 4.0[5], CalEPA's screening tool that ranks each census tract in the state for pollution and socioeconomic vulnerability, the proposed project's census tract (6065042904) ranks worse than 81% of the rest of the state overall. The surrounding community, including residences immediately adjacent to the west, bears the impact of multiple sources of pollution and is more polluted than average in many pollution indicators measured by CalEnviroScreen. For example, the project census tract ranks in the 95th percentile for ozone burden, 55th percentile for PM 2.5 burden, and 90th percentile for traffic impact burden. All of these environmental factors are attributed to heavy truck/trailer activity and traffic in the area. Ozone can cause lung irritation, inflammation, and worsening of existing chronic health conditions, even at low levels of exposure[6].

The census tract also ranks in the 71st percentile for hazardous waste[7] impacts. Hazardous waste generators and facilities contribute to the contamination of air, water and soil near waste generators and facilities can harm the environment as well as people.

[5] CalEnviroScreen 4.0 https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40
[6] OEHHA Ozone https://oehha.ca.gov/calenviroscreen/indicator/air-quality-ozone
[7] OEHHA Hazardous Waste Generators and Facilities
https://oehha.ca.gov/calenviroscreen/indicator/hazardous-waste-generators-and-facilities

Further, the census tract is a diverse community including 80% Hispanic, 8% African-American, and 3% Asian-American residents, whom are especially vulnerable to the impacts of pollution. The community has a high rate of low educational attainment, meaning 93% of the census tract over age 25 has not attained a high school diploma, which is an indication that they may lack health insurance or access to medical care. The community has a high rate of poverty, meaning 84% of the households in the census tract have a total income before taxes that is less than the poverty level. Income can affect health when people cannot afford healthy living and working conditions, nutritious food and necessary medical care[8]. Poor communities are often located in areas with high levels of pollution[9]. Poverty can cause stress that weakens the immune system and causes people to become ill from pollution[10]. Living in poverty is also an indication that residents may lack health insurance or access to medical care. Medical care is vital for this census tract as it ranks in the 91st percentile for incidence of cardiovascular disease and 66th percentile for incidence of asthma. The community also has a high rate of linguistic isolation, meaning 84% of the census tract speaks little to no English and faces further challenges and inequities due to this.

Additionally, the project's census tract (6065042904) and the census tracts adjacent to the project site (6065042010, 6065042620, and 6065042901) are identified as SB 535 Disadvantaged Communities[11]. This indicates that cumulative impacts of development and environmental impacts in the County and surrounding area are disproportionately impacting these communities. The negative environmental, health, and quality of life impacts of industrial development in the County have become distinctly inequitable. This information is not discussed or presented for analysis in the MND. The severity of environmental impacts particularly on these Disadvantaged Communities must be included for analysis as part of an EIR in order to comply with CEQA Guidelines Section 15131 (c).

The State of California lists three approved compliance modeling softwares[12] for non-residential buildings: CBECC-Com, EnergyPro, and IES VE. CalEEMod is not listed as an approved software. The CalEEMod modeling does not comply with the 2022 Building Energy Efficiency Standards and under-reports the project's significant Energy impacts and fuel consumption to the public and decision makers. Since the MND did not accurately or adequately model the energy impacts in compliance with Title 24, it cannot conclude the project will generate less than significant impacts and a finding of significance must be made. An EIR with modeling using one

[8] OEHHA Poverty https://oehha.ca.gov/calenviroscreen/indicator/poverty
[9] Ibid.
[10] Ibid.
[11] OEHHA SB 535 Census Tracts https://oehha.ca.gov/calenviroscreen/sb535
[12] California Energy Commission 2022 Energy Code Compliance Software https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-1

of the approved software types must be prepared and circulated for public review in order to adequately analyze the project's significant environmental impacts. This is vital as the MND utilizes CalEEMod as a source in its methodology and analysis, which is clearly not an approved software.

It must also be noted that the County of Riverside is not listed as a jurisdiction with local energy standards approved by the CA Energy Commission[13]. According to the CA Energy Commission, "Local jurisdictions wishing to enforce locally adopted energy standards that exceed the current energy code are required to apply to the California Energy Commission (CEC). Local jurisdictions must demonstrate their local ordinance, or reach code, saves more energy than current statewide energy standards and is cost effective." Therefore, compliance with the County's CAP does not comply with CA Energy Commission standards or AB 32/SB 32. The MND is misleading to the public and decision makers by stating compliance with these standards when the local jurisdiction standards have not been approved by the CA Energy Commission. The MND broadly states that, "Compliance with the aforementioned mandatory measures would ensure that future development projects would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant," when it has not provided any meaningful evidence to demonstrate that the pure existence of these regulations equates to the project's compliance with the regulations and that the project does not result in a significant and unavoidable impact.

Hazards and Hazardous Materials

The project reviewed and deemed consistent with the March Air Reserve Airport Land Use Compatibility Plan (ALUCP) at the January 9, 2025 Riverside County Airport Land Use Commission (RC ALUC) meeting[14] proposed a maximum of 42 feet building height. Figure 5B: Building Elevations and Profiles within the MND depicts that the maximum building height is 47.5 feet. This varies significantly from the project reviewed by the RC ALUC (and March Air Reserve Base and United States Air Force during the RC ALUC review process).

Further, the RC ALUC did not review or act on the requested General Plan Amendment to change the land use from Rural Community-Very Low Density Residential (RC-VLDR) to Community Development- Business Park (BP). The California Airport Land Use Planning Handbook[15] states

[13] Local Ordinances Exceeding the 2022 Energy Code, California Energy Commission https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-2
[14] Agenda Item 3.2 and Attachments https://rcaluc.org/sites/g/files/aldnop421/files/2025-03/Merge_for_Website_01-09-25.pdf
[15] California Airport Land Use Planning Handbook https://dot.ca.gov/-/media/dot-media/programs/aeronautics/documents/californiaairportlanduseplanninghandbook-a11y.pdf

that Airport Land Use Commission review is required "Prior to the amendment of a general plan or specific plan, or the adoption of a zoning ordinance or building regulation within the ALUCP planning boundary, the ALUC shall review the plan, ordinance, or regulation for consistency with the ALUCP (PUC Section 21676(b))." Given that the proposed project includes a General Plan Amendment (GPA) and Zone Change to proceed, RC ALUC review and approval of the requested GPA is required. Since the RC ALUC has not reviewed the project as proposed in the MND in its entirety, an EIR must be prepared to include a finding of significance as there is no meaningful evidence presented to support a less than significant finding.

Land Use/Planning

The project faces significant inconsistencies with statutory requirements of the Housing Crisis Act (HCA) of 2019/Senate Bill (SB) 330[16]/SB 8[17]. The HCA/SB 330/SB 8 require replacement housing sites when land designated for housing development is changed to a non-housing use to ensure no net loss of housing capacity. Government Code Section 66300(b)(1)(A) requires that agencies shall not "change the general plan land use designation, specific plan land use designation, or zoning to a less intensive use below what was allowed under the land use designation and zoning ordinances in effect at the time of the proposed change." Under Government Code Section 66300(b)(1)(A), a "less intensive use" includes, but is not limited to, reductions to height, density, or floor area ratio, new or increased open space or lot size requirements, or new or increased setback requirements, minimum frontage requirements, or maximum lot coverage limitations, or any other action that would individually or cumulatively reduce residential development capacity. Pursuant to SB 330, replacement capacity for any displaced residential units must be provided **concurrently** at the **time of project approval**.

Government Code Section 66300 (h)(i)(1) states that, "this section does not prohibit an affected county or an affected city, including the local electorate acting through the initiative process, from changing a land use designation or zoning ordinance to a less intensive use, or reducing the intensity of land use, if the city or county concurrently changes the development standards, policies, and conditions applicable to other parcels within the jurisdiction to ensure that there is no net loss in residential capacity." The project requires a General Plan Amendment to change the land use designation of 9.62 acres of land from CD-VLDR to BP and a Change of Zone to change the Zoning from R-R-1 to IP. The General Plan land use designation of CD-VLDR permits the development up to 1 dwelling units per acre. This indicates that the 9.62 acre project site has an existing residential capacity of 9 dwelling units.

[16] Housing Crisis Act of 2019/SB 330
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB330
[17] SB 8 https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB8

Due to the required land use changes to implement the proposed project, the site would not be used for the development of 9 dwelling units and replacement sites to accommodate the site's residential capacity must be proposed and analyzed as part of the project. All of the above factors are in conflict with SB 8 that expanded the provisions of the HCA to include Government Code Section 66300 (h)(i)(1) requiring concurrent approval of replacement sites to ensure no net loss in residential capacity, and Section 66300 (h)(2)(A) defining "concurrently" to mean the action is approved at the same meeting of the legislative body. The MND does not act in conformance with these laws and has not identified replacement sites for housing. Approval of the MND and the proposed project will result in a net loss of housing capacity. Specifically, the existing General Plan and Zoning designations permit the development of up to 9 dwelling units and that lost residential capacity is a significant environmental impact in violation of the HCA/SB 330/SB 8. An EIR must be prepared to include a finding of significance due to this inconsistency.

Additionally, deferring the environmental analysis of construction and operation of the replacement sites to a later date is project piecemealing in violation of CEQA. The MND does not accurately or adequately describe the project, meaning "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment" (CEQA § 15378). The whole of the action must statutorily and legally include identification of replacement sites to accommodate at least 9 replacement dwelling units and environmental impacts associated with the construction of the replacement dwelling units.

The MND does not meaningfully discuss the project's required General Plan Amendment and Zone Change applications to allow development of industrial uses on the project site. The site was not anticipated to be developed with industrial development and is therefore not currently accounted for in regional and local plans adopted for purposes of avoiding or mitigating environmental effects, including the AQMP, RTP/SCS, General Plan, and/or the County's Climate Action Plan. An EIR must be prepared to include this information for analysis and include a finding of significance. A finding of significance must also be included because the project is not accounted for in the General Plan growth projections.

The MND also does not provide any information regarding the buildout conditions of the County's General Plan and/or MVAP. Due to the required land use changes from VLDR to BP to accommodate the proposed project, it was not analyzed with the growth projections and buildout scenario included in the General Plan and/or MVAP. The General Plan and MVAP did not analyze the proposed project site as an industrial land use and therefore it is not included in any growth projections or emissions estimates. An EIR must be revised to include a finding of significance.

The MND provides a broad, erroneous, and misleading consistency analysis with the General Plan/Mead Valley Area Plan that excludes specific analysis with the goals and policies of each plan. The MND is inadequate as an informational document and an EIR must be prepared with an accurate consistency analysis with all General Plan and Mead Valley Area Plan goals/policies, including the following:

1. AQ 3.3 Encourage large employers and commercial/industrial complexes to create Transportation Management Associations.
2. AQ 9.2 Attain performance goals and/or VMT reductions which are consistent with SCAG's Growth Management Plan.
3. AQ 17.9 Encourage the installation and use of electric service units at truck stops and distribution centers for heating and cooling truck cabs, and particularly for powering refrigeration trucks in lieu of idling of engines for power.
4. AQ 17.10 Promote and encourage the use of natural gas and electric vehicles in distribution centers.
5. C2.1: LOS C shall apply to all development proposals in any area of the Riverside County not located within the boundaries of an Area Plan, as well those areas located within the following Area Plans: Mead Valley

6. HC 1.1 Foster the overall health and well-being of Riverside County residents, particularly the most vulnerable populations.

7. HC 14.2 When feasible, avoid locating new sources of air pollution near homes and other sensitive receptors.
8. HC 16.15 Assure that site plan design protects people and land, particularly sensitive land uses such as housing and schools, from air pollution and other externalities associated with industrial and warehouse development through the use of barriers, distance, or similar solutions or measures from emission sources when possible.
9. HC 16.18 Promote new development that emphasizes job creation and reduction in vehicle miles traveled in job-poor areas and does not otherwise contribute to onsite emissions in order to improve air quality.
10. HC 16.24 Ensure compatibility between industrial development and agricultural uses and adjacent land uses. To achieve compatibility, industrial development and agricultural uses will be required to include criteria addressing noise, land, traffic and greenhouse gas emissions to avoid or minimize creating adverse conditions for adjacent communities.
11. LU 10.2: Require a fiscal impact analysis for specific plans and major development proposals so as not to have a negative fiscal impact on the County of Riverside.

Additionally, the MND does not discuss the project's compliance with the Business Park land use designation within the General Plan. The Land Use Element[18] of the General Plan states the following regarding the Business Park designation:

"The Business Park land use designation allows for employee-intensive uses, including research and development, technology centers, corporate and support office uses, clean industry and supporting retail uses. Building intensity ranges from 0.25 to 0.6 FAR."

Notably, the Business Park land use designation does not permit warehouses. Warehouses are permitted in the Light Industrial land use designation. The MND excludes for analysis that the project is not permitted by the Business Park land use designation and does not comply with the proposed General Plan land use designation. A finding of significance must be made as part of an EIR.

Population and Housing

The MND does not provide a quantified analysis of the construction workforce generated by the proposed project. An EIR must be prepared that includes an analysis of the construction jobs generated by the project. Additionally, an EIR must also provide demographic and geographic information on the location of qualified workers (for both project operations and construction) to fill these positions in order to provide an accurate environmental analysis.

The MND provides conflicting information regarding the operational jobs created by the proposed project. The Introduction of the MND states that, "Employment estimates calculated using the employment density factors identified in the Southern California Association of Governments (SCAG) Employment Density Study (October 2001), identifies a rate of one employee per 1,195 SF. of building area for industrial warehouse uses results in 156 employees (185,912 SF ÷ 1,195 SF/employee = 156 employees)." The MND states here that, "For the purposes of analysis, the Project is estimated to result in 100 employees." Utilizing 100 employees for purposes of analysis within the MND despite multiple reputable data sources calculating significantly higher operational employees serves to skew impacts downwards in an attempt to present less than significant impacts in the MND. The methodology that must be used to calculate the project's operational employees is the County's General Plan employee generation factor[19] of 1 employee for every 600 square feet of building area for the Business Park land use designation. Utilizing this data source for the methodology results in the following calculation:

185,912 sf / 600 = 310 employees

[18] https://planning.rctlma.org/sites/g/files/aldnop416/files/2024-05/Portals-14-Ch03-Land-Use-2019-28-21_0.pdf
[19] https://planning.rctlma.org/sites/g/files/aldnop416/files/migrated/Portals-14-genplan-general-Plan-2017-appendices-Appendix-E-2-April-2017.pdf

Utilizing the County's General Plan employee generation for the Business Park land use designation, the proposed project will generate 310 employees. The MND utilizes uncertain and misleading language which does not provide any meaningful analysis of the project's population and employment generation. The MND continues by stating that, "The estimated number of employees that would be required for the Project has been estimated for purposes of this analysis at 100 based on actual data from similar facilities operating throughout southern California." The MND does not provide any supporting evidence, counts, or studies of the alleged "actual data from similar facilities operating throughout southern California," that result in the assumption of 100 employees at the proposed project. In order to comply with CEQA's requirements for meaningful disclosure, an EIR must be prepared to provide an accurate estimate of employees generated by all uses of the proposed project by utilizing the County's General Plan employee generation for the Business Park land use designation. It must also provide demographic and geographic information on the location of qualified workers to fill these positions. A construction worker employment analysis must also be included to adequately and accurately analyze all potentially significant environmental impacts.

The MND finds that impacts to population and housing will not be significant without providing any quantified analysis or meaningful evidence to support this conclusion. The MND utilizes additional uncertain and misleading statements in its analysis of the project's workforce in stating that, "The employees that would fill these roles are *anticipated* to reside within *commuting distance* and would not generate needs for any housing." The "commuting distance" of the project site is undefined and relying on the entire labor force within an undefined distance, notably the greater SCAG region, to fill the project's construction and operational jobs will increase rates of VMT and emissions during all phases of construction and operations and an EIR must be prepared to account for longer worker trip distances.

The MND concludes that there is an "average 3.9% unemployment rate in March 2023 for the four communities near the Project Site (Moreno Valley, Nuevo, Perris, and Riverside)," but does not provide any meaningful evidence that the unemployed population is interested in or qualified for work in the industrial sector. The MND also states that, "should the Project require employees to relocate to the area for work, there is sufficient vacant housing available within the *region*, including the Mead Valley area, City of Perris, City of Hemet, City of Moreno Valley and City of Menifee." Relying upon employees within the region will also increase project generated VMT and requires preparation of a revised VMT analysis as part of an EIR. The MND does not provide any meaningful information or analysis to support the conclusion that the project will not necessitate the construction of housing affordable affordable to households earning 80% or less of the County's median income to accommodate Project-related employees.

The MND does not provide any information on the wages generated by the construction or operational jobs in the proposed project. MIT's Living Wage Research Center reports that the living wage for two adults with two children is $32.20 per hour in Riverside County[20]. This is an annual salary of approximately $66,976. The U.S. Bureau of Labor Statistics reports that the mean annual wage in the Riverside - San Bernardino - Ontario metropolitan area for warehouse workers[21] is:

Laborers and Freight, Stock, and Material Movers, Hand: $44,720
Packers and Packagers, Hand: $42,150
Stockers and Order Fillers: $43,530

HCD's area median income (AMI) for a family of four people in Riverside County is $103,900[22]. 80% of the Riverside County AMI is $83,120 and the MND has not demonstrated that the project's construction and/or operational employees will earn an annual salary of at least $83,120. The MND has not provided evidence that the project will pay wages above 80% of the Riverside County AMI and thus not generate a need for affordable housing. An EIR must be prepared which includes this information for analysis in order to provide an adequate and accurate environmental analysis.

Additionally, the MND has not demonstrated that the available housing in the listed jurisdictions is affordable to the project's employees and/or households earning 80 percent or less of the County's median income. An EIR must be prepared with this analysis and discussion in order to provide an accurate and adequate environmental analysis.

SCAG's Connect SoCal Demographics and Growth Forecast[23] notes that the County will add 27,100 jobs from 2019 to 2035. Based on the County's General Plan employee factor for the Business Park land use designation calculation of 310 jobs, the project represents 1.1% of the County's job growth over 16 years, and is actually a 1.1% increase above this projection as the project requires a GPA and ZC to change the land use from a non-employment generating land use to an employment-generating land use. A single project accounting for this amount of the projected employment growth over 16 years represents a significant amount of growth. The MND has not provided a cumulative analysis discussion of projects approved since 2019 (SCAG),

[20] MIT Living Wage Research Center https://livingwage.mit.edu/counties/06065
[21] U.S. Bureau of Labor Statistics May 2022 Riverside-San Bernardino-Ontario Metropolitan Area Occupational Employment and Wage Estimates https://www.bls.gov/oes/current/oes_40140.htm#53-0000
[22] HCD 2025 Income Limits https://www.hcd.ca.gov/sites/default/files/docs/grants-and-funding/income-limits-2025.pdf
[23] SCAG Connect SoCal Demographics and Growth Forecast https://www.scag.ca.gov/sites/default/files/2024-05/23-2987-tr-demographics-growth-forecast-final-040424.pdf

General Plan adoption, and/or projects "in the pipeline" to determine if the project will exceed SCAG's employment growth forecast or the County's General Plan/Mead Valley Area Plan growth projections.

For example, recent industrial projects within the County including the greater Knox Business Park (piecemealed projects known as Muranaka Warehouse, Diamond Warehouse, Knox Buildings A/C/D/E, and Knox Phase 5) will generate 3,492 employees, Stoneridge Commerce Center[24] (10,256 employees), Seaton and Cajalco Industrial Project[25] (340 employees), Harvill and Rider Industrial[26] (325 employees), Harvill at Water Industrial (423 employees), and Rider Patterson Business Center (574 employees), and piecemealed project Plot Plan No. 2200047 (PPT220047) and Variance #230002[27] (325 employees) combined with the proposed project's 310 employees, these select industrial projects alone will generate 16,045 employees. This represents 59.2% of the County's job growth over 16 years accounted for by only a few recent industrial projects. This total increases exponentially when commercial development activity and other industrial projects are added to the calculation. An EIR must be prepared to include this information for analysis and also include a cumulative development analysis of projects approved since General Plan adoption, 2019 (SCAG), General Plan adoption, and projects "in the pipeline" to determine the County's progress towards General Plan/Mead Valley Area Plan growth estimates and SCAG's growth forecasts.

Additionally, Table 2: Statistical Summary of Mead Valley Area Plan (MVAP) states that the Business Park land use designation will generate 8,563 employees, and the MND has not provided this information for discussion. Since the project requires a GPA/ZC to permit employment-generating uses on the site, the project will exceed the growth planned for by the MVAP and its associated environmental analysis. An EIR must be prepared to include this information for analysis and a finding of significance due to this inconsistency.

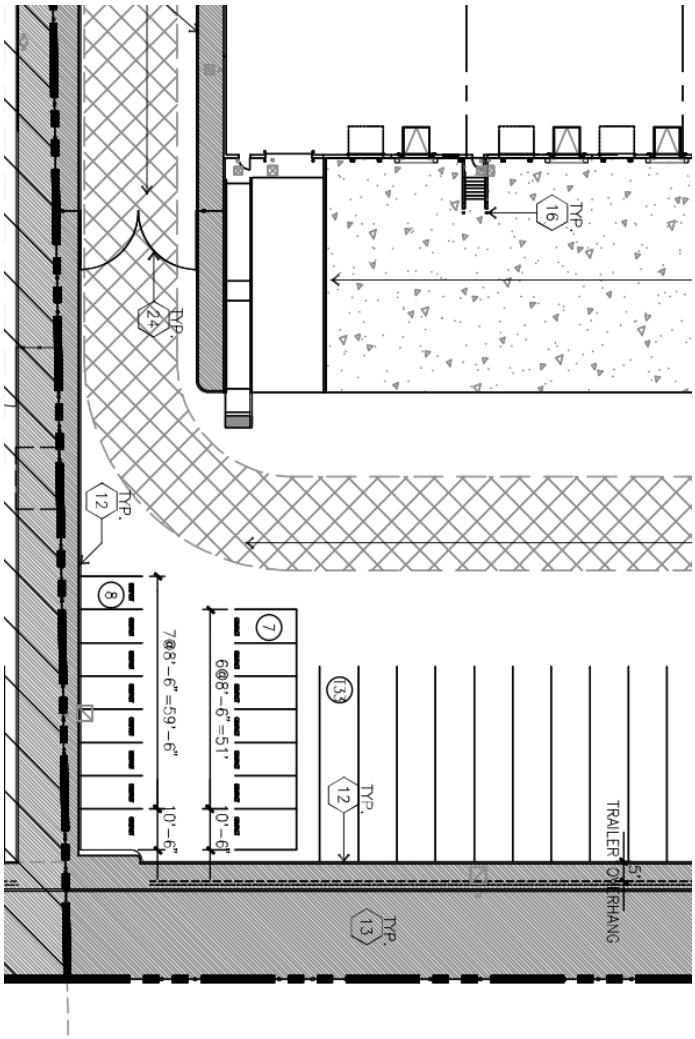
Transportation

The VMT analysis has underestimated the significance of the proposed project's VMT generation. The MND has not analyzed the project's truck/trailer/delivery van activity. An EIR must be prepared to include all truck/trailer/delivery van activity for quantified VMT analysis. The operational nature of industrial/warehouse uses involves high rates of truck/trailer/delivery van VMT due to traveling from large import hubs to regional distribution centers to smaller industrial parks and then to their final delivery destinations. Once employees arrive at the warehouses for work, they will conduct their jobs by driving truck/trailer/delivery vans across the region as part

[24] https://ceqanet.opr.ca.gov/2020040325/4
[25] https://ceqanet.opr.ca.gov/2022060441
[26] https://ceqanet.opr.ca.gov/2021080035
[27] https://ceqanet.opr.ca.gov/2024020843

of the daily operations as a warehouse, which will drastically increase project-generated VMT. The project's truck/trailer and delivery van activity is unable to utilize public transit or active transportation and it is misleading to the public and decision makers to exclude this activity from VMT analysis. An EIR must be prepared to reflect a quantified VMT analysis that includes all truck/trailer and delivery van activity.

The MND has not adequately analyzed the project's potential to substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses; or the project's potential to result in inadequate emergency access. There are also no exhibits adequately depicting the onsite turning radius available for trucks maneuvering throughout the site. Notably, the truck/trailer parking stalls are adjacent to the truck court on the east side of the building. Passenger car parking spaces are also located adjacent to the truck/trailer parking stalls within the truck court and are configured in a manner that is not conducive to vehicular maneuvering.



These parking stalls may be in use at any time and further restrict truck/trailer movement, particularly while trucks/trailers attempt to maneuver into a loading dock door. The MND has not analyzed these scenarios for potential conflicts during onsite maneuvering between passenger cars and trucks/trailers. An EIR must be prepared to include a finding of significance due to these significant and unavoidable impacts.

Additionally, the MND has not provided any analysis of the available horizontal and vertical sight distance at the intersection of the project driveways and adjacent streets. Sight distance is the continuous length of street ahead visible to the driver. At unsignalized intersections, corner sight distance must provide a substantially clear line of sight between the driver of the vehicle waiting on the minor road (driveway) and the driver of an approaching vehicle. An EIR must be prepared with this analysis based on the American Association of State Highway and Transportation Officials (AASHTO) Stopping Sight Distance requirements.

Mandatory Findings of Significance

The MND does not adequately discuss or and analyze the commitment of resources is not consistent with regional and local growth forecasts. As noted throughout this comment letter, the project represents a significant amount of growth in the County, and no analysis in context of the General Plan/MVAP buildout analysis scenario has been provided. Due to the required land use changes from MDR to LI to accommodate the proposed project, it was not analyzed with the growth projections and buildout scenario included in the General Plan and/or MVAP. The General Plan and MVAP did not analyze the proposed project site as an industrial land use and therefore it is not included in any growth projections or emissions estimates. An EIR must be prepared to include a finding of significance.

The MND has not adequately analyzed that the project will have impacts which are individually limited, but cumulatively considerable; "Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, other current projects and probable future projects. As noted above, the project is a piecemealed portion of the greater Thrifty Oil development within the County, including at least one known 194,479 square foot industrial building located adjacent to the south of the proposed project site. These two projects will cumulatively generate 380,391 square feet of industrial building area. The MND states here that, “There are no other projects planned for the Project vicinity that would be considered cumulatively considerable.” However, the MND is only analyzing and representing a portion of the overall impacts generated by the overall two building pproject. Bifurcating the environmental analysis of the two buildings serves to skew impacts downwards to achieve less than significant findings, which obfuscates the true incremental effects of the project viewed in connection with the effects of other projects. An EIR must be prepared to include a finding of significance.

The MND also states here that, "The environmental analysis conducted in this Initial Study determined that the Proposed Project is consistent with the County's General Plan land use and zoning projections. The land use has been considered with overall County growth." These statements do not consider the required change in Land Use designation from VLDR to BP in order to accommodate industrial development/employment generating development on the project site. Due to the required land use changes from VLDR to BP to accommodate the proposed project, it was not analyzed with the growth projections and buildout scenario included in the General Plan and/or MVAP. The General Plan and MVAP did not analyze the proposed project site as an industrial land use/employment generating land use and therefore it is not included in any growth projections or emissions estimates. An EIR must be prepared to include a finding of significance.

An EIR must be prepared to include a cumulative analysis discussion here to demonstrate the impact of the proposed project in a cumulative setting. The MND does not discuss or analyze the project will not comply with the General Plan's Land Use Buildout Scenario/MVAP Buildout Scenario due to the required changes in Land Use designation. Also, SCAG's Connect SoCal Demographics and Growth Forecast[28] notes that the County will add 27,100 jobs from 2019 to 2035. Based on the County's General Plan employee factor for the Business Park land use designation calculation of 310 jobs, the project represents 1.1% of the County's job growth over 16 years, and is actually a 1.1% increase above this projection as the project requires a GPA and ZC to change the land use from a non-employment generating land use to an employment-generating land use. A single project accounting for this amount of the projected employment growth over 16 years represents a significant amount of growth.

An EIR must also provide a cumulative analysis discussion of projects approved since 2019 (SCAG), General Plan adoption, and projects "in the pipeline" to determine the County's progress towards SCAG's employment or population growth forecast for the County and/or the County's General Plan growth forecasts. For example, recent industrial projects within the County including the greater Knox Business Park (piecemealed projects known as Muranaka Warehouse, Diamond Warehouse, Knox Buildings A/C/D/E, and Knox Phase 5) will generate 3,492 employees, Stoneridge Commerce Center[29] (10,256 employees), Seaton and Cajalco Industrial Project[30] (340 employees), Harvill and Rider Industrial[31] (325 employees), Harvill at Water Industrial (423 employees), and Rider Patterson Business Center (574 employees), and piecemealed project Plot

[28] SCAG Connect SoCal Demographics and Growth Forecast https://www.scag.ca.gov/sites/default/files/2024-05/23-2987-tr-demographics-growth-forecast-final-040424.pdf
[29] https://ceqanet.opr.ca.gov/2020040325/4
[30] https://ceqanet.opr.ca.gov/2022060441
[31] https://ceqanet.opr.ca.gov/2021080035

Plan No. 2200047 (PPT220047) and Variance #230002[32] (325 employees) combined with the proposed project's 310 employees, these select industrial projects alone will generate 16,045 employees. This represents 59.2% of the County's job growth over 16 years accounted for by only a few recent industrial projects. This total increases exponentially when commercial development activity and other industrial projects are added to the calculation. An EIR must be prepared to include this information for analysis and also include a cumulative development analysis of projects approved since General Plan adoption, 2019 (SCAG), General Plan adoption, and projects "in the pipeline" to determine the County's progress towards General Plan/Mead Valley Area Plan growth estimates and SCAG's growth forecasts.

Additionally, Table 2: Statistical Summary of Mead Valley Area Plan (MVAP) states that the Business Park land use designation will generate 8,563 employees, and the MND has not provided this information for discussion. Since the project requires a GPA/ZC to permit employment-generating uses on the site, the project will exceed the growth planned for by the MVAP and its associated environmental analysis. An EIR must be prepared to include this information for analysis and a finding of significance due to this inconsistency.

Conclusion

For the foregoing reasons, GSEJA believes the MND is flawed and an EIR must be prepared for the proposed project and circulated for public review. Golden State Environmental Justice Alliance requests to be added to the public interest list regarding any subsequent environmental documents, public notices, public hearings, and notices of determination for this project. Send all communications to Golden State Environmental Justice Alliance P.O. Box 79222 Corona, CA 92877.

Sincerely,



Vashon Simien
Blum, Collins & Ho, LLP

Attachments:
1. SWAPE Technical Analysis

[32] https://ceqanet.opr.ca.gov/2024020843

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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May 15, 2025

Gary Ho
Blum, Collins & Ho LLP
707 Wilshire Blvd, Ste. 4880
Los Angeles, CA 90017

Subject: Comments on the Thrifty Oil North Business Center Project (SCH No. 2025050128)

Dear Mr. Ho:

We have reviewed the Initial Study/Mitigated Negative Declaration ("IS/MND") for the Thrifty Oil North Business Center ("Project") located in the County of Riverside ("County"). The Project proposes the construction of a 185,912-square-foot ("SF") concrete tilt-up, non-refrigerated warehouse on a 9.62-acre site.

Our review concludes that the IS/MND fails to sufficiently evaluate the air quality and greenhouse gas ("GHG") impacts. As a result, emissions associated with construction and operation of the proposed Project may be underestimated or unaddressed. An Environmental Impact Report ("EIR") should be prepared to reassess and, if necessary, mitigate the potential air quality and GHG impacts that the Project may have.

Air Quality

Input Parameters Used to Estimate Project Emissions

The IS/MND relies on the California Emissions Estimator Model ("CalEEMod") Version 2022.1 to estimate the Project's air quality emissions (Appendix G-1, p. 21). The construction-related CalEEMod output files, titled "Placentia Avenue (Construction) Detailed Report," are inconsistent with information disclosed in the IS/MND.

The IS/MND's air quality analysis may therefore underestimate criteria air pollutant emissions from Project construction. In our opinion, an EIR should be prepared to include an updated air quality analysis that sufficiently evaluates the impact that Project construction would have on local and regional air quality.

Changes To Individual Construction Phase Lengths

The "Placentia Avenue (Construction) Detailed Report" model includes changes to the default construction schedule (p. 32). As a result of these changes, the model includes the following construction schedule (p. 21):

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	1/7/2025	2/4/2025	5.00	20.0	—
Site Preparation	Site Preparation	2/5/2025	2/19/2025	5.00	10.0	—
Grading	Grading	2/20/2025	3/20/2025	5.00	20.0	—
Building Construction	Building Construction	3/21/2025	2/6/2026	5.00	230	—
Paving	Paving	1/10/2026	2/6/2026	5.00	20.0	—
Architectural Coating	Architectural Coating	1/10/2026	2/6/2026	5.00	20.0	—

The justification provided for these changes is:

> "Construction anticipated to start in Q1 2025 and end Q1 2026" (p. 32).

The IS/MND provides a total construction duration of 12 months. While the Project construction period is justified, the IS/MND and associated appendices do not mention the individual construction phase lengths. As the CalEEMod User's Guide requires any changes to model defaults be justified, we find that the changes to the individual construction phase length lack adequate support.[1] As each construction phase is associated with different emissions activities, altering an individual construction phase length can impact emissions estimates for specific criteria air pollutants.[2]

The "Placentia Avenue (Construction) Detailed Report" model combines the building construction and architectural coating phases; however, this approach lacks adequate justification. The IS/MND indicates that warehouse construction is expected to occur over an 8- to 9-month period and that all components of the building, including painting, will be completed within this timeframe (p. 4). However, neither the IS/MND nor its appendices provide a clear rationale to support the assumption that the architectural coating phase will occur concurrently with the building construction phase. Until these values are estimated and verified, it is our opinion that the model should have included proportionately altered individual phase lengths to match the proposed construction duration of 12 months.[3]

Changes to Architectural Coating Emission Factors

The "Placentia Avenue (Construction) Detailed Report" model includes changes to the default architectural coating emission factors. The justification provided for these changes is:

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[1] "CalEEMod User's Guide." CAPCOA, May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 1, 14.

[2] "CalEEMod User's Guide." CAPCOA, May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 32.

[3] See SWAPE's CalEEMod in Appendix A for the proportionately altered construction schedule, p. 22.

"SCAQMD Rule 1113" (p. 32)

The IS/MND does not mention South Coast Air Quality Management Districts' ("SCAQMD") Rule 1113, which limits Volatile Organic Compound ("VOC") content in architectural coatings. Rule 1113's Table of Standards specifies VOC limits ranging from 50 g/L to 730 g/L across 57 coating categories.[4] As the IS/MND does not mention Rule 1113 or specify a particular coating type with a defined VOC limit, we are unable to ensure the reliability of the revised emission factors. It is in our opinion that an EIR be prepared and that compliance with Rule 1113 be incorporated into a formal mitigation measure.

Changes to Off-Road Construction Equipment Engine Emission Standards

The "Placentia Avenue (Construction) Detailed Report" model includes changes to the off-road construction equipment input parameters (p. 22). As previously mentioned, the CalEEMod User's Guide requires any changes to model defaults be justified.[5]

The modeling assumes the use of Tier 4 Interim emission standards for construction equipment engines—a key assumption that is not discussed in the IS/MND. The lack of discussion in the IS/MND regarding the inclusion of Tier 4 Interim standards limits the ability of reviewers to fully assess the accuracy and enforceability of the air quality analysis.

We recommend an EIR be prepared so that the use of Tier 4 Interim emission standards for construction equipment engines is formally identified as a mitigation measure within a Mitigation Monitoring and Reporting Program, consistent with guidance from the Association of Environmental Professionals ("AEP") and CEQA requirements for enforceable mitigation.[6]

Updated Analysis Indicates a Potentially Significant Air Quality Impact

We created an updated model to provide an estimate of the Project's construction emissions based upon the Project-specific information provided by the IS/MND and the "Placentia Avenue (Construction) Detailed Report" (See Appendix A). In this model, we proportionately adjusted the individual construction phase lengths to align with the proposed 12-month construction schedule and omitted the unsupported modifications to architectural coating emission factors and the unsubstantiated application of Tier 4 emission standards.[7]

Our updated analysis estimates that the Project's construction-related VOC emissions would exceed the applicable SCAQMD thresholds of 75 pounds per day ("lbs/day") (see table below). [8]

---

[4] "Small Entity Compliance Guide." United States EPA, July 1999, *available at*: https://www.epa.gov/sites/default/files/2015-06/documents/compliance-vocsarchcoatings.pdf.

[5] "CalEEMod User's Guide." CAPCOA, May 2021, *available at:* https://www.aqmd.gov/caleemod/user's-guide, p. 1, 14.

[6] "CEQA Portal Topic Paper Mitigation Measures." AEP, February 2020, *available at:* https://web.archive.org/web/20240716185055/https://ceqaportal.org/tp/CEQA%20Mitigation%202020.pdf, p. 6.

[7] See Appendix A for proportionately altered construction schedule.

[8] "South Coast AQMD Air Quality Significance Thresholds." SCAQMD, April 2019, *available at*: http://www.aqmd.gov/docs/default-source/ceqa/handbook/south-coast-aqmd-air-quality-significance-thresholds.pdf?sfvrsn=25.

SWAPE Criteria Air Pollutant Emissions	
Construction	**VOC** (lbs/day)
IS/MND	47
SWAPE	104
SCAQMD Threshold	**75**
Exceeds?	**Yes**

According to our updated analysis, the Project's construction-related VOC emissions are estimated at approximately 104 lbs/day, exceeding SCAQMD's significance threshold.[9] This finding indicates a potentially significant air quality impact that the IS/MND did not identify or address. It is our opinion that an EIR should be conducted to reevaluate the Project's potential air quality impacts on the environment.

Greenhouse Gas

Greenhouse Gas Impacts Evaluation

The IS/MND estimates that the Project would generate net annual GHG emissions of 1,827.49 metric tons of carbon dioxide equivalents per year ("MT CO_2e/year") (Table 5, p. 51). Based on this estimate, the IS/MND concludes that the Project would not exceed the Riverside County Climate Action Plan ("CAP") threshold of 3,000 MT CO_2e/year and the emissions would be less than significant (p. 51).

In our opinion, the IS/MND's analysis and the subsequent less-than-significant impact conclusion lack adequate support because the analysis relies upon an outdated threshold.

Reliance on an Outdated Quantitative GHG Threshold

The 3,000 MT CO2e/year threshold used in the Project's GHG analysis is consistent with the CAP threshold. The County's GHG reduction targets are consistent with the guidance established when the Global Warming Solutions Act of 2006, commonly called "AB 32," was the main regulating law for GHG reductions in California, which targeted a return to 1990 GHG levels by 2020.[10] Since then, the regulatory landscape has evolved considerably.

The Association of Environmental Professionals guidance states that California Environmental Quality Act ("CEQA") thresholds need to be updated over time to reflect the state's evolving GHG reduction goals.[11] Relying on a 2020-based threshold in 2025 fails to meet this recommendation. SCAQMD has since developed a service population ("SP")-based efficiency target of 3.0 metric tons of carbon dioxide equivalents per service population per year ("MT CO_2e/SP/year"), derived by applying a 40 percent

[9] See Appendix A for CalEEMod output files.
[10] "Health & Safety Code 38550." California State Legislature, January 2006, *available at:* https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=38550.
[11] "Beyond Newhall and 2020: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California." Association of Environmental Professionals, October 2016, *available at:* https://califaep.org/docs/AEP-2016_Final_White_Paper.pdf, p. 39.

reduction to the original 2020 efficiency target.[12] This updated threshold reflects California's 2035 goals and is more appropriate.

The Project's reliance on the 3,000 MT CO_2e/year CAP threshold may be unjustified and does not support a less-than-significant impact finding under CEQA. Instead, the 3.0 MT CO_2e/SP/year efficiency threshold could have been applied, as it aligns with current climate policy and SCAQMD guidance.

Potential Significant GHG Impact

We compared the Project's estimated GHG emissions to the SCAQMD 2035 efficiency target of 3.0 MT CO_2e/SP/year to assess the Project's potential contribution to global climate change. According to California Air Pollution Control Officers Association's *CEQA & Climate Change* report, a service population is defined as "the sum of the number of residents and the number of jobs supported by the project."[13] The IS/MND states that the Project is expected to support about 100 full time jobs, and does not mention any future residents (p. 4).

When dividing the Project's net annual GHG emissions, as estimated by the IS/MND, by a SP of 100 people, the Project is estimated to emit approximately 18.3 MT CO_2e/SP/year (see table below).[14]

Project Greenhouse Gas Emissions	
Annual Emissions (MT CO_2e/year)	1827.49
Service Population	100
Service Population Efficiency (MT CO_2e/SP/year)	18.3
SCAQMD 2035 Target	**3.0**
Exceeds?	***Yes***

The Project's service population efficiency value exceeds the SCAQMD 2035 efficiency target of 3.0 MT CO_2e/SP/year, indicating a potentially significant impact not previously identified or addressed by the IS/MND. An EIR should be prepared that includes an updated GHG analysis and, if necessary, additional mitigation measures to reduce the Project's GHG emissions to less-than-significant levels.

Mitigation

Feasible Mitigation Measures Available to Reduce Emissions

CEQA Guidelines Section 15096(g)(2) recommends that a responsible agency implement all feasible mitigation measures to reduce potential impacts to the greatest extent possible. As demonstrated in the

[12] "Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #15." SCAQMD, September 2010, *available at:* http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf, p. 2.
[13] "CEQA & Climate Change." California Air Pollution Control Officers Association, January 2008, *available at:* https://www.ourair.org/wp-content/uploads/CAPCOA-CEQA-and-Climate-Change.pdf, p. 71-72.
[14] *Calculated:* (3,795.9 MT CO_2e/year) / (70 service population) = (54.2 MT CO_2e/SP/year).

sections above, the Project may result in potentially significant air quality and GHG impacts that should be mitigated further.

To reduce the VOC emissions associated with Project construction, we recommend the IS/MND consider incorporating the following mitigation measure from the California Department of Justice ("CA DOJ"):[15]

- Require the use of super compliant, low-VOC paints less than 10 g/L during the architectural coating construction phase and during Project maintenance.

To reduce construction VOC emissions, the California Department of Public Health ("CDPH") recommends the use of:[16]

- Natural materials such as solid wood products (e.g., hard wood flooring and wood paneling), natural stone (e.g., granite and marble), ceramic tile, and glass.
- Composite wood products that comply with the California Air Resources Board's Airborne Toxic Control Measure for formaldehyde.
- Flooring materials that are certified as low emitting under the CDPH Standard Method v1.2 or equivalent.
- Sealer on the surface of spray-on fireproofing to reduce adsorption of VOCs using a low-VOC sealer, if necessary.

To reduce the GHG emissions associated with the Project, we recommend several mitigation measures.

The CA DOJ recommends: [17]

- Installing solar photovoltaic systems on the project site of a specified electrical generation capacity that is equal to or greater than the building's projected energy needs, including all electrical chargers.
- Requiring all stand-by emergency generators to be powered by a non-diesel fuel.
- Requiring facility operators to train managers and employees on efficient scheduling and load management to eliminate unnecessary queuing and idling of trucks.

[15] "Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act." State of California Department of Justice, September 2022, *available at*: https://oag.ca.gov/system/files/media/warehouse-best-practices.pdf, p. 8 – 10.
[16] "Reducing occupant exposure to volatile organic compounds (VOCs) from indoor sources: Guidelines for building occupants." California Department of Public Health, July 1996, *available at*: https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/CDPH%20Document%20Library/reducing_occupant_exposure_vocs_guidelines_ADA.pdf.
[17] "Warehouse Projects: Best Practices and Mitigation Measures to Comply with the California Environmental Quality Act." State of California Department of Justice, September 2022, *available at*: https://oag.ca.gov/system/files/media/warehouse-best-practices.pdf, p. 8 – 10.

SCAQMD staff recommends: [18]

- Utilizing only Energy Star heating, cooling, and lighting devices and appliances.

The measures provided above offer feasible ways to incorporate lower-emitting design features into the proposed Project to reduce VOC and GHG emissions released during construction. We recommend that an EIR be prepared that includes all feasible mitigation measures, as well as an updated GHG analysis to ensure that any necessary mitigation measures are implemented to minimize emissions to the maximum extent feasible.

Disclaimer

SWAPE has received limited documentation regarding this project. Additional information may become available in the future; thus, we retain the right to revise or amend this report when additional information becomes available. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable environmental consultants practicing in this or similar localities at the time of service. No other warranty, expressed or implied, is made as to the scope of work, work methodologies and protocols, site conditions, analytical testing results, and findings presented. This report reflects efforts which were limited to information that was reasonably accessible at the time of the work, and may contain informational gaps, inconsistencies, or otherwise be incomplete due to the unavailability or uncertainty of information obtained or provided by third parties.

Sincerely,



Matt Hagemann, P.G., C.Hg.



Paul E. Rosenfeld, Ph.D.

[18] "Draft Environmental Impact Report (EIR) for the Proposed CADO Menifee Industrial Warehouse Project (Proposed Project)." SCAQMD, April 2024, *available at*: https://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2024/april-2024/RVC240313-05.pdf?sfvrsn=8, p. 3.

Appendix A: CalEEMod Placentia Avenue (Construction) Detailed Report

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Appendix A

Placentia Avenue (Construction) Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Placentia Avenue (Construction)
Construction Start Date	1/7/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	9.00
Location	33.822225978364784, -117.2493932920862
County	Riverside-South Coast
City	Unincorporated
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5579
EDFZ	11
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Unrefrigerated Warehouse-No Rail	186	1000sqft	5.57	185,785	56,997	—	—	—
Parking Lot	195	Space	1.07	0.00	0.00	—	—	—

Other Asphalt Surfaces	2.08	Acre	2.08	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.80	1.49	11.6	19.3	0.03	0.44	1.22	1.66	0.41	0.29	0.70	—	4,215	4,215	0.16	0.17	6.08	4,275
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	104	104	51.8	33.5	0.21	1.93	9.55	11.2	1.78	2.97	4.53	—	30,173	30,173	0.63	4.26	1.50	31,458
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.87	4.87	11.1	13.5	0.03	0.42	1.29	1.72	0.39	0.38	0.77	—	4,094	4,094	0.13	0.30	2.69	4,189
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.89	0.89	2.03	2.46	0.01	0.08	0.24	0.31	0.07	0.07	0.14	—	678	678	0.02	0.05	0.44	693

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.80	1.49	11.6	19.3	0.03	0.44	1.22	1.66	0.41	0.29	0.70	—	4,215	4,215	0.16	0.17	6.08	4,275
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.91	4.13	51.8	33.5	0.21	1.93	9.55	11.2	1.78	2.97	4.53	—	30,173	30,173	0.63	4.26	1.50	31,458
2026	104	104	7.18	10.8	0.01	0.32	0.20	0.52	0.29	0.05	0.34	—	1,701	1,701	0.06	0.02	0.02	1,708
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.45	1.20	11.1	13.5	0.03	0.42	1.29	1.72	0.39	0.38	0.77	—	4,094	4,094	0.13	0.30	2.69	4,189
2026	4.87	4.87	0.24	0.39	< 0.005	0.01	0.01	0.02	0.01	< 0.005	0.01	—	62.2	62.2	< 0.005	< 0.005	0.02	62.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.26	0.22	2.03	2.46	0.01	0.08	0.24	0.31	0.07	0.07	0.14	—	678	678	0.02	0.05	0.44	693
2026	0.89	0.89	0.04	0.07	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	< 0.005	10.4

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.11	0.11	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	1.03	0.93	< 0.005	0.04	—	0.04	0.04	—	0.04	—	160	160	0.01	< 0.005	—	160
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.19	0.17	< 0.005	0.01	—	0.01	0.01	—	0.01	—	26.4	26.4	< 0.005	< 0.005	—	26.5
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	194	194	0.01	0.01	0.02	197
Vendor	< 0.005	< 0.005	0.11	0.03	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	91.8	91.8	< 0.005	0.01	0.01	96.1

Hauling	0.01	< 0.005	0.16	0.04	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	134	134	< 0.005	0.02	0.01	140
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.17	9.17	< 0.005	< 0.005	0.02	9.30
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.28	4.28	< 0.005	< 0.005	0.01	4.48
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.23	6.23	< 0.005	< 0.005	0.01	6.53
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.52	1.52	< 0.005	< 0.005	< 0.005	1.54
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.71	0.71	< 0.005	< 0.005	< 0.005	0.74
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.03	1.03	< 0.005	< 0.005	< 0.005	1.08

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.82	4.05	37.5	32.4	0.05	1.93	—	1.93	1.78	—	1.78	—	5,528	5,528	0.22	0.04	—	5,547
Dust From Material Movement	—	—	—	—	—	—	5.66	5.66	—	2.69	2.69	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Roa Equipment	0.12	0.10	0.92	0.80	< 0.005	0.05	—	0.05	0.04	—	0.04	—	136	136	0.01	< 0.005	—	137
Dust From Material Movement	—	—	—	—	—	—	0.14	0.14	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Roa d Equipm ent	0.02	0.02	0.17	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	22.6	22.6	< 0.005	< 0.005	—	22.6
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.08	1.02	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	227	227	0.01	0.01	0.02	230
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	61.2	61.2	< 0.005	0.01	< 0.005	64.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.66	5.66	< 0.005	< 0.005	0.01	5.74
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.51	1.51	< 0.005	< 0.005	< 0.005	1.58
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.94	0.94	< 0.005	< 0.005	< 0.005	0.95
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.25	0.25	< 0.005	< 0.005	< 0.005	0.26
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.73	2.30	20.6	19.6	0.03	1.15	—	1.15	1.05	—	1.05	—	3,134	3,134	0.13	0.03	—	3,145
Dust From Material Movement	—	—	—	—	—	—	2.31	2.31	—	0.94	0.94	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	0.11	0.96	0.91	< 0.005	0.05	—	0.05	0.05	—	0.05	—	146	146	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	—	0.11	0.11	—	0.04	0.04	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.18	0.17	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.2	24.2	< 0.005	< 0.005	—	24.2
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	194	194	0.01	0.01	0.02	197
Vendor	< 0.005	< 0.005	0.11	0.03	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	91.8	91.8	< 0.005	0.01	0.01	96.1
Hauling	1.09	0.40	31.0	7.36	0.18	0.51	7.02	7.54	0.51	1.97	2.48	—	26,753	26,753	0.50	4.21	1.48	28,021
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.17	9.17	< 0.005	< 0.005	0.02	9.30
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.28	4.28	< 0.005	< 0.005	0.01	4.48
Hauling	0.05	0.02	1.46	0.34	0.01	0.02	0.33	0.35	0.02	0.09	0.12	—	1,246	1,246	0.02	0.20	1.14	1,306
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.52	1.52	< 0.005	< 0.005	< 0.005	1.54
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.71	0.71	< 0.005	< 0.005	< 0.005	0.74
Hauling	0.01	< 0.005	0.27	0.06	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	206	206	< 0.005	0.03	0.19	216

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.76	0.64	5.89	7.36	0.01	0.24	—	0.24	0.22	—	0.22	—	1,353	1,353	0.05	0.01	—	1,358
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.12	1.08	1.34	< 0.005	0.04	—	0.04	0.04	—	0.04	—	224	224	0.01	< 0.005	—	225

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.42	0.35	0.34	6.03	0.00	0.00	1.02	1.02	0.00	0.24	0.24	—	1,100	1,100	0.05	0.04	4.04	1,116
Vendor	0.03	0.02	0.79	0.24	0.01	0.01	0.20	0.21	0.01	0.06	0.07	—	717	717	0.02	0.11	2.04	752
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.37	0.33	0.38	4.55	0.00	0.00	1.02	1.02	0.00	0.24	0.24	—	1,011	1,011	0.05	0.04	0.10	1,024
Vendor	0.03	0.01	0.82	0.25	0.01	0.01	0.20	0.21	0.01	0.06	0.07	—	718	718	0.02	0.11	0.05	751
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.18	0.23	2.72	0.00	0.00	0.57	0.57	0.00	0.13	0.13	—	578	578	0.03	0.02	0.98	586
Vendor	0.02	0.01	0.46	0.14	< 0.005	0.01	0.11	0.12	0.01	0.03	0.04	—	405	405	0.01	0.06	0.50	424
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.04	0.50	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	95.7	95.7	< 0.005	< 0.005	0.16	97.0
Vendor	< 0.005	< 0.005	0.08	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	67.1	67.1	< 0.005	0.01	0.08	70.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	0.49	0.49	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.13	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01	—	26.6	26.6	< 0.005	< 0.005	—	26.7
Paving	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.41	4.41	< 0.005	< 0.005	—	4.42
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	194	194	0.01	0.01	0.02	197
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.47	3.47	< 0.005	< 0.005	0.01	3.52
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.57	0.57	< 0.005	< 0.005	< 0.005	0.58
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	7.12	9.94	0.01	0.32	—	0.32	0.29	—	0.29	—	1,511	1,511	0.06	0.01	—	1,516
Paving	0.49	0.49	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.20	0.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	41.4	41.4	< 0.005	< 0.005	—	41.5
Paving	0.01	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.85	6.85	< 0.005	< 0.005	—	6.88
Paving	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.82	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	190	190	< 0.005	0.01	0.02	193
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.28	5.28	< 0.005	< 0.005	0.01	5.35
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.87	0.87	< 0.005	< 0.005	< 0.005	0.89
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	104	104	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.22	6.22	< 0.005	< 0.005	—	6.24
Architectural Coatings	4.82	4.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.03	1.03	< 0.005	< 0.005	—	1.03
Architectural Coatings	0.88	0.88	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.85	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	198	198	< 0.005	0.01	0.02	200
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.33	9.33	< 0.005	< 0.005	0.01	9.46
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.55	1.55	< 0.005	< 0.005	< 0.005	1.57
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	1/7/2025	1/29/2025	5.00	17.0	—
Site Preparation	Site Preparation	1/30/2025	2/11/2025	5.00	9.00	—
Grading	Grading	2/12/2025	3/6/2025	5.00	17.0	—
Building Construction	Building Construction	3/7/2025	12/19/2025	5.00	206	—
Paving	Paving	12/23/2025	1/14/2026	5.00	17.0	—
Architectural Coating	Architectural Coating	1/15/2026	2/6/2026	5.00	17.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40

Site Preparation	Crawler Tractors	Diesel	Average	4.00	8.00	87.0	0.43
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Crawler Tractors	Diesel	Average	3.00	8.00	87.0	0.43
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	3.00	10.2	HHDT,MHDT
Demolition	Hauling	1.94	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	2.00	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT

Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	3.00	10.2	HHDT,MHDT
Grading	Hauling	388	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	78.0	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	23.5	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	15.6	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	278,678	92,893	8,233

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	2,810	—
Site Preparation	—	—	35.0	0.00	—
Grading	62,025	—	50.0	0.00	—
Paving	0.00	0.00	0.00	0.00	3.15

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Unrefrigerated Warehouse-No Rail	0.00	0%
Parking Lot	1.07	100%
Other Asphalt Surfaces	2.08	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O

2025	0.00	532	0.03	< 0.005
2026	0.00	532	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	29.1	annual days of extreme heat
Extreme Precipitation	1.95	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth

Wildfire	6.36	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A

Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	95.3
AQ-PM	55.1
AQ-DPM	13.9
Drinking Water	10.2
Lead Risk Housing	54.6
Pesticides	52.5
Toxic Releases	43.8
Traffic	90.2
Effect Indicators	—
CleanUp Sites	60.4

Groundwater	14.3
Haz Waste Facilities/Generators	70.9
Impaired Water Bodies	0.00
Solid Waste	0.00
Sensitive Population	—
Asthma	66.5
Cardio-vascular	91.0
Low Birth Weights	49.3
Socioeconomic Factor Indicators	—
Education	93.2
Housing	80.1
Linguistic	84.3
Poverty	84.1
Unemployment	93.1

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	8.712947517
Employed	6.274862056
Median HI	6.826639292
Education	—
Bachelor's or higher	1.860644168
High school enrollment	100
Preschool enrollment	13.02450917
Transportation	—
Auto Access	65.16104196

Active commuting	54.20248941
Social	—
2-parent households	54.04850507
Voting	3.259335301
Neighborhood	—
Alcohol availability	90.15783395
Park access	8.558963172
Retail density	9.829334018
Supermarket access	10.3554472
Tree canopy	2.104452714
Housing	—
Homeownership	46.43911202
Housing habitability	15.55241884
Low-inc homeowner severe housing cost burden	28.37161555
Low-inc renter severe housing cost burden	2.322597203
Uncrowded housing	11.35634544
Health Outcomes	—
Insured adults	4.79917875
Arthritis	24.0
Asthma ER Admissions	34.2
High Blood Pressure	19.3
Cancer (excluding skin)	68.9
Asthma	7.7
Coronary Heart Disease	13.8
Chronic Obstructive Pulmonary Disease	7.1
Diagnosed Diabetes	14.5
Life Expectancy at Birth	12.9
Cognitively Disabled	46.5

Physically Disabled	37.2
Heart Attack ER Admissions	6.2
Mental Health Not Good	6.0
Chronic Kidney Disease	7.4
Obesity	3.9
Pedestrian Injuries	94.4
Physical Health Not Good	6.0
Stroke	13.0
Health Risk Behaviors	—
Binge Drinking	72.5
Current Smoker	4.8
No Leisure Time for Physical Activity	4.7
Climate Change Exposures	—
Wildfire Risk	32.2
SLR Inundation Area	0.0
Children	22.0
Elderly	91.2
English Speaking	24.7
Foreign-born	59.6
Outdoor Workers	4.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	93.6
Traffic Density	67.0
Traffic Access	23.0
Other Indices	—
Hardship	96.9
Other Decision Support	—
2016 Voting	13.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	81.0
Healthy Places Index Score for Project Location (b)	5.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Consistent with the "Placentia Avenue (Construction) Detailed Report" model.
Construction: Construction Phases	See our comments on "Changes to Individual Construction Phase Lengths" and "Changes to Architectural Coating Emission Factors."
Construction: Dust From Material Movement	Consistent with the "Placentia Avenue (Construction) Detailed Report" model.
Construction: Trips and VMT	Consistent with the "Placentia Avenue (Construction) Detailed Report" model.
Construction: Off-Road Equipment	Consistent with the "Placentia Avenue (Construction) Detailed Report" model. See our comment on "Changes to Off-Road Construction Equipment Engine Emission Standards."

Construction Schedule Calculations					
Phase	Default Phase Length	Construction Duration	%	Construction Duration	Revised Phase Length
Demolition	20	453	0.0442	395	17
Site Preparation	10	453	0.0221	395	9
Grading	20	453	0.0442	395	17
Construction	230	453	0.5077	395	201
Paving	20	453	0.0442	395	17
Architectural Coating	20	453	0.0442	395	17

	Total Default Construction Duration	Revised Construction Duration
Start Date	1/7/2025	1/7/2025
End Date	4/5/2026	2/6/2026
Total Days	453	395

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Matthew F. Hagemann, P.G., C.Hg.

- **Geologic and Hydrogeologic Characterization, Investigation and Remediation Strategies**
- **Industrial Stormwater Compliance**
- **CEQA Review**
- **Expert Testimony**

Professional Certifications:
California Professional Geologist, P.G.
California Certified Hydrogeologist, C.Hg.

Education:
M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.
B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Experience:
30 years of experience in environmental policy, contaminant assessment and remediation, stormwater compliance, and CEQA review. Spent nine years with the U.S. EPA in the Resource Conservation Recovery Act (RCRA) and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where I identified emerging threats to groundwater. While with EPA, I served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. Led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) and directed efforts to improve hydrogeologic characterization and water quality monitoring. For the past 15 years, as a founding partner with SWAPE, I developed extensive client relationships and has managed complex projects that include consultations as an expert witness and a regulatory specialist, and managing projects ranging from industrial stormwater compliance to CEQA review of impacts from hazardous waste, air quality and greenhouse gas emissions.

Positions held include:

Government:
Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);

Geologist, U.S. Forest Service (1986 – 1998).

Educational:
Geology Instructor, Golden West College, 2010 – 2104, 2017;
Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
Instructor, College of Marin, Department of Science (1990 – 1995).

Private Sector:
Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
Senior Environmental Analyst, Komex H2O Science, Inc. (2000 -- 2003);
Executive Director, Orange Coast Watch (2001 – 2004);
Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, responsibilities have included:

- Lead analyst and testifying expert, for both plaintiffs and defendants, in the review of over 300 environmental impact reports and negative declarations since 2003 under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions, and geologic hazards.
- Recommending additional mitigation measures to lead agencies at the local and county level to include additional characterization of health risks and implementation of protective measures to reduce exposure to hazards from toxins.
- Stormwater analysis, sampling and best management practice evaluation, for both government agencies and corporate clients, at more than 150 industrial facilities.
- Serving as expert witness for both plaintiffs and defendants in cases including contamination of groundwater, CERCLAcompliance in assessment and remediation, and industrial stormwater contamination.
- Technical assistance and litigation support for vapor intrusion concerns, for both government agencies and corporate clients.
- Lead analyst and testifying expert in the review of environmental issues in license applicationsfor large solar power plants before the California Energy Commission.
- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.

With Komex H2O Science Inc., duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony

against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.
- Lead author for a multi-volume remedial investigation report for an operating school in LosAngeles that met strict Sate of California regulatory requirements.
- Development of strategic approaches for cleanup of contaminated sites in consultation withclients and regulators.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities included:

- Leading efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiating a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identifying emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. Used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. Prepared geologic reports, conducted hearings, and responded to public comments from residents who were very concerned about the impact of designation.
- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Served as a hydrogeologist with the RCRA Hazardous Waste program. Duties included:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliancewith Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S.EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexicoand advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation- wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served as senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advising the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinkingwater supplies.
- Shaping EPA's national response to these threats by serving on workgroups and by contributingto guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improving the technical training of EPA's scientific and engineering staff.
- Earning an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Establishing national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities included:

- Mapping geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinating research with community stakeholders who were concerned with natural resource protection.
- Characterizing the geology of an aquifer that serves as the sole source of drinking water for thecity of Medford, Oregon.

As a consultant with Dames and Moore, led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large RCRA hazardous waste site in eastern Oregon.

Duties included the following:

- Supervising year-long effort for soil and groundwater sampling.
- Conducting aquifer tests.
- Investigating active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.
- Part time geology instructor at Golden West College in Huntington Beach, California from 2010 to 2014 and in 2017.

Summary of Testimony Experience Over Past Four Years

In Re New Jersey Department of Environmental Protection et al. vs. E.I. DuPont de Nemours and Company, in the United States District Court, District of New Jersey, Civil Action No. 1:19-cv-14766-RMB-JBC. Deposition in 2025. Representing Plaintiffs in matters regarding contamination of groundwater, wastewater, soil, and air with per- and poly-fluoroalkyl substances.

In Re Edmond Asher, et al., vs. RTX Corporation (f/k/a Raytheon Technologies Corporation, et al.) in the County of Huntington Superior Court, Indiana, Cause number 35D01-2006-CT-000338. Deposition in 2024. Representing Plaintiffs in matters regarding contamination of groundwater and soil vapor with trichlorethylene.

In Re Wright vs Consolidated Rail Corporation In the Circuit Court of Cook County, Illinois, Case No: 21L3966. Deposition in 2023, Representing Plaintiff in matters involving groundwater and drinking water contamination of perchloroethylene, trichlorethylene, 1,2-dichloroethane, and carbon tetrachloride.

In Re Behr Dayton Thermal Products LLC In the United States District Court for the Southern District of Ohio Western Division at Dayton, Case No: 08-cv-326. Deposition in 2022. Representing Plaintiff in matters regarding contamination of groundwater and indoor air with perchloroethylene and trichloethelene.

Orange County Water District vs. Sabic Innovative Plastics US, LLC, et al. In the Court of Appeal, Fourth District, Division 1, California, Case No: D070553. Deposition in 2020. Representing Plaintiff in matters involving compliance with The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Los Angeles Waterkeeper vs. AAA Plating and Inspection, Inc. In the United States District Court for the Central District of California, Case No: No. CV 18-5916 PA (GJSx). Deposition in 2019. Expert witness representing Plaintiff in matters involving contaminated stormwater runoff at an industrial facility in Compton, California.

Californians for Alternatives to Toxics vs. Schneider Dock and Intermodal Facility. In the United States District Court for the Northern District of California, Case No: 3:17-cv-05287-JST. Deposition in 2019. Expert witness representing Plaintiff in matters involving contaminated stormwater runoff at an industrial facility in Eureka, California.

Bells et al. vs. The 3M Company et al. In the United States District Court for the District of Colorado, Case No: 1:16-CV-02531-RBJ. Deposition in 2018. Expert witness representing Plaintiff on matters regarding the general hydrogeological conditions present in an area impacted by per- and poly-fluoroalkyl substances.

Ungar vs. Foundation for Affordable Housing. In the Superior Court, State of California, Los Angeles County, Case No. BC628890 Deposition in 2017. Expert witness representing defendant on matters involving alleged drinking water contamination.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S.EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making andPublic Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins atschools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBEReleases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells.
Presentation to the Ground Water and Environmental Law Conference, National GroundwaterAssociation.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Waterin

Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Waterin the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to atribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to ameeting of tribal representatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking WaterSupplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant.Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting ofthe National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to ameeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to AddressImpacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater(and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA andState Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublishedreport.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground StorageTanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Concerns Related to Snowmobile Usage.

Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal WatercraftUsage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George WrightSociety Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval AirStation, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui,October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Airand Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Basesin California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

Other Experience:
Selected as subject matter expert for the California Professional Geologist licensing examinations,2009-2011.

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Paul Rosenfeld, Ph.D.

Chemical Fate and Transport & Air Dispersion Modeling

Principal Environmental Chemist

Risk Assessment & Remediation Specialist

Education

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on volatile organic compound filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Focus on wastewater treatment.

Professional Experience

Dr. Rosenfeld has over 25 years of experience conducting environmental investigations and risk assessments for evaluating impacts to human health, property, and ecological receptors. His expertise focuses on the fate and transport of environmental contaminants, human health risk, exposure assessment, and ecological restoration. Dr. Rosenfeld has evaluated and modeled emissions from oil spills, landfills, boilers and incinerators, process stacks, storage tanks, confined animal feeding operations, industrial, military and agricultural sources, unconventional oil drilling operations, and locomotive and construction engines. His project experience ranges from monitoring and modeling of pollution sources to evaluating impacts of pollution on workers at industrial facilities and residents in surrounding communities. Dr. Rosenfeld has also successfully modeled exposure to contaminants distributed by water systems and via vapor intrusion.

Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing lead, heavy metals, mold, bacteria, particulate matter, petroleum hydrocarbons, chlorinated solvents, pesticides, radioactive waste, dioxins and furans, semi- and volatile organic compounds, PCBs, PAHs, creosote, perchlorate, asbestos, per- and poly-fluoroalkyl substances (PFOA/PFOS), unusual polymers, fuel oxygenates (MTBE), among other pollutants. Dr. Rosenfeld also has experience evaluating greenhouse gas emissions from various projects and is an expert on the assessment of odors from industrial and agricultural sites, as well as the evaluation of odor nuisance impacts and technologies for abatement of odorous emissions. As a principal scientist at SWAPE, Dr. Rosenfeld directs air dispersion modeling and exposure assessments. He has served as an expert witness and testified about pollution sources causing nuisance and/or personal injury at sites and has testified as an expert witness on numerous cases involving exposure to soil, water and air contaminants from industrial, railroad, agricultural, and military sources.

Professional History:

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Principal and Founding Partner
UCLA School of Public Health; 2007 to 2011; Lecturer (Assistant Researcher)
UCLA School of Public Health; 2003 to 2006; Adjunct Professor
UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator
UCLA Institute of the Environment, 2001-2002; Research Associate
Komex H_2O Science, 2001 to 2003; Senior Remediation Scientist
National Groundwater Association, 2002-2004; Lecturer
San Diego State University, 1999-2001; Adjunct Professor
Anteon Corp., San Diego, 2000-2001; Remediation Project Manager
Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager
Bechtel, San Diego, California, 1999 – 2000; Risk Assessor
King County, Seattle, 1996 – 1999; Scientist
James River Corp., Washington, 1995-96; Scientist
Big Creek Lumber, Davenport, California, 1995; Scientist
Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist
Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

Publications:

Rosenfeld, P.E., Spaeth, K.R., McCarthy, S.J. *et al.* Camp Lejeune Marine Cancer Risk Assessment for Exposure to Contaminated Drinking Water From 1955 to 1987. *Water Air Soil Pollut* **235**, 124 (2024). https://doi.org/10.1007/s11270-023-06863-y.

Rosenfeld P.E., Spaeth K.R., Remy L.L., Byers V., Muerth S.A., Hallman R,C., Summers-Evans J., Barker S. (2023) Perfluoroalkyl substances exposure in firefighters: Sources and implications, *Environmental Research*, Volume 220, https://doi.org/10.1016/j.envres.2022.115164.

Rosenfeld P.E. and Spaeth K.R., (2023) Authors' Response to Letter to the Editor from Bullock and Ramacciotti, *Water Air Soil Pollution* Volume 234, https://doi.org/10.1007/s11270-023-06165-3

Rosenfeld P. E., Spaeth K., Hallman R., Bressler R., Smith, G., (2022) Cancer Risk and Diesel Exhaust Exposure Among Railroad Workers. *Water Air Soil Pollution.* **233,** 171.

Remy, L.L., Clay T., Byers, V., **Rosenfeld P. E.** (2019) Hospital, Health, and Community Burden After Oil Refinery Fires, Richmond, California 2007 and 2012. *Environmental Health.* 18:48

Simons, R.A., Seo, Y. **Rosenfeld, P**., (2015) Modeling the Effect of Refinery Emission On Residential Property Value. *Journal of Real Estate Research*. 27(3):321-342

Chen, J. A, Zapata A. R., Sutherland A. J., Molmen, D.R., Chow, B. S., Wu, L. E., **Rosenfeld, P. E.,** Hesse, R. C., (2012) Sulfur Dioxide and Volatile Organic Compound Exposure To A Community In Texas City Texas Evaluated Using Aermod and Empirical Data. *American Journal of Environmental Science*, 8(6), 622-632.

Rosenfeld, P.E. & Feng, L. (2011). *The Risks of Hazardous Waste.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2010). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences*. 113–125.

Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.** (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health*. 73(6), 34-46.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries.* Amsterdam: Elsevier Publishing.

Cheremisinoff, N.P., & **Rosenfeld, P.E.,** (2009). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Petroleum Industry*. Amsterdam: Elsevier Publishing.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. *WIT Transactions on Ecology and the Environment, Air Pollution,* 123 (17), 319-327.

Cheremisinoff, N.P., **Rosenfeld, P.E.** Davletshin, A.R. (2008). ***Responsible Care***. Gulf Publishing. Texas.

Tam L. K., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. *Organohalogen Compounds*, 70, 002252-002255.

Tam L. K., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008). Methods For Collect Samples For Assessing Dioxins And Other Environmental Contaminants In Attic Dust: A Review. *Organohalogen Compounds*, 70, 000527-000530.

Hensley, A.R. A. Scott, J. J. J. Clark, **Rosenfeld, P.E.** (2007). Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility. *Environmental Research*. 105, 194-197.

Rosenfeld, P.E., J. J. J. Clark, A. R. Hensley, M. Suffet. (2007). The Use of an Odor Wheel Classification for Evaluation of Human Health Risk Criteria for Compost Facilities. *Water Science & Technology* 55(5), 345-357.

Rosenfeld, P. E., M. Suffet. (2007). The Anatomy of Odour Wheels for Odours of Drinking Water, Wastewater, Compost And The Urban Environment. *Water Science & Technology* 55(5), 335-344.

Sullivan, P. J. Clark, J.J.J., Agardy, F. J., **Rosenfeld, P.E.** (2007). *Toxic Legacy, Synthetic Toxins in the Food, Water, and Air in American Cities.* Boston Massachusetts: Elsevier Publishing

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash. *Water Science and Technology*. 49(9),171-178.

Rosenfeld P. E., J.J. Clark, I.H. (Mel) Suffet (2004). The Value of An Odor-Quality-Wheel Classification Scheme for The Urban Environment. *Water Environment Federation's Technical Exhibition and Conference (WEFTEC) 2004*. New Orleans, October 2-6, 2004.

Rosenfeld, P.E., and Suffet, I.H. (2004). Understanding Odorants Associated with Compost, Biomass Facilities, and the Land Application of Biosolids. *Water Science and Technology*. 49(9), 193-199.

Rosenfeld, P.E., and Suffet I.H. (2004). Control of Compost Odor Using High Carbon Wood Ash, *Water Science and Technology*, 49(9), 171-178.

Rosenfeld, P. E., Grey, M. A., Sellew, P. (2004). Measurement of Biosolids Odor and Odorant Emissions from Windrows, Static Pile and Biofilter. *Water Environment Research*. 76(4), 310-315.

Rosenfeld, P.E., Grey, M and Suffet, M. (2002). Compost Demonstration Project, Sacramento California Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Integrated Waste Management Board Public Affairs Office*, Publications Clearinghouse (MS–6), Sacramento, CA Publication #442-02-008.

Rosenfeld, P.E., and C.L. Henry. (2001). Characterization of odor emissions from three different biosolids. *Water Soil and Air Pollution*. 127(1-4), 173-191.

Rosenfeld, P.E., and Henry C. L., (2000). Wood ash control of odor emissions from biosolids application. *Journal of Environmental Quality.* 29, 1662-1668.

Rosenfeld, P.E., C.L. Henry and D. Bennett. (2001). Wastewater dewatering polymer affects on biosolids odor emissions and microbial activity. *Water Environment Research*. 73(4), 363-367.

Rosenfeld, P.E., and C.L. Henry. (2001). Activated Carbon and Wood Ash Sorption of Wastewater, Compost, and Biosolids Odorants. *Water Environment Research*, 73, 388-393.

Rosenfeld, P.E., and Henry C. L., (2001). High carbon wood ash effect on biosolids microbial activity and odor. *Water Environment Research*. 131(1-4), 247-262.

Chollack, T. and **P. Rosenfeld. (**1998). Compost Amendment Handbook for Landscaping. Prepared for and distributed by the City of Redmond, Washington State.

Rosenfeld, P. E. (1992). The Mount Liamuiga Crater Trail. *Heritage Magazine of St. Kitts*, 3(2).

Rosenfeld, P. E. (1993). High School Biogas Project to Prevent Deforestation on St. Kitts. *Biomass Users Network*, 7(1).

Rosenfeld, P. E. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. Doctoral Thesis. University of Washington College of Forest Resources.

Rosenfeld, P. E. (1994). Potential Utilization of Small Diameter Trees on Sierra County Public Land. Master's thesis reprinted by the Sierra County Economic Council. Sierra County, California.

Rosenfeld, P. E. (1991). How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelor's Thesis. University of California.

Presentations:

Rosenfeld, P.E., "The science for Perfluorinated Chemicals (PFAS): What makes remediation so hard?" Law Seminars International, (May 9-10, 2018) 800 Fifth Avenue, Suite 101 Seattle, WA.

Rosenfeld, P.E., Sutherland, A; Hesse, R.; Zapata, A. (October 3-6, 2013). Air dispersion modeling of volatile organic emissions from multiple natural gas wells in Decatur, TX. *44th Western Regional Meeting, American Chemical Society.* Lecture conducted from Santa Clara, CA.

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Atrazine: A Persistent Pesticide in Urban Drinking Water. *Urban Environmental Pollution*. Lecture conducted from Boston, MA.

Feng, L.; Gonzalez, J.; Sok, H.L.; Sutherland, A.J.; Waller, C.C.; Wisdom-Stack, T.; Sahai, R.K.; La, M.; Hesse, R.C.; **Rosenfeld, P.E.** (June 20-23, 2010). Bringing Environmental Justice to East St. Louis, Illinois. *Urban Environmental Pollution.* Lecture conducted from Boston, MA.

Rosenfeld, P.E. (April 19-23, 2009). Perfluoroctanoic Acid (PFOA) and Perfluoroactane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*, Lecture conducted from Tuscon, AZ.

Rosenfeld, P.E. (April 19-23, 2009). Cost to Filter Atrazine Contamination from Drinking Water in the United States" Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States. *2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting*. Lecture conducted from Tuscon, AZ.

Wu, C., Tam, L., Clark, J., **Rosenfeld, P**. (20-22 July (2009). Dioxin and furan blood lipid concentrations in populations living near four wood treatment facilities in the United States. Brebbia, C.A. and Popov, V., eds., *Air Pollution XVII: Proceedings of the Seventeenth International Conference on Modeling, Monitoring and Management of Air Pollution*. Lecture conducted from Tallinn, Estonia.

Rosenfeld, P. E. (October 15-18, 2007). Moss Point Community Exposure To Contaminants From A Releasing Facility. *The 23rd Annual International Conferences on Soils Sediment and Water.* Platform lecture conducted at University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant. *The 23rd Annual International Conferences on Soils Sediment and Water*. Platform lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld, P. E. (October 15-18, 2007). Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions. The *23rd Annual International Conferences on Soils Sediment and Water*. Lecture conducted from University of Massachusetts, Amherst MA.

Rosenfeld P. E. (March 2007). Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP). *The Association for Environmental Health and Sciences (AEHS) Annual Meeting*. Lecture conducted from San Diego, CA.

Rosenfeld P. E. (March 2007). Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama. *The AEHS Annual Meeting.* Lecture conducted from San Diego, CA.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (August 21 – 25, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*. Lecture conducted from Radisson SAS Scandinavia Hotel in Oslo Norway.

Hensley A.R., Scott, A., **Rosenfeld P.E.,** Clark, J.J.J. (November 4-8, 2006). Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility. *APHA 134 Annual Meeting & Exposition.* Lecture conducted from Boston Massachusetts.

Paul Rosenfeld Ph.D. (October 24-25, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. Mealey's C8/PFOA. *Science, Risk & Litigation Conference.* Lecture conducted from The Rittenhouse Hotel, Philadelphia, PA.

Paul Rosenfeld Ph.D. (September 19, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, *Toxicology and Remediation PEMA Emerging Contaminant Conference*. Lecture conducted from Hilton Hotel, Irvine California.

Paul Rosenfeld Ph.D. (September 19, 2005). Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP. *PEMA Emerging Contaminant Conference.* Lecture conducted from Hilton Hotel in Irvine, California.

Paul Rosenfeld Ph.D. (September 26-27, 2005). Fate, Transport and Persistence of PDBEs. *Mealey's Groundwater Conference.* Lecture conducted from Ritz Carlton Hotel, Marina Del Ray, California.

Paul Rosenfeld Ph.D. (June 7-8, 2005). Fate, Transport and Persistence of PFOA and Related Chemicals. *International Society of Environmental Forensics: Focus on Emerging Contaminants*. Lecture conducted from Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Fate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals. *2005 National Groundwater Association Ground Water and Environmental Law Conference*. Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld Ph.D. (July 21-22, 2005). Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation. *2005 National Groundwater Association Ground Water and Environmental Law Conference.* Lecture conducted from Wyndham Baltimore Inner Harbor, Baltimore Maryland.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. and Rob Hesse R.G. (May 5-6, 2004). Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. *National Groundwater Association. Environmental Law Conference*. Lecture conducted from Congress Plaza Hotel, Chicago Illinois.

Paul Rosenfeld, Ph.D. (March 2004). Perchlorate Toxicology. *Meeting of the American Groundwater Trust*. Lecture conducted from Phoenix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse (2004). Perchlorate Contamination of the Colorado River. *Meeting of tribal representatives*. Lecture conducted from Parker, AZ.

Paul Rosenfeld, Ph.D. (April 7, 2004). A National Damage Assessment Model for PCE and Dry Cleaners. *Drycleaner Symposium. California Ground Water Association*. Lecture conducted from Radison Hotel, Sacramento, California.

Rosenfeld, P. E., Grey, M., (June 2003) Two stage biofilter for biosolids composting odor control. *Seventh International In Situ And On Site Bioremediation Symposium Battelle Conference* Orlando, FL.

Paul Rosenfeld, Ph.D. and James Clark Ph.D. (February 20-21, 2003) Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. *National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants*. Lecture conducted from Hyatt Regency Phoenix Arizona.

Paul Rosenfeld, Ph.D. (February 6-7, 2003). Underground Storage Tank Litigation and Remediation. *California CUPA Forum*. Lecture conducted from Marriott Hotel, Anaheim California.

Paul Rosenfeld, Ph.D. (October 23, 2002) Underground Storage Tank Litigation and Remediation. *EPA Underground Storage Tank Roundtable*. Lecture conducted from Sacramento California.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Understanding Odor from Compost, *Wastewater and Industrial Processes. Sixth Annual Symposium on Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Suffet, M. (October 7- 10, 2002). Using High Carbon Wood Ash to Control Compost Odor. *Sixth Annual Symposium on Off Flavors in the Aquatic Environment. International Water Association*. Lecture conducted from Barcelona Spain.

Rosenfeld, P.E. and Grey, M. A. (September 22-24, 2002). Biocycle Composting for Coastal Sage Restoration. *Northwest Biosolids Management Association*. Lecture conducted from Vancouver Washington.

Rosenfeld, P.E. and Grey, M. A. (November 11-14, 2002). Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility. *Soil Science Society Annual Conferenc*e. Lecture conducted from Indianapolis, Maryland.

Rosenfeld. P.E. (September 16, 2000). Two stage biofilter for biosolids composting odor control. *Water Environment Federation.* Lecture conducted from Anaheim California.

Rosenfeld. P.E. (October 16, 2000). Wood ash and biofilter control of compost odor. *Biofest.* Lecture conducted from Ocean Shores, California.

Rosenfeld, P.E. (2000). Bioremediation Using Organic Soil Amendments. *California Resource Recovery Association*. Lecture conducted from Sacramento California.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation with High-Carbon Wood-Ash. *Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings*. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., and C.L. Henry. (1999). An evaluation of ash incorporation with biosolids for odor reduction. *Soil Science Society of America*. Lecture conducted from Salt Lake City Utah.

Rosenfeld, P.E., C.L. Henry, R. Harrison. (1998). Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Brown and Caldwell.* Lecture conducted from Seattle Washington.

Rosenfeld, P.E., C.L. Henry. (1998). Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. *Biofest.* Lecture conducted from Lake Chelan, Washington.

Rosenfeld, P.E, C.L. Henry, R. Harrison. (1998). Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation with High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Lecture conducted from Bellevue Washington.

Rosenfeld, P.E., C.L. Henry, R. B. Harrison, and R. Dills. (1997). Comparison of Odor Emissions from Three Different Biosolids Applied to Forest Soil. *Soil Science Society of America*. Lecture conducted from Anaheim California.

Teaching Experience:

UCLA Department of Environmental Health (Summer 2003 through 20010) Taught Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. The course focused on the health effects of environmental contaminants.

National Ground Water Association, Successful Remediation Technologies. Custom Course in Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

National Ground Water Association; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

California Integrated Waste Management Board, April and May 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

UCLA Department of Environmental Engineering, February 5, 2002. Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

University Of Washington, Soil Science Program, Teaching Assistant for several courses including Soil Chemistry, Organic Soil Amendments, and Soil Stability.

U.C. Berkeley, Environmental Science Program Teaching Assistant for Environmental Science 10.

Academic Grants Awarded:

California Integrated Waste Management Board. $41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate the effect of high carbon wood ash on volatile organic emissions from compost. 2001.

Synagro Technologies, Corona California: $10,000 grant awarded to San Diego State University.
Goal: investigate the effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

King County, Department of Research and Technology, Washington State. $100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

Northwest Biosolids Management Association, Washington State. $20,000 grant awarded to investigate the effect of polymers and ash on VOC emissions from biosolids. 1997.

James River Corporation, Oregon: $10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

United State Forest Service, Tahoe National Forest: $15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

Kellogg Foundation, Washington D.C. $500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993

Deposition and/or Trial Testimony:

In Vanderburgh Superior Court 5, County of Vanderburgh, Indiana
Markello v CSX
Civil Action No 82D05-2011-CT-004962
Deposition 3-26-25

Iin the Circuit Court of Cook County Illinois
Jarosiewicz v Northeast Regional Railroad
Case No 2023 L 002290
Deposition 2-27-25

In the District Court 191st Judicial District Dallas County
Acklin v Poly America International
Cause No DC-22-08610
Deposition 1-8-2025

United States District Court, Norther District of California
Asustin Vs Monsanto
Case No 2:23-cv-272
Deposition 12-20-25

In Jefferson Circuit Court Division One, Louisville, Kentucky
Stafford vs, CSX
Case No. 18-CI-001790
Deposition: 8-27-24

In the Twenty-Second Judicial Circuit of St. Louis. State of Missouri
Patricia Godfrey vs, Amtrak
Case No. 2122-CC-00525
Deposition: 7-17-24

In the Circuit Court of Jefferson County Alabama
Linda Early Vs. CSX
Case number CV-2021-00241

Deposition 6-24-24

In the Court of Common Please Lucas County, Ohio
Brenda Conkright vs. CSX
Case No. G-4801-CI-0202102664-000
Deposition: 6-4-24

In the Commonwealth of Kentucky, Greenup Circuit Court
Patsy Sue Napier vs. CSX
Case No. 19-CI-0012
Deposition: 5-8-2-24

In United States District Court of Hawaii
Patrick Feindt, Jr. et al. vs. The United States of America
Case No. 1:22-cv-LEK-KJM
Trial 3-29-24 and 4-5-24

In the District Court of Hood County State of Texas
Artie Gray vs. Exxon Mobil
Case No. C-2018047
Rosenfeld Deposition:4-22-2024

In the Elkhart Superior Court State of Indiana
Estate of Clark Stacy vs. Penn Central Corporation
Cause No 2D01-2001-CT-00007
Rosenfeld Deposition 1-25-2024 and 3-7-2024

In the Circuit Court of Trempealeau County, State of Wisconsin
Michael J. Sylla et al. vs. High-Crush Whitehall LLC
Case No. 2019-CV-63, 2019-CV-64, 2019-CV-65, 2019-CV-66
Rosenfeld Deposition: 3-5-2024

In the Circuit Court of Trempealeau County, State of Wisconsin
Leland Drangstveit vs. High-Crush Blair LLC
Case No. 19-CV-66
Rosenfeld Deposition 3-5-2024

In the Circuit Court of Jefferson County Alabama
Donald Lee Ashworth vs. CSX Transportation Inc.
Case No CV-2021-901261
Rosenfeld Deposition 1-23-2024

In the United States District Court for the Eastern District of Wisconsin
Gary L Siepe vs. Soo Line Railroad
Case No. 2:21-cv-00919
Rosenfeld Deposition 1-19-2024

In the United States District Court for the Western District of Louisiana
Ricky Bush v. Clean Harbors Colfax LLC
Case No. 1:22-cv-02026-DDD-JPM
Rosenfeld Deposition 12-18-2023 and 1-15-2024

In United States District Court of Hawaii
Patrick Feindt, Jr. et al. vs. The United States of America
Case No. 1:22-cv-LEK-KJM
Rosenfeld Deposition 11-29-2023

In the Circuit Court for the Twentieth Judicial Circuit St. Clair County, Illinois
Timothy Gray vs. Rural King et al.
Case No 2022-LA-355
Rosenfeld Deposition 9-26-2023

In United States District Court Eastern District of Wisconsin
Gary L. Siepe vs. Soo Line Railroad Company
Case No. 2:21-cv-00919
Rosenfeld Deposition 9-15-2023

In the Circuit Court of Cook County Illinois
Donald Fox vs. BNSF
Case No. 2021 L12
Rosenfeld Deposition 9-12-2023

In the Court of Common Please Cuyahoga County, Ohio
Thomas Schleich vs. Penn Central Corporation
Lead Case No. CV-20-939184
Rosenfeld Deposition 8-27-2023

In the Circuit Court of Jackson County Missouri at Kansas City
Timothy Dalsing vs. BNSF
Case No. No. 2216-cv06539
Rosenfeld Deposition 7-28-2023

In the United States District Court for the Southern District of Texas Houston Division
International Terminals Company LLC Deer Park Fire Litigation
Lead Case No. 4:19-cv-01460
Rosenfeld Deposition 7-25-2023

In the Circuit Court of Livingston County Missouri
Shirley Ralls vs. Canadian Pacific Railway and Soo Lind Railroad
Case No. 28LV-CV0020
Rosenfeld Daubert Hearing 7-18-2023 Trial Testimony 7-19-2023

In the Circuit Court of Cook County Illinois
Brenda Wright vs. Penn Central and Conrail
Case No. No. 2032L003966
Rosenfeld Deposition 6-13-2023

In the Circuit Court Common Please Philadelphia of Jefferson County Alabama
Frank Belle vs. Birmingham Southern Railroad Company et al.
Case No. 01-cv-2021-900901.00
Rosenfeld Deposition 4-6-2023

In the Circuit Court of Jefferson County Alabama
Linda De Gregorio vs. Penn Central
Case No. 002278
Rosenfeld Deposition 3-27-20203

In the United States District Court Eastern District of New York
Rosalie Romano et al. vs. Northrup Grumman Corporation
Case No. 16-cv-5760
Rosenfeld Deposition 3-16-2023

In the Superior Court of Washington, Spokane County
Judy Cundy vs. BNSF
Case No. 21-2-03718-32
Rosenfeld Deposition 3-9-2023

In The Court of Common Pleas of Philadelphia County, PA Civil Trial Division
Feaster v Conrail
Case No. 001075
Rosenfeld Deposition 2-1-2023

In United States District Court for the Central District of Illinois
Sherman vs. BNSF
Case No. 3:17-cv-01192
Rosenfeld Deposition 1-18-2023

In United States District Court District of Colorado
Gonzales vs. BNSF
Case No. 1:21-cv-01690
Rosenfeld Deposition 1-17-2023

In United States District Court District of Colorado
Abeyta vs. BNSF
Case No. 1:21-cv-01689-KMT
Rosenfeld Deposition 1-3-2023

In United States District Court For The Easter District of Louisiana
Nathaniel Smith vs. Illinois Central Railroad
Case No. 2:21-cv-01235
Rosenfeld Deposition 11-30-2022

In the Superior Court of the State of California, County of San Bernardino
Billy Wildrick, Plaintiff vs. BNSF Railway Company
Case No. CIVDS1711810
Rosenfeld Deposition 10-17-2022

In the State Court of Bibb County, State of Georgia
Richard Hutcherson, Plaintiff vs Norfolk Southern Railway Company
Case No. 10-SCCV-092007
Rosenfeld Deposition 10-6-2022

In the Civil District Court of the Parish of Orleans, State of Louisiana
Millard Clark, Plaintiff vs. Dixie Carriers, Inc. et al.
Case No. 2020-03891
Rosenfeld Deposition 9-15-2022

In The Circuit Court of Livingston County, State of Missouri, Circuit Civil Division
Shirley Ralls, Plaintiff vs. Canadian Pacific Railway and Soo Line Railroad
Case No. 18-LV-CC0020
Rosenfeld Deposition 9-7-2022

In The Circuit Court of the 13th Judicial Circuit Court, Hillsborough County, Florida Civil Division
Jonny C. Daniels, Plaintiff vs. CSX Transportation Inc.
Case No. 20-CA-5502
Rosenfeld Deposition 9-1-2022

In The Circuit Court of St. Louis County, State of Missouri

Kieth Luke et. al. Plaintiff vs. Monsanto Company et. al.
Case No. 19SL-CC03191
Rosenfeld Deposition 8-25-2022

In The Circuit Court of the 13th Judicial Circuit Court, Hillsborough County, Florida Civil Division
Jeffery S. Lamotte, Plaintiff vs. CSX Transportation Inc.
Case No. NO. 20-CA-0049
Rosenfeld Deposition 8-22-2022

In State of Minnesota District Court, County of St. Louis Sixth Judicial District
Greg Bean, Plaintiff vs. Soo Line Railroad Company
Case No. 69-DU-CV-21-760
Rosenfeld Deposition 8-17-2022

In United States District Court Western District of Washington at Tacoma, Washington
John D. Fitzgerald Plaintiff vs. BNSF
Case No. 3:21-cv-05288-RJB
Rosenfeld Deposition 8-11-2022

In Circuit Court of the Sixth Judicial Circuit, Macon Illinois
Rocky Bennyhoff Plaintiff vs. Norfolk Southern
Case No. 20-L-56
Rosenfeld Deposition 8-3-2022, Trial 1-10-2023

In Court of Common Pleas, Hamilton County Ohio
Joe Briggins Plaintiff vs. CSX
Case No. A2004464
Rosenfeld Deposition 6-17-2022

In the Superior Court of the State of California, County of Kern
George LaFazia vs. BNSF Railway Company.
Case No. BCV-19-103087
Rosenfeld Deposition 5-17-2022

In the Circuit Court of Cook County Illinois
Bobby Earles vs. Penn Central et. al.
Case No. 2020-L-000550
Rosenfeld Deposition 4-16-2022

In United States District Court Easter District of Florida
Albert Hartman Plaintiff vs. Illinois Central
Case No. 2:20-cv-1633
Rosenfeld Deposition 4-4-2022

In the Circuit Court of the 4th Judicial Circuit, in and For Duval County, Florida
Barbara Steele vs. CSX Transportation
Case No.16-219-Ca-008796
Rosenfeld Deposition 3-15-2022

In United States District Court Easter District of New York
Romano et al. vs. Northrup Grumman Corporation
Case No. 16-cv-5760
Rosenfeld Deposition 3-10-2022

In the Circuit Court of Cook County Illinois
Linda Benjamin vs. Illinois Central

Case No. No. 2019 L 007599
Rosenfeld Deposition 1-26-2022

In the Circuit Court of Cook County Illinois
Donald Smith vs. Illinois Central
Case No. No. 2019 L 003426
Rosenfeld Deposition 1-24-2022

In the Circuit Court of Cook County Illinois
Jan Holeman vs. BNSF
Case No. 2019 L 000675
Rosenfeld Deposition 1-18-2022

In the State Court of Bibb County State of Georgia
Dwayne B. Garrett vs. Norfolk Southern
Case No. 20-SCCV-091232
Rosenfeld Deposition 11-10-2021

In the Circuit Court of Cook County Illinois
Joseph Ruepke vs. BNSF
Case No. 2019 L 007730
Rosenfeld Deposition 11-5-2021

In the United States District Court For the District of Nebraska
Steven Gillett vs. BNSF
Case No. 4:20-cv-03120
Rosenfeld Deposition 10-28-2021

In the Montana Thirteenth District Court of Yellowstone County
James Eadus vs. Soo Line Railroad and BNSF
Case No. DV 19-1056
Rosenfeld Deposition 10-21-2021

In the Circuit Court Of The Twentieth Judicial Circuit, St Clair County, Illinois
Martha Custer et al. vs Cerro Flow Products, Inc.
Case No. 0i9-L-2295
Rosenfeld Deposition 5-14-2021
Trial October 8-4-2021

In the Circuit Court of Cook County Illinois
Joseph Rafferty vs. Consolidated Rail Corporation and National Railroad Passenger Corporation d/b/a AMTRAK,
Case No. 18-L-6845
Rosenfeld Deposition 6-28-2021

In the United States District Court For the Northern District of Illinois
Theresa Romcoe vs. Northeast Illinois Regional Commuter Railroad Corporation d/b/a METRA Rail
Case No. 17-cv-8517
Rosenfeld Deposition 5-25-2021

In the Superior Court of the State of Arizona In and For the Cunty of Maricopa
Mary Tryon et al. vs. The City of Pheonix v. Cox Cactus Farm, L.L.C., Utah Shelter Systems, Inc.
Case No. CV20127-094749
Rosenfeld Deposition 5-7-2021

In the United States District Court for the Eastern District of Texas Beaumont Division

Robinson, Jeremy et al vs. CNA Insurance Company et al.
Case No. 1:17-cv-000508
Rosenfeld Deposition 3-25-2021

In the Superior Court of the State of California, County of San Bernardino
Gary Garner, Personal Representative for the Estate of Melvin Garner vs. BNSF Railway Company.
Case No. 1720288
Rosenfeld Deposition 2-23-2021

From: Danica Nguyen
To: Mason, Krista
Cc: Sam Wang
Subject: RE: Technical Data Request: Proposed Thrifty Oil North Business Center Project
Date: Wednesday, May 14, 2025 6:59:00 AM

Good morning, Krista,

Thank you for quickly providing the requested files. I was able to access and download them.

Regards,

Danica Nguyen
Air Quality Specialist, CEQA-IGR
Planning, Rule Development & Implementation
South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765
Phone: (909) 396-3531
E-mail: dnguyen1@aqmd.gov
Please note South Coast AQMD is closed on Mondays.

From: Mason, Krista <KMason@Rivco.org>
Sent: Tuesday, May 13, 2025 5:09 PM
To: Danica Nguyen <dnguyen1@aqmd.gov>
Cc: Sam Wang <swang1@aqmd.gov>
Subject: [EXTERNAL] RE: Technical Data Request: Proposed Thrifty Oil North Business Center Project

Good afternoon,

Please find the link to the modeling files below:

https://urbanxroads.egnyte.com/fl/4Cwq0QyjPH

Please confirm you are able to access the files, and if you need additional information.

Thank you,

Krista

From: Danica Nguyen <dnguyen1@aqmd.gov>
Sent: Tuesday, May 13, 2025 4:04 PM
To: Mason, Krista <KMason@Rivco.org>
Cc: Sam Wang <swang1@aqmd.gov>

Subject: Technical Data Request: Proposed Thrifty Oil North Business Center Project

CAUTION: This email originated externally from the **Riverside County** email system. **DO NOT** click links or open attachments unless you recognize the sender and know the content is safe.

Dear Krista Mason,

South Coast AQMD staff received the Notice of Intent to Adopt a Negative Declaration (NOI/ND) for the **Proposed Thrifty Oil North Business Center Project** (South Coast AQMD Control Number: RVC250507-03). Staff is currently in the process of reviewing the NOI/ND. According to the NOI/MND, the public comment period is from 05/02/2025 -05/21/2025.

Upon review of the files provided as part of the public review period, I was able to access the NOI/ND and Appendices via the County's website.

Please provide an electronic copy of any live modeling and emission calculation files (complete data files, not summaries) that were used to quantify the air quality impacts from construction and/or operation of the Proposed Project as applicable, including the following:

- CalEEMod Input Files (.csv and .json files);
- Live EMFAC output files;
- Any emission calculation file(s) (live version of excel file(s); no PDF) used to calculate the Project's emission sources (i.e. truck operations);
- AERMOD Input and Output files, including AERMOD View file(s) (.isc);
- HARP Input and Output files and/or cancer risk calculation files (live version of excel file(s); no PDF) used to calculate cancer risk, and chronic and acute hazards from the Project;
- Any other files related to post-processing done outside of AERMOD to calculate pollutant-specific concentrations (if applicable).

You may send the above-mentioned files via a Dropbox link in which they may be accessed and downloaded by South Coast AQMD staff by **05/19/2025**. Without all files and supporting documentation, South Coast AQMD staff will be unable to complete a review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.

Thank you for your assistance. If you have any questions regarding this request, please feel free to contact me.

Regards,

Danica Nguyen
Air Quality Specialist, CEQA-IGR
Planning, Rule Development & Implementation
South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765
Phone: (909) 396-3531

E-mail: dnguyen1@aqmd.gov
Please note South Coast AQMD is closed on Mondays.

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County of Riverside California

From: Executive Director
To: Mason, Krista
Cc: Assistant Executive Director; Ramon Amaya; Rich Golding
Subject: Re: Thrifty Oil North Business Center Appendices Request 2025050128 - MND
Date: Monday, May 12, 2025 11:54:58 AM

Thanks Krista, it is appreciated. We're able to access the files.

From: Mason, Krista <KMason@Rivco.org>
Sent: Monday, May 12, 2025 10:26 AM
To: Executive Director <executivedirector@goldenstateeja.com>
Cc: Assistant Executive Director <assistantexecutivedirector@goldenstateeja.com>; Ramon Amaya <ramaya@goldenstateeja.com>; Rich Golding <rgolding@goldenstateeja.com>
Subject: RE: Thrifty Oil North Business Center Appendices Request 2025050128 - MND

Good morning,

Please find the link to the modeling files below:

https://urbanxroads.egnyte.com/fl/4Cwq0QyjPH

Please confirm you are able to access the files, and if you need additional information.

Thank you,

Krista

From: Executive Director <executivedirector@goldenstateeja.com>
Sent: Friday, May 9, 2025 5:21 PM
To: Mason, Krista <KMason@Rivco.org>
Cc: Assistant Executive Director <assistantexecutivedirector@goldenstateeja.com>; Ramon Amaya <ramaya@goldenstateeja.com>; Rich Golding <rgolding@goldenstateeja.com>
Subject: Re: Thrifty Oil North Business Center Appendices Request 2025050128 - MND

Thank you for your quick response, it is appreciated!

From: Mason, Krista <KMason@Rivco.org>
Sent: Friday, May 9, 2025 4:19 PM
To: Executive Director <executivedirector@goldenstateeja.com>
Cc: Assistant Executive Director <assistantexecutivedirector@goldenstateeja.com>; Ramon Amaya <ramaya@goldenstateeja.com>; Rich Golding <rgolding@goldenstateeja.com>
Subject: RE: Thrifty Oil North Business Center Appendices Request 2025050128 - MND

The information has been requested.

Thank you,

Krista

From: Executive Director <executivedirector@goldenstateeja.com>
Sent: Friday, May 9, 2025 3:54 PM
To: Mason, Krista <KMason@Rivco.org>
Cc: Assistant Executive Director <assistantexecutivedirector@goldenstateeja.com>; Ramon Amaya <ramaya@goldenstateeja.com>; Rich Golding <rgolding@goldenstateeja.com>; Executive Director <executivedirector@goldenstateeja.com>
Subject: Re: Thrifty Oil North Business Center Appendices Request 2025050128 - MND

Hi Krista,

We didn't come across the CalEEMod output files in the reports. Can you tell us where they are located or send gee files.

Thank you,
Joe Bourgeois

Get Outlook for iOS

From: Executive Director <executivedirector@goldenstateeja.com>
Sent: Thursday, May 8, 2025 7:49:13 PM
To: Mason, Krista <KMason@Rivco.org>
Cc: Assistant Executive Director <assistantexecutivedirector@goldenstateeja.com>; Ramon Amaya <ramaya@goldenstateeja.com>; Rich Golding <rgolding@goldenstateeja.com>
Subject: Re: Thrifty Oil North Business Center Appendices Request 2025050128 - MND

Hi Krista,

Thanks for the follow up. We were able to access the appendices.

Joe

From: Mason, Krista <KMason@Rivco.org>
Sent: Thursday, May 8, 2025 9:46 AM
To: Executive Director <executivedirector@goldenstateeja.com>
Cc: Assistant Executive Director <assistantexecutivedirector@goldenstateeja.com>; Ramon Amaya

<ramaya@goldenstateeja.com>; Rich Golding <rgolding@goldenstateeja.com>
Subject: RE: Thrifty Oil North Business Center Appendices Request 2025050128 - MND

I have checked the website and I am able to access the documents. I left you a voicemail, you can give me a call and I will walk you through the website to see if you are still unable to access the docs. If not, I can troubleshoot the issue.

Thank you,

Krista

From: Executive Director <executivedirector@goldenstateeja.com>
Sent: Thursday, May 8, 2025 9:28 AM
To: Mason, Krista <KMason@Rivco.org>
Cc: Assistant Executive Director <assistantexecutivedirector@goldenstateeja.com>; Ramon Amaya <ramaya@goldenstateeja.com>; Rich Golding <rgolding@goldenstateeja.com>
Subject: Re: Thrifty Oil North Business Center Appendices Request 2025050128 - MND

Hello Ms. Mason,

I was only able to view the NOI. Appendices were not attached.

Please advise,

Thank you,

Joe Bourgeois

Get Outlook for iOS

From: Mason, Krista <KMason@Rivco.org>
Sent: Thursday, May 8, 2025 9:18:10 AM
To: Executive Director <executivedirector@goldenstateeja.com>
Cc: Assistant Executive Director <assistantexecutivedirector@goldenstateeja.com>; Ramon Amaya <ramaya@goldenstateeja.com>; Rich Golding <rgolding@goldenstateeja.com>
Subject: RE: Thrifty Oil North Business Center Appendices Request 2025050128 - MND

Good morning,

The MND and the technical appendices can be accessed on the County of Riverside Department of Planning website at the link below:

https://planning.rctlma.org/environmental-notices-ceqa

Please scroll to the bottom of the page, and let me know if you are able to access the documents.

Thank you,

Krista Mason

From: Executive Director <executivedirector@goldenstateeja.com>
Sent: Wednesday, May 7, 2025 2:36 PM
To: Mason, Krista <KMason@Rivco.org>
Cc: Assistant Executive Director <assistantexecutivedirector@goldenstateeja.com>; Ramon Amaya <ramaya@goldenstateeja.com>; Rich Golding <rgolding@goldenstateeja.com>
Subject: Thrifty Oil North Business Center Appendices Request 2025050128 - MND
Importance: High

CAUTION: This email originated externally from the **Riverside County** email system. **DO NOT** click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon Ms. Mason,

We are unable to locate the Appendices for the project in the subject line on the County website nor CEQANET.

Would you please forward the appendices immediately, so we can review them as this project has a deadline for comments that ends on 5/21/2025.

Thank you,

Joe Bourgeois
Executive Director
Golden State Environmental Justice Alliance
B - (951) 279-4697

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County of Riverside California

May 21, 2025

County of Riverside Planning Department
Attn: Krista Mason, Project Planner
4080 Lemon Street, 12th Floor
Riverside, CA 92502
Submitted via email at kmason@rivco.org.

Re: Thrifty Oil North Business Center MND (SCH #2025050128)

Dear Krista Mason,

This letter is being written on behalf of the Center for Community Action and Environmental Justice (CCAEJ) in response to the Mitigated Negative Declaration for the proposed Thrifty Oil North Business Center (SCH #2025050128) which has been proposed for construction in the Mead Valley area of Riverside County. After reviewing the MND document, there are a handful of questions and concerns which we would like to ensure are addressed before final construction occurs.

We are heartened to see that the Project endeavors to comply with the requirements of AB98 (Carillo, 2024) and will incorporate the necessary elements to qualify for the 21st Century Warehouse. Additionally, the proposed size of nearly 186,000 square feet will mean that it is large enough to be covered by the South Coast Air Quality Management District's Rule 2305: indirect sources rule for warehouses. We hope that following the law and including these elements from the beginning will be enough to ward off the worst outcomes that have otherwise been all too common an affliction for communities where warehouses have been placed.

Nevertheless, there are some lingering issues that are presented with the Project as proposed. The primary concern is for the change of zoning. Though it does not appear that the Project would actually remove any homes, it is stated that it will involve a rezone from the current Rural Residential zoning to Industrial Park. This is a substantial shift in land uses, all being undertaken less than a decade from when the Mead Valley Area Plan was published, including input from public engagement at the time. It is concerning to see these changes being made at this junction without more public participation as the community members remain very invested in the future of Mead Valley and maintaining it as a haven for those seeking a quieter pace of life. While it is understandable that eventually some things might change, it would be preferable to have far more public input on the process.

An additional point to consider is that of access to the Project by bicycles. We would strongly recommend the use of the Association of Pedestrian and Bicycle Professionals' bike parking standards[1] to provide the proper bike parking at the site. Similarly, the fact that the Project will be constructing new road infrastructure presents an opportunity to ensure that it uses the best designs for bicycle facilities such as those detailed in the Caltrans contextual guidance[2] from the beginning—crucial for smoothing compliance with SB932 (Portantino, 2022).

Thank you for your time and consideration on this matter. If there are any questions, please do not hesitate to reach out.

Sincerely,



Marven E. Norman
Environmental Policy Analyst

CC: Inland Empire Biking Alliance

CCAEJ is a long-standing community based organization with over 40 years of experience advocating for stronger regulations through strategic campaigns and building a base of community power. Most notably, CCAEJ's founder Penny Newman won a landmark federal case against Stringfellow Construction which resulted in the 'Stringfellow Acid Pits' being declared one of the first Superfund sites in the nation. ***CCAEJ*** prioritizes community voices as we continue our grassroots efforts to bring lasting environmental justice to the Inland Valley Region.

[1] https://www.apbp.org/assets/docs/EssentialsofBikeParking_FINA.pdf
[2] https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/office-of-smart-mobility-and-climate-change/planning-contextual-guidance-memo-03-11-20-a11y.pdf

5/9/25

KRISTA MASON: Project Planner.
P.O. Box #1409: Riverside, Ca. 92502
~1409

PLEASE be advised of my 110% support for Stephane Wandel and Orden Co project.

We need good paying jobs here in Mead Valley.

My family has lived in Mead Valley since 1958.

We cannot stop good positive progress...

A lot of veterans can find jobs here.

Thank you for considering my input.

Best/Wishes

[signature]

951-657 0435

PO Box 1136 Perris Ca
92572

PO BOX 1136
Perris Ca 92572

SN BERNARDINO CA 923
9 MAY 2025 PM 7 L



To: Krista Mason: Project P:
P.O. Box # 1409:
Riverside, Calif. 92502-1409

92502-140909

SAN GORGONIO CHAPTER

Moreno Valley/Box Springs Group

SENT VIA EMAIL
June 17, 2025

Krista Mason, Principal Planner
County of Riverside
Email: kmason@rivco.org;

RE: **Public comment for Thrifty Oil North Business Center – SCH# 2025050128 Mitigated Negative Declaration**

Dear Ms. Mason,

Thank you for the opportunity to provide comments on the Mitigated Negative Declaration (MND) on the Thrifty Oil North Business Center – SCH # 2025050128. We apologize for commenting outside of the official comment period but did not receive notification on this project MND being released despite commenting on it verbally and in writing to the County throughout the foundation general plan amendment process in 2024. Please notify us of any future hearing notices or project updates.

The Project aims to construct a 185,912 sq.ft. speculative warehouse on the southeast corner of Placentia Avenue and Tobacco Road in Mead Valley. This action requires a Foundation General Plan Amendment from Rural Community – Very Low Density Residential to Community Development – Business Park and a rezone from rural Residential 1-acre (R-R-1) to Industrial Park (I-P).

The property has single family homes due West and the future Mead Valley Wellness Village due east, which includes a wellness and education center, children and youth crisis residential program, urgent care facility, transitional housing, and mental health rehab inpatient facility – with a total of 522 beds. The project is in an 81st percentile environmental justice census tract 06065042904. The project consists of discretionary actions for multiple changes to amend the general plan and zoning to accommodate the more intense industrial development than the existing Mead Valley Area Plan contemplated.

In our review, the Sierra Club Box Springs Group found the Project MND deficient in multiple areas. A summary is listed here, with detailed information in the body of the letter supporting each claim.

1. The County did not discuss or perform a Cumulative Impacts Analysis as required under CEQA for traffic, land use, housing, air quality, and environmental justice. CEQA guidelines.

§ 15355 defines cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other impacts. The individual effects may be changes from several separate projects. The cumulative impact from several projects are the incremental impact to other closely related past, present, and reasonably foreseeable future projects. Mead Valley is already the most burdened community in the Inland Empire (see **Figure 1**). A reasonable list of projects to include that are 'cumulatively considerable' and 'reasonably foreseeable' within 2 miles of the project include:

a. Harvest Landing (SCH# 2024080337) – 288 acres of warehouses
b. Cajalco Commerce Center (SCH# 2023060799) and GPA 240005 – Rezone 50 acres from VLDR to Light Industrial
c. Ramona Gateway (SCH #2022040023) – Approved 47 acre warehouse project
d. Rider and Patterson Business Center (SCH#2022120110) – Approved 37 acre warehouse project
e. Harvill at Water Industrial (SCH #2022050490) – approved 20 acre warehouse project
f. Seaton Ave and Cajalco Rd Industrial project (SCH # 2022060441) – approved 17 acre warehouse project
g. BCI IV Harvill Industrial Center (SCH #2023030724) – approved 9 acre warehouse project
h. Patterson and Harvill Business Center (SCH #2024101276) – approved 5 acre warehouse project
i. GPA 240049 – Rezone 18 acres from VLDR to Business Park
j. GPA 240063 – Rezone 58 acres from VLDR to Business Park
k. GPA 240026 – Rezone 162 acres from Rural Residential to Light Industrial
l. GPA 240082 – Rezone 15 acres from VLDR to Light Industrial
m. GPA 240042 – Rezone 17 acres from VLDR to Business Park
n. GPA 240012 – Rezone 9.5 acres from VLDR to Light Industrial
o. GPA 240022 – Rezone 321.1 acres from Rural residential to Specific Plan
p. GPA 240027 – Rezone 10.5 acres from VLDR to Light Industrial
q. GPA 240004 – Rezone 19.5 acres from VLDR to Light Industrial
r. GPA 240059 – Rezone 8.5 acres from VLDR to Light Industrial

2. The circulation for the proposed project provides truck access on Placentia Avenue with an overflow truck entrance on Tobacco Road. Tobacco Road is not a designated truck route and does not meet truck route requirements established under Assembly Bill 98 and encoded in 65098.2.7(b) to minimize adverse impacts on residential communities and enhance transportation efficiency. Placentia Avenue is the only local road that meets those requirements. Since the site is NOT in an existing industrial zone, and a traffic analysis has not been completed, a waiver cannot be granted.
3. The project claims it is not located within any special hazard zone on p. 7 and p. 94 of the MND. This is false as the property was designated a very high fire hazard severity zone in the state local responsibility map released in March 2025 available on the Riverside County Fire

website[1]. The project needs to be analyzed for compliance with Very High Fire Hazard Severity Zone areas, construction, and circulation and reviewed by the County Fire Marshall. Mitigation of construction, materials, and landscaping may be required.

4. The project asserts that the "Healthy Communities" element of the General Plan is not applicable as it is a 'warehouse within an industrial area'. It fails to acknowledge the harmful impacts of industrial land use on adjacent parcels and specifically does not analyze for the impacts on vulnerable populations at the Wellness Center to the east which will be completely surrounded by warehouse land uses and a busy freeway full of diesel trucks. Most absurdly, the dock doors, trailer parking, and truck access driveway is adjacent to the transition housing and urgent care facility buildings to the east of the project and no receptors were designated on that site for the air quality impact analysis on p. 32. This is clearly a result of the County failing to mandate a cumulative impact analysis to ensure adjacent compatibility. This is especially problematic since the current land use is very low density residential – this site is being rezoned to be industrial. Moreover, community members in Mead Valley and in adjacent communities made public comment at Municipal Advisory Council, Planning Director Hearing meetings, Planning Commission meetings, and Board of Supervisor hearings on this project, in addition to submitting written comment. The community engagement component of 'Healthy Communities' within the General Plan is ignored and omitted.
5. Table 3 and Table 4 omit adjacent warehouse projects to assess whether these effects are cumulatively considerable for localized significance. Given the hundreds of acres of adjacent rezones and the 10s of millions of square feet of approved warehouses under construction, these affects are clearly significant and above localized significance thresholds when considering the cumulatively considerable impacts of trucks from the sum total of reasonably foreseeable projects. Please justify omitting the dozens of other in development warehouses around the project from this analysis.
6. A foundation component change requires providing findings pursuant to County Ordinance 348, Article II Section 2.4. These findings are not provided in the MND on why this project is consistent with the County Vision, is not determinantal to the Mead Valley Area Plan, and what unanticipated changes have occurred that require an industrial upzone.

[1] https://www.rvcfire.org/our-departments/fire-marshal/FHSZ-map

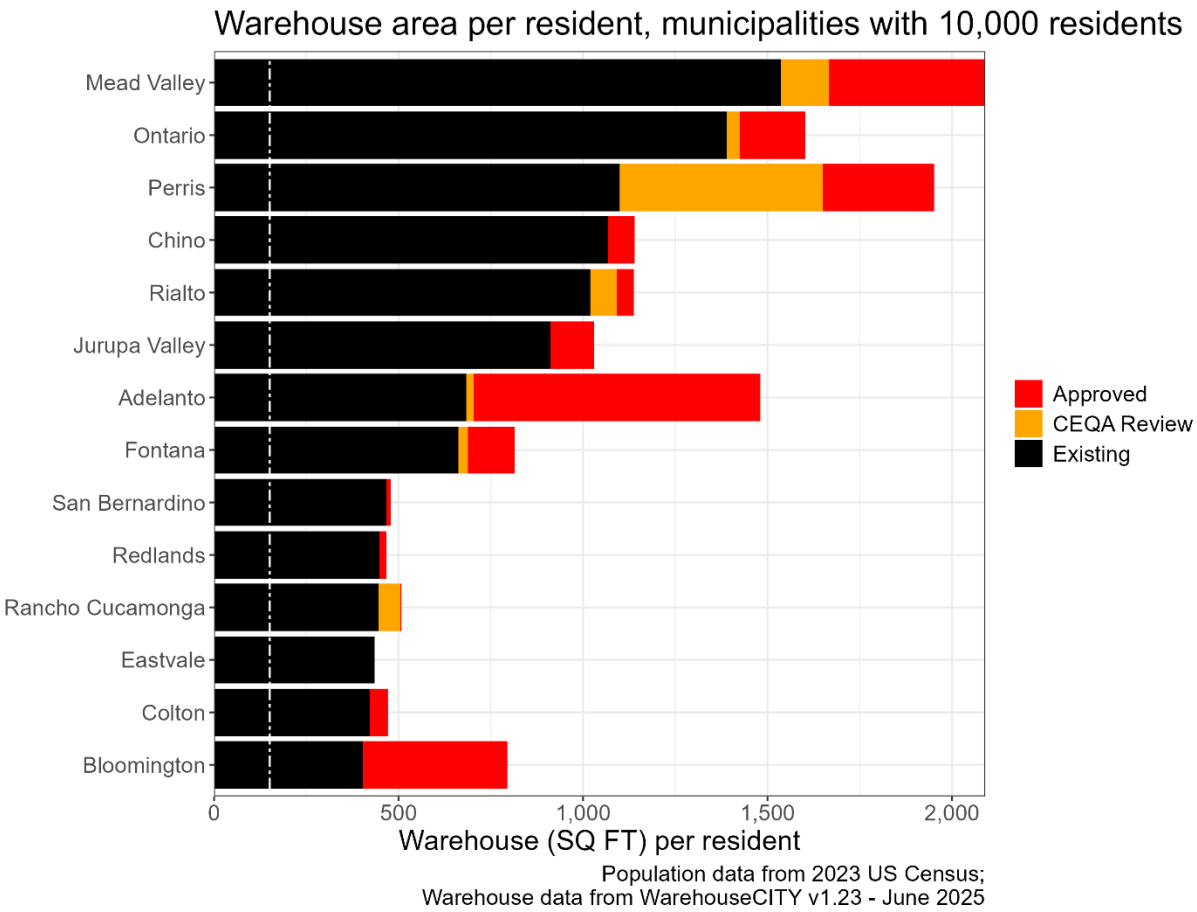


Figure 1. Per capita warehouse area (sq ft) for Inland Empire cities and census designated places. Note, this does not include about 1,000 acres of the planned FGPA projects.

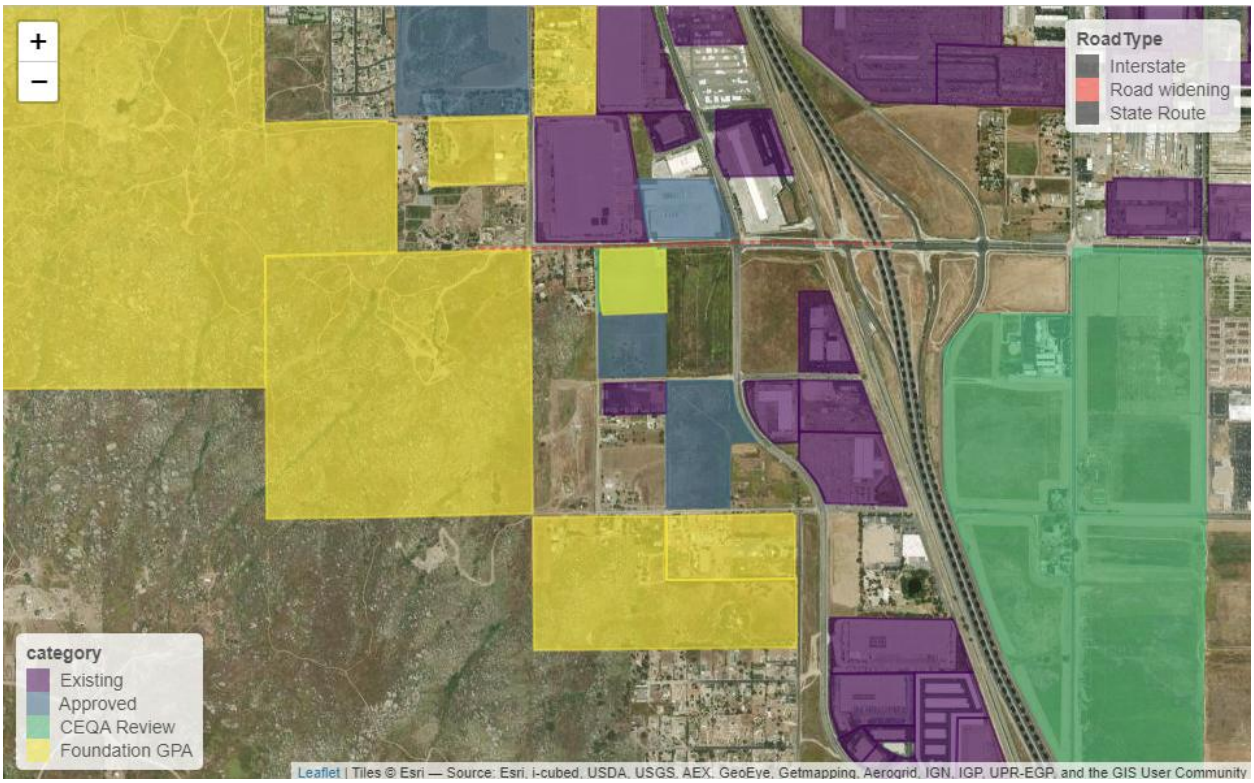


Figure 2. Existing, approved, and proposed warehouse land uses surrounding the project site.

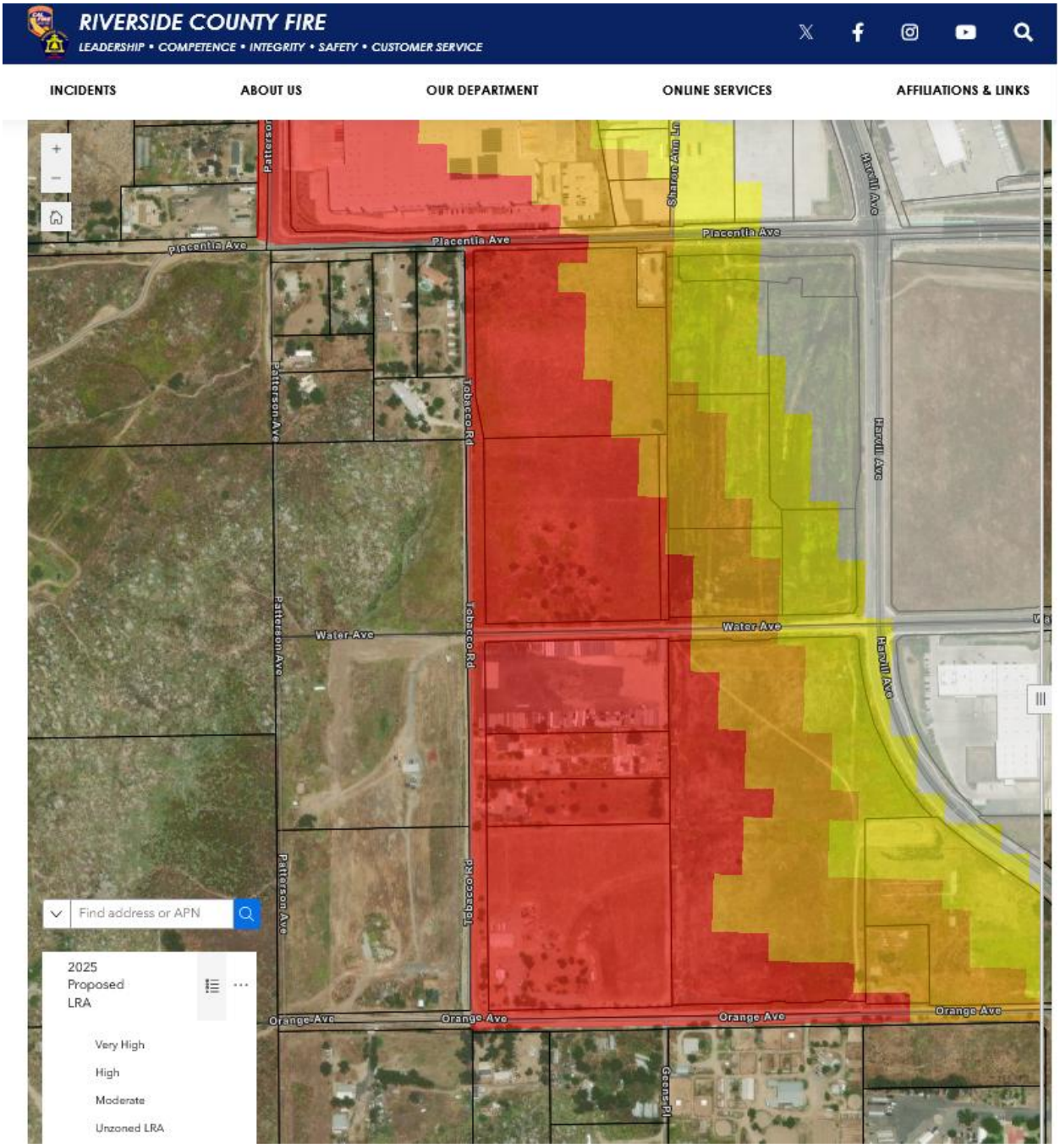


Figure 3. Screenshot of Riverside County Fire Marshall Local Responsibility Area fire hazard severity map. The project is located in a very high fire hazard severity zone as of March 2025 and should be analyzed for full compliance.

Thank you for your attention to these issues.

Mike McCarthy, PhD
Co-Conservation Chair

RIVERSIDE COUNTY
AIRPORT LAND USE COMMISSION

January 14, 2025

Krista Mason, Project Planner
County of Riverside, Planning Department
4080 Lemon Street,
Riverside, CA 92501

CHAIR
Steve Manos
Lake Elsinore

VICE CHAIR
vacant

COMMISSIONERS

John Lyon
Riverside

Steven Stewart
Palm Springs

Richard Stewart
Moreno Valley

Michael Geller
Riverside

Vernon Poole
Murrieta

STAFF

Director
Paul Rull

Simon A. Housman
Barbara Santos
Jackie Vega

County Administrative Center
4080 Lemon St., 14th Floor.
Riverside, CA 92501
(951) 955-5132

www.rcaluc.org

RE: AIRPORT LAND USE COMMISSION (ALUC) DEVELOPMENT REVIEW

File No.:	ZAP1629MA24
Related File No.:	CZ2300030 (Change of Zone), PP230048 (Plot Plan)
Compatibility Zone:	Zone C2
APNs:	317-260-017, 317-260-018

Dear Ms. Mason:

On January 9, 2025, the Riverside County Airport Land Use Commission (ALUC) found County of Riverside Case Nos. CZ2300030 (Change of Zone), PP230048 (Plot Plan), a proposal to construct a 185,912 square foot manufacturing building with office space on 9.89 acres, located on southerly of Placentia Street, easterly of Patterson Avenue, and westerly of Tobacco Road and also proposing to construct 151,440 square foot photovoltaic (PV) panel structures located on the rooftop of the proposed industrial building and eight Carport sunshades totaling 22,060 square feet located on the parking lot, and change the sites zoning from Rural Residential (R-R) to Industrial Park (IP), **CONSISTENT** with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, subject to the following conditions:

CONDITIONS:

1. Any outdoor lighting installed shall be hooded or shielded so as to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward facing.

2. The following uses/activities are not included in the proposed project and shall be prohibited at this site.

   (a) Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight or circling climb following takeoff or toward an aircraft engaged in a straight or circling final approach toward a landing at an airport, other than a DoD or FAA-approved navigational signal light or visual approach slope indicator.

   (b) Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport to the extent as to result in a potential for temporary after-image greater than the low (“green”) level.

   (c) Any use which would generate smoke or water vapor or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, production of cereal grains, sunflower, and row crops, composting operations, wastewater management facilities, artificial marshes, trash transfer

stations that are open on one or more sides, recycling centers containing putrescible wastes, construction and demolition debris facilities, fly ash disposal, and incinerators.)

(d) Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

(e) Highly noise-sensitive outdoor nonresidential uses. Examples of noise-sensitive outdoor nonresidential uses that are prohibited include, but are not limited to, major spectator-oriented sports stadiums, amphitheaters, concert halls and drive-in theaters.

(f) Hazards to Flight.

3. The attached notice shall be provided to all prospective purchasers of the property and tenants of the building, and shall be recorded as a deed notice.

4. Any proposed stormwater basins or facilities shall be designed and maintained to provide for a maximum 48-hour detention period following the design storm, and remain totally dry between rainfalls. Vegetation in and around the stormwater basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous canopy, when mature. Landscaping in and around the stormwater basin(s) shall not include trees or shrubs that produce seeds, fruits, or berries.

5. Landscaping in the stormwater basin, if not rip-rap, should be in accordance with the guidance provided in ALUC "LANDSCAPING NEAR AIRPORTS" brochure, and the "AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT" brochure available at RCALUC.ORG which list acceptable plants from Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist.

   A notice sign, in a form similar to that attached hereto, shall be permanently affixed to the stormwater basin with the following language: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and not attract birds. Proper maintenance is necessary to avoid bird strikes". The sign will also include the name, telephone number or other contact information of the person or entity responsible to monitor the stormwater basin

6. March Air Reserve Base must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers, access gates, etc.

7. All solar arrays installed on the project site shall consist of smooth glass photovoltaic solar panels without anti-reflective coating, a fixed tilt of 10 degrees and orientation of 180 degrees. Solar panels shall be limited to a total of 151,440 square feet of solar panels on the proposed building rooftop and the eight Carport sunshades totaling 22,060 square feet, and the locations and coordinates shall be as specified in the glare study. Any deviation from these specifications (other than reduction in square footage of panels), including change in orientation, shall require a new solar glare analysis to ensure that the amended project does not result in any glare impacting the air traffic

control tower or creation of any “yellow” or “red” level glare in the flight paths, and shall require a new hearing by the Airport Land Use Commission.

8. In the event that any glint, glare, or flash affecting the safety of air navigation occurs as a result of project operation, upon notification to the airport operator of an event, the airport operator shall notify the project operator in writing. Within 30 days of written notice, the project operator shall be required to promptly take all measures necessary to eliminate such glint, glare, or flash. An “event” includes any situation that results in an accident, incident, “near-miss,” or specific safety complaint regarding an in-flight experience to the airport operator or to federal, state, or county authorities responsible for the safety of air navigation. The project operator shall work with the airport operator to prevent recurrence of the incidence. Suggested measures may include, but are not limited to, changing the orientation and/or tilt of the source, covering the source at the time of day when events of glare occur, or wholly removing the source to diminish or eliminate the source of the glint, glare, or flash. For each such event made known to the project operator, the necessary remediation shall only be considered to have been fulfilled when the airport operator states in writing that the situation has been remediated to the airport operator’s satisfaction.

9. In the event that any electrical interference affecting the safety of air navigation occurs as a result of project operation, upon notification to the airport operator of an event, the airport operator shall notify the project operator in writing. Within 30 days of written notice, the project operator shall be required to promptly take all measures necessary to eliminate such interference. An “event” includes any situation that results in an accident, incident, “near-miss,” report by airport personnel, or specific safety complaint to the airport operator or to federal, state, or county authorities responsible for the safety of air navigation. The project operator shall work with the airport operator to prevent recurrence of the event. For each such event made known to the project operator, the necessary remediation shall only be considered to have been fulfilled when the airport operator states in writing that the situation has been remediated to the airport operator’s satisfaction.

10. The project has been evaluated to construct a 185,912 square foot manufacturing building with office space on 9.89 acres, 151,440 square foot photovoltaic (PV) panel structures located on the rooftop of the proposed industrial building and eight Carport sunshades totaling 22,060 square feet located on the parking lot, and also proposes to change the sites zoning from Rural Residential (R-R) to Industrial Park (IP). Any increase in building area, change in use to any higher intensity use, change in building location, or modification of the tentative parcel map lot lines and areas will require an amended review to evaluate consistency with the ALUCP compatibility criteria**,** at the discretion of the ALUC Director.

Supporting documentation was provided to the Airport Land Use Commission and is available online at www.rcaluc.org, click Agendas 1-9-25 Agenda, Bookmark Agenda Item No. 3.2.

If you have any questions, please contact me at (951) 955-6893.

Sincerely,
RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION



Paul Rull, ALUC Director

Attachments: Notice of Airport in Vicinity

cc: Thrifty Oil Company (applicant/property owner)
Nick Johnson (representative)
Gary Gosliga, March Inland Port Airport Authority
Major David Shaw, Base Civil Engineer, March Air Reserve Base
ALUC Case File

X:\AIRPORT CASE FILES\March\ZAP1629MA24\ZAP1629MA24.LTR.doc

THERE IS AN AIRPORT NEARBY.

THIS STORM WATER BASIN IS DESIGNED TO HOLD STORM WATER FOR ONLY 48 HOURS AND NOT TO ATTRACT BIRDS

PROPER MAINTENANCE IS NECESSARY TO AVOID BIRD STRIKES

RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION ALUC

IF THIS BASIN IS OVERGROWN, PLEASE CONTACT:

Name: _____ Phone: _____

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)

317220013
RETT COLUCCIO
20335 PATTERSON AVE
PERRIS CA 92570

317220016
JUAN HERRERA
20401 PATTERSON AVE
PERRIS CA 92571

317220017
RAZO FAMILY REVOCABLE TRUST DTD 09/09/23
20441 PATTERSON AVE
PERRIS CA 92570

317220018
BUENROSTRO FAMILY REV TRUST DATED 11/10/23
23430 PLACENTIA ST
PERRIS CA 92570

317240008
EXETER 20388 HARVILL
100 MATSONFORD RD
RADNOR PA 19087

317240017
IPT RIVERSIDE LOGISTICS CENTER II
PO BOX 2209
CARLSBAD CA 92018

317240034
COUNTY OF RIVERSIDE
464 W 4TH ST
SAN BERNARDINO CA 92401

317240043
STEVEN M. RAIO
20281 HARVILL AVE
PERRIS CA 92570

317240044
RM5 HOLDINGS
20343 HARVILL AVE
PERRIS CA 92570

317240045
KUMIVA GROUP
600 S LAKE AVE STE 200
PASADENA CA 91106

317250007
JOHN PAUL STCLAIR
3651 GLEN OAKS MANOR DR
SARASOTA FL 34232

317260003
ANITA PEREZ RAMIREZ
23561 PLACENTIA AVE
PERRIS CA 92571

317260004
ANITA A. BRAMLETT SIMS
23551 PLACENTIA ST
PERRIS CA 92570

317260005
SILVANO SERRANO
3142 EL ROSARIO DR
PERRIS CA 92571

317260014
JEAN PIERRE ESQUIRE
43800 CORONADO DR
TEMECULA CA 92592

317260015
THRIFTY OIL
13116 IMPERIAL HWY
SANTA FE SPGS CA 90670

317260018
VIANEY ZEPEDA
2974 INDIAN AVE
PERRIS CA 92571

317260019
FLORINE M. ROMERO
PO BOX 1136
PERRIS CA 92572

317260020
CHARLES DUANE ROMERO
PO BOX 1668
PERRIS CA 92572

317260024
JUAN G. BARRIENTOS
23511 PLACENTIA ST
PERRIS CA 92570

317260036
SWIFT TRANSPORTATION OF ARIZONA
20002 N 19TH AVE
PHOENIX AZ 85027

317260037
COUNTY OF RIVERSIDE
3403 10TH ST NO 500
RIVERSIDE CA 92501

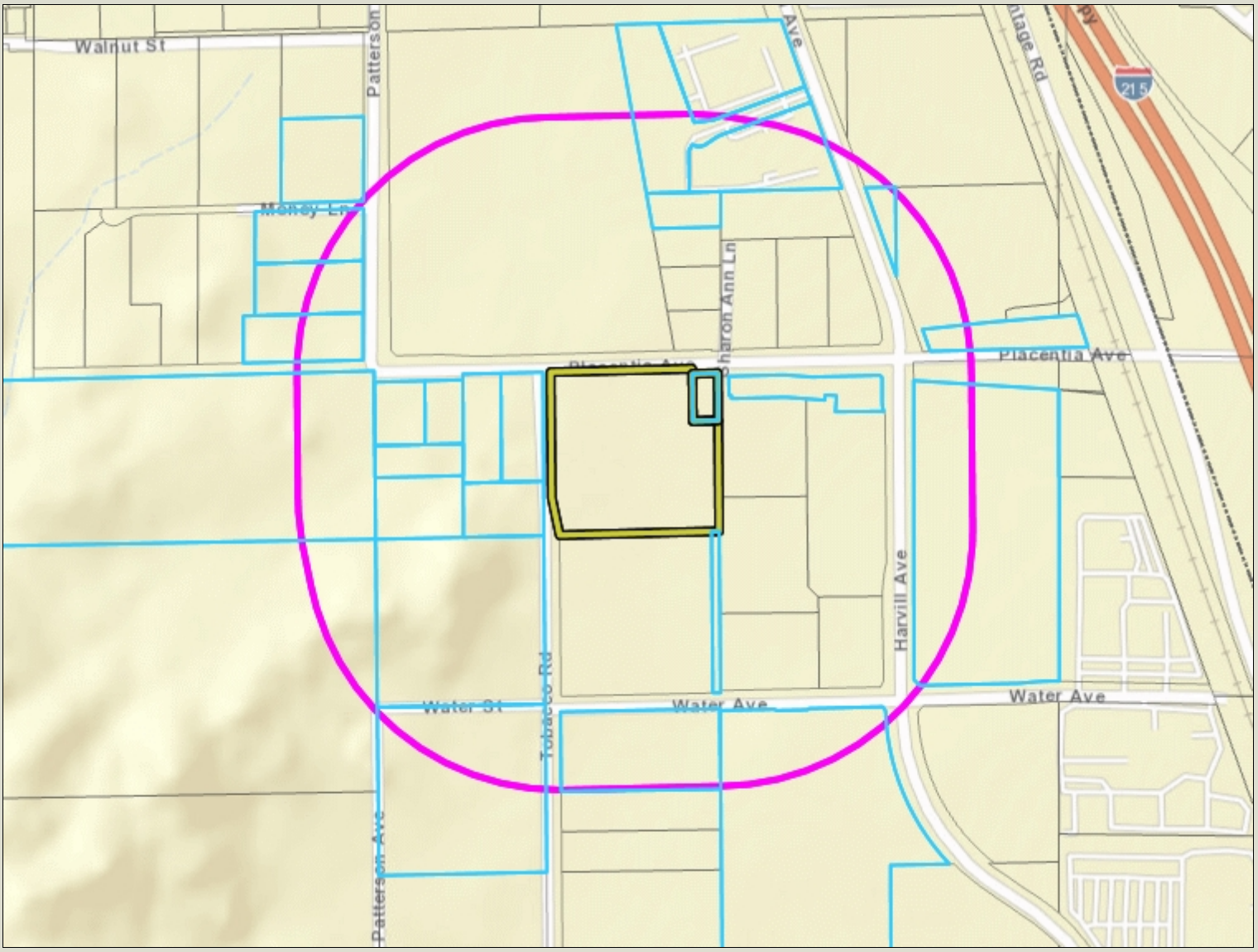
317270001
EQUIPMENT VALLEY & INV
13930 OAKS AVE
CHINO CA 91710

317270002
KAVIANNA INC
10759 SAFFRON ST
FONTANA CA 92337

317270020
BCIF HARVILL BUSINESS CENTER LP
PO BOX 4549
CARLSBAD CA 92018

GPA230008, CZ2300030, PPT230048

Riverside County GIS Mailing Labels





Legend

- County Boundary
- Cities
- Parcels
- World_Street_Map

Notes

1000 SF Buffer

0 752 1,505 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

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Account Number:	5209148
Ad Order Number:	0011749689
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Publication:	The Press-Enterprise
Publication Dates:	08/14/2025
Total Amount:	$1649.42
Payment Amount:	$0.00
Amount Due:	$1649.42
Notice ID:	cjigNONHqehvKP0YL6y5
Invoice Text:	NOTICE OF PUBLIC HEARING BEFORE THE BOARD OF SUPERVISORS OF RIVERSIDE COUNTY ON A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND PLOT PLAN IN THE FIRST SUPERVISORIAL DISTRICT NOTICE IS HEREBY GIVEN that a public hearing at which all interested persons will be heard, will be held before the Board of Supervisors of Riverside County, California, on the 1st Floor Board Chambers, County Administrative Center, 4080 Lemon Street, Riverside, on Tuesday, August 26, 2025 at 10:00 A.M. or as soon as possible thereafter, to consider the Planning Commission's recommendation to approve General Plan Amendment No. 230008, Change of Zone No. 2300030, and Plot Plan No. 230048. General Plan Amendment No. 230008 proposes to change the General Plan Foundation Component from Rural Community (RC) to Community Development (CD), and the General Plan land use designation from Very Low Density Residential (VLDR) to Business Park (BP). Change of Zone No. 2300030 proposes to change the zone from Rural Residential (R-R-1) to Industrial Park (I-P). Plot Plan No. 230048 proposes to construct a 185,912 square foot warehouse with 9,000 square feet of office space, including 23 loading dock doors, 126 parking spaces, and 33 truck trailer spaces on approximately 9.62 gross acres. APN(s): 317-260-017, 317-260-018. This proposed project is located: North of Water Ave., south of Placentia Ave., west of Harvill Ave., and east of Tobacco Rd.in the First Supervisorial District. The Riverside County Planning Department recommends that the Board of Supervisors TENTATIVELY APPROVE General Plan Amendment No. 230008, TENTATIVELY APPROVE Change of Zone No. 2300030, and APPROVE Plot Plan No. 230048. On June 25, 2025, the

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8/26/2025
23.1

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Publication: The Press-Enterprise

PROOF OF PUBLICATION OF

Ad Desc: 0011749689

FILE NO. 0011749689

PROOF OF PUBLICATION

I am a citizen of the United States. I am over the age of eighteen years and not party to or interested in the above-entitled matter. I am an authorized representative of THE PRESS-ENTERPRISE, a newspaper of general circulation, printed and published daily in the County of Riverside, and which newspaper has been adjudicated a newspaper of general circulation by the Superior Court of the County of Riverside, State of California, under date of April 25, 1952, Case Number 54446, under date of March 29, 1957, Case Number 65673, under date of August 25, 1995, Case Number 267864, and under date of September 16, 2013, Case Number RIC 1309013; that the notice, of which the annexed is a printed copy, has been published in said newspaper in accordance with the instructions of the person(s) requesting publication, and not in any supplement thereof on the following dates, to wit:

08/14/2025

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Date: August 14, 2025.
At: Riverside, California

Christine Gonzalez

Signature

NOTICE OF PUBLIC HEARING BEFORE THE BOARD OF SUPERVISORS OF RIVERSIDE COUNTY ON A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND PLOT PLAN IN THE FIRST SUPERVISORIAL DISTRICT

NOTICE IS HEREBY GIVEN that a public hearing at which all interested persons will be heard, will be held before the Board of Supervisors of Riverside County, California, on the 1st Floor Board Chambers, County Administrative Center, 4080 Lemon Street, Riverside, on **Tuesday, August 26, 2025 at 10:00 A.M.** or as soon as possible thereafter, to consider the Planning Commission's recommendation to approve **General Plan Amendment No. 230008, Change of Zone No. 2300030, and Plot Plan No. 230048.** General Plan Amendment No. 230008 proposes to change the General Plan Foundation Component from Rural Community (RC) to Community Development (CD), and the General Plan land use designation from Very Low Density Residential (VLDR) to Business Park (BP). Change of Zone No. 2300030 proposes to change the zone from Rural Residential (R-R-1) to Industrial Park (I-P). Plot Plan No. 230048 proposes to construct a 185,912 square foot warehouse with 9,000 square feet of office space, including 23 loading dock doors, 126 parking spaces, and 33 truck trailer spaces on approximately 9.62 gross acres. APN(s): 317-260-017, 317-260-018. This proposed project is located: North of Water Ave., south of Placentia Ave., west of Harvill Ave., and east of Tobacco Rd. in the First Supervisorial District.

The Riverside County Planning Department recommends that the Board of Supervisors **TENTATIVELY APPROVE General Plan Amendment No. 230008, TENTATIVELY APPROVE Change of Zone No. 2300030, and APPROVE Plot Plan No. 230048.**

On June 25, 2025, the Planning Commission recommended approval of the project as stated to the Board of Supervisors on a vote of 4-0. The Planning Department meeting documents for the proposed project may be viewed online under the Planning Commission hearing date on the Public Hearing page of the Planning Department website: https://planning.rctlma.org/Public-Hearings.

FOR FURTHER INFORMATION REGARDING THIS PROJECT, PLEASE CONTACT KRISTA MASON, PROJECT PLANNER, AT (951) 955-1722 OR EMAIL KMASON@RIVCO.ORG.

Any person wishing to testify in support of or in opposition to the project may do so in writing between the date of this notice and the public hearing or may appear and be heard at the time and place noted above. All written comments received prior to the public hearing will be submitted to the Board of Supervisors and the Board of Supervisors will consider such comments, in addition to any oral testimony, before making a decision on the project.

If you challenge the above item in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence to the Planning Department or Board of Supervisors at, or prior to, the public hearing. Be advised that as a result of the public hearing and the consideration of all public comment, written and oral, the Board of Supervisors may amend, in whole or in part, the project and/or the related environmental document. Accordingly, the designations, development standards, design or improvements, or any properties or lands within the boundaries of the project, may be changed in a way other than specifically proposed.

Alternative formats available upon request to individuals with disabilities. If you require reasonable accommodation, please contact Clerk of the Board at (951) 955-1069.

Please send all written correspondence to: Clerk of the Board, 4080 Lemon Street, 1st Floor, Post Office Box 1147, Riverside, CA 92502-1147 or email cob@rivco.org

Dated: August 5, 2025
Kimberly A. Rector, Clerk of the Board
By: Naomy Sicra, Clerk of the Board Assistant

AVISO DE AUDIENCIA PÚBLICA ANTE LA JUNTA DE SUPERVISORES DEL CONDADO DE RIVERSIDE SOBRE UNA ENMIENDA AL PLAN GENERAL, CAMBIO DE ZONA Y PLANO DE PARCELA EN EL PRIMER DISTRITO DE SUPERVISIÓN

POR EL PRESENTE SE NOTIFICA que se llevará a cabo una audiencia pública en la que se escuchará a todas las personas interesadas, ante la Junta de Supervisores del Condado de Riverside, California, en la Sala de la Junta del 1.er piso, Centro Administrativo del Condado, 4080 Lemon Street, Riverside, **el martes 9 de septiembre de 2025 a las 10:00 a. m.** o lo antes posible después, para considerar la recomendación de la Comisión de Planificación de aprobar **Enmienda al Plan General No. 230008, Cambio de Zonificación No. 2300030 y Plano de Parcela No. 230048.** La Enmienda al Plan General No. 230008 propone cambiar el Componente de Cimentación del Plan General de Comunidad Rural (CR) a Desarrollo Comunitario (CD), y la designación del uso del suelo del Plan General de Residencial de Muy Baja Densidad (VLDR) a Parque Empresarial (BP). El Cambio de Zonificación No. 2300030 propone cambiar la zonificación de Residencial Rural (R-R-1) a Parque Industrial (I-P). El plano de parcela No. 230048 propone la construcción de un almacén de 185,912 pies cuadrados (17,600 m²) con 9,000 pies cuadrados (840 m²) de oficinas, que incluye 23 muelles de carga, 126 plazas de aparcamiento y 33 espacios para remolques de camiones, en aproximadamente 9.62 acres brutos. APN(s): 317-260-017, 317-260-018. Este proyecto se ubica al norte de Water Ave., al sur de Placentia Ave., al oeste de Harvill Ave. y al este de Tobacco Rd. en el Primer Distrito de Supervisión.

El Departamento de Planificación del Condado de Riverside recomienda que la Junta de Supervisores **ADOPTE** la Declaración Negativa Mitigada, **APRUEBE TENTATIVAMENTE** la Enmienda al Plan General No. 230008, **APRUEBE TENTATIVAMENTE** el Cambio de Zona No. 2300030 y **APRUEBE** el Plano de Parcela No. 230048.

El 25 de junio de 2025, la Comisión de Planificación recomendó la aprobación del proyecto, tal como se presentó a la Junta de Supervisores, por 4 votos a favor y 0 en contra. Los documentos de la reunión del Departamento de Planificación sobre el proyecto propuesto pueden consultarse en línea, en la página de Audiencias Públicas del sitio web https://planning.rctlma.org/Public-Hearings del Departamento de Planificación, con la fecha de la audiencia de la Comisión de Planificación.

PARA OBTENER MÁS INFORMACIÓN SOBRE ESTE PROYECTO, COMUNÍQUESE CON KRISTA MASON, PLANIFICADORA DEL PROYECTO, AL (951) 955-1722 O ENVÍE UN CORREO ELECTRÓNICO KMASON@RIVCO.ORG.

Cualquier persona que desee testificar a favor o en contra del proyecto podrá hacerlo por escrito entre la fecha de este aviso y la audiencia pública, o podrá comparecer y ser escuchada en la fecha y lugar indicados anteriormente. Todos los comentarios escritos recibidos antes de la audiencia pública se presentarán a la Junta de Supervisores, quien los considerará, además de cualquier testimonio oral, antes de tomar una decisión sobre el proyecto.

Si desafía el punto anterior ante el tribunal, podrá limitarse a plantear únicamente las cuestiones que usted u otra persona hayan planteado en la audiencia pública descrita en este aviso, o en correspondencia escrita dirigida al Departamento de Planificación o a la Junta de Supervisores durante la audiencia pública o con anterioridad a ella. Tenga en cuenta que, como resultado de la audiencia pública y de la consideración de todos los comentarios públicos, escritos y orales, la Junta de Supervisores podrá modificar, total o parcialmente, el proyecto o el documento ambiental correspondiente. En consecuencia, las designaciones, las normas de desarrollo, el diseño o las mejoras, o cualquier propiedad o terreno dentro de los límites del proyecto, podrán modificarse de forma distinta a la propuesta específica.

Formatos alternativos disponibles a solicitud para personas con discapacidad. Si necesita adaptaciones razonables, comuníquese con la secretaría de la Junta al (951) 955-1069.

Envíe toda la correspondencia escrita a: secretaría de la Junta, 4080 Lemon Street, 1er piso, apartado postal 1147, Riverside, CA 92502-1147 o envíe un correo electrónico a: cob@rivco.org.

Fecha: 5 de agosto de 2025
Kimberly A. Rector, secretaria de juntas
By: Naomy Sicra, Asistente de secretaría de la juntas
The Press-Enterprise
Published: 8/14/25

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Publication:	The Press-Enterprise
Publication Dates:	08/14/2025
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Notice ID:	cjigNONHqehvKP0YL6y5
Invoice Text:	NOTICE OF PUBLIC HEARING BEFORE THE BOARD OF SUPERVISORS OF RIVERSIDE COUNTY ON A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND PLOT PLAN IN THE FIRST SUPERVISORIAL DISTRICT NOTICE IS HEREBY GIVEN that a public hearing at which all interested persons will be heard, will be held before the Board of Supervisors of Riverside County, California, on the 1st Floor Board Chambers, County Administrative Center, 4080 Lemon Street, Riverside, on Tuesday, August 26, 2025 at 10:00 A.M. or as soon as possible thereafter, to consider the Planning Commission's recommendation to approve General Plan Amendment No. 230008, Change of Zone No. 2300030, and Plot Plan No. 230048. General Plan Amendment No. 230008 proposes to change the General Plan Foundation Component from Rural Community (RC) to Community Development (CD), and the General Plan land use designation from Very Low Density Residential (VLDR) to Business Park (BP). Change of Zone No. 2300030 proposes to change the zone from Rural Residential (R-R-1) to Industrial Park (I-P). Plot Plan No. 230048 proposes to construct a 185,912 square foot warehouse with 9,000 square feet of office space, including 23 loading dock doors, 126 parking spaces, and 33 truck trailer spaces on approximately 9.62 gross acres. APN(s): 317-260-017, 317-260-018. This proposed project is located: North of Water Ave., south of Placentia Ave., west of Harvill Ave., and east of Tobacco Rd.in the First Supervisorial District. The Riverside County Planning Department recommends that the Board of Supervisors TENTATIVELY APPROVE General Plan Amendment No. 230008, TENTATIVELY APPROVE Change of Zone No. 2300030, and APPROVE Plot Plan No. 230048. On June 25, 2025, the

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Publication: The Press-Enterprise

PROOF OF PUBLICATION OF

Ad Desc: 0011749689

FILE NO. 0011749689

PROOF OF PUBLICATION

I am a citizen of the United States. I am over the age of eighteen years and not party to or interested in the above-entitled matter. I am an authorized representative of THE PRESS-ENTERPRISE, a newspaper of general circulation, printed and published daily in the County of Riverside, and which newspaper has been adjudicated a newspaper of general circulation by the Superior Court of the County of Riverside, State of California, under date of April 25, 1952, Case Number 54446, under date of March 29, 1957, Case Number 65673, under date of August 25, 1995, Case Number 267864, and under date of September 16, 2013, Case Number RIC 1309013; that the notice, of which the annexed is a printed copy, has been published in said newspaper in accordance with the instructions of the person(s) requesting publication, and not in any supplement thereof on the following dates, to wit:

08/14/2025

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Date: August 14, 2025.
At: Riverside, California

Christine Gonzalez

Signature

NOTICE OF PUBLIC HEARING BEFORE THE BOARD OF SUPERVISORS OF RIVERSIDE COUNTY ON A GENERAL PLAN AMENDMENT, CHANGE OF ZONE, AND PLOT PLAN IN THE FIRST SUPERVISORIAL DISTRICT

NOTICE IS HEREBY GIVEN that a public hearing at which all interested persons will be heard, will be held before the Board of Supervisors of Riverside County, California, on the 1st Floor Board Chambers, County Administrative Center, 4080 Lemon Street, Riverside, on **Tuesday, August 26, 2025 at 10:00 A.M.** or as soon as possible thereafter, to consider the Planning Commission's recommendation to approve **General Plan Amendment No. 230008, Change of Zone No. 2300030, and Plot Plan No. 230048.** General Plan Amendment No. 230008 proposes to change the General Plan Foundation Component from Rural Community (RC) to Community Development (CD), and the General Plan land use designation from Very Low Density Residential (VLDR) to Business Park (BP). Change of Zone No. 2300030 proposes to change the zone from Rural Residential (R-R-1) to Industrial Park (I-P). Plot Plan No. 230048 proposes to construct a 185,912 square foot warehouse with 9,000 square feet of office space, including 23 loading dock doors, 126 parking spaces, and 33 truck trailer spaces on approximately 9.62 gross acres. APN(s): 317-260-017, 317-260-018. This proposed project is located: North of Water Ave., south of Placentia Ave., west of Harvill Ave., and east of Tobacco Rd.in the First Supervisorial District.

The Riverside County Planning Department recommends that the Board of Supervisors **TENTATIVELY APPROVE General Plan Amendment No. 230008, TENTATIVELY APPROVE Change of Zone No. 2300030, and APPROVE Plot Plan No. 230048.**

On June 25, 2025, the Planning Commission recommended approval of the project as stated to the Board of Supervisors on a vote of 4-0. The Planning Department meeting documents for the proposed project may be viewed online under the Planning Commission hearing date on the Public Hearing page of the Planning Department website: https://planning.rctlma.org/Public-Hearings.

FOR FURTHER INFORMATION REGARDING THIS PROJECT, PLEASE CONTACT KRISTA MASON, PROJECT PLANNER, AT (951) 955-1722 OR EMAIL KMASON@RIVCO.ORG.

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Please send all written correspondence to: Clerk of the Board, 4080 Lemon Street, 1st Floor, Post Office Box 1147, Riverside, CA 92502-1147 or email cob@rivco.org

Dated: August 5, 2025
Kimberly A. Rector, Clerk of the Board
By: Naomy Sicra, Clerk of the Board Assistant

AVISO DE AUDIENCIA PÚBLICA ANTE LA JUNTA DE SUPERVISORES DEL CONDADO DE RIVERSIDE SOBRE UNA ENMIENDA AL PLAN GENERAL, CAMBIO DE ZONA Y PLANO DE PARCELA EN EL PRIMER DISTRITO DE SUPERVISIÓN

POR EL PRESENTE SE NOTIFICA que se llevará a cabo una audiencia pública en la que se escuchará a todas las personas interesadas, ante la Junta de Supervisores del Condado de Riverside, California, en la Sala de la Junta del 1.er piso, Centro Administrativo del Condado, 4080 Lemon Street, Riverside, **el martes 9 de septiembre de 2025 a las 10:00 a. m.** o lo antes posible después, para considerar la recomendación de la Comisión de Planificación de aprobar **Enmienda al Plan General No. 230008, Cambio de Zonificación No. 2300030 y Plano de Parcela No. 230048.** La Enmienda al Plan General No. 230008 propone cambiar el Componente de Cimentación del Plan General de Comunidad Rural (CR) a Desarrollo Comunitario (CD), y la designación del uso del suelo del Plan General de Residencial de Muy Baja Densidad (VLDR) a Parque Empresarial (BP). El Cambio de Zonificación No. 2300030 propone cambiar la zonificación de Residencial Rural (R-R-1) a Parque Industrial (I-P). El plano de parcela No. 230048 propone la construcción de un almacén de 185,912 pies cuadrados (17,600 m²) con 9,000 pies cuadrados (840 m²) de oficinas, que incluye 23 muelles de carga, 126 plazas de aparcamiento y 33 espacios para remolques de camiones, en aproximadamente 9.62 acres brutos. APN(s): 317-260-017, 317-260-018. Este proyecto se ubica al norte de Water Ave., al sur de Placentia Ave., al oeste de Harvill Ave. y al este de Tobacco Rd. en el Primer Distrito de Supervisión.

El Departamento de Planificación del Condado de Riverside recomienda que la Junta de Supervisores **ADOPTE** la Declaración Negativa Mitigada, **APRUEBE TENTATIVAMENTE** la Enmienda al Plan General No. 230008, **APRUEBE TENTATIVAMENTE** el Cambio de Zona No. 2300030 y **APRUEBE** el Plano de Parcela No. 230048.

El 25 de junio de 2025, la Comisión de Planificación recomendó la aprobación del proyecto, tal como se presentó a la Junta de Supervisores, por 4 votos a favor y 0 en contra. Los documentos de la reunión del Departamento de Planificación sobre el proyecto propuesto pueden consultarse en línea, en la página de Audiencias Públicas del sitio web https://planning.rctlma.org/Public-Hearings del Departamento de Planificación, con la fecha de la audiencia de la Comisión de Planificación.

PARA OBTENER MÁS INFORMACIÓN SOBRE ESTE PROYECTO, COMUNÍQUESE CON KRISTA MASON, PLANIFICADORA DEL PROYECTO, AL (951) 955-1722 O ENVÍE UN CORREO ELECTRÓNICO KMASON@RIVCO.ORG.

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Envíe toda la correspondencia escrita a: secretaría de la Junta, 4080 Lemon Street, 1er piso, apartado postal 1147, Riverside, CA 92502-1147 o envíe un correo electrónico a: cob@rivco.org.

Fecha: 5 de agosto de 2025
Kimberly A. Rector, secretaria de Juntas
By: Naomy Sicra, Asistente de secretaría de la Juntas
The Press-Enterprise
Published: 8/14/25

25 x 2 = 50

RIVERSIDE COUNTY
PLANNING DEPARTMENT

Charissa Leach, P.E.
TLMA Director

DATE: July 31, 2025

TO: Clerk of the Board of Supervisors

FROM: Planning Department – Riverside – **Krista Mason, Project Planner**
BOS Date 8/26/2025

SUBJECT: **MT#28546 TRANSPORTATION & LAND MANAGEMENT AGENCY/PLANNING: PUBLIC HEARING ON THE PLANNING COMMISSION'S DECISION TO APPROVE GENERAL PLAN AMENDMENT NO. 230008 (GPA230008), CHANGE OF ZONE NO. 2300030 (CZ2300030), and PLOT PLAN NO. 230048 (PPT230048)** – Intent to Adopt an MND (SCH No. 2025050128) - Applicant: Thrifty Oil, Co. c/o Stephane Wandel – Engineer/ Representative: The Orden Company c/o Jaime Jones – First Supervisorial District – North Perris Zoning Area – Mead Valley Area Plan – Rural Community- Very Low Density Residential (RC-VLDR) – Location: North of Water Ave., south of Placentia Ave., west of Harvill Ave., and east of Tobacco Rd. – 9.62 Gross Acres – Zoning: Rural Residential- one acre minimum (R-R-1) - REQUEST: General Plan Amendment No. 230008 proposes to change the General Plan Foundation Component from Rural Community (RC) to Community Development (CD), and the General Plan land use designation from Very Low Density Residential (VLDR) to Business Park (BP). Change of Zone No. 2300030 proposes to change the zone from Rural Residential (R-R-1) to Industrial Park (I-P). Plot Plan No. 230048 proposes to construct a 185,912 square foot warehouse with 9,000 square feet of office space, including 23 loading dock doors, 126 parking spaces, and 33 truck trailer spaces on approximately 9.62 gross acres- APNs 317-260-017, 317-260-018. Applicant Fees 100% [District 1]

Planning Commission Date: 6/25/25 / **Commissioner Vote:** 4-0

The attached item(s) require the following action(s) by the Board of Supervisors:

☐ Place on Administrative Action

☒ Set for Hearing (Legislative Action Required; CZ, GPA, SP, SPA)

☒ Labels provided If Set For Hearing
☒ 10 Day ☐ 20 Day ☐ 30 day

☒ Publish in Newspaper:
(1st Dist) Press Enterprise

☐ CEQA Exempt
☐ 10 Day ☐ 20 Day ☐ 30 day

☒ Notify Property Owners (app/agencies/property owner labels provided)

Designate Newspaper used by Planning Department for Notice of Hearing:
(1st Dist) Press Enterprise

2025 AUG -4 AM 9:44
CLERK OF THE BOARD OF SUPERVISORS

Riverside Office · 4080 Lemon Street, 12th Floor
P.O. Box 1409, Riverside, California 92502-1409
(951) 955-3200 · Fax (951) 955-1811

Desert Office · 77-588 Duna Court, Suite H
Palm Desert, California 92211
(760) 863-8277 · Fax (760) 863-7040

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The Riverside County Planning Department recommends that the Board of Supervisors **ADOPT Mitigated Negative Declaration, TENTATIVELY APPROVE General Plan Amendment No. 230008, TENTATIVELY APPROVE Change of Zone No. 2300030, and APPROVE Plot Plan No. 230048**.

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Dated: August 5, 2025

Kimberly A. Rector, Clerk of the Board
By: Naomy Sicra, Clerk of the Board Assistant

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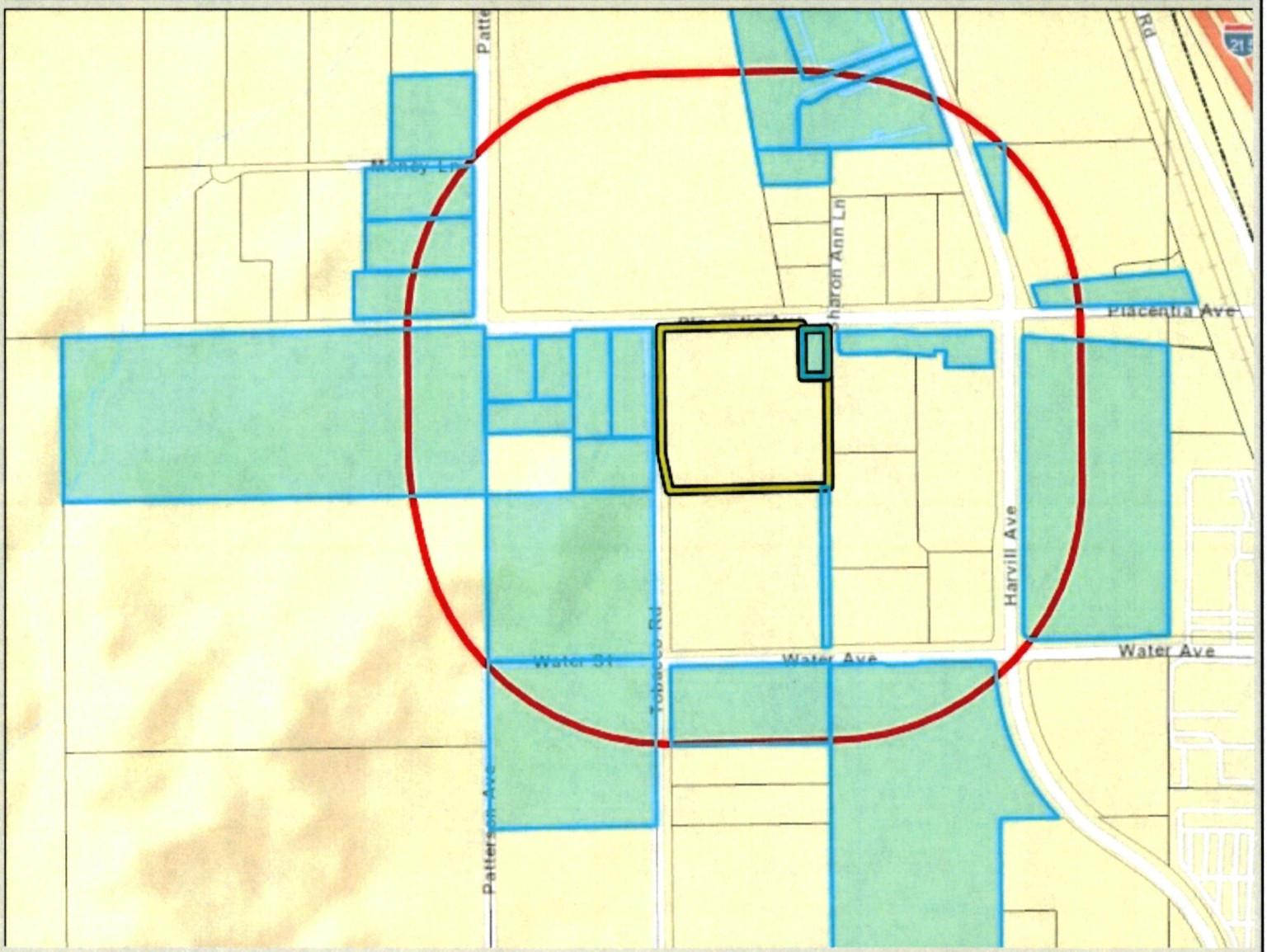
Fecha: 5 de agosto de 2025

Kimberly A. Rector, secretaria de juntas
By: Naomy Sicra, Asistente de secretaria de la juntas

Plot Plan No. 230048 (PPT230048)

Riverside County GIS Mailing Labels





Legend

- County Boundary
- Cities
- Parcels
- World_Street_Map

Notes

1000 SF

0 752 1,505 Feet

IMPORTANT Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

REPORT PRINTED ON... 7/27/2025 10:47:34 PM

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317220013
RETT COLUCCIO
20335 PATTERSON AVE
PERRIS CA 92570

317220016
JUAN HERRERA
20401 PATTERSON AVE
PERRIS CA 92571

317220017
RAZO FAMILY REVOCABLE TRUST DTD 09/09/23
20441 PATTERSON AVE
PERRIS CA 92570

317220018
BUENROSTRO FAMILY REV TRUST DATED 11/10/23
23430 PLACENTIA ST
PERRIS CA 92570

317240008
EXETER 20388 HARVILL
100 MATSONFORD RD
RADNOR PA 19087

317240017
IPT RIVERSIDE LOGISTICS CENTER II
PO BOX 2209
CARLSBAD CA 92018

317240034
COUNTY OF RIVERSIDE
464 W 4TH ST
SAN BERNARDINO CA 92401

317240043
STEVEN M. RAIO
20281 HARVILL AVE
PERRIS CA 92570

317240044
RM5 HOLDINGS
20343 HARVILL AVE
PERRIS CA 92570

317240045
KUMIVA GROUP
600 S LAKE AVE STE 200
PASADENA CA 91106

317250007
JOHN PAUL STCLAIR
3651 GLEN OAKS MANOR DR
SARASOTA FL 34232

317260003
ANITA PEREZ RAMIREZ
23561 PLACENTIA AVE
PERRIS CA 92571

317260004
ANITA A. BRAMLETT SIMS
23551 PLACENTIA ST
PERRIS CA 92570

317260005
SILVANO SERRANO
3142 EL ROSARIO DR
PERRIS CA 92571

317260014
JEAN PIERRE ESQUIRE
43800 CORONADO DR
TEMECULA CA 92592

317260015
THRIFTY OIL
13116 IMPERIAL HWY
SANTA FE SPGS CA 90670

317260018
VIANEY ZEPEDA
2974 INDIAN AVE
PERRIS CA 92571

317260019
FLORINE M. ROMERO
PO BOX 1136
PERRIS CA 92572

317260020
CHARLES DUANE ROMERO
PO BOX 1668
PERRIS CA 92572

317260024
JUAN G. BARRIENTOS
23511 PLACENTIA ST
PERRIS CA 92570

317260036
SWIFT TRANSPORTATION OF ARIZONA
20002 N 19TH AVE
PHOENIX AZ 85027

317260037
COUNTY OF RIVERSIDE
3403 10TH ST NO 500
RIVERSIDE CA 92501

317270001
EQUIPMENT VALLEY & INV
13930 OAKS AVE
CHINO CA 91710

317270002
KAVIANNA INC
10759 SAFFRON ST
FONTANA CA 92337

317270020
BCIF HARVILL BUSINESS CENTER LP
PO BOX 4549
CARLSBAD CA 92018

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Dated: August 5, 2025

Kimberly A. Rector, Clerk of the Board
By: Naomy Sicra, Clerk of the Board Assistant

REMOVE SIDE EDGES FIRST
THEN FOLD AND TEAR THIS STUB ALONG PERFORATION

REMOVE THESE EDGES FIRST
FOLD, CREASE AND TEAR ALONG PERFORATION

[redacted]



REMOVE THESE EDGES FIRST
FOLD, CREASE AND TEAR ALONG PERFORATION

Riverside County Clerk of the Board
County Administrative Center
4080 Lemon Street, 1st Floor Annex
P. O. Box 1147
Riverside, CA 92502-1147

92502>1147
ANK

FIRST-CLASS
NONAUTO
PRSRT LTR

US POSTAGE PITNEY BOWES
ZIP 92504
02 7W
$ 000.68[6]
0008041315 AUG 05 2025

PUBLIC HEARING NOTICE
This may affect your pr

NIXIE
911 DC 1
RETURN TO SENDER
ATTEMPTED - NOT KNOWN
UNABLE TO FORWARD
*2052-04456-15-19
BC: 92502114747
0008/15/25

RETURN TO SENDER
NOT AT THIS ADDRESS

SEE OTHER SIDE FOR
OPENING INSTRUCTIONS

SEE OTHER SIDE FOR
OPENING INSTRUCTIONS

[redacted]

AVISO DE AUDIENCIA PÚBLICA ANTE LA JUNTA DE SUPERVISORES DEL CONDADO DE RIVERSIDE SOBRE UNA ENMIENDA AL PLAN GENERAL, CAMBIO DE ZONA Y PLANO DE PARCELA EN EL PRIMER DISTRITO DE SUPERVISIÓN

POR EL PRESENTE SE NOTIFICA que se llevará a cabo una audiencia pública en la que se escuchará a todas las personas interesadas, ante la Junta de Supervisores del Condado de Riverside, California, en la Sala de la Junta del 1.er piso, Centro Administrativo del Condado, 4080 Lemon Street, Riverside, **el martes 9 de septiembre de 2025 a las 10:00 a. m.** o lo antes posible después, para considerar la recomendación de la Comisión de Planificación de aprobar **Enmienda al Plan General No. 230008, Cambio de Zonificación No. 2300030 y Plano de Parcela No. 230048**. La Enmienda al Plan General No. 230008 propone cambiar el Componente de Cimentación del Plan General de Comunidad Rural (CR) a Desarrollo Comunitario (CD), y la designación del uso del suelo del Plan General de Residencial de Muy Baja Densidad (VLDR) a Parque Empresarial (BP). El Cambio de Zonificación No. 2300030 propone cambiar la zonificación de Residencial Rural (R-R-1) a Parque Industrial (I-P). El plano de parcela No. 230048 propone la construcción de un almacén de 185,912 pies cuadrados (17,600 m²) con 9,000 pies cuadrados (840 m²) de oficinas, que incluye 23 muelles de carga, 126 plazas de aparcamiento y 33 espacios para remolques de camiones, en aproximadamente 9.62 acres brutos. APN(s): 317-260-017, 317-260-018. Este proyecto se ubica al norte de Water Ave., al sur de Placentia Ave., al oeste de Harvill Ave. y al este de Tobacco Rd. en el Primer Distrito de Supervisión.

El Departamento de Planificación del Condado de Riverside recomienda que la Junta de Supervisores **ADOPTE** la Declaración Negativa Mitigada, **APRUEBE TENTATIVAMENTE** la Enmienda al Plan General No. 230008, **APRUEBE TENTATIVAMENTE** el Cambio de Zona No. 2300030 y **APRUEBE** el Plano de Parcela No. 230048.

El 25 de junio de 2025, la Comisión de Planificación recomendó la aprobación del proyecto, tal como se presentó a la Junta de Supervisores, por 4 votos a favor y 0 en contra. Los documentos de la reunión del Departamento de Planificación sobre el proyecto propuesto pueden consultarse en línea, en la página de Audiencias Públicas del sitio web https://planning.rctlma.org/Public-Hearings del Departamento de Planificación, con la fecha de la audiencia de la Comisión de Planificación.

PARA OBTENER MÁS INFORMACIÓN SOBRE ESTE PROYECTO, COMUNÍQUESE CON KRISTA MASON, PLANIFICADORA DEL PROYECTO, AL (951) 955-1722 O ENVÍE UN CORREO ELECTRÓNICO KMASON@RIVCO.ORG.

Cualquier persona que desee testificar a favor o en contra del proyecto podrá hacerlo por escrito entre la fecha de este aviso y la audiencia pública, o podrá comparecer y ser escuchada en la fecha y lugar indicados anteriormente. Todos los comentarios escritos recibidos antes de la audiencia pública se presentarán a la Junta de Supervisores, quien los considerará, además de cualquier testimonio oral, antes de tomar una decisión sobre el proyecto.

Si desafía el punto anterior ante el tribunal, podrá limitarse a plantear únicamente las cuestiones que usted u otra persona hayan planteado en la audiencia pública descrita en este aviso, o en correspondencia escrita dirigida al Departamento de Planificación o a la Junta de Supervisores durante la audiencia pública o con anterioridad a ella. Tenga en cuenta que, como resultado de la audiencia pública y de la consideración de todos los comentarios públicos, escritos y orales, la Junta de Supervisores podrá modificar, total o parcialmente, el proyecto o el documento ambiental correspondiente. En consecuencia, las designaciones, las normas de desarrollo, el diseño o las mejoras, o cualquier propiedad o terreno dentro de los límites del proyecto, podrán modificarse de forma distinta a la propuesta específica.

Formatos alternativos disponibles a solicitud para personas con discapacidad. Si necesita adaptaciones razonables, comuníquese con la secretaria de la Junta al (951) 955-1069.

Envíe toda la correspondencia escrita a: secretaria de la junta, 4080 Lemon Street, 1er piso, apartado postal 1147, Riverside, CA 92502-1147 o envíe un correo electrónico a: cob@rivco.org.

Fecha: 5 de agosto de 2025

Kimberly A. Rector, secretaria de juntas
By: Naomy Sicra, Asistente de secretaria de la juntas

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County Administrative Center
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Riverside, CA 92502-1147

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[redacted]

Flores, Kate

From:	Debbie Walsh <abilene149@gmail.com>
Sent:	Tuesday, August 26, 2025 12:20 AM
To:	Setser, Jennifer; Supervisor Medina - 1st District; Clerk of the Board; Office of 2nd District Supervisor; District 4 Supervisor V. Manuel Perez; District3; District 5; George Hague; Michael McCarthy; CBFCentury@aol.com
Subject:	Item 23.1 Thrifty Oil Warehouse Project
Attachments:	ThriftyoilwarehouseBOS82025_2.pdf

CAUTION: This email originated externally from the **Riverside County** email system. **DO NOT** click links or open attachments unless you recognize the sender and know the content is safe.

The Rural Association of Mead Valley is adamantly opposed to GPA 230008, Plot Plan (PPT) No. 230048 and zone changes 230030 that proposes to construct an 185,912 square foot (SF) concrete tilt-up warehouse. RAMV was not notified of this hearing even though they sent in letters to the Planning Commission opposing this Project and are an interested party.

The Project will be directly next to the $580 million Mead Valley Wellness Center. The substantial impacts to this facility and people using this facility have not been analyzed in the MND. This facility is clearly a sensitive receptor where hundreds of County employees will be working and thousands of people with compromised health will be living at this facility. https://ruhealth.org/mead-valley-wellness-village.

This Project must be denied.

Please include the attached letter into the Public Record.

Debbie Walsh

23.1

August 25, 2025

RAMV
Debbie Walsh
PO Box 2244
Perris, CA 92572

Riverside County Board of Supervisors
4080 Lemon Street, 12th Floor
Riverside, CA 92502

Project Planner: Krista Mason

Supervisors:

Item 23.1 Thrifty Oil Warehouse Project

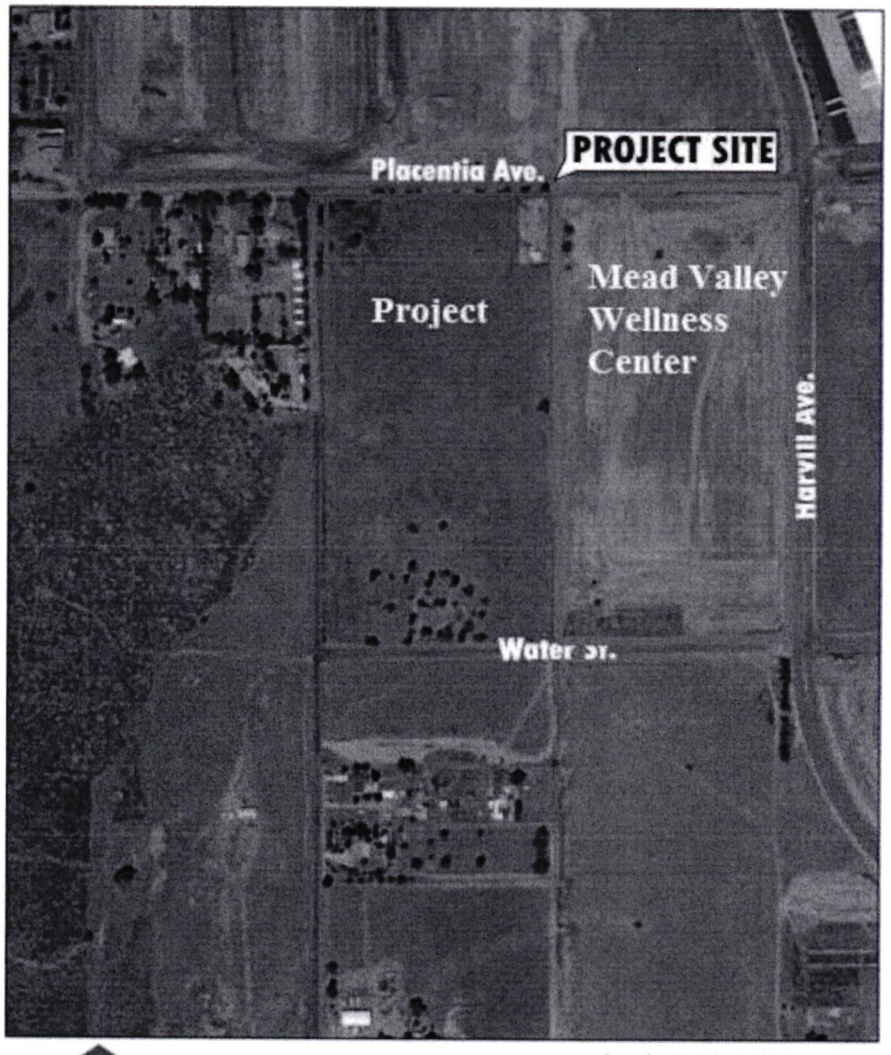
GENERAL PLAN AMENDMENT NO. 230008 (GPA230008), CHANGE OF ZONE NO. 2300030 (CZ2300030), and PLOT PLAN NO. 230048 (PPT230048)

The Rural Association of Mead Valley is adamantly opposed to GPA 230008, Plot Plan (PPT) No. 230048 and zone changes 230030 that proposes to construct an 185,912 square foot (SF) concrete tilt-up warehouse. RAMV was not notified of this hearing even though they sent in letters to the Planning Commission opposing this Project and are an interested party.

Thrifty Oil Co (Applicant) proposes to construct one 185,912 square foot (SF) concrete tilt-up, warehouse on a 9.62-acres on the southeast corner of Placentia Avenue and Tobacco Road.

The Proposed Project is anticipated to generate a total of 322 two-way trips per day onto Placentia Ave.

The Project will be directly next to the $580 million Mead Valley Wellness Center. The substantial impacts to this facility and people using this facility have not been analyzed in the MND. This facility is clearly a sensitive receptor where hundreds of County employees will be working and thousands of people with compromised health will be living at this facility. https://ruhealth.org/mead-valley-wellness-village.



LILBURN

PROJECT SITE-AERIAL VIEW
Thrifty Oil Speculative Warehouse
23641 Placentia Avenue
Riverside County, California
FIGURE 2

"The Mead Valley Wellness Village will offer outpatient and residential services for behavioral health and substance use disorders, primary healthcare, and behavioral health urgent care. The facility will serve children, youth, families, veterans, and others, and will be home to the first behavioral health urgent care in Riverside County for children under 13".

"Located at the intersection of Placentia Street and Harvill Avenue. The campus will incorporate beautiful landscaping, walking trails, and functional green spaces that are visually pleasing and beneficial to individuals in recovery."

The Wellness Village will include parks, recreation areas, gardens, rest areas, and trails for community members utilizing our services.

The Wellness Village will provide primary health care, children and youth services, and mental health and substance use disorder services. An on-campus pharmacy will be open to the public.

The Wellness Village will provide a market and café open to the community.

Thrifty Oil Warehouse Project Mobile Source Health Risk Assessment MND does not include the substantial health impacts to the Mead Valley Wellness Center directly adjacent to the Proposed Project. The dock doors are facing the Mead Valley Wellness Center.

TABLE 2-4: DPM EMISSIONS FROM PROJECT TRUCKS (2026 ANALYSIS YEAR)

Truck Emission Rates						
Source		VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
Idling - Loading Docks	57			0.0885	1.26	1.460E-05
Idling - Truck Trailer Parking	57			0.0885	1.26	1.460E-05
Onsite North	114	10.28	0.0210		0.22	2.501E-06
Onsite South	114	20.29	0.0210		0.43	4.935E-06
Off-Site Travel - Placentia 50%	57	8.60	0.0090		0.08	8.945E-07
Off-Site Travel - Tobacco 50%	57	21.31	0.0090		0.19	2.217E-06
Off-Site Travel - Placentia Avenue 100%	114	54.19	0.0090		0.49	5.640E-06

[a] Vehicle miles traveled are for modeled truck route only.

[b] Emission rates determined using EMFAC 2021. Idle emission rates are expressed in grams per idle hour rather than grams per mile.

[c] This column includes the total truck travel and truck idle emissions. For idle emissions this column includes emissions based on the assumption that each truck idles for 15 minutes.

Thrifty Oil Warehouse Project Mobile Source Health Risk Assessment page 18.

OPERATIONAL IMPACTS

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project operational-source DPM emissions is Location R2 which is located approximately 90 feet west of the Project site at an existing residence located at 23551 Placentia Avenue. Since there are no private outdoor living areas (backyards) facing the Project site, R2 is placed at the building façade. At the MEIR, the maximum incremental cancer risk attributable to Project operational-source DPM emissions is estimated at 1.18 in one million, which is less than the SCAQMD significance threshold of 10 in one million. At this same location, non-cancer risks were estimated to be <0.01, which would not exceed the applicable significance threshold of 1.0. Although Location R2 is not the nearest receptor to the Project site, it is the location that would experience the highest concentrations of DPM during project operation due to meteorological conditions (wind speed and direction) in the vicinity of the Project site. All other receptors would experience lower concentrations of DPM and thus less risk during operation of the proposed Project than the MEIR identified herein. As such, the Project will not cause a significant human health or cancer risk to adjacent land uses as a result of Project operational activity. All other receptors would experience less risk than what is identified for this location.

Thrifty Oil Warehouse Project Mobile Source Health Risk Assessment page 23.

GPA 230007 conflicts with the General Plan Vision

II. THE GENERAL PLAN AMENDMENT AND ZONE CHANGE SHOULD BE DENIED WHERE IT WILL RESULT IN SIGNIFICANT ENVIRONMENTAL IMPACTS, INCLUDING SIGNIFICANT HEALTH RISKS FROM DEVELOPING DISTRIBUTION WAREHOUSES ADJACENT TO RESIDENTIAL USES.

The Mead Valley Wellness Center includes primary and specialty medical care, dental services, substance use disorder services, and a pharmacy, as well as onsite respite for families whose children are in short-term residential care.

- A recovery center featuring an adult and youth behavioral health urgent care, sobering center, crisis residential treatment and a residential substance use disorder treatment and detox program.
- A residential complex that will include supportive housing, recovery residences and residential behavioral health programs.
- Restorative care programs such as an adult residential facility and mental health rehabilitation center.

There are a large number of empty warehouses in Mead Valley within the Industrial corridor.

This Foundation General Plan Amendment (GPA) is a proposal to change the General Plan Foundation Component and Land Use designation from Rural Community-Very Low-density Residential (RC-VLDR) to Community Development – Business Park (CD-BP).

There is no justification or findings to change the land use and zoning from residential agriculture to industrial. This project is next to the Mott Rimrock Reserve with hundreds of sensitive and endangered animals and plants. The 24-7 noise, lighting and pollution will endanger this habitat.

This Project is part of the overall piecemealing of over 1200 acres outside of the Mead Valley Industrial Corridor where zoning changes are being proposed through the Foundation GPA process from residential agricultural to Industrial land uses.

• This proposed warehouse is part of 1200 acres of proposed warehouses outside of the Mead Valley Industrial Corridor.

COUNTY OF RIVERSIDE
ENVIRONMENTAL ASSESSMENT FORM: INITIAL STUDY

Project Case Type (s) and Number(s): General Plan Amendment No. 230008 (GPA230008) - Change of Zone No. 2300030 (CZ2300030); Plot Plan No. 230048 (PPT230048)
Lead Agency Name: County of Riverside Planning Department
Address: 4080 Lemon Street 12th Floor, Riverside, CA 92501
Contact Person: Krista Mason, Project Planner
Telephone Number: 951-955-6060
Applicant's Name: Stephane Wandel on behalf of Thrifty Oil Co.
Applicant's Address: 13116 Imperial Highway, Santa Fe Springs, CA 90670

I. PROJECT INFORMATION

Thrifty Oil Co (Applicant) proposes to construct one 185,912 square foot (SF) concrete tilt-up, non-refrigerated warehouse on an 9.62-acres (gross) / 8.68-acres (net) of vacant land designated as APN 317-260-017 and 317-260-018 on the southeast corner of Placentia Avenue and Tobacco Road in the unincorporated Mead Valley area of Riverside County, approximately 7 miles west of the City of Perris (Proposed Project, Figure 1 - *Regional Vicinity*; Figure 2 - *Project Site - Aerial View*; Figure 3 - *Project Site USGS View*). The Proposed Project is designed to house one or more tenant(s), which have not been designated at this time, and will include one 176,912 SF warehouse with 9 bays, two grade level doors, 23 dock high doors and two, 4,500 SF office spaces with mezzanines for a total square footage of 185,912, with related site landscaping, drainage basin, and parking. The building would be designed to incorporate standards of a 21st Century Warehouse as enacted by AB 98[1] (effective January 1, 2026) and identified in Chapter 2.8 (commencing with Section 65098) added to Division 1 of Title 7 of the Government Code. These would include at a minimum) cool roofing, medium- and heavy-duty vehicle charging readiness, light-duty electric vehicle charging readiness and installed charging stations, skylights in at least one percent of the roof area, or equivalent LED efficient lighting, classes of forklifts used on site, to be zero-emission by January 1, 2028, to the extent operationally feasible, and equipment used on site utilizing small off-road engines to be zero-emission, to the extent operationally feasible, commercially off-the shelf available, and adequate power available on site.

The Project also includes dedication of approximately 0.943 acres for public right of way improvements to be built along Tobacco Road and Placentia Avenue as a part of the Proposed Project, as well as off-site utility improvements.

The Project will also include onsite and offsite infrastructure improvements as required by the County of Riverside.

Concurrent Entitlements:

The Project requires the following approvals:

- General Plan Amendment No. 230008 (GPA 230008) proposal to change the land use from Rural Community-Very Low Density Residential (RC-VLDR) to Community Development- Business Park (BP).
- Change of Zone No. 230030 (CZ2300030) proposal to change the zone from Rural Residential one-acre minimum lot size (R-R-1) to Industrial Park (I-P).

[1] https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202320240AB98

E. **Brief description of the existing environmental setting of the project site and its surroundings:** The Project Site is relatively flat, with elevations that range from approximately 1,560 to 1,530 feet above mean sea level, sloping in an easterly gradient. Figure 9 – *Project Site Zoning* identifies the Site and zoning and the surrounding zoning. Parcel 317-260-018 at the northeast corner of the overall site which will be merged with parcel 317-260-17 contains a modular structure, trailer, and small storage building that will be removed as part of the Project proposal.

- **North:** Placentia Avenue, an approximately 21-foot-wide paved road, lies along the northern Project Site boundary. The Project Site abuts a 699,630 s.f, industrial warehouse recently constructed by Barker Logistics, LLC on the north side across Placentia Avenue, zoned Industrial Park (I-P).

- **South:** The Project Site abuts vacant property along the south side that is zoned Industrial Park (I-P). This property is owned by the same applicant who has land use entitlements develop a similar facility on this parcel APN: 317-260-015 and 317-260-16.

- **West:** Tobacco Road, an approximately 26-foot-wide paved road, lies along the western Project Site Boundary. Zoning immediately west of Tobacco Road is rural residential (R-R-1) and is occupied by single family residences.

- **East:** The Project Site abuts vacant property along the east side that is zoned Manufacturing, Service Commercial (M-SC). This parcel is owned by the County of Riverside.

The MND linked to this meeting today is the Initial study. This Project has not performed the required CEQA analysis. The MND does not include the adjacent Mead Valley Wellness Center where hundreds of residents and patients will be living and receiving care.

This Project must be denied. If it does move forward a EIR is required.

Sincerely,

Debbie Walsh

President, RAMV