Appendix A
FEDERAL JURISDICTIONAL INFORMATION

Wetlands and "Waters of the U.S." Definitions

Wetlands. The U.S. Army Corps of Engineers (USACE; Federal Register 1982) and the Environmental Protection Agency (Federal Register 1980) jointly define wetlands as "[t]hose 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" (Environmental Laboratory 1987).

Waters of the U.S. The official definition of "Waters of the U.S." and their limits of jurisdiction (as they may apply) are defined by the USACE' Regulatory Program Regulations (Section 328.3, paragraphs [a] 1-3 and [e], and Section 328.4, paragraphs [c] 1 and 2) as follows:

1. All waters which are 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;
2. all interstate waters including interstate wetlands;
3. all other waters such as intrastate lakes, rivers, streams (including intermittent streams) , mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters,
    i. which are or could be used by interstate or foreign travelers for recreation or other purposes; or
    ii. from which fish or shellfish are or could be taken and sold in interstate commerce; or
    iii. which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters …;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands)…

Non-tidal Waters of the U.S. The limits of jurisdiction in non-tidal waters: In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or when adjacent wetlands are present, the jurisdiction extends to the limit of the adjacent wetlands.

The term ordinary high water mark (OHWM) means that line on the shore established by the fluctuation 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 (scouring), the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Waters of the U.S. must exhibit an OHWM or other evidence of surface flow created by hydrologic physical changes. These physical changes include (Riley 2005):

- Natural line impressed on the bank
- Shelving
- Changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community

Further guidance on identifying the OHWM in the Arid Southwest (Lichvar and McColley 2008). This publication provided geomorphic and vegetation OHWM indicators specific to the Arid Southwest. .Jurisdictional areas also must be connected to Waters of the U.S. (Guzy and Anderson 2001; U.S. Supreme Court 2001).

As a consequence of the U.S. Supreme Court decision in Rapanos v. United States, a memorandum was developed regarding Clean Water Act jurisdiction (Grumbles and Woodley 2007). The memorandum states that the EPA and the USACE will assert jurisdiction over traditional navigable waters (TNW), wetlands adjacent to TNW, tributaries to TNWs that are a relatively permanent water body (RPW), and wetlands adjacent to TNW. An RPW has year round flow or continuous seasonal flow (i.e., typically for three months or longer). Jurisdiction over other waters (i.e., non TNW and RPW) will be based on a fact specific analysis to determine if they have a significant nexus to a TNW.

Pursuant to the USACE Instructional Guidebook (USACE and EPA 2007), the significant nexus evaluation will cover the subject reach of the stream (upstream and downstream) as well as its adjacent wetlands (Illustrations 2 through 6, USACE and EPA 2007). The evaluation will include the flow characteristics, annual precipitation, ability to provide habitat for aquatic species, ability to retain floodwaters and filter pollutants, proximity of the subject reach to a TNW, drainage area, and the watershed.

Wetland Criteria

Wetland boundaries are determined using three mandatory criteria (hydrophytic vegetation, wetland hydrology, and hydric soil) established for wetland delineations and described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). Following is a brief discussion of the three criteria and how they are evaluated.

Vegetation

“Hydrophytic vegetation is defined herein as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently

or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987).

The wetland indicator status (obligate upland, facultative upland, facultative, facultative wetland, obligate wetland, or no indicator status) of the dominant plant species of all vegetative layers is determined. Species considered to be hydrophytic include the classifications of facultative, facultative wetland, and obligate wetland as defined in the current list of wetland plants of the Arid Southwest (Lichvar, et. al. 2014; Table A-1). The percent of dominant wetland plant species is calculated. The hydrophytic vegetation criterion is considered to be met if it meets the "Dominance Test," "Prevalence Index," or the vegetation has morphological adaptations for prolonged inundation.

Table A-1*
DEFINITIONS OF PLANT INDICATOR CATEGORIES

INDICATOR CATEGORIES	ABBREVIATION	QUALITATIVE DESCRIPTION	ESTIMATED PROBABILITY of OCCURING in WETLANDS
Obligate	OBL	Occur almost always under natural conditions in wetlands	>99%
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands	67%-99%
Facultative	FAC	Equally likely to occur in wetlands or non-wetlands	34%-66%
Facultative Upland	FACU	Usually occur in non-wetlands but occasionally found in wetlands	1%-33%
Upland	UPL	Occur in wetlands in another region, but occur almost always under natural conditions in non-wetland in the region specified	>1%

*From USFWS 1996

Hydrology

"The term 'wetland hydrology' encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic reducing conditions, respectively" (Environmental Laboratory 1987).

Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least 5 percent of the growing season during a normal rainfall year (approximately

18 days for most of low-lying southern California). Hydrology criteria are evaluated based on the characteristics listed below (USACE 2008). Where positive indicators of wetland hydrology are present, the limit of the OHWM (or the limit of adjacent wetlands) is noted and mapped. Evidence of wetland hydrology is met by the presence of a single primary indicator or two secondary indicators.

Primary

- surface water (A1)
- high water table (A2)
- saturation (A3)
- water marks (B1; non-riverine)
- sediment deposits (B2; non-riverine)
- drift deposits (B3; non-riverine
- surface soil cracks (B6)
- inundation visible on aerial imagery (B7)
- water-stained leaves (B9)
- salt crust (B11)
- biotic crust (B12)
- aquatic invertebrates (B13)
- hydrogen sulfide odor (C1)
- oxidized rhizospheres along living roots (C3)
- presence of reduced iron (C4)
- recent iron reduction in tilled soils (C6)
- thin muck surface (C7)

Secondary

- watermarks (B1; riverine)
- sediment deposits (B2; riverine)
- drift deposits (B3; riverine)
- drainage patterns (B10)
- dry-season water table (C2)
- crayfish burrows (C8)
- saturation visible on aerial imagery (C9)
- shallow aquitard (D3)
- FAC-neutral test (D5)

In the absence of all other hydrologic indicators and in the absence of significant modifications of an area's hydrologic function, positive hydric soil characteristics are assumed to indicate positive wetland hydrology. This assumption applies unless the site visit was done during the wet season of a normal or wetter-than-normal year. Under those circumstances, wetland hydrology would not be present.

Soils

The USACE and Environmental Protection Agency, in their administration of Section 404 of the Clean Water Act, rely on the National Technical Committee for Hydric Soils (NTCHS) for a definition of hydric soils. According to the NTCHS "A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." (Federal Register 1994)

Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation. Soil matrix and mottle colors are identified at each sampling plot using a Munsell soil color chart (Kollmorgen 1994). Generally, an 18-inch pit is excavated with a shovel at each sampling point unless refusal occurs above 18 inches.

Soils in each area are closely examined for hydric soil indicators, including the characteristics listed below. Hydric soil indicators are presented in three groups. Indicators for "All Soils" (A) are used in any soil regardless of texture, indicators for "Sandy Soils" (S) area used in soil layers

with USDA textures of loamy fine sand or coarser, and indicators for "Loamy and Clayey Soils" (F) are used with soil layers of loamy very fine sand and finer (USACE 2008).

- histosols (A1)
- histic epipedons (A2)
- black histic (A3)
- hydrogen sulfide (A4)
- stratified layers (A5)
- 1 cm muck (A9)
- depleted below dark surface (A11)
- thick dark surface (A12)
- sandy mucky mineral (S1)
- sandy gleyed matrix (S4)
- sandy redox (S5)
- stripped matrix (S6)
- loamy mucky mineral (F1)
- loamy gleyed matrix (F2)
- depleted matrix (F3)
- redox dark surface (F6)
- depleted dark surface (F7)
- redox depressions (F8)
- vernal pools (F9)
- 2 cm muck (A10)
- reduced vertic (F18)
- red parent material (TF2)

Hydric soils may be assumed to be present in plant communities that have complete dominance of obligate or facultative wetland species. In some cases, there is only inundation during the growing season and determination must be made by direct observation during that season, recorded hydrologic data, testimony of reliable persons, and/or indication on aerial photographs.

Non-wetland Waters of the U.S.

The non-wetland Waters of the U.S. designation is met when an area has periodic surface flows but lacks sufficient indicators to meet the hydrophytic vegetation and/or hydric soils criteria. For purposes of delineation and jurisdictional designation, the non-wetland Waters of the U.S. boundary in non-tidal areas is the OHWM as described in the Section 404 regulations (33 CFR Part 328).

USGS Mapping

The USGS Quad maps are one of the resources used to aid in the identification and mapping of jurisdictional areas. Their primary uses include understanding the subregional landscape position of a site, major topographical features, and a project's position in the watershed.

In our experience the designation of watercourse as a blue-line stream (intermittent or perennial) on USGS maps has been unreliable and typically overstates the hydrology of most streams. This has also been the experience of others, including the late Luna Leopold. Leopold was a hydrologist with USGS from 1952 to 1972, Professor in the Department of Geology and Geophysics, and Department of Landscape Architecture, University of California, Berkeley from 1972 to 1986, and Professor Emeritus from 1987 until his death in 2006. In regard to USGS maps, Dr. Leopold wrote "I tried to devise a way of defining hydrologic criteria for the channels shown on topographic maps and developed some promising procedures. None were acceptable to the topographers, however. I learned that the blue lines on a map are drawn by nonprofessional, low-salaried personnel. In actual fact, they are drawn to fit a rather personalized aesthetic." (1994)

REFERENCES

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. with Appendices.

Federal Register. July 13, 1994. Changes in hydric soils of the United States

Grumbles, B.H. and J.P. Woodley, Jr. 2007. Memorandum: Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. June 5. 12 pp.

Guzy, G.S. and R.M. Anderson. 2001. Memorandum: Supreme Court Ruling Concerning CWA Jurisdiction Over Isolated Waters. U.S. EPA and U.S. Army Corps of Engineers.

Kollmorgen Instruments Corporation. 1994. Munsell Soil Color Charts, Revised edition. Baltimore, MD.

Leopold, Luna B. 1994. A View of the River. Harvard Univ. Press, Cambridge, MA, 298 pp.

Lichvar, R., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2014. Arid West, 2014 Regional Wetland Plant List. Phytoneuron 2014-41: 1-42. http://rsgisias.crrel.usace.army.mil/nwpl_static/data/docs/lists_2014/Regions/pdf/reg_AW_2014v1.pdf

Lichvar, R. and S. McColley. 2008. A Field Guide to the Identification of the Ordinary High Water Mark(OHWM) in the Arid West Region of the Western United States, A Delineation Manual. August. 68 pp., plus Appendices.

Riley, D.T. 2005. Ordinary High Water Mark. RGL No. 05-05. 4pp

U.S. Army Corps of Engineers (USACE). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Eds. J.S. Wakely, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center. September.

U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA). 2007. U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook. May 30. 60 pp. U.S. Army Corps of Engineers (USACE).

U.S. Fish and Wildlife Service. 1996. 1996 National List of Vascular Plant Species That Occur in Wetlands. http://www.mde.state.md.us/programs/Water/WetlandsandWaterways/DocumentsandInformation/Documents/www.usace.army.mil/CECW/Documents/cecwo/reg/plants/l96_intro.pdf

U.S. Supreme Court. 2001. Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 99-1178 (SWANCC). January 9.

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix B

STATE JURISDICTIONAL INFORMATION

Appendix B
STATE JURISDICTIONAL INFORMATION

California Department of Fish and Wildlife Regulations

The California Department of Fish and Wildlife (CDFW; Department) regulates alterations or impacts to streambeds or lakes (wetlands) under Fish and Game Code Sections 1600 through 1616 for any private, state, or local government or public utility-initiated projects. The Fish and Game Code Section 1602 requires any entity to notify the Department before beginning any activity that will do one or more of the following: (1) substantially obstruct or divert the natural flow of a river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers and streams as well as lakes in the state.

In order to notify the Department, a person, state, or local governmental agency or public utility must submit a complete notification package and fee to the Department regional office that serves the county where the activity will take place. A fee schedule is included in the notification package materials. Under the Permit Streamlining Act (Government Code Sections 65920 et seq.), the Department has 30 days to determine whether the package is complete. If the requestor is not notified within 30 days, the application is automatically deemed to be complete.

Once the notification package is deemed to be complete, the Department will determine whether the applicant will need a Lake or Streambed Alteration Agreement (SAA) for the activity, which will be required if the activity could substantially adversely affect an existing fish and wildlife resource. If an SAA is required, the Department will conduct an on-site inspection, if necessary, and submit a draft SAA that will include measures to protect fish and wildlife resources while conducting the project. If the applicant is applying for a regular SAA (less than five years), the Department will submit a draft SAA within 60 calendar days after notification is deemed complete. The 60-day time period does not apply to notifications for long-term SAAs (greater than 5 years).

After the applicant receives the SAA, the applicant has 30 calendar days to notify the Department whether the measures in the draft SAA are acceptable. If the applicant agrees with the measures included in the draft SAA, the applicant will need to sign the SAA and submit it to the Department. If the applicant disagrees with any measures in the draft SAA, the applicant must notify the Department in writing and specify the measures that are not acceptable. Upon written request, the Department will meet with the applicant within 14 calendar days of receiving the request to resolve the disagreement. If the applicant fails to respond in writing within 90 calendar days of receiving the draft SAA, the Department may withdraw that SAA. The time periods described above may be extended at any time by mutual agreement.

After the Department receives the signed draft SAA, the Department will make it final by signing the SAA; however, the Department will not sign the SAA until it both receives the notification fee and ensures that the SAA complies with the California Environmental Quality

Act (Public Resources Code Section 21000 et seq.). After the applicant receives the final agreement, the applicant may begin the project the agreement covers, provided that the applicant has obtained any other necessary federal, state and/or local authorizations.

Water Resource Control Board Regulations

Section 401 Water Quality Certification

Whenever a project requires a federal Clean Water Act (CWA) Section 404 permit or a Rivers and Harbors Act Section 10 permit, it must first obtain a CWA Section 401 Water Quality Certification. The Regional Water Quality Control Board (RWQCB) administers the 401 Certification program. Federal CWA Section 401 requires that every applicant for a Section 404 permit must request a Water Quality Certification that the proposed activity will not violate state and federal water quality standards.

Porter-Cologne Water Quality Control Act

The State Water Resource Control Board (SWRCB) and the RWQCB regulate the discharge of waste to waters of the State via the 1969 Porter-Cologne Water Quality Control Act (Porter-Cologne) as described in the California Water Code (SWRCB 2008). The California Water Code is the State's version of the Federal CWA. Waste, according to the California Water Code, includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal. State waters that are not federal waters may be regulated under Porter-Cologne. A Report of Waste Discharge must be filed with the RWQCB for projects that result in discharge of waste into waters of the State. The RWQCB will issue Waste Discharge Requirements (WDRs) or a waiver. The WDRs are the Porter-Cologne version of a CWA 401 Water Quality Certification.

REFERENCES

California Association of Resource Conservation Districts. 2002. Guide to Watershed Project Permitting for the State of California. Available at URL: http://www.carcd.org/permitting/pguide.pdf.

California Department of Fish and Wildlife (CDFW). Fish and Game Code Sections 1600 through 1616.

Date unknown. Streambed/Lake Alteration Notification Guidelines.

Appendix C

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: South Norco Channel City/County: Norco/Riverside Sampling Date: 21 May 2012

Applicant/Owner: Riverside Co. Flood Control and Water Conservation District; RCF-02 State: CA Sampling Point: 1

Investigator(s): W.L. Sward Section, Township, Range: S 7 and 18, T 3 south, R 6 west

Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): none Slope (%): 2%

Subregion (LRR): C Lat: 33.9134 Long: -117.5480 Datum: WGS84

Soil Map Unit Name: Placentia fine sandy loam, 0 - 5 % (PlB) NWI classification: Undefined

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation ✔, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Sample point is located in a natural bottomed, trapezoidal drainage ditch. NWI maps show an undefined polygon at the sample point.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 25'X60')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15'X30")			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot size: r=5')			
1. Grass seedling (Leptochloa fusca?)	+	No	FACW?
2. Aphanisma blitoides	2%	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	2%	= Total Cover	
Woody Vine Stratum (Plot size: 10'X10')			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

Channel is maintained Riverside Co. Flood Control and Water Conservation District is un-vegetated. Maintenance is conducted pursuant to an MOU with the CDFG (T. Rheiner, pers. comm.).

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR3/2	100%					Sa	coarse sand
1-3	10YR2/1	100%					Sa	coarse sand; high organic content
3-5	5Y4/1	100%					SaCL	
5-10	10YR3/2	100%					SaCL	
10-12	10YR3/2	100%					SaL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✔

Remarks:

No hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ✔ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✔ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): _____

Water Table Present? Yes ✔ No ____ Depth (inches): 4"

Saturation Present? (includes capillary fringe) Yes ✔ No ____ Depth (inches): 0"

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Aquatic invertebrates: clam shell fragments.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: South Norco Channel Line S-1 City/County: Norco/Riverside Sampling Date: 23 Dec 2014

Applicant/Owner: Riverside Co. Flood Control and Water Conservation District/RCF-02.03 State: CA Sampling Point: 2

Investigator(s): L Sward & R Hoganauer Section, Township, Range: La Sierra Land Grant (unsectioned)

Landform (hillslope, terrace, etc.): Trapezoidal drainage ditch Local relief (concave, convex, none): none Slope (%): 2%

Subregion (LRR): C: Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

SP centered in densest patch of vegetation. WUS and State limits GPS'd. SP is located in man made, earthen trapezoidal channel.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20' X 60')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 20' X 20")			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' X 5')			
1. Leptochloa fuscoe uninerva	40	yes	FACW
2. grass seedling	+	no	?
3.			
4.			
5.			
6.			
7.			
8.			
	40%	= Total Cover	
Woody Vine Stratum (Plot size: 10' X 10')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 60% % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks:

Herbaceous wetland.
Sparse Typha sp. sprouts downstream.

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4"	10YR 3/3	100%					Sa	
4" - 8"	10YR 3/1	95%	5YR 4/6	5%	RM	M	SaL	
8"- 10"	2.5Y 3/2	100%					SaCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Hard pan

Depth (inches): 8" - 10"

Hydric Soil Present? Yes ✔ **No** ___

Remarks:

Water in pit at 8".

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✔ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): ___

Water Table Present? Yes ✔ No ___ Depth (inches): 8"

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 4"

Wetland Hydrology Present? Yes ✔ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

FAC-neutral Test; w:u=1:0

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: South Norco Channel Line S-1 City/County: Norco/Riverside Sampling Date: 23 Dec 2014

Applicant/Owner: Riverside Co. Flood Control and Water Conservation District/RCF-02.03 State: CA Sampling Point: 3

Investigator(s): L Sward & R Hoganauer Section, Township, Range: La Sierra Land Grant (unsectioned)

Landform (hillslope, terrace, etc.): Trapezoidal drainage ditch Local relief (concave, convex, none): none Slope (%): 2%

Subregion (LRR): C: Mediterranean California Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

SP is located in man made, earthen trapezoidal channel.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 12' X 60')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 12' X 20')			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5' X 5')			
1. Veronica anagalis-aquatica	22%		OBL
2. Pseudognaphalium luteoalbum	2%	no	FAC
3. Medicago polymorpha	1%	no	FACU
4. Persicaria lapathifolia	+	no	FACW
5. Malva parviflora	+	no	UPL
6. Sonchus oleraceous	+	no	UPL
7. Sisymbrium irio	+	no	UPL
8.			
	25%	= Total Cover	
Woody Vine Stratum (Plot size: 10; X 10')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 75% % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks:

Disturbed wetland.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4"	10YR 3/3	100%					Sa	coarse sand
4" - 7"	10YR 3/2	100%					SaL	
7" - 11"	2.5YR 4/1	60%	7.5YR 4/6	40%	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✔ Surface Water (A1)
- ✔ High Water Table (A2)
- ✔ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✔ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✔ No ___ Depth (inches): 1" - 2"

Water Table Present? Yes ✔ No ___ Depth (inches): 9"

Saturation Present? (includes capillary fringe) Yes ✔ No ___ Depth (inches): 4"

Wetland Hydrology Present? Yes ✔ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water ponded in approximately 15% of herbaceous stratum sampling area, in southern part of area.
FAC-neutral Test; w:u=1:0

Appendix D

SAMPLE POINT AND SITE PHOTOS

Sample Point 1. This sample point is located in the channel, just upstream from Temescal Avenue. Wetland hydrology was present but hydric soil and wetland vegetation were not. Channel is maintained by the Riverside County Flood Control and Water Conservation District, and is unvegetated. Maintenance is conducted pursuant to an MOU with the CDFG (T. Rheiner, pers. comm.). Three squashed, 2-foot diameter corrugated metal pipes, visible downstream from the sample point, convey water under Temescal Avenue. 21 May 2012

Sample Point 2. This sample point is located in the channel, just upstream from a culverted crossing in the southern part of the channel. All three wetland parameters, vegetation, soil, and hydrology, were present. The vegetation at this location was dominated by native wetland species. 23 December 2014

Sample Point 3. This sample point is located in the channel, just downstream from Temescal Avenue. All three wetland parameters, vegetation, soil, and hydrology, were present. The vegetation at this location was dominated by non-native wetland species. 23 December 2014

Appendix E

MEMORANDUM OF UNDERSTANDING

RIVERSIDE COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT
AND
CALIFORNIA DEPARTMENT OF FISH AND GAME
MEMORANDUM OF UNDERSTANDING
MAINTENANCE ACTIVITIES IN IMPROVED CHANNELS
AND
DETENTION/RETENTION AND/OR DEBRIS BASINS

This Memorandum of Understanding (MOU) by and between the California Department of Fish and Game, hereinafter called the "Department", and Riverside County Flood Control and Water Conservation District, hereinafter called the "District", is for the purpose of delineating and defining routine maintenance activities in improved channels and basins that shall not require further Notice and Agreement in compliance with Section 1601 of the Fish and Game Code.

WHEREAS, Section 1601 of the Fish and Game Code empowers the Department to propose reasonable modification(s) to projects as would allow for the protection and continuation of existing fish and wildlife resources; and

WHEREAS, it is essential that the District perform routine maintenance activities within improved channels and basins to ensure that the facilities continue to provide the design level of flood protection to which the facilities were constructed, to protect the public's investment, to prevent loss of life and property and to comply with local ordinances and regulations, the regulations pertaining to the National Flood Insurance Program and other Federally mandated programs; and

WHEREAS, it is mutually beneficial to delineate and define routine maintenance of improved channels and basins, and to establish procedures to expedite maintenance activities, and to provide for the protection of fish, wildlife and their habitats during such maintenance activities; and

WHEREAS, nothing in this MOU shall constitute a waiver of any future or current Department claims to the use and maintenance of natural conditions under the public trust doctrine; and

WHEREAS, nothing in this MOU shall constitute a waiver of the District's claimed rights to maintain and operate the improved channel(s) and basin(s) solely for flood control purposes.

NOW, THEREFORE, the Department and the District agree as follows:

I. DEFINITIONS

A. Improved Channel. A waterway in which significant man-made alteration has occurred to improve the passage of flood flows, including straightening and containing the flows within constructed banks (including levees) and concrete-lined, riprap or earth trapezoidal channels with engineered banks. Channel banks, channel bottoms, low flow channels and other appurtenant features of improved channels are defined by the diagram of the typical cross section of improved flood control channels as shown in Exhibit 3 attached hereto and incorporated herein by reference.

B. Improved Basin. A facility which has been designed and constructed to temporarily impound flood waters and/or debris during times of flood flows. An improved basin is typically located along a natural watercourse and has flood waters and/or debris delivered to it via the watercourse or an improved basin may be located apart from a natural watercourse and have flood waters and/or debris delivered to it via an improved channel or underground storm drain system. Basin banks, bottom, low flow "wet" areas, low flow channel, inlet structure(s), outlet structure, dam embankment (if any) and other appurtenant features are defined by the diagram of the conceptual plan view and cross section as shown in Exhibit 4 attached hereto and incorporated herein by reference.

C. Maintenance. The removal of sand, silt, sediment, debris, rubbish, woody and herbaceous vegetation and other obstructions to flow, the control of weeds, grasses and emergent vegetation and the repair and/or replacement, cleaning and clearing of constructed channel or basin improvements all as necessary to maintain the structural integrity and capacity of the improved channel(s) or basin(s). The improved channels and basins listed in Exhibit 1 and shown on the Maintenance Maps, Exhibit 2, attached hereto are the current list of facilities covered by this MOU. Exhibit 1 and Exhibit 2 are attached hereto and incorporated herein by reference.

II. AUTHORIZED ACTIVITIES

The maintenance activities identified below, when performed on the improved channel(s), improved basin(s) and adjacent work area(s) specified in Exhibit 1 and in accordance with the procedures described below, shall not require further notice to, or agreement with, the Department pursuant to Section 1601 of the Fish and Game Code.

The District, in the selection and application of pesticides (herbicides and rodenticides) as hereinafter set forth, shall comply with all applicable local, State, and Federal permitting or licensing requirements or regulations. Nothing in this MOU shall be construed as a permit, license, or any other entitlement to the application of pesticides.

A. Control of weeds and grasses on maintenance roads and on the areas between top of banks (improved channel and improved basin) and adjacent property to comply with local fire regulations and to provide a safe travel way to conduct facility inspection and maintenance activities by mowing, discing, hand labor or herbicide application.

B. Control of weeds and grasses, and emergent aquatic vegetation on earthen channel bottoms and banks to maintain channel design capacity, or to comply with local fire regulations, or to conduct facility inspection. Vegetation control will be accomplished by mowing, hand labor or herbicide application.

C. Control of weeds and grasses on the basin banks to comply with local fire regulations or to conduct facility inspection by mowing, hand labor or herbicide application.

D. Control of weeds and grasses in revegetated mitigation areas and landscaped areas to allow plant establishment by mowing, discing, hand labor or herbicide application as specified in Exhibit 1.

E. Removal of vegetation, sand, silt, sediment and debris, and other obstructions to flow within the immediate vicinity (not to exceed 100 feet) of the following structures: (1) stream flow measuring stations; (2) culverts and bridges; (3) storm drain outfall structures; (4) drop structures (energy dissipaters), and (5) basin inlet and outlet structures, to maintain the structures design function. Surface flowing water, if any, will be diverted, if possible, from work area when using equipment in the improved channel or improved basin.

F. Control and/or removal of woody and herbaceous vegetation with large tractor-pulled rotary mowers or equivalent and/or hand labor and tools on channel bottoms and channel banks to maintain channel design capacity. Improved channels that are to be cleared in strips in alternating years to retain habitat for wildlife, as illustrated in Exhibit 5 attached hereto and incorporated herein by reference, are indicated in Exhibit 1.

G. Control and/or removal of woody and herbaceous vegetation, weeds and grasses with large tractor-pulled rotary mowers or equivalent and/or hand labor tools on basin bottoms to comply with local fire regulations or to minimize the potential for obstructing the basin outlet structure. Except as provided for in Authorized Activities E or P or as indicated in Exhibit 1, vegetation in low flow "wet" areas shall be left undisturbed.

H. Removal of trees or branches that are in imminent danger of falling, fallen trees and associated debris to maintain the channel or basin outlet structure design capacity.

I. Removal of accumulated sand, silt, sediment, woody and herbaceous vegetation, debris, rubbish and other obstructions from concrete-lined or rock-lined channels or transition sections to maintain design capacity.

J. Removal of accumulated sand, silt, sediment, debris, rubbish and other obstructions or accumulations in improved channels with unlined channel bottoms or basin bottoms to maintain channel or basin design capacity. Improved channels or improved basins that are to be cleared in strips in alternating years to retain habitat for wildlife, as illustrated in Exhibit 5, are indicated in Exhibit 1.

K. Removal of accumulated sand, silt, sediment, debris, rubbish and other obstructions or accumulations in improved channels with unlined channel bottoms to maintain low flow channel design capacity or, when necessary, to

provide fish passage or habitat identified in District environmental documents.

L. Repair of failed sections of rock, gabion, masonry block, rail and wire, concrete-lined, gunite, grouted concrete riprap or other bank protections to maintain bank stabilization measures or drop structures to provide invert stabilization measures. Surface flowing water, if any, will be diverted from the work area, if possible, when using equipment in the improved channel. Maintenance activities shall be confined to the section affected by the failure. Upon maintenance activity completion, disturbed portions of the channel bottom shall be scarified from the work site to the equipment entrance where equipment traffic has caused compaction of the streambed soil materials.

M. Restoration of eroded earth levees or channel and basin banks previously installed and/or maintained for public health and safety. Surface flowing water, if any, will be diverted from the work area, if possible, when using equipment in the improved channel or improved basin.

N. Scarify bottom of improved channel(s) or improved basin(s) by discing, ripping or bulldozing for the purpose of increasing the percolation rate related to the promotion of groundwater recharge.

O. Control of burrowing rodents in channel, basin (including dam embankment) or levee banks with application of rodenticides.

P. Removal of accumulated sand, silt, sediment, woody and herbaceous vegetation, debris, rubbish and other obstructions from basin bottoms including low flow "wet" areas by mowing, discing, bulldozing, hand labor or herbicide application as specified in Exhibit 1.

III. TIME AND MANNER OF WORK

Maintenance work shall be performed at a time and in a manner which shall meet the District's obligations to public health and safety while recognizing the need to minimize adverse impacts to fish and wildlife resources and their habitat. Periods of concern to the Department are March through June for nesting birds.

IV. REPORTING REQUIREMENTS

The District shall provide written notification to the Regional Manager, Region 5 of the Department on or about May 1, of each year. The notification shall include a list of the projects on which routine maintenance is anticipated to be performed in the following fiscal year (July 1 through June 30). The notification shall also include a list of those projects on which routine maintenance was performed during the current fiscal year but were not included in the notification provided in the previous year. The notification need not include a list of those projects on which routine maintenance is not anticipated to occur in the following year or will be performed entirely within a reach of concrete channel.

EXHIBIT 1

IMPROVED CHANNELS AND BASINS MAINTENANCE LISTING

RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

NOTES:

GROUP 1: AUTHORIZED ACTIVITIES INCLUDE ITEMS A, B, E, F, H, J, K, L, M, O (typically applicable to earthen channels and/or levees and with or without slope protection)

GROUP 2: AUTHORIZED ACTIVITIES INCLUDE ITEMS A, E, H, I, L, O (typically applicable to concrete trapezoidal or rectangular channels)

GROUP 3: AUTHORIZED ACTIVITIES INCLUDE ITEMS A, C, E, G, H, J, L, M, O (typically applicable to detention/retention and/or debris basins)

GROUP 4: Federal Project - Maintenance activities regulated by the Secretary of the Army and may include any or all of the Authorized Activities.

Unless an individual Authorized Activity is specifically listed as an Authorized Activity on Pages 1 through 35 of this Exhibit, the activities included in each of the Groups above shall be the only activities which may be accomplished for any particular project as designated on Pages 1 through 35 of this Exhibit.

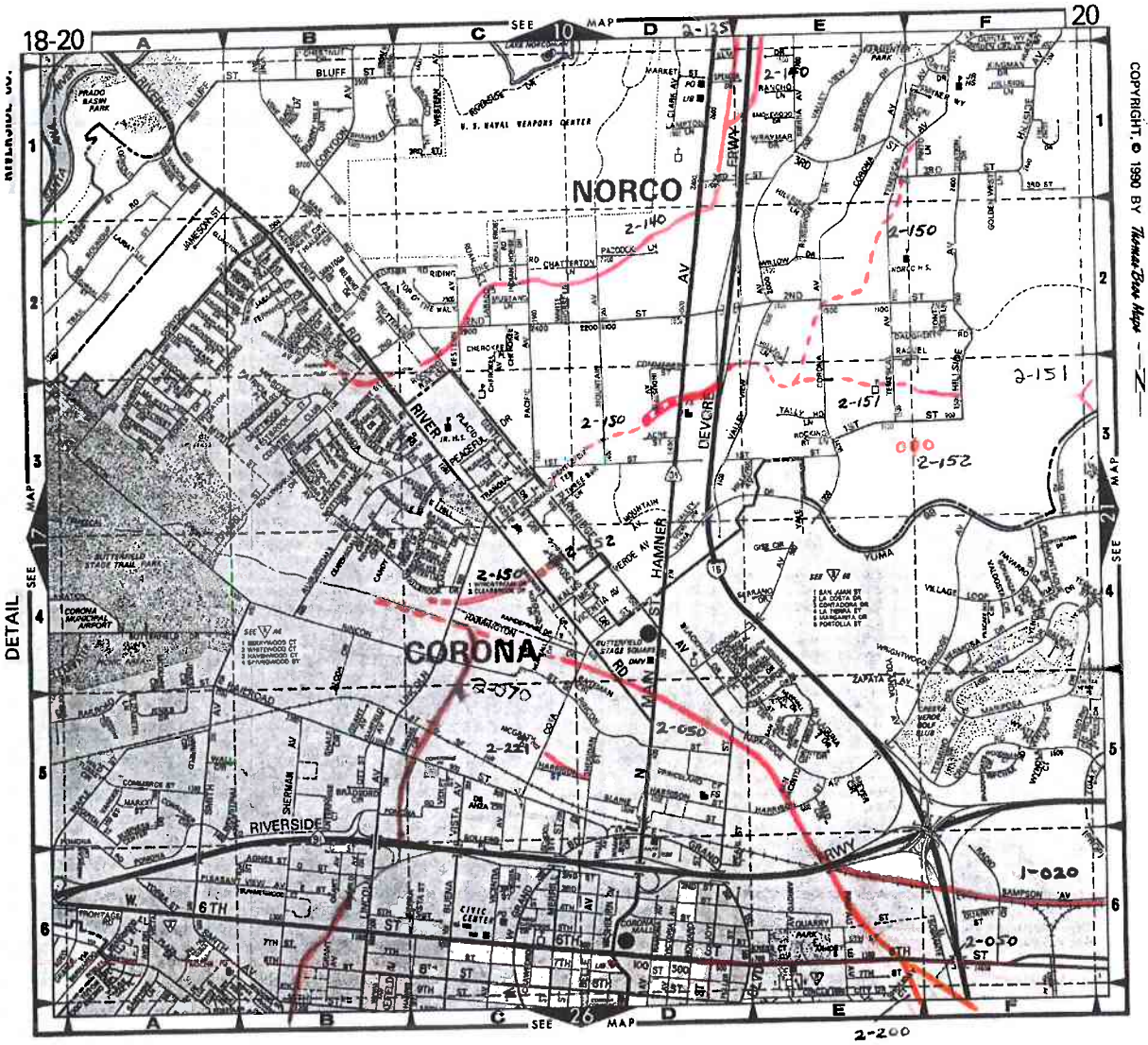
Updated July 1997

R.C.F.C. & W.C.D.

EXHIBIT 1
IMPROVED CHANNELS AND BASINS MAINTENANCE LISTING

ZONE 2

PROJECT NO.	PROJECT NAME	DESCRIPTION (PROJECT TYPE)	LOCATION (See Thomas Bros. Map) PAGE NO.	GRID	AUTHORIZED ACTIVITIES (SEE COVER SHEET OF EXHIBIT 1 AND SECTION II OF MOU)
2-0135	North Norco Channel Frwy Lat.	Concrete trap. channel	10 20	E6 D1, E1	GROUP 2
2-0140	North Norco Channel	Concrete trap., concrete rectangular channels	10 20	E5, 6 B3, C2, D1, 2, E1	GROUP 2
	North Norco Channel	Earthen trap. channel	10 20	E4, 5, F4 B2, 3	GROUP 1
2-0142	North Norco Channel Line NA	Concrete rectangular wall	10	E5, F5	GROUP 2
2-0145	North Norco Channel Line NB	Concrete trap. channel	10	E6, F6	GROUP 2
	North Norco Channel Line NB	Earthen trap. channel	10	E6	GROUP 1
2-0150	South Norco Channel	Concrete channel	20	D3	GROUP 2
	South Norco Channel	Earthen trap. channel with and without bank protection	20	C3, D3, E1-3, F1	GROUP 1


18-20
20
SEE MAP 10
SEE MAP 26
NORCO
CORONA
RIVERSIDE
2-135
2-140
2-150
2-151
2-152
2-155
2-170
2-221
2-650
2-050
2-200
I-020
RIVER RD
HAMNER AV
DEVORE
MAIN ST
6TH ST
DETAIL
COPYRIGHT © 1990 BY Thomas Bros Maps

Appendix D

WET SEASON FAIRY SHRIMP SURVEY REPORT

HELIX
Environmental Planning

South Norco Channel Project

Wet Season Fairy Shrimp Survey Report

May 28, 2015

Prepared for:
Riverside County Flood Control and Water Conservation District
1995 Market Street
Riverside, CA 92501

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard, Suite 200
La Mesa, CA 91942

I certify that the information in this survey report and attached exhibits fully and accurately represent my work:

Jason Kurnow

Amy Mattson

South Norco Channel Project
Wet Season Fairy Shrimp Survey Report

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

THIS PAGE INTENTIONALLY LEFT BLANK

1.0 INTRODUCTION

This report presents the findings of the 2014-2015 wet season fairy shrimp survey conducted for the South Norco Channel Project, which encompasses an approximately 19.5-acre study area located within the City of Norco, Riverside County, California (Figure 1). The study area is situated within Sections 7 and 18 of Township 3 South, Range 6 West as shown on the U.S. Geological Survey 7.5-minute Corona North quadrangle map (Figure 2). The study area is located within the Cities of Riverside and Norco Area Plan, of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). However, none of the parcels that compose the study area are within any Criteria Cell, Cell Group, or Sub Unit.

The purpose of this survey was to determine presence/absence of federally listed threatened vernal pool fairy shrimp (*Branchinecta lynchi*) and federally listed endangered Riverside fairy shrimp (*Streptocephalus woottoni*) within water-holding basins occurring within the study area.

1.1 SPECIES INFORMATION

There are 3 species of fairy shrimp with potential to occur on site: Riverside fairy shrimp, vernal pool fairy shrimp, and versatile fairy shrimp (*Branchinecta lindahli*). The Riverside fairy shrimp is federally listed as endangered, vernal pool fairy shrimp is federally listed as threatened, and versatile fairy shrimp is relatively common and is not listed or considered sensitive. Riverside fairy shrimp can be found in Riverside, Orange, and San Diego counties, and occur in vernal pools and other ephemeral basins. Vernal pool fairy shrimp occur throughout the Central Valley and in several disjunct populations in Riverside County. The versatile fairy shrimp is common in pools throughout California and can co-occur with both vernal pool and Riverside fairy shrimp. Federally listed endangered San Diego fairy shrimp (*B. sandiegonensis*) can be found in San Diego and Orange counties but are not known to occur in Riverside County and are not expected to occur within the study area.

2.0 METHODS

HELIX permitted biologists Jason Kurnow and Amy Mattson (Permit TE778195) conducted the wet season survey according to U.S. Fish and Wildlife Service (USFWS) protocol (USFWS 1996) to determine presence/absence of vernal pool and Riverside fairy shrimp. Five site visits were conducted within the study area during this survey. Ponding was noted at the site on December 23, 2014. A request to conduct surveys was submitted to the USFWS on December 24, 2014 and the initial survey occurred on January 8, 2014. This was approximately 5 weeks after the initial rain event of the 2014-2015 rain season[1]. Subsequent visits occurred on January 23, February 6, March 18, and May 26, 2015.

Samples were taken in water-holding basins using fine mesh aquarium nets. When possible, fairy shrimp were identified in the field and immediately returned to their pool of origin. In

[1] * The initial rain event occurred from November 30, 2014 to December 4, 2014. The rainfall total for this event according to the nearest NOAA weather station (Yorba Linda) was 3.23 inches.

some instances, fairy shrimp were collected and identified using the key in Eriksen and Belk (1999) with aid of a dissecting scope. When "take" of fairy shrimp occurred, no more than 3 male specimens were collected from pools having no less than 10 fairy shrimp. Care was taken to ensure that nets were cleaned after each basin was sampled. Basin depth, area, water temperature, air temperature, habitat condition, and species present were noted and recorded on USFWS vernal pool data sheets (Appendix A). Data sheets were not filled out when a basin was dry during a survey visit. Representative site photos are included in Appendix B.

3.0 RESULTS

No federally listed threatened or endangered fairy shrimp were observed in this wet season fairy shrimp survey. Three basins were observed to hold water during this survey. The non-listed versatile fairy shrimp was observed in Basins 1 and 2 (Table 1; Figure 3).

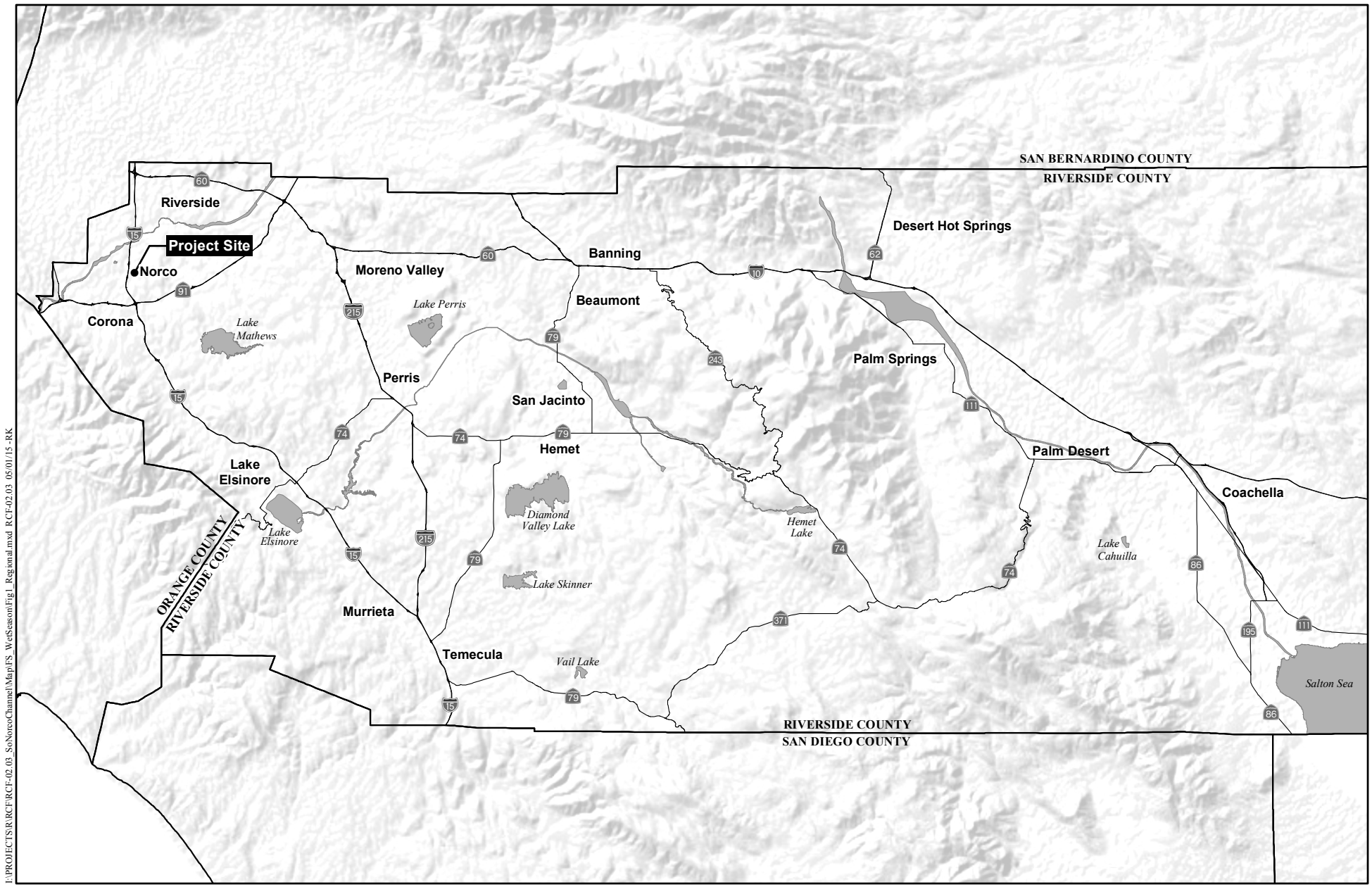
Table 1
WET SEASON FAIRY SHRIMP SAMPLING RESULTS

BASIN	2015				
	1/8	1/23	2/6	3/18	5/26*
1	BRLI	BRLI	Dry	Dry	Dry
2	BRLI	Dry	Dry	Dry	Dry
3	---	Dry	Dry	Dry	Dry

BRLI: Branchinecta lindahli
--- : Basin sampled, but no fairy shrimp observed
* Pond check triggered by a storm event occurring May 15, 2015.

4.0 DISCUSSION

The start date of the wet season survey in the study area likely resulted in one or two fewer sampling events than otherwise would have been done. This is based on the basins being ponding by December 4, 2014. Given that date for ponding, the initial survey would have been done one week earlier. If the surveys were conducted one week earlier, there may have been sufficient ponding for one more survey before the pools dried out. However, it is likely that the outcome would be the same if the survey effort began earlier. This is because the initial rain event of the 2014-2015 rain season was significant, yielding a rain fall total of 3.23 inches. This is enough to cause ponding in all 3 basins. Since the initial rain event, two other rain events occurred prior to the initial wet season survey: one occurring December 12-13, 2015, with the second occurring December 16-17, 2015. Rainfall totals for these two events were 1.74 inches and 0.47 inch. It is unlikely that any of the basins dried out from the time of initial inundation to the time of the initial survey visit. Fairy shrimp hatching as a result of initial inundation would likely still be present during the initial survey, although their densities might have differed from what was observed. Thus, the number of versatile fairy shrimp may have been different, but no additional species would have been present.



I:\PROJECTS\R\RCF\RCF-02.03_SoNorcoChannel\Map\FS_WetSeason\Fig1_Regional.mxd RCF-02.03 05/01/15 -RK

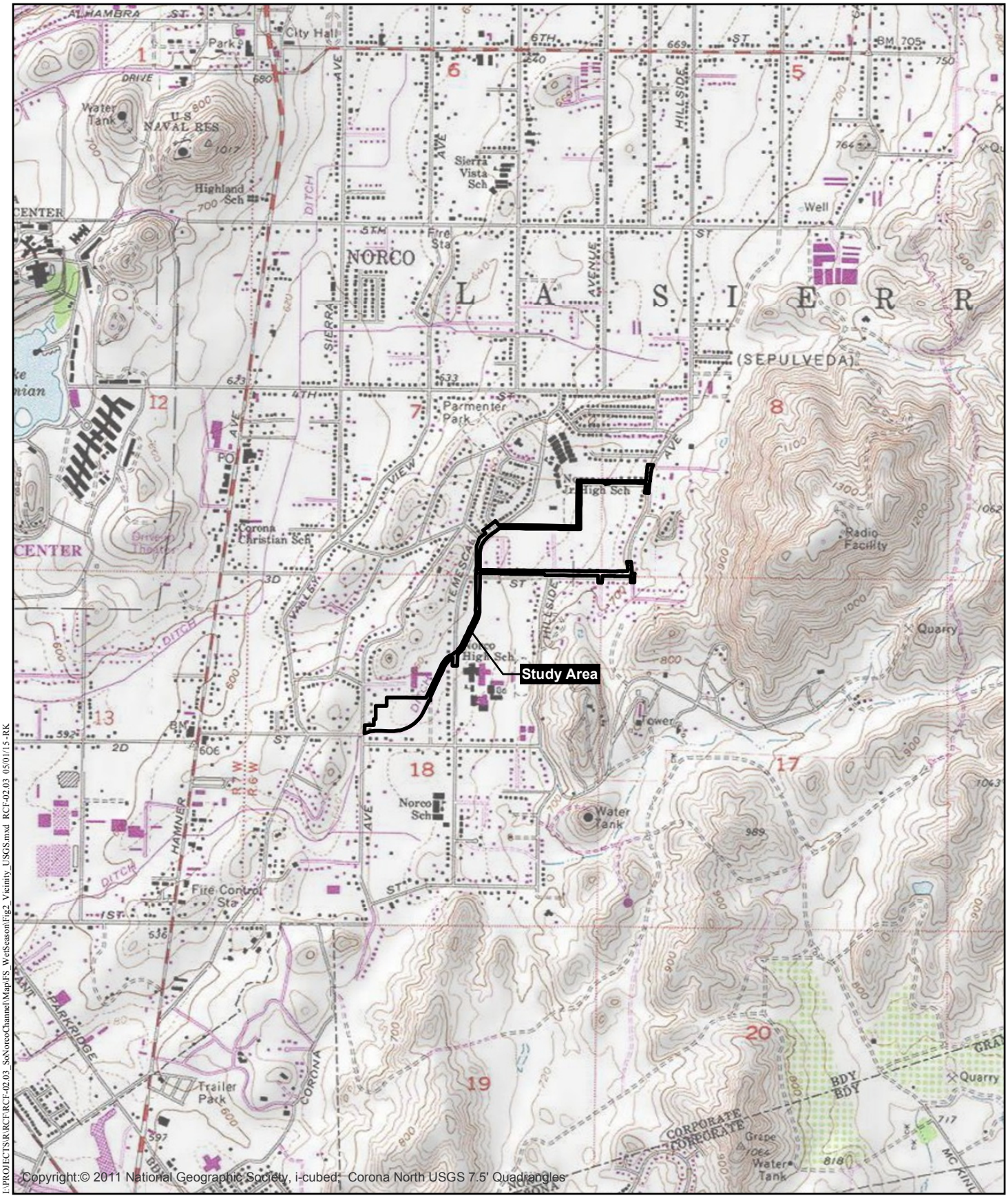
Regional Location

SOUTH NORCO CHANNEL

HELIX Environmental Planning

N 0 10 Miles

Figure 1



I:\PROJECTS\R\RCF\RCF-02.03_SoNorcoChannel\Map\FS_WetSeason\Fig2_Vicinity_USGS.mxd RCF-02.03 05/01/15 RK

Project Vicinity - USGS Quadrangle

SOUTH NORCO CHANNEL

HELIX Environmental Planning

N 0 2,000 Feet

Figure 2

I:\PROJECTS\R\RCF\RCF-02.03_SoNorcoChannel\Map\FS_WetSeason\Fig3_Basins.mxd RCF-02.03 05/01/15 -RK

Sampled Basins

SOUTH NORCO CHANNEL

HELIX Environmental Planning

N 0 150 Feet

Figure 3

5.0 REFERENCES

Eriksen, C.H. and D. Belk. 1999. Fairy Shrimps of California's Puddles, Pools, and Playas. Mad River Press. Eurkea, California. 196pp.

U.S. Fish and Wildlife Service (USFWS). 1996. Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Brachiopods. April 19.

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix A

USFWS WET SEASON SURVEY DATA SHEETS

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ☐ No ☑ Yes

Required color slides and/or photographs for the project site are included: ☐ No ☑ Yes

Date: 1/8/15 Time: 0830-0930 County: Riverside Quad: Corona North

Collectors: Jason Kurnow Permit #: TE778195

Site/Project Name: South Norco Channel Pool#: 1

Township: 3 south Range: 6 west Section: 18 Lat: 33°54'38.35"N Long: 117°33'01.69"W

Air Tempurature (°C): 17 Water Temperature (°C): 9

Pool Depth:
at time of sampling: 10 cm
estimated maximum: 30 cm

Surface Area:
at time of sampling: 16 m x 4 m
estimated maximum: 100 m x 25 m

Habitat Condition:

undisturbed ☐ disturbed: ☑ tire tracks ☐ garbage ☐ discing/plowing

ungrazed ☑ grazed: ☐ cattle ☐ horses ☐ sheep other:
light ☐ moderate ☐ heavy ☐

land use of habitat: vacant

(Optional) Water Chemistry Data:

Alkalinity (total): ppm or ☐ mg/l Conductivity: µMHO

Dissolved NH_4: Dissolved Oxygen: ppm or ☐ mg/l

pH: Turbidity (secchi disc depth): cm or ☐ clear to bottom

Salinity: ppt or ☐ ppm Total Dissolved Solids (TDS): ppm

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (*e.g.*, 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Branchinecta lindahli, gravid females, 100's

Notostracans:
(note reproductive status)

None

(Optional) Species Observations:

- ○ Cladocerans
- ○ Conchostracans
- ○ Copepods
- ○ Ostracods
- ○ Fish
- ○ Frogs
- ○ Slamanders
- ○ Waterfowl
- ○ Other (specify):

Insects: (adult or larvae)

- ○ Anisoptera
- ○ Zygoptera
- ○ Hydrophilidae
- ○ Dysticidae
- ○ Corixidae
- ○ Notonectidae
- ○ Belostoatidae
- ○ Other (specify):

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ☐ No ☑ Yes

Required color slides and/or photographs for the project site are included: ☐ No ☑ Yes

Date: 1/8/15 Time: 0830-0930 County: Riverside Quad: Corona North

Collectors: Jason Kurnow Permit #: TE778195

Site/Project Name: South Norco Channel Pool#: 2

Township: 3 south Range: 6 west Section: 18 Lat: 33°54'39.07"N Long: 117°33'05.30"W

Air Tempurature (°C): 17 Water Temperature (°C): 9

Pool Depth:
at time of sampling: 10 cm
estimated maximum: 25 cm

Surface Area:
at time of sampling: 4 m x 3 m
estimated maximum: 46 m x 23 m

Habitat Condition:

undisturbed ☐ disturbed: ☑ tire tracks ☐ garbage ☐ discing/plowing

ungrazed ☑ grazed: ☐ cattle ☐ horses ☐ sheep other:
light ☐ moderate ☐ heavy ☐

land use of habitat: vacant

(Optional) Water Chemistry Data:

Alkalinity (total): ppm or ☐ mg/l Conductivity: µMHO

Dissolved NH_4: Dissolved Oxygen: ppm or ☐ mg/l

pH: Turbidity (secchi disc depth): cm or ☐ clear to bottom

Salinity: ppt or ☐ ppm Total Dissolved Solids (TDS): ppm

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (*e.g.*, 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Branchinecta lindahli, gravid females, 100's

Notostracans:
(note reproductive status)

None

(Optional) Species Observations:

- ○ Cladocerans
- ○ Conchostracans
- ○ Copepods
- ○ Ostracods
- ○ Fish
- ○ Frogs
- ○ Slamanders
- ○ Waterfowl
- ○ Other (specify):

Insects: (adult or larvae)

- ○ Anisoptera
- ○ Zygoptera
- ○ Hydrophilidae
- ○ Dysticidae
- ○ Corixidae
- ○ Notonectidae
- ○ Belostoatidae
- ○ Other (specify):

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ☐ No ☑ Yes

Required color slides and/or photographs for the project site are included: ☐ No ☑ Yes

Date: 1/8/15 Time: 0830-0930 County: Riverside Quad: Corona North

Collectors: Jason Kurnow Permit #: TE778195

Site/Project Name: South Norco Channel Pool#: 3

Township: 3 south Range: 6 west Section: 18 Lat: 33°54'37.55"N Long: 117°33'06.89"W

Air Temperature (°C): 17 Water Temperature (°C): 9

Pool Depth:
at time of sampling: 10 cm
estimated maximum: 30 cm

Surface Area:
at time of sampling: 4.5 m x 1.67 m
estimated maximum: 75 m x 25 m

Habitat Condition:

undisturbed ☐ disturbed: ☑ tire tracks ☐ garbage ☐ discing/plowing

ungrazed ☑ grazed: ☐ cattle ☐ horses ☐ sheep other:
light ☐ moderate ☐ heavy ☐

land use of habitat: vacant

(Optional) Water Chemistry Data:

Alkalinity (total): ppm or ☐ mg/l Conductivity: µMHO

Dissolved NH_4: Dissolved Oxygen: ppm or ☐ mg/l

pH: Turbidity (secchi disc depth): cm or ☐ clear to bottom

Salinity: ppt or ☐ ppm Total Dissolved Solids (TDS): ppm

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (*e.g.*, 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

None

Notostracans:
(note reproductive status)

None

(Optional) Species Observations:

- ○ Cladocerans
- ○ Conchostracans
- ○ Copepods
- ○ Ostracods
- ○ Fish
- ○ Frogs
- ○ Slamanders
- ○ Waterfowl
- ○ Other (specify):

Insects: (adult or larvae)

- ○ Anisoptera
- ○ Zygoptera
- ○ Hydrophilidae
- ○ Dysticidae
- ○ Corixidae
- ○ Notonectidae
- ○ Belostoatidae
- ○ Other (specify):

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ☐ No ☑ Yes

Required color slides and/or photographs for the project site are included: ☐ No ☑ Yes

Date: 1/23/15 Time: 0830-0900 County: Riverside Quad: Corona North

Collectors: Jason Kurnow Permit #: TE778195

Site/Project Name: South Norco Channel Pool#: 1

Township: 3 south Range: 6 west Section: 18 Lat: 33°54'38.35"N Long: 117°33'01.69"W

Air Tempurature (°C): 17 Water Temperature (°C): 16

Pool Depth:
at time of sampling: 5 cm
estimated maximum: 30 cm

Surface Area:
at time of sampling: 10 m x 2 m
estimated maximum: 100 m x 25 m

Habitat Condition:

undisturbed ☐ disturbed: ☑ tire tracks ☐ garbage ☐ discing/plowing

ungrazed ☑ grazed: ☐ cattle ☐ horses ☐ sheep other:
light ☐ moderate ☐ heavy ☐

land use of habitat: vacant

(Optional) Water Chemistry Data:

Alkalinity (total): ppm or ☐ mg/l Conductivity: µMHO

Dissolved NH_4: Dissolved Oxygen: ppm or ☐ mg/l

pH: Turbidity (secchi disc depth): cm or ☐ clear to bottom

Salinity: ppt or ☐ ppm Total Dissolved Solids (TDS): ppm

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (*e.g.*, 10's, 100's, 1000's)

Anostracans:
(note reproductive status)

Branchinecta lindahli, mature male, 1's

Notostracans:
(note reproductive status)

None

(Optional) Species Observations:

- ○ Cladocerans
- ○ Conchostracans
- ○ Copepods
- ○ Ostracods
- ○ Fish
- ○ Frogs
- ○ Slamanders
- ○ Waterfowl
- ○ Other (specify):

Insects: (adult or larvae)

- ○ Anisoptera
- ○ Zygoptera
- ○ Hydrophilidae
- ○ Dysticidae
- ○ Corixidae
- ○ Notonectidae
- ○ Belostoatidae
- ○ Other (specify):

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in they will be accessioned.

Species	# Individuals	Accession/Catalog #	Pool #

Appendix B

REPRESENTATIVE SITE PHOTOS

Basin 1 - looking souteast-1/8/15-JK

Basin 2 - looking east-1/8/15-JK

Basin 3 - looking northwest-1/8/15-JK

Appendix E

CULTURAL RESOURCES REPORT

CULTURAL RESOURCES REPORT FOR THE PROPOSED RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT SOUTH NORCO CHANNEL, LINE S-1 IN THE CITY OF NORCO, RIVERSIDE COUNTY, CALIFORNIA

USGS Corona North, CA 7.5' Quadrangle

Prepared for:
Larry Sward
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard, Suite 200
La Mesa, CA 91942

Prepared by:
Tiffany Clark, Ph.D., RPA and Josh Smallwood, M.A., RPA
Applied EarthWorks, Inc.
133 N. San Gabriel Boulevard, Suite 201
Pasadena, CA 91107

January 2015

National Archaeological Database (NADB)
Type of Study: Literature Search, Intensive Pedestrian Survey and Evaluation
Cultural Resources Recorded: P-33-024099 and P-33-024100
USGS 7.5' Quadrangle: Corona North
Acreage: 19 acres
Level of Investigation: Section 106 of the NHPA
Key Words: Norco; Riverside County; Section 106; CEQA; Phase 1 area; 19 acres surveyed; two cultural resources; historical irrigation feature; historical storm channel

CONTENTS

List of Figures

List of Tables

MANAGEMENT SUMMARY

At the request of HELIX Environmental Planning, Inc., on behalf of the Riverside County Flood Control and Water Conservation District (District), Applied EarthWorks, Inc. (*Æ*) performed an intensive cultural resources survey for the proposed Riverside County Flood Control and Water Conservation District South Norco Channel, Line S-1 Project (Project) located within the City of Norco, Riverside County, California. The survey examined a total of approximately 19 acres (ac) of land that encompass Assessor's Parcel Numbers (APNs) 123-100-001, -130-010, -160-026, -220-001; 125-130-014, -015; and 125-140-025, -160-005. The District proposes the stabilization of the existing South Norco interim earthen flood control channel, along with the construction of two underground storm drain pipes. The proposed Project is subject to compliance with the California Environmental Quality Act (CEQA), as amended. In anticipation of future Project review by the U.S. Army Corps of Engineers (USACE), the cultural resource investigation was also conducted in accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA, 36 CFR, 63, and 800).

A cultural resources literature and records search carried out at the Eastern Information Center (EIC) on May 11, 2012, indicated that no archaeological or historical cultural resources had been previously recorded within Project's Area of Potential Effects (APE). An intensive-level Phase I survey of the APE carried out on December 8, 2014, resulted in the documentation of two newly identified historical built-environment resources that include a segment of the South Norco Channel (P-33-024099) and an irrigation weir box feature (P-33-024100). Neither of these resources is recommended as eligible for listing on the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR).

Ground disturbance associated with the relining of the channel and existing detention basin will primarily occur along the sides and bases of the flood control structures, which have been previously disturbed by construction and maintenance activities. The potential for encountering intact cultural deposits in these areas is relatively low. As such, no further cultural resources management is recommended for these areas at this time.

Due to a lack of ground visibility, the eastern portions of the APE that run along the paved roadways of Hillside Lane, Hillside Avenue, and 3rd Street could not be examined for cultural resources during the Phase I survey. However, the presence of several large bedrock milling sites immediately southeast of the Project area suggests that archaeological sensitivity in this portion of the APE is moderate to high. Trenching and excavation associated with the construction of underground drainage pipes may extend to a depth of 3.0 meters (m) (10 feet [ft]) and as such, have the potential to disturb buried archaeological deposits. It is therefore recommended that a qualified archaeological monitor be present during any Project-related ground-disturbing activities associated with the installation of the underground drainage pipes that extend into undisturbed sediments.

Field notes documenting the current investigation are on file at *Æ*'s Hemet office. A copy of this report will be placed on file at the EIC of the California Historical Resources Information System (CHRIS).

1
INTRODUCTION

At the request of Helix Environmental Planning, Inc., on behalf of the Riverside County Flood Control and Water Conservation District (District), Applied EarthWorks Inc. (Æ), performed a cultural resources assessment for the South Norco Channel Line S-1 Project (Project), Riverside County, California (Figure 1-1). The study consisted of records searches, Native American coordination, and a Phase I survey of the approximately 19-acre (ac) Project area. The proposed Project is subject to compliance with the California Environmental Quality Act (CEQA), as amended. In anticipation of future Project review by the U.S. Army Corps of Engineers (USACE), the cultural resource investigation was conducted in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (NHPA, 36 CFR, 63, and 800). This report summarizes the methods and results of the cultural resources study and provides Project-specific management recommendations.

1.1 PROJECT LOCATION

Located within the city of Norco in western Riverside County, California, the Project area is bounded on the west by Corona Street, on the east by Hillside Avenue, on the north by Fourth Street, and on the south by Second Street. Specifically, it is mapped within Township 3 South, Range 6 West, Sections 7 and 18 of the Corona South, CA U.S. Geological Survey quadrangle (Figure 1-2). The Project site is approximately 19 ac in size and encompasses Assessor's Parcel Numbers (APNs) 123-100-001, -130-010, -160-026, -220-001; 125-130-014, -015; and 125-140-025, -160-005.

1.2 PROJECT BACKGROUND AND DESCRIPTION

The District proposes the stabilization, maintenance, and operation of a segment of the existing South Norco interim earthen flood control channel, as well as construction, maintenance, and operation of two underground storm drain pipes, S-1 and S-5, that would connect from the South Norco channel. The primary objective of the Project is to stabilize the existing earthen channel. The desired method of stabilization is to convert the earthen channel to a concrete-lined channel thereby eliminating the erosion problems currently experienced within the channel and downstream areas and reducing the frequency and need of sediment and plant material removal. In addition to stabilization of the main channel segment, the District also proposes to construct underground drainage pipes to transmit storm flows in place of existing surface flow facilities. Ground-disturbing activities related to Project development will likely include trenching and excavation.

1.3 AREA OF POTENTIAL EFFECTS

Because USACE's jurisdictional areas are present within the Project area, the proposed Project is considered an "undertaking" per Section 301(7) of the NHPA. For this reason, it was necessary to define an Area of Potential Effects (APE), or the geographic area within which the Project has the potential to directly or indirectly cause alternations to historic properties per 36 CFR § 800.16(d). In defining the APE, both direct and indirect impacts anticipated by the proposed Project were considered. Because the Project involves construction and modifications to a below-grade channel, drainage pipes, and detention basins, the indirect effects, such as visual intrusion or noise, are

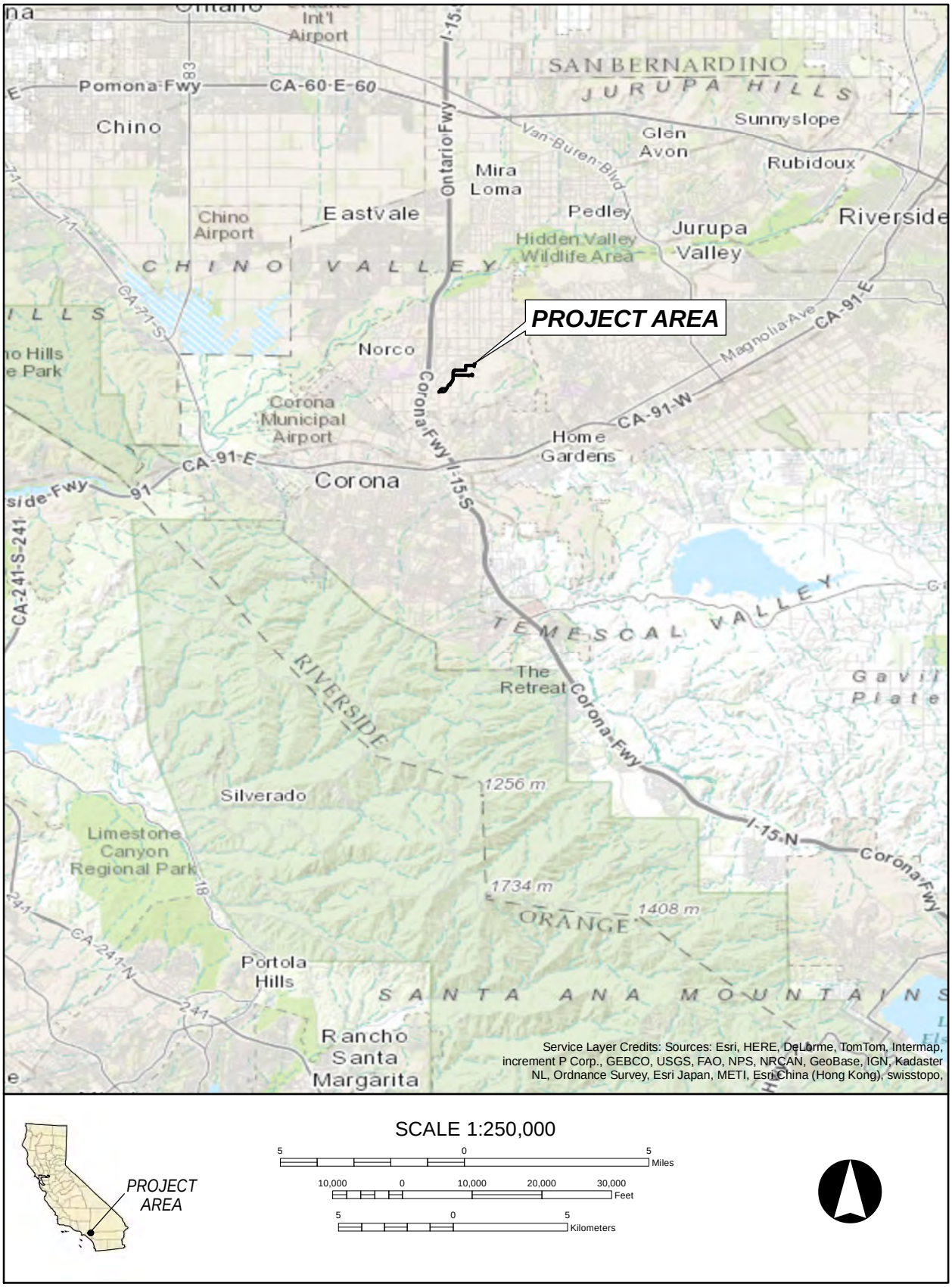


Figure 1-1 Project vicinity map.

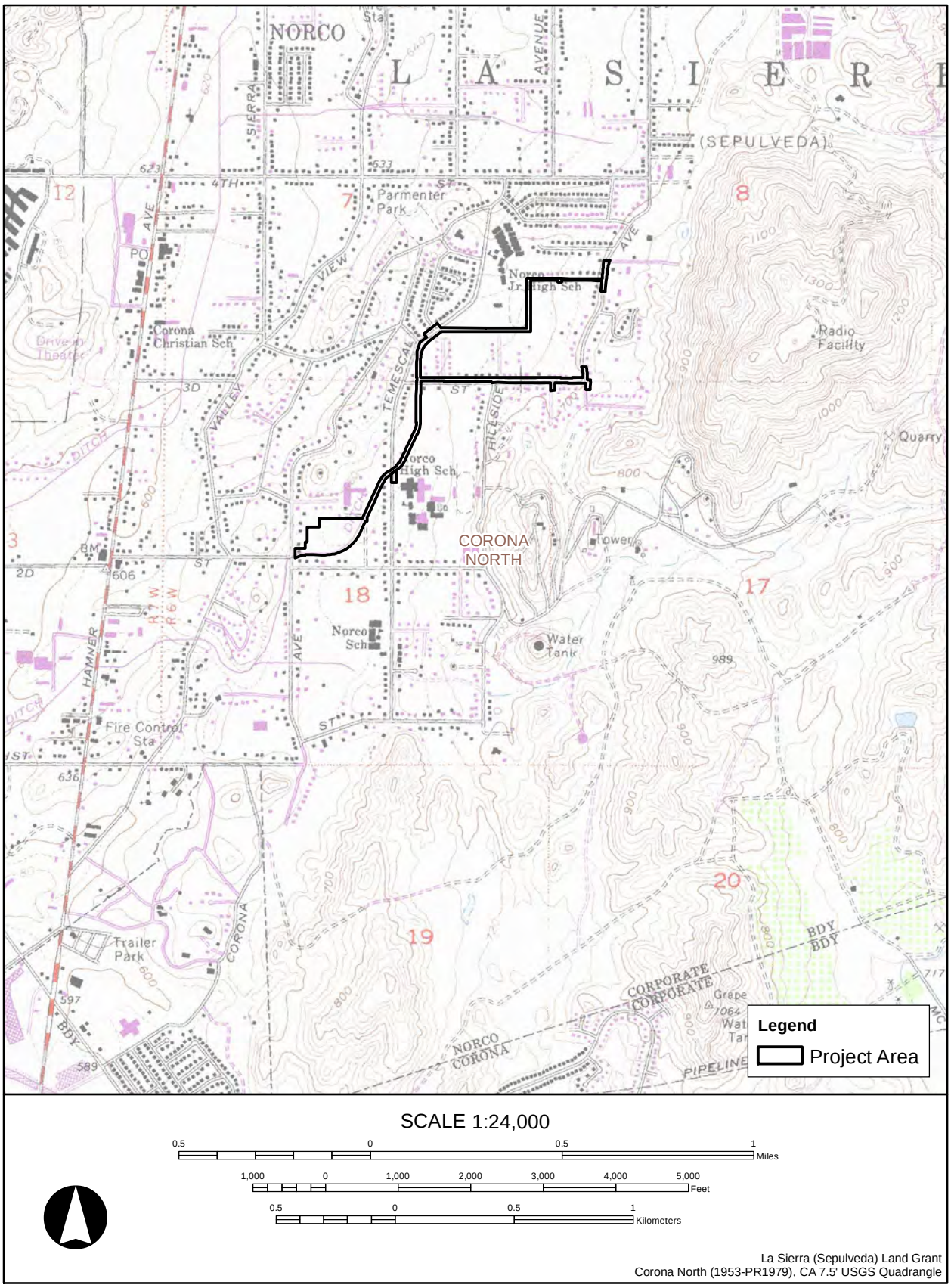


Figure 1-2 Project location map.

considered temporary. As such, the APE for this Project is defined as the area of direct impacts, which includes the Project footprint, staging areas, and temporary impact areas. The APE defined for the proposed Project encompasses an area of 19 ac as depicted in Figure 1-3; depth of anticipated disturbance ranges from 2.4 m (8 ft) to 3.0 m (10 ft).

1.4 REGULATORY CONTEXT

1.4.1 National Historic Preservation Act (NHPA)

As previously mentioned, portions of the Project area contain jurisdictional areas that are regulated by the USACE. As such, the Project is considered a federally licensed "undertaking" per 36 Code of Federal Regulations (CFR) § 800.2 (o) and subject to compliance with Section 106 of the NHPA of 1966, as amended. The NHPA established a national policy for historic preservation and instituted a multifaceted program, administered by the Secretary of the Interior, to encourage the achievement of preservation goals at the federal, state, and local levels. The NHPA authorized the expansion and maintenance of the National Register of Historic Places (NRHP), established the position of State Historic Preservation Officer (SHPO), provided for the designation of State Review Boards, set up a mechanism to certify local governments to carry out the purposes of the NHPA, assisted Native American tribes in preserving their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP).

National Register of Historic Places (NRHP). The NHPA of 1966 established the NRHP as "an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (Code of Federal Regulations, Title 36, Part 60.2). The NRHP recognizes properties that are significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A property is eligible for the NRHP if it is significant under one or more of the following criteria (Code of Federal Regulations, Title 36, Part 60.4):

A) that are associated with events that have made a significant contribution to the broad patterns of our history; or

B) that are associated with the lives of persons significant in our past; or

C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D) that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR § 60.4).

If a cultural resource is determined to be an eligible historic property under 36 CFR § 60.4, then Section 106 requires that the effects of the proposed undertaking be assessed and considered in planning the undertaking. Ordinarily, cemeteries, birthplaces, or graves of historic figures; properties

Figure 1-3 Project Area of Potential Effects (APE) Map.

owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; and properties that are primarily commemorative in nature are not considered eligible for the NRHP, unless they satisfy certain conditions. In general, a resource must be 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

1.4.2 California Environmental Quality Act (CEQA)

The proposed Project is also subject to compliance with CEQA. Therefore, cultural resources management work conducted as part of the proposed Project shall comply with the *CEQA Statutes and Guidelines* (OPR 2012), which directs lead agencies to first determine whether cultural resources are "historically significant" resources. 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 on the environment. Generally, a cultural resource shall be considered "historically significant" if the resource is 45 years old or older, possesses integrity of location, design, setting, materials, workmanship, feeling, and association, and meets the requirements for listing on the *California Register of Historical Resources* (CRHR) under any one of the following criteria:

1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2) Is associated with the lives of persons important in our past;

3) 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,

4) Has yielded, or may be likely to yield, information important in prehistory or history. (Title 14 CCR, § 15064.5)

The cited statutes and guidelines specify how cultural resources are to be managed in the context of construction projects, such as the proposed South Norco Channel Line S-1 Project. Briefly, archival and field surveys must be conducted, and identified cultural resources must be inventoried and evaluated in prescribed ways. Prehistoric and historical archaeological resources, as well as historical resources such as buildings, structures, and other built-environment features, deemed "historically significant" must be considered in project planning and development. In addition, any proposed project that may affect "historically significant" cultural resources must be submitted to the SHPO for review and comment prior to project approval by the responsible agency and prior to construction.

1.5 REPORT ORGANIZATION

This report documents the results of a Phase I cultural resources investigation for the proposed Project. Chapter 1 introduced the scope of the work and regulatory context. Chapter 2 synthesizes the natural and cultural setting of the Project area and surrounding region. Chapter 3 presents the results of the background research, including a cultural resources literature and records search conducted at the Eastern Information Center (EIC) of the California Historical Resource Information System (CHRIS), housed at the University of California, Riverside. Chapter 4 details the cultural

resources study methods. Chapter 5 presents the results of the Phase I survey and the evaluation of the significance of the cultural resources identified within the Project area. Management recommendations are included in Chapter 6, followed by bibliographic references in Chapter 7. DPR recording forms for the two resources located within the Project boundaries are provided in Appendix A. Results of Native American Communication are found in Appendix B.

2
SETTING

2.1 INTRODUCTION

This chapter describes the environmental and cultural setting of the Project area to provide background information and context for how historical and archaeological resources in the area developed and were used. The discussion is based on a review of existing data and literature. The nature and distribution of past cultural activities in the Project region have been influenced by such factors as topography, climate change, water availability, and access to biological resources. Therefore, prior to discussing the cultural setting, aspects of the regional environment are briefly summarized below.

2.2 CURRENT NATURAL ENVIRONMENT

The Project is located in the eastern portion of the city of Norco, in western Riverside County. The city is situated in the Corona Valley, which is bounded on the south and west by the Santa Ana Mountains, on the northwest by the Prado Basin and Chino Hills, on the north by the Santa Ana River, and on the east by a group of low-lying hills. The region is located in the Peninsular Ranges and Transverse Ranges Geomorphic Provinces of southern California.

The Santa Ana River watershed is the principal drainage through the area, fed by numerous smaller drainages, such as Temescal Wash which is located west of the Project. The highest elevations (upper reaches) of the watershed occur in the San Bernardino Mountains (San Gorgonio Peak—11,485 ft above mean sea level [amsl] in elevation), in the eastern San Gabriel Mountains (Transverse Ranges Province; Mt. Baldy—10,080 ft amsl in elevation), and in the San Jacinto Mountains (Peninsular Ranges Province, Mt. San Jacinto—10,804 ft amsl). Further downstream, the river flows through the Santa Ana Mountains and the Chino Hills before descending into the Coastal Plain of Orange County, and into the Pacific Ocean. Primary slope direction is northeast to southwest, with secondary slopes controlled by local topography.

The climate of the Santa Ana River watershed and surrounding area is Mediterranean with hot, dry summers and cooler, wetter winters. Average annual precipitation ranges from 12 inches (in.) per year in the coastal plain to 18 in. per year in the inland alluvial valleys, reaching 40 in. or more in the San Bernardino Mountains. Most of the precipitation occurs between November and March in the form of rain with variable amounts of snow in the higher elevations. The climatological cycle of the region results in high surface water flows in the spring and early summer, followed by low flows during the dry season. Winter and spring floods generated by storms are not uncommon in wet years. Similarly, during the dry season, infrequent summer storms can cause torrential floods in local streams.

Due to its proximity to the Santa Ana River and Prado Basin, the Project region is located within a hydrologically active area. Sediments and geological formations underlying the Project area are largely alluvial. They derived from those water systems and were deposited during the Quaternary period (1.8 million years ago to the present). Rock outcrops in the general area are derived from marine and non-marine sediments, primarily sandstone and conglomerates. Farther south, the

Santiago Peak Volcanic formation outcrops along the upper ridges of the Santa Ana Mountains. This formation is composed of andesitic basalt, andesite, dacite, and rhyolite, which were often quarried by prehistoric Native American groups for use as toolstone material. West of the Project area, in the Chino Hills, outcrops consist of several sandstone-conglomerate formations. Along the Santa Ana River, very old fan deposits, consisting of gravels, sands, and silts, are incised, and in-filled with redeposited sediments of Holocene-age. Quaternary period alluvial fan sediments exist along the margins of the surrounding hills.

Prior to the extensive development of the Project area and surrounding region, the native flora and fauna population was likely composed of species characteristic of the Riversidian Sage Scrub/Coastal Sage Scrub communities, with riparian wetland species present along the Santa Ana River drainage. The majority of the Project area at present appears disturbed from previous development and use of the parcels.

2.3 PREHISTORIC SETTING

It is generally believed that human occupation of the southern California coastal region and the southern California desert regions dates back to at least 10,000 before present (B.P.). Recent archaeological studies for the Eastside Reservoir Project and the Inland Feeder Pipeline Project, suggests that human occupation of the inland valley regions of southern California may date to as early as 7000 to 9000 B.P. (Goldberg et al. 2001; Horne and McDougall 2008). Four broad cultural periods of human settlement and subsistence strategies are believed to have operated in southern California during the past 10,000 years: the Early Holocene Interval (ca. 10,000–7500 years B.P.); the Middle Holocene Interval (ca. 7500 to 5000 B.P.); the Middle to Late Holocene Interval (ca. 5000 to 1500 B.P.); and the Late Horizon Period (ca. 2000 years B.P. to the initial period of European contact).

Both coastal and desert region designations (Wallace 1978; Warren 1980, 1984) for the early Holocene Interval refer to a long period of human adaptation to environmental changes brought about by the transition from the late Pleistocene to the early Holocene geologic periods. As climatic conditions became warmer and more arid, Pleistocene megafauna perished abruptly between 13,000 and 10,000 B.P. Human populations responded to these changing environmental conditions by focusing their subsistence efforts on the procurement of a wider variety of faunal, as well as floral, resources. These early occupants of southern California are believed to have been nomadic large-game hunters whose tool assemblage included percussion-flaked scrapers and knives; large, well-made stemmed, fluted, or leaf-shaped projectile points (e.g., Lake Mojave, Silver Lake); crescentics; heavy core/cobble tools; hammerstones; bifacial cores; and choppers and scraper planes.

Although sites assigned to the Middle Holocene Interval are similar in many respects, their content, structure, and age can vary. This variability is largely due to geographical differences between the coast and interior. The primary difference between the archaeological assemblages of coastal and inland sites appears to be related to subsistence. Coastal occupants gathered fish and plant resources, and hunting was generally less important (projectile points are rare). The inland occupants primarily collected hard seeds and hunted small mammals; therefore, projectile points are more common in inland assemblages. King (1967:66–67) suggests that the coastal sites probably represent more permanent occupations than are found in the interior, since coastal inhabitants were sustained by more reliable and abundant food resources. A more mobile subsistence collection strategy was likely

necessary for inland inhabitants. It is also possible that inland and coastal sites of this period represent seasonal movement by the same groups of people.

Overall, the general settlement-subsistence patterns of the Middle Holocene Interval were exemplified by a greater emphasis on seed gathering, with coastal and inland sites exhibiting shallow midden accumulations, suggesting seasonal camping. Midden accumulation at desert locales dating to this period is generally rare. Based on the distribution of sites assigned to this period, aboriginal groups likely followed a modified, central-based wandering pattern with an inferred shift toward enhanced logistical settlement organization (Binford 1980; Warren 1968). In this semi-sedentary pattern, a base camp was occupied during a portion of the year, while satellite camps were occupied by smaller groups of people to exploit seasonally available floral resources such as grass seeds, berries, tubers, and nuts. The exploitation of terrestrial faunal resources was also an important economic pursuit, especially in the inland and desert regions of southern California. The degree of population sedentism was based upon the availability of reliable water sources and the abundance of exploitable resources in the general locale; coastal occupants of this period are believed to have practiced a higher degree of sedentism than other southern California groups because of a more reliable and abundant resource base.

During the Middle to Late Holocene Interval, the subsistence base in southern California broadened. The technological advancement of the mortar and pestle may indicate the use of acorns, an important storable subsistence resource. Hunting presumably also gained in importance. An abundance of broad, leaf-shaped blades and heavy, often stemmed or notched, projectile points have been found in association with large numbers of terrestrial and aquatic mammal bones. Other characteristic features of this period include the appearance of bone and antler implements and the occasional use of asphaltum and steatite. Most chronological sequences for southern California recognize the introduction of the bow and arrow by 1500 B.P., marked by the appearance of small arrow points and arrow shaft straighteners.

In general, cultural patterns remained similar in character to those of the preceding horizon. However, the material culture at many coastal sites became more elaborate, reflecting an increase in sociopolitical complexity and increased efficiency in subsistence strategies (e.g., the introduction of the bow and arrow for hunting). The settlement-subsistence patterns and cultural development during this period are not well understood because of a lack of large amounts of data; however, the limited data do suggest that the duration and intensity of occupation at the base camps increased, especially toward the latter part of this period. However, through time, southern California populations became increasingly diversified and economically specialized, especially among the coastal southern California cultures. Adaptation to various ecological niches and further population growth typify the subsequent periods of cultural history in southern California. This subsistence orientation, characterized by a heavy dependence on both hunting and plant gathering, continues into the historic period.

The Post-1500 B.P. Interval (Late Holocene to the time of Spanish settlement [approximately 1769 A.D.]) is characterized by a reliance on the bow and arrow for hunting, along with the use of bedrock mortars and milling slicks. Late prehistoric coastal sites are numerous. Diagnostic artifacts include small triangular projectile points, mortars and pestles, steatite ornaments and containers, perforated stones, circular shell fishhooks, and numerous and varied bone tools, as well as bone and shell ornamentation. Elaborate mortuary customs, as well as generous use of asphaltum and the

development of extensive trade networks, are also characteristic of this period. During the latter half of this period in the southern coastal region, pottery, ceramic smoking pipes, cremation urns, rock paintings, and some European trade goods were added to the previous cultural assemblage (Meighan 1954). Increased hunting efficiency (through use of the bow and arrow) and widespread exploitation of acorns and other hard nuts and berries (indicated by the abundance of mortars and pestles) provided reliable and storable food resources. This, in turn, promoted greater sedentism. Related to this increase in resource utilization and sedentism are sites with deeper middens, suggesting central-based wandering or permanent habitation. These would have been the villages, or rancherias, noted by the early non-native explorers (True 1966, 1970). By about 500 B.P., strong ethnic patterns developed among native populations in southern California. This may reflect accelerated cultural change brought about by increased efficiency in cultural adaptation and diffusion of technology from the central coastal region of California and the southern Great Basin (Douglas et al. 1981:10).

2.4 ETHNOGRAPHIC SETTING

The Project area is situated in a region that in prehistory may have been shared to some extent by four different tribal entities: the coastal groups of the Gabrielino/Tongva, the Luiseño, and the Juaneño, and to a lesser extent, the interior Cahuilla groups. However, ethnographic data suggests a strong Gabrielino/Tongva presence, while the Luiseño were more prevalent to the south, the Juaneño to the southwest, and the Cahuilla were situated primarily to the east. The nearest Luiseño presence was in Temescal Canyon to the south of the Project area. A brief discussion of the ethnography of the Gabrielino/Tongva and Luiseño peoples is presented below.

2.4.1 Gabrielino

During the protohistoric period, the greater Los Angeles plain and extending eastward into the inland valley region area was inhabited by the Gabrielino peoples. The Gabrielino, a Uto-Aztecan (or Shoshonean) group, may have entered the region as recently as 1500 B.P. from the southern Great Basin or interior California deserts; it is also possible that the Gabrielino peoples migrated into the region in successive waves over a lengthy period of time beginning as early as 4000 B.P. Gradually, these Uto-Aztecan peoples began to displace the previous Hokan occupants of the southern coastal region (Kroeber 1925:578–580). In the protohistoric period, the Gabrielino were flanked by speakers of Hokan languages: the Chumash to the north and the Diegueño to the south (Kroeber 1925:578–580).

It is believed that the total Gabrielino territory covered more than 1,500 square miles and included the watersheds of the Los Angeles River, San Gabriel River, Santa Ana River, and Rio Hondo. The Gabrielino also occupied the islands of Santa Catalina, San Clemente, and San Nicolas. Within this large territory were more than 50 residential communities with populations that ranged from approximately 50 to 150 individuals. Each community consisted of one or more lineages which maintained a permanent geographic territory that included a permanent settlement and a variety of hunting and gathering areas as well as ritual sites.

A typical Gabrielino settlement contained a variety of structures used for religious, residential, and recreational purposes. In the larger communities, a sacred enclosure surrounded by the houses of the chief and other members of the elite community was generally located near the center of the community. Surrounding those structures were the smaller homes occupied by the rest of

community. Other features common at residential sites were sweathouses and level clearings used as playing fields and dance grounds as well as cemeteries (McCawley 1996:32–33).

Gabrielino territory offered rich and diverse resources. Subsistence items described in ethnohistorical sources include large numbers of native grass seeds, six or more types of acorns, pinyon pine nuts, seeds and berries from various shrubs, fresh greens and shoots, mule deer, pronghorn, mountain sheep, rabbits and rodents, quail and waterfowl, snakes, lizards, insects, and freshwater fish, plus a wide variety of marine fish, shellfish, and sea mammals in coastal zones. This wealth of resources, coupled with an effective technology and a well-developed trade and ritual system, resulted in a society that was among one of the most materially wealthy and culturally sophisticated cultural groups in California (McCawley 1996:141). The management of food resources by the chief was the heart of the Gabrielino economy; a portion of each day's hunting, fishing, or gathered food resources was given to the chief who was responsible for managing the community's food reserves. Each family also kept a food supply for use in lean times.

The material culture of the Gabrielino is elaborate and in many ways comparable to that of the Chumash. An excellent descriptive source is Blackburn's (1963) compendium of Gabrielino material culture, which is intended for an archaeological audience and exhaustively summarizes Padre Geronimo Boscana's accounts of the Juaneño farther south in the vicinity of San Juan Capistrano, Hugo Reid's (1852) letters to the *Los Angeles Star*, and Harrington's (n.d.) early twentieth-century interviews, among a number of other sources. Shell ornaments and beads, baskets, bone tools, flint weapons and drills, fishhooks, mortars and pestles, wooden bowls and paddles, shell spoons, wooden war clubs, and a variety of steatite items (cooking vessels, comals, ornaments) are among the many artifact types common in descriptions of Gabrielino culture (Blackburn 1963). Highly developed artisanship is particularly evident in the many technomic implements inlaid with shell (using asphaltum) and in the steatite items from production centers on Catalina Island.

Trade was an important element of the Gabrielino economy. While the principal Gabrielino-produced commodity—steatite vessels from centers on Catalina Island—originated well outside the defined study region, trade in steatite items was conducted throughout the local territory and involved external relations with cultural groups beyond Gabrielino borders, including the Cahuilla, Serrano, Luiseño, Chumash, and Mojave. Additionally, *Olivella* shell callus beads, manufactured on the northern Channel Islands by the Chumash and their predecessors, were reportedly used frequently as a currency by the Gabrielino and other southern California groups, particularly in situations when bartering methods were inappropriate or ineffective.

In general, the Gabrielino cultivated alliances with other groups (a Chumash-Salinan-Gabrielino alliance, for one [Bean 1976:104]) and also maintained cult or ritual centers (such as the village *Povongna*, presumed to be located in the vicinity of Long Beach) where trade fairs, mourning ceremonies, and other types of social and economic interaction linked villages of many environmental zones into exchange and social partnerships. Strong (1929:98) indicates that there was a "loose ceremonial union" among the Cahuilla, Luiseño, Serrano, and Gabrielino, manifested in gifts of shell money sent by all to leaders of clans in which a death had occurred. Blackburn (1976:240) notes that ceremonialism in general provided a context for far-ranging social interaction, especially between the Gabrielino and several neighboring groups, and resulted in strong unity against external enemies. However, Bean and Smith (1978:546) conclude that the Gabrielino peoples quarreled constantly among themselves and that inter-village conflict was frequent and

deadly, although rarely extended. Marriage ties usually dictated affiliations during conflicts.

2.4.2 Luiseño

The Luiseño belonged to a cultural nationality speaking a language belonging to the Takic branch of the Shoshonean family, a part of the larger Uto-Aztecan language stock. The territory of the Luiseño encompassed approximately 1,500 square miles of coastal southern California (White 1963). Along the coast, Luiseño lands extended from about Agua Hedionda Creek in the south to Aliso Creek in the northwest. From there, the boundary extended inland to Santiago Peak, then across to the eastern side of the Elsinore Valley, then southward to the east of Palomar Mountain and around the southern slope of Palomar Mountain to the valley of San Jose. The boundary then turned west and returned to the sea along Agua Hedionda Creek. The Luiseño were, for the most part, hunters and gatherers. Luiseño groups often had fishing and gathering sites on the coast in addition to their inland sites, providing them with the resources of many different ecological niches. Villages were usually located in sheltered coves or canyons on the side of slopes in a warm thermal zone near good water supplies and in defensible locations (Bean and Shipek 1978).

2.5 ETHNOHISTORICAL SETTING

The first direct contact between the Europeans and the Gabrielino is thought to have occurred in 1542 with the arrival of Cabrillo's small fleet at Santa Catalina Island, and later in 1602 when the Sebastian Vizcaino expedition visited San Clemente and Santa Catalina islands and the mainland near present-day San Pedro (McCawley 1996:207). Later in 1769, the Gaspar de Portolá expedition crossed the Gabrielino homeland twice. Mission San Gabriel was founded on September 8, 1771, at a location near the Whittier Narrows. Because of conflict, recruitment and conversion of the Native Americans remained slow for the first few years of the existence of the mission. Sometime around 1774, Mission San Gabriel was moved to its present location to obtain more suitable land for agriculture. A second mission, San Fernando, was established within Gabrielino territory in 1797.

Mission life was highly regimented and contrasted sharply with the traditional Gabrielino lifestyle; as a result, colonization had a dramatic and negative effect on Gabrielino society, including fugitivism. The traditional Native American communities were depopulated and epidemics caused by the introduction of European diseases further reduced the Native American population. Between 1832 and 1834, the Mexican government implemented a series of Secularization Acts that were theoretically designed to turn over the mission lands to the native populations; however, most of this land was taken over by Mexican civilians. Thus, the primary result of secularization was increased fugitivism among the Gabrielino (McCawley 1996:208). The later American takeover of California brought further hardships to the Gabrielino who eventually settled at small Native American and Mexican settlements in the Eagle Rock and Highland Park districts of Los Angeles as well as on Indian Reservations at Pauma, Pala, Pechanga, and Soboba.

2.6 HISTORICAL SETTING

The history of the Project vicinity and surrounding region provides a context for understanding local settlement from the time that Spanish explorers first laid claim to the territory, to the development of the modern urban landscape. It is the basis for the identification of the historic property types constructed during this period, and the evaluation of their significance as historical resources.

2.6.1 California History

Exploration of the California coast in the sixteenth and seventeenth centuries was the basis for the Spanish claim to the region. In the eighteenth century, Spain recognized that to strengthen its claim, it would have to settle Alta California to preclude encroachment by the Russians and British. Therefore, in the latter half of the eighteenth century, Spain and the Franciscan Order founded a series of presidios, or military camps, and missions along the California coast, beginning at San Diego in 1769. In 1796, Father Juan Santiago explored the Temescal Valley, east of the Santa Ana Mountains in Riverside County and west of Lake Mathews, in an attempt to find a location for an inland *asistencia* for the mission at San Juan Capistrano. Asistencias and mission ranchos were established to further the influence of the Catholic Church and the Missions by using vast lands in the interior for cattle ranching, operated by Mexican and Indian rancheros, and thereby creating a self-sustaining system to support the Mission.

In 1821, Mexico opened the ports of San Diego and Monterey to foreign trade (Crouch et al. 1982:200). American ships docked at California ports to purchase tallow and hides, which were known as California banknotes. The vast landholdings (ranchos) of the Catholic Church were divided and granted to honorable soldiers, political supporters, and wealthy elites by the various Mexican governors who ruled Alta California. Americans also settled in California, some of them becoming citizens and owners of large ranchos. The nearest of these was the Rancho La Sierra (Yorba). Granted to Bernardo Yorba in 1846 by the Mexican Governor Pio Pico, it comprised the western half of the 17,774-ac Rancho La Sierra de Santa Ana. Conflicts between the Californios and the central government in Mexico City led to a series of uprisings culminating in the Bear Flag Revolt of June 1846.

With the signing of the Treaty of Guadalupe-Hidalgo on February 2, 1848, California formally became an American territory, and two years later, on September 9, 1850, California became the thirty-first state in the Union. Between those two years came a large influx of Americans seeking their fortunes; the catalyst for this influx was James Marshall's 1848 discovery of gold at Sutter's Mill (Starr 2005). The population and wealth in the early statehood years were concentrated in the northern part of the state. Ranching was the main occupation in the southern counties; the flood and drought of the 1860s brought that era to a close, and the completion of the transcontinental railroad in 1869 opened California to agricultural settlement.

Southern California was promoted as an ideal agricultural area, with fertile soil and a mild climate. Books on California painted beautiful pictures that appealed to both Americans and Europeans. There were three land booms tied to railroad construction: (1) after the transcontinental railroad was completed, enabling easy travel to California; (2) late 1870s after the Southern Pacific was completed; and, (3) 1886–1888, when the Santa Fe transcontinental line was completed. Competition between the lines incited a rate war, and both tourists and potential settlers took advantage of the low fares to come to California (Lech 2004:222).

2.6.2 Local History

In 1846, the area that is now Norco was part of the large land grant that was given to Vicenta Sepulveda by the Mexican governor Pio Pico. Known as La Sierra de Santa Ana, the rancho encompassed a 17,774-ac area in western Riverside County. During the late 1800s, the land passed through several owners including the San Jacinto Land Company. In 1908, James W. Long

purchased property in the Norco area and subsequently formed the Orange Heights Water Company. In the 1910s, the area began to be subdivided for citrus growing. Although the high winds and warm temperatures proved to be the wrong climate for citrus cultivation (Bitetti 2005:16), numerous small farms were established in the Norco area in the following decades. These farms produced a variety of agricultural products including peaches, apricots, and alfalfa, as well as hogs and chickens (Bitetti 2005:19).

In the early years, the Norco area was known by a variety of names including "Citrus Belt" and "Orchard Heights." In 1921, Rex Brainerd Clark of the North Corona Land Company bought some of the property and in the following years laid out a street grid and constructed an improved water system. This community was named Norco after the North Corona portion of the company name.

During the construction of the irrigation wells for the Norco development, an underground hot sulfur spring was discovered. Aware of the health benefits of mineral springs, Clark decided to build a high class resort around the springs known as the Lake Norconian Club. Construction of the resort began in 1926 on 900 ac in the center of town and included a 55-ac lake, a casino, Olympic-sized pools, mineral baths, golf course, tennis courts, and a private landing field. Opened in 1929, the resort was initially a great success, drawing a number of film and sports stars, as well as regular visitors. With the onset of the Great Depression, visitation at the Lake Norconian Club diminished and the resort was closed in 1933. Clark sold the land and buildings to the federal government in 1941. During World War II, the U.S. Navy used the resort as a naval hospital. In March 1962, the property was given to the State of California for use as a correctional facility for narcotics offenders. The Naval Surface Warfare Center Corona Division is located on part of the property separated by a fence from the prison.

Amid the post World War II (WWII)-era development boom across southern California, the City of Norco experienced a period of growth that forever changed the economy and character of the region. As agriculture moved out of the area, former fields were developed into residential, commercial, and light industrial zones. Improvements in infrastructure also occurred, including the channelization of Temescal Wash bordering Norco on the north and west. State Route 91 was constructed south of Norco in 1962, followed by completion of Interstate 15 in the 1980s. Development of commerce and industry in the Norco area has increased with the quality of transportation routes linking it with other parts of southern California. Housing and land prices in the area are considerably less than those in Los Angeles and Orange counties. Since the 1980s, Norco has also evolved into a "bedroom community" for many people who commute to work in Orange County, Los Angeles, and other cities of the Inland Empire region.

3
SOURCES CONSULTED

3.1 EASTERN INFORMATION CENTER RECORDS SEARCH

An archaeological literature and records search was conducted at the EIC at the University of California, Riverside, on May 11, 2012. The objective of this records search was to determine whether any prehistoric or historical cultural resources had been recorded previously within a one-mile radius of the Project area.

The results of the records search indicate that 25 cultural resource studies have been conducted within a one-mile radius of the Project area (Table 3-1); none of these studies intersected the Project area. These studies resulted in the documentation of 24 cultural resources that include 16 prehistoric archaeological resources and eight historical built-environment resources (Table 3-2). Thirteen of the 16 prehistoric cultural resources are archaeological sites with the remaining three resources composed of isolated artifacts. Most of the prehistoric archaeological sites consist of bedrock milling features and/or artifact scatters. The recorded prehistoric resources are concentrated within the vicinity of the Norco Hills southeast of the Project area.

All eight of the built-environment resources have also been documented in the area west of Hamner Avenue and southwest of the Project APE. Although most of these resources consist of single-family residences, P-33-019906 includes the remains of several chicken houses associated with the Norco Egg Ranch. None of the 24 previously identified cultural resources are located within the boundary of the Project area.

Table 3-1
Previous Cultural Resources Studies within One-Mile of the Project Area

EIC Reference #	Year	Author	Title
RI-00535	1979	John Bean Lowell, Sylvia Brakke Vane, Matthew C. Hall, Harry Lawton, Richard Logan, Lee Gooding Massey, John Oxendine, Charles Rozaire, and David P. Whistler	Cultural Resources and the Devers-Mira 500 kV Transmission Line Route (Valley to Mira Loma Section)
RI-00608	1982	Beth Padon	Archaeological Assessment of Woodlake Village General Plan Amendment
RI-00609	1979	Thomas Holcomb, James D. Swenson, and Phillip J. Wilke	Results of Test Excavations at CA-RIV-1443, Norco Hills, Riverside County, California
RI-00610	1979	Christopher E. Drover	An Archaeological Assessment of the North Hills Proposed Subdivision Near Norco, California
RI-00736	1979	James D. Swenson	Addendum To: An Archaeological Assessment of the North Hills Proposed Subdivision Near Norco, California

Table 3-1 (continued)

EIC Reference #	Year	Author	Title
RI-01108	1987	Christopher E. Drover	Environmental Impact Evaluation: An Archaeological Assessment of the Proposed Riverside Community College District Site and Dean Homes Residential Development, Norco, California
RI-01665	1983	Wirth Associates	Devers-Serrano-Villa Park Transmission System Supplement to the Cultural Resources Technical Report – Public Review Document and Confidential Appendices
RI-01743	2000	Phillipe Lapin	Letter report: Cultural Resources Assessment for Pacific Bell Wireless Facility Cm 266-01, County of Riverside, California
RI-02886	1989	Michael K. Lerch	Cultural Resources Assessment of the I-15 Freeway Corridor Land Gateway Specific Plan, City of Norco, Riverside County, California
RI-02902	1989	Mark T. Swanson and Roger G. Hatheway	The Prado Dam and Reservoir, Riverside and San Bernardino Counties, California
RI-02905	1988	Jeanette McKenna	An Intensive Survey of the Corona Ranch Project Area, City of Corona, Riverside County, California
RI-03544	1992	Robert Wlodarski	Negative Archaeological Survey Report (08-RIV-I15, PM 42.3/43.4)
RI-03565	1998	McKenna et al.	Phase III Archaeological Investigations of CA-RIV-4947 (McKenna 216-3), Located in the Norco Area of Riverside County, California
RI-03727	1993	Ronald M. Bissell	Cultural Resources Reconnaissance of the Tozai Property, Norco, Riverside County, California
RI-03728	1993	Ronald M. Bissell	Cultural Resources Reconnaissance of the Hidden Valley Golf Course, Norco, Riverside County, California
RI-03730	1996	Jeanette McKenna	A Phase II Archaeological Testing Program for Site within the Proposed Hidden Valley Golf Course, Norco, Riverside County, California
RI-03919	1995	Robert S. White	An Archaeological Assessment of the South Norco Channel Line SA, Stage 2, Located in the City of Norco, Riverside County
RI-03964	2000	Curt Duke	Cultural Resource Assessment for Pacific Bell Wireless Facility CM 306-01, County of Riverside, California
RI-03974	1995	Joan C. Brown	Cultural Assessment and Survey for the Proposed South Norco Line Channel Line SB, Stage 2 Project, Located in the City of Norco, Riverside County, California
RI-04014	1996	Richard Starr Shepard	Luiseno Rock Art and Sacred Landscape in Late Prehistoric Southern California
RI-04087	1998	Robert J. Wlodarski	A Phase I Archaeology Study: Norco Senior Housing Project (Phase II) (2 Acre Parcel of Land), City of Norco, Riverside County, California
RI-04569	2000	Anna Hoover and Patrick Maxon	Cultural Resources Monitoring for the Norco Hills Project, Tract 25779, City of Norco, Riverside County, California
RI-05409	2001	Bruce Love, Bai "Tom" Tang, Michael Hogan, and Mariam Dahdul	Historical/Archaeological Resources Survey Report, Arlington Desalter and Pipeline, City of Riverside, Corona, and Norco, Riverside County, California

Table 3-1 (continued)

EIC Reference #	Year	Author	Title
RI-05840	2001	Bruce Love, Bai "Tom" Tang, Michael Hogan, and Mariam Dahdul	Historical/Archaeological Resources Survey Report, Rossland Norco Project, City of Corona, Riverside County, California
RI-08171	2008	Jennifer M. Sanka and Marnie Aislin-Kay	Cultural Resources Assessment Public Safety Enterprise Communication Project Riverside, Orange, San Bernardino, and San Diego Counties, FM 04174400010

Table 3-2
Previous Cultural Resources Identified within One-Mile of the Project Area

Primary	Trinomial	Description
P-33-001258	CA-RIV-1258	Prehistoric bedrock milling site; site destroyed with housing development
P-33-001259	CA-RIV-1259	Prehistoric bedrock milling site
P-33-001443	CA-RIV-1443	Prehistoric site containing manos, metates, cores, flakes, and fire affected rock; site destroyed with housing development
P-33-001449	CA-RIV-1449	Prehistoric site containing multiple bedrock milling features, ground stone bowl rim fragment, scrapers, cores, and flakes
P-33-001450	CA-RIV-1450	Prehistoric site containing a pictograph, bedrock milling feature, ground stone bowl rim fragment, and mano
P-33-004947	CA-RIV-4947	Prehistoric site containing debitage, partial granitic bowl, cores, and manos; site destroyed with housing development
P-33-005159	CA-RIV-5159	Prehistoric bedrock milling site
P-33-005162	CA-RIV-5162	Prehistoric bedrock milling site
P-33-005171	CA-RIV-5171	Prehistoric bedrock milling site
P-33-005176	CA-RIV-5176	Prehistoric bedrock milling site
P-33-009024		Isolated artifact: metasedimentary flake
P-33-009025		Isolated artifact: metasedimentary hammerstone and granitic bifacial mano
P-33-009026		Isolated artifact: granitic mano fragment
P-33-012561	CA-RIV-7133	Prehistoric lithic scatter
P-33-012615		Prehistoric bedrock milling site
P-33-012616		Prehistoric bedrock milling site
P-33-019900		2214 Second Street; one-story vernacular single family residence
P-33-019901		2138 Second Street; one-story vernacular single family residence
P-33-019902		2266 Second Street; one-story ranch-style single family residence
P-33-019905		1500 Mountain Avenue; one-story vernacular commercial building
P-33-019906		Norco Egg Ranch
P-33-019907		1751 Mountain Avenue; one-story vernacular single family residence
P-33-019913		1619 Pacific Avenue; one-story vernacular single family residence
P-33-019937		1661 Mountain Avenue; one-story vernacular single family residence

Other sources consulted during the archaeological literature and records search include the *Office of Historic Preservation Archaeological Determinations of Eligibility* (ADOE), and the *Office of*

Historic Preservation Directory of Properties in the Historic Property Data File. Additionally, the 1947 Corona 15' USGS topographic map was consulted to determine if historical buildings or structures were present within the Project area. One property (P-33-001259/CA-RIV-1259), a prehistoric bedrock milling site, was found to be listed on the ADOE as not evaluated for inclusion on the National Register of Historic Places. No historical properties or landmarks have been recorded within or immediately adjacent to the Project area.

3.2 NATIVE AMERICAN COMMUNICATION

As part of the cultural resources assessment, Æ also requested a Sacred Lands File (SLF) search from the Native American Heritage Commission (NAHC) located in Sacramento, California in November 11, 2014. The NAHC responded on November 24, 2014 and stated that no SLF resources were known to exist within the Project APE. However, the NAHC cautioned that the absence of specific site information does not indicate the absence of such resources. The NAHC provided a list of regional Native Americans who have interest in the region and recommended that these individuals be contacted for additional information on Native American cultural resources in the area. These individuals and groups include:

- San Manuel Band of Mission Indians
- Morongo Band of Mission Indians
- Ernest Siva, Tribal Elder, Morongo Band of Mission Indians
- Goldie Walker, Chairwoman, Serrano Nation of Mission Indians

Scoping letters were sent on December 9, 2014, to each of the listed tribes and individuals that requested information regarding Native American cultural resources within the survey area. Two responses were received as a result of these letters.

- Daniel McCarthy, Director-CRM Department for the San Manuel Band of Mission Indians emailed on December 9, 2014, and stated that the Project is outside of Serrano ancestral territory. He requested that Æ contact other tribes who had ancestral ties to the Project area.

- On December 10, 2014, Denisa Torres, Cultural Resources Manager for the Morongo Band of Mission Indians sent an email stating that the Project is outside of Tribe's current reservation boundaries, but within an area that may be considered a traditional use area or one in which the Tribe has cultural ties. Therefore, she stated that the Tribe requests the following: (1) proper procedures to be followed if human remains are encountered during construction activities; (2) if Native American cultural resources are discovered during construction, work will cease in the immediate area until the find can be assessed by a qualified archaeologist; (3) and if significant Native American cultural resources are discovered, for which a Treatment Plan must be prepared, the developer or his archaeologist shall contact the Morongo Band of Mission Indians.

Æ also conducted follow-up telephone calls to Ms. Walker and Mr. Siva on December 23, 2014. Æ was unsuccessful in contacting Ms. Walker by phone; however, a detailed message was left for Mr. Siva. An example of the letter sent, the list of contacts, and responses received, and a Table of Responses summarizing communication with Native American groups and/or individuals contacted is located in Appendix B.

4
CULTURAL RESOURCES SURVEY METHODS

A Phase I cultural resources survey was conducted by Æ archaeologist Mitch Evans on December 8, 2014. The Project area consists of four distinct portions that differed considerably in character: (1) the existing detention basin; (2) the earthen flood control channel; (3) the landscaped area around Norco Intermediate School; and (4) paved roadways of Hillside Lane, Hillside Avenue, and 3rd Street. A summary of the field methods used within each of these areas is provided below.

The earthen detention basin is located in the southwestern portion of the Project area (see Figure 1-3). The ground surface in this area was intensively inspected by the archaeologist who walked a series of parallel transects spaced at no more than 15 m (50 ft) apart. Ground visibility ranged from good to excellent with portions of the detention basin obscured by spoil piles, standing water, and concentrations of vegetation debris (Figure 4-1).

Figure 4-1 View of existing detention basin, facing south.

The South Norco Channel alignment constituted the largest portion of the Project area and was surveyed by walking two transects, one on either side of the earthen flood control channel drainage channel. Ground visibility ranged from moderate to excellent. Although small segments of the sides and bottom of the channel were obscured by concrete and rock rubble, much of the alignment was earthen in construction (Figure 4-2). Due to recent rains, standing water was found along portions of the channel bottom.

Figure 4-2 Portion of South Norco Channel, facing southwest.

The northern extent of the Project area runs along the southern and eastern boundary of the Norco Intermediate School. This portion of the APE was examined by the archaeologist walking two parallel transects spaced no more than 15 m (50 ft) apart. Ground visibility was poor as much of the survey area ran along the edge of the school's athletic fields which was covered with turf grass (Figure 4-3).

Finally, a reconnaissance survey was employed to examine the northern and eastern portions of the APE that ran along Hillside Lane, Hillside Avenue, and 3rd Street. The APE in both of these areas was centered on paved roadways. Ground visibility in this area was poor as much of the ground surface was covered with concrete and asphalt pavement (Figure 4-4). Due to the lack of visibility, a pedestrian survey of this portion of the APE was not conducted.

Figure 4-3 APE running along southern boundary of Norco Intermediate School, facing east.

Figure 4-4 View of APE along Hillside Lane, facing west.

5
SURVEY RESULTS AND RESOURCE EVALUATION

Two newly identified historical cultural resources were located within the Project APE. These include a segment of the South Norco Channel (P-33-024099) and a concrete irrigation weir box (P-33-024100) (Figure 5-1). Descriptions of the two built-environment resources are first provided followed by a significance evaluation of each resource.

5.1 CULTURAL RESOURCE DESCRIPTIONS

5.1.1 P-33-024099

This approximately 4,100-ft-long segment of the Riverside County Flood Control's South Norco Channel consists of an earthen flat-bottomed cut channel with sloping sides. The channel prism along this segment measures approximately 25–30 ft wide across the top, 10 ft wide across the flat bottom, and is approximately 3 to 4 ft deep. This segment features hard-earth, sloped embankments, and is flanked by dirt access roads that measure as much as 15 ft wide.

Building plans for the South Norco Channel were drawn in January 1968, with construction following soon thereafter. The construction of the storm channel was undoubtedly prompted by the frequent flooding events that had occurred in the area in November 1965 and December 1966. An article in the *Corona Daily Independent* dated March 6, 1969, reported, "In all of Norco only portions of two main channels have been completed—the North Norco Channel from the west end of Wraymar Lane to Second Street and Parkridge, and the South Norco Channel from Third near Temescal to Valley View just north of First" (Corona Daily Independent 1969:1). Following the devastation and damages to the Norco area as a result of the January–February 1969 flood, the District proposed to construct and extend existing flood control channels throughout the town. A photograph in the newspaper article shows Norco City Manager Nick Poppelreiter pointing to a drawing of the existing and proposed channels, revealing that the majority of the portion of the South Norco Channel within the Project area had already been completed by March 1969, but not the segment extending west of Valley View to its present terminus. As-built designs indicate that the southern extension of the channel, which measured 2,725 ft in length, was completed by September 1969, with the 1,375-ft-long northern extension constructed by July 1971. A fence was installed along these segments in 1977–1978. No apparent alterations have been made to the subject segment of the channel.

There are a number of associated structures along this segment of the South Norco Channel. These include: a culvert at the 3rd Street crossing; a culvert at an unnamed street crossing (south of 3rd Street); a pedestrian crossing bridge at Norco High School (between a parking lot and the school campus); a culvert at the Temescal Avenue crossing; a culvert at an unnamed crossing adjacent to a modern retention basin; and a 135-ft-long concrete-lined open-top canal where the channel approaches a culvert at Corona Avenue near Second Street (Figure 5-2).

5.1.2 P-33-024100

This concrete weir box is located at the northern edge of an Riverside County Flood Control and Water Conservation District's retention basin, and immediately adjacent to a chain link fence and

Figure 5-1 Cultural resources within Project APE.

Figure 5-2 A segment of the concrete-lined open-top South Norco Channel (P-33-024099) at Corona Avenue, view to the west.

residential neighborhood. It is situated south of Willow Drive and east of Corona Avenue in the southern portion of Norco. Elevation is about 662 ft amsl.

The feature consists of a board-formed, poured concrete irrigation weir box that is rectangular in shape and measures approximately 3.5 ft long by 2 ft wide by 4 ft tall (Figure 5-3). The walls are roughly 6 in. thick and constructed of course concrete. A brass water depth gauge is embedded into the west wall, and the direction of pipe flow appears to be east-west, although the structure appears to be an abandoned remnant of a former agricultural landscape. Fragments of concrete pipe are scattered about the base of the weir box as if the underground portion may have been demolished. The parcel on which this weir box is located is owned by the Riverside County Flood Control and Water Conservation District, who maintains the earthen retention basin as a flood control feature. The immediate surrounding parcels are developed with residential property, and there is no agricultural land within close proximity that this weir box could irrigate. Determining the construction history of these irrigation features is difficult given that these types of irrigation features were built by individual farmers following standard designs and traditional practice with no necessary permits.

5.2 CULTURAL RESOURCE EVALUATIONS

5.2.1 P-33-024099

The South Norco Channel is a flood control feature that functions to reduce the possibility of property damages from periodic flooding. The entire channel measures less than 5 mi long,

Figure 5-3 A concrete weir box (P-33-024100) next to the property fence line at the north side of the existing retention basin, view to the north.

draining into the Prado Flood Control Basin, and it only serves the southeastern portion of the Norco community, which primarily consists of residential, commercial, and light industrial development. The Channel does not stand out within the history of the Riverside County Flood Control District as an important engineering project in Riverside County, and it is not known to be directly associated with any other important historical events. Although the flood control feature has aided the successful growth and development of the southeastern Norco community, the South Norco Channel does not appear to meet NRHP Criterion A and CRHR Criterion 1. As the National Park Service (NPS) explains, "mere association with historic events is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well" (NPS 1991:12). The Channel's contribution to the area's growth and development is minor and insufficient to have any significant, direct association with twentieth-century development of the area. Similarly, none of the individual structures along the subject portion of the South Norco Channel appear eligible for the NRHP under Criterion A, or the CRHR under Criterion 1.

The South Norco Channel also does not appear to meet NRHP Criterion B or CRHR Criterion 2 for any direct associations with the productive lives of persons important in local, state, or national history. The Channel was constructed by Riverside County Flood Control and Water Conservation District, and not individuals. The District likely hired various contractors and workers to cut and prepare the Channel. There is no evidence that the South Norco Channel has any known direct association with the productive lives of important individuals in local, regional, state, or national history under NRHP Criterion B/CRHR Criterion 2. Similarly, none of the individual structures along the subject portion of the South Norco Channel appear eligible for the NRHP under Criterion B or the CRHR under Criterion 2.

The South Norco Channel does not appear to meet NRHP Criterion C or CRHR Criterion 3 for "distinctive characteristics of a type, period, and method of construction," and does not stand out from other similar earthen flood control channels as having any architectural or engineering merits. Rather, the Channel is of standard design and construction, and not unlike any other simple earthen flood control channel. The South Norco Channel does not appear to employ any ingenious or technologically innovative and scientifically significant engineering in its construction. As such, the South Norco Channel does not appear to meet NRHP Criterion C or CRHR Criterion 3, and similarly, none of the individual structures along the subject segment of the Channel exhibits any architectural or engineering merits on their own that would be considered eligible for the NRHP under Criterion C or the CRHR under Criterion 3.

Finally, the South Norco Channel does not appear to meet NRHP Criterion D or CRHR Criterion 4 for any potential to provide information important to the study of late twentieth-century flood control systems. Similarly, none of the individual structures along the subject segment of the Channel appear eligible for the NRHP under Criterion D or the CRHR under Criterion 4. This criteria is typically reserved for archaeological resources, ruins, or rare built environments of which little is already known, and that are considered the sole source of historical data. None of the structures recorded during this study, or the Channel as a whole would be able to yield any information important to the study of flood control systems of their particular type or vintage in local, state, or national history. The structures themselves are not the primary sources of this information, but rather, the physical manifestation of the knowledge and practice of this technology, which was widely applied throughout Riverside County and other parts of southern California.

In conclusion, the South Norco Channel does not appear to meet any of the criteria of the NRHP or CRHR for historical significance. Consequently, it is recommended that this resource is ineligible for listing on the NRHP or the CRHR.

5.2.2 P-33-024100

While P-33-024100 undoubtedly dates to the mid twentieth century, this isolated remnant weir box has no known direct association with events that have made a significant contribution to the broad patterns of our history nor is it associated with the lives of persons significant in our past. As such, the resource is not recommended as eligible to the NRHP under Criterion A or B or to the CRHR under Criterion 1 or 2. In addition, it does not embody the distinctive characteristics of a type, period, or method of construction, and thus is not recommended eligible under Criterion C/3. Finally, the isolated weir box does not have potential to yield any information important to the study of irrigation systems of their particular type or vintage in local, state, or national history. Therefore, it is recommended that the resource is ineligible for listing on the NRHP or CRHR under Criterion D or Criterion 4, respectively.

6
MANAGEMENT RECOMMENDATIONS

The historical South Norco Channel (P-33-024099) and irrigation feature (P-33-024100) that were identified within the Project area were documented and evaluated for historical significance as part of the cultural resources study. Neither of these built-environment features is recommended as eligible for the NRHP or the CRHR. Therefore, neither of them qualifies as a "historic property" under the NHPA or a "historical resource" under CEQA.

An intensive-level Phase I field survey of the existing channel and detention basin did not encounter any potentially significant archaeological resources of prehistoric or historic age, and the results of this study indicate that the archaeological sensitivity of these areas is considered to be low. Ground disturbance associated with the relining of the channel and detention basin will primarily occur along the sides and bases of the flood control structures, which have been previously disturbed by construction and maintenance activities. As the potential for encountering intact cultural deposits in these areas is relatively low, no further cultural resources management is recommended for the existing channel and detention basin at this time.

Due to the lack of ground visibility, much of the APE along Hillside Lane, Hillside Avenue, and 3rd Street could not be inspected for archaeological resources. However, the presence of several large bedrock milling sites in the nearby Norco Hills area suggests that archaeological sensitivity in the eastern portion of the Project area is moderate to high. Trenching and excavation associated with the construction of underground drainage pipes may extend to a depth of 3.0 m (10 ft) and as such, have the potential to disturb deeply buried archaeological deposits. Therefore, it is recommended that a qualified archaeological monitor be present during any Project-related ground-disturbing activities associated with the installation of the underground drainage pipes that extend into undisturbed sediments.

7
REFERENCES

Bean, L. J.

1976 Social Organization in Native California. In: *Native Californians: A Theoretical Retrospective*, edited by L. J. Bean and T. C. Blackburn, pp. 99B123. Ballena Press, Ramona, California.

Bean, L. J., and C. R. Smith

1978 Gabrielino. In: *California*, edited by R. F. Heizer, pp. 538B549. Handbook of North American Indians, vol. 8, W. C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Bean, Lowell J., and Florence C. Shipek

1978 Luiseño. In: *Handbook of North American Indians: Volume 8 California*. William C. Sturtevant, general editor, Robert F. Heizer, volume editor. Smithsonian Institution, Washington, D.C.

Binford, L. R.

1980 Willow Smoke and Dogs' Tails: Hunter Gatherer Settlement Systems and Archaeological Site Formation. *American Antiquity* 45:4–20.

Bitetti, Marge

2005 *Norco*. Arcadia Publishing, Mount Pleasant, South Carolina.

Blackburn, T.

1963 Ethnohistoric Descriptions of Gabrielino Material Culture. *UCLA Archaeological Survey Annual Reports* 5:1–50.

1976 Ceremonial Integration and Social Interaction in Aboriginal California. In *Native Californians: A Theoretical Retrospective*, edited by Lowell J. Bean and Thomas C. Blackburn, pp. 225–243. Ballena Press, Ramona, California.

Corona Daily Independent

1969 "Norco Flood Victims Girding for Session…Will Report Trouble to Commission Tomorrow." By Bette Reincke, staff writer, March 6, page 1. Available through NewspaperArchive.com.

Crouch, D. P., D. J. Garr, and A. I. Mundigo

1982 *Spanish City Planning in North America*. MIT Press, Cambridge, Massachusetts.

Douglas, R. D., J. Cooper, D. Burkenroad, E. Gardner, and T. Mabry

1981 *Archaeological, Historical/Ethnohistorical, and Paleontological Assessment, Weir Canyon Park-Road Study, Orange County, California*. Larry Seeman Associates, Tustin. Ms. on file, University of California Institute of Archaeology, Los Angeles, California.

Goldberg, S. K., C. J. Klink, J. A. Onken, W. G. Spaulding, M. C. Robinson, M. C. Horne, and R. L. McKim

2001 *Metropolitan Water District of Southern California Eastside Reservoir Project Final Report of Archaeological Investigations, Vol. IV: Synthesis of Findings*. Applied EarthWorks, Inc., Hemet California. Submitted to the Metropolitan Water District of Southern California, Los Angeles, California.

Harrington, John P.

n.d. Ethnographic Field Notes. Copies on file at Cultural Systems Research, Inc., Menlo Park, California.

Horne, M. C., and D. P. McDougall

2008 *Early Archaic Settlement and Subsistence in the San Jacinto Valley, Riverside County, California*. Applied EarthWorks, Inc., Hemet, California. Draft report in preparation for The Metropolitan Water District of Southern California, Los Angeles, California.

King, T. F.

1967 *Test Excavations at MRN-375, the Palo Marin Site in Point Reyes National Seashore*. Society for California Archaeology, R. E. Schenk Memorial Archives of California Archaeology 17. San Francisco, California.

Kroeber, A. L.

1925 *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Washington, D.C.

Lech, Steve

2004 *Along the Old Roads: A History of the Portion of Southern California That Became Riverside County, 1772–1893*. Steve Lech, Riverside, California.

McCawley, W.

1996 *The First Angelinos*. Malki Museum Press/Ballena Press Cooperative Publication.

Meighan, C. W.

1954 A Late Complex in Southern California Prehistory. *Southwestern Journal of Anthropology* 10(2):215–227.

National Park Service (NPS)

1991 *National Register Bulletin Number 15: How to Apply the National Register Criteria for Evaluation*. U.S. Department of the Interior, National Park Service, Washington, D.C.

Office of Planning and Research (OPR)

2012 *CEQA: California Environmental Quality Act, Statutes and Guidelines*. State of California, Sacramento.

Reid, Hugo

1852 Letters about the Los Angeles County Indians. *Los Angeles Star* 1(41), 2(11).

Starr, K.
2005 *California: A History*. The Modern Library, New York.

Strong, W. D.
1929 *Aboriginal Society in Southern California.* University of California Publications in American Archaeology and Ethnology 26(1). Berkeley and Los Angeles, California.

True, D. L.
1966 *Archaeological Differentiation of Shoshonean and Yuman Speaking Groups in Southern California*. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles, California.

1970 *Investigations of a Late Prehistoric Complex in Cuyamaca State Park, San Diego County, California*. Archaeological Survey Monographs No. 1, University of California, Los Angeles, California.

Wallace, W. J.
1978 Post Pleistocene Archaeology, 9000 to 2000 B.C. In: *California Indians*, edited by R.F. Heizer and M. A. Whipple, pp. 186–210. University of California Press, Los Angeles, California.

Warren, C. N.
1968 Cultural Tradition and Ecological Adaptation on the Southern California Coast. *Eastern New Mexico University Contributions in Archaeology* 1(3):1–15.

1980 The Archaeology and Archaeological Resources of the Amargosa–Mojave Basin Planning Units. In *A Cultural Resources Overview for the Amargosa–Mojave Basin Planning Units*, by C. N. Warren, M. Knack, and E. von Till Warren. U.S. Bureau of Land Management, Cultural Resources Publications, Anthropology–History, Riverside, California.

1984 The Desert Region. In: *California Archaeology*, by Michael J. Moratto, pp. 339–430. Academic Press, New York and London.

White, R. C.
1963 Luiseño Social Organization. *University of California Publications in American Archaeology and Ethnology* 48(2):91–194. Berkeley, California.

APPENDIX A

CONFIDENTIAL SITE RECORDS

APPENDIX B

NATIVE AMERICAN COMMUNICATION

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 657-5390 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Date: November 11, 2014

Project: South Norco Channel Line S-1 Project (AE #3000)

County: Riverside

USGS Quadrangle Name: Corona North, CA

Township 3S/Range 6W, Sections 7 and 18

Company/Firm/Agency: Applied EarthWorks, Inc.

Contact Person: Joan George

Street Address: 3550 E. Florida Ave., Suite H

City: Hemet Zip: 92544

Phone: (951) 766-2000

Fax: (951) 766-0020

Email: jgeorge@appliedearthworks.com

Project Description: The Riverside County Flood Control and Water Conservation District proposes to stabilize the existing earthen channel by lining it with concrete.

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

November 24, 2014

Joan George
Applied Earthworks, Inc.
3550 E. Florida Ave., Suite H
Hemet, CA

Sent by Fax: (951) 766-0020
Number of Pages: 2

Re: South Norco Channel Line S-1 Project (AE # 3000), Riverside County.

Dear Ms. George,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Government Program Analyst

Native American Contacts
Riverside County
November 21, 2014

San Manuel Band of Mission Indians
Lynn Valbuena, Chairwoman
26569 Community Center Serrano
Highland , CA 92346
(909) 864-8933
(909) 864-3724 Fax
(909) 864-3370 Fax

Serrano Nation of Mission Indians
Goldie Walker, Chairwoman
P.O. Box 343 Serrano
Patton , CA 92369
(909) 528-9027
(909) 528-9032

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Road Cahuilla
Banning , CA 92220 Serrano
dtorres@morongo-nsn.gov
(951) 572-6004 Fax

Ernest H. Siva
Morongo Band of Mission Indians Tribal Elder
9570 Mias Canyon Road Serrano
Banning , CA 92220 Cahuilla
siva@dishmail.net
(951) 849-4676

San Manuel Band of Mission Indians
Daniel McCarthy, M.S.., Director-CRM Dept.
26569 Community Center Drive Serrano
Highland , CA 92346
dmccarthy@sanmanuel-nsn.gov
(909) 864-8933 Ext 3248
(909) 862-5152 Fax

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad Cahuilla
Banning , CA 92220 Serrano
(951) 849-8807
(951) 755-5200
(951) 922-8146 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed South Norco Channel Line S-1 Project (AE # 3000), Riverside County.

Applied EARTHWORKS Inc.

3550 E. Florida Ave., Suite H
Hemet, CA 92544-4937
O: (951) 766-2000 | F: (951) 766-0020

December 9, 2014

Daniel McCarthy
Director – CRM Department
San Manuel Band of Mission Indians
26569 Community Center Drive
Highland, CA 92346

Re: Cultural Resources Investigation for South Norco Channel Line S-1 Project, Riverside County, California

Dear Mr. McCarthy:

On behalf of HELIX Environmental Planning, Applied EarthWorks, Inc. (Æ) is conducting a cultural resources study of the South Norco Channel Line S-1 Project (Project) located within the city of Norco and bounded to the west by Corona Street, to the east by Hillside Avenue, to the north by Fourth Street, and to the south by Second Street. The Project proposes the stabilization, maintenance, and operation of a segment of the existing South Norco interim earthen flood control channel within the Project area, indicated on the attached map, located on the Corona North, CA 7.5' USGS quadrangle map within T3S/R6W, Sections 7 and 18, San Bernardino Baseline and Meridian (S.B.B.M.).

The archaeological literature and records search conducted at the Eastern Information Center housed at the University of California, Riverside, indicates that 24 cultural resources studies have been conducted within a one-mile radius of the Project area. None of these studies involved the Project area. Twenty-four cultural resources have been recorded within a one-mile radius of the Project area; however, no cultural resources have been recorded within the boundaries of the Project area.

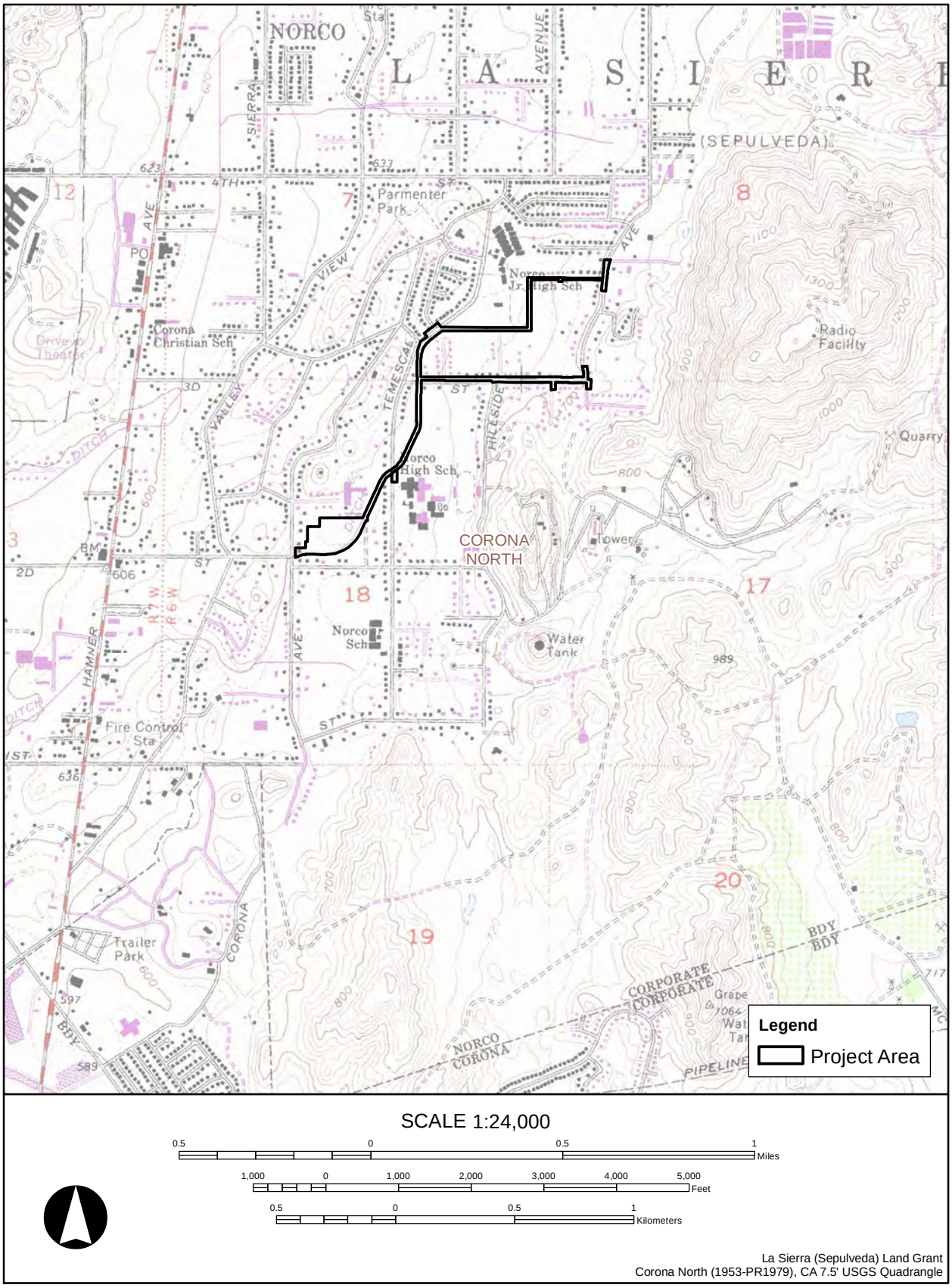
Æ was contracted to perform an intensive archaeological survey of the Project area. The survey was completed on December 8, 2014 and transect spacing ranged from 10 to 15 meters. One historical resource (the Channel) and one isolated modified cobble were identified during the survey.

As part of the cultural resources assessment of the Project area, Æ requested a search of the *Sacred Lands File* by the Native American Heritage Commission (NAHC). The NAHC responded on November 24, 2014 stating that the *Sacred Lands File* search failed to indicate the presence of Native American cultural resources in the immediate Project area. Should cultural properties exist within or near the Project area shown on the enclosed map, or if you have any concerns regarding Native American issues related to the overall Project, please contact me at (951) 766-2000 or jgeorge@appliedearthworks.com expressing your concerns. If I do not hear from you within in the next two weeks, I will contact you with a follow-up phone call or email.

Please be aware that your comments and concerns are very important to us, as well as to the successful completion of this Project. I look forward to hearing from you in the near future. Thank you, in advance, for taking the time to review this request.

Respectfully yours,

Joan George
Associate Archaeologist
Applied EarthWorks, Inc.



Project location map for the South Norco Channel, Line S-1 Project.

From:	Daniel McCarthy
To:	Joan George
Subject:	RE: Cultural Resources Investigation for the South Norco Channel Project
Date:	Tuesday, December 09, 2014 1:56:04 PM
Attachments:	image001.jpg

Joan,
Thank you for the opportunity to comment. However, this project is outside Serrano ancestral territory. Please contact another tribe who has ancestral ties there. //daniel

Daniel McCarthy, MS, RPA
Director
Cultural Resources Management Department
San Manuel Band of Mission Indians
26569 Community Center Drive
Highland, CA 92346
Office: 909 864-8933 x 3248
Cell: 909 838-4175
dmccarthy@sanmanuel-nsn.gov

From: Joan George [mailto:jgeorge@appliedearthworks.com]
Sent: Tuesday, December 09, 2014 1:27 PM
To: Daniel McCarthy
Subject: Cultural Resources Investigation for the South Norco Channel Project

Good Afternoon,

Attached please find a scoping letter and map for the South Norco Channel Project, in the City of Norco, Riverside County.

Thank you,
Joan

Joan George | Applied EarthWorks, Inc.
Associate Archaeologist

3550 E. Florida Ave., Ste. H
Hemet, CA 92544-4937
951.766.2000 x-24 office
http://www.appliedearthworks.com