and applicable general plans and regional plans, including habitat conservation plans and natural community conservation plans (NCCP). A finding of consistency should be included with the CEQA document.

As per Section 15168 of the CEQA Statute, the use of a Program Environmental Impact Report (PEIR) for this project is warranted. Subsection "c" of Section 15168 provides that activities subsequent to the PEIR must be examined to determine whether additional environmental documents must be prepared. Section 15168(c)(1) states that if a later project has effects that were not examined in the PEIR, a new initial study would have to be completed, leading to a negative declaration or environmental impact report.

The advantages of a program EIR are found in Section 15168 of the CEQA Guidelines. Two of these advantages are: to ensure consideration of cumulative impacts and to allow the lead agency to consider broad policy alternatives and program-wide mitigation measures.

An assessment of future actions in this programmatic EIR is problematic because of the nature and complexity of the project(s). It is important for the DEIR to include a list of potential mitigation measures for categories of general project impacts that will require mitigation, i.e., for narrow endemic plants, wildlife movement north to south, revegetation measures, impacts to riparian vegetation and streams and other measures. The DEIR should also include a discussion of the Tenaja Corridor and potential impacts to it. A crucial factor in the Department's permitting of the plan components will be implementation of a monitoring program to track projects' impacts and mitigation to ensure that mitigation occurs on the project as a whole and not just on the project components. A discussion and accounting of cumulative impacts should be addressed in subsequent CEQA documents for specific projects.

The project has the potential to impact a number of coastal sage scrub, Riversidean sage scrub, Engelmann oak and riparian habitats and species. Among the species are: Bell's sage sparrow, coastal California gnatcatcher, Cooper's hawk, least Bell's vireo, loggerhead shrike, southwestern willow flycatcher, bobcat, and mountain lion.

The Department is concerned about the continuing loss of jurisdictional waters of the State and the encroachment of development into areas with native habitat values. The CEQA document should contain sufficient, specific, and current biological information on the existing habitat and species at the project site; measures to minimize and avoid sensitive biological resources, and mitigation measures to offset the loss of native flora and fauna and State waters.

This particular project has the potential to have significant environmental impacts on sensitive flora and fauna resources. Therefore, the CEQA document should include an alternatives analysis which focuses on environmental resources and ways to avoid or minimize impacts to those resources.

To enable Department staff to adequately review and comment on the proposed project, we suggest that updated biological studies be conducted prior to any environmental or discretionary approvals. The following information should be included in any focused biological report or supplemental environmental report:

1. A summary of the structure, purpose and obligations of the Lead Agency under the MSHCP and an analysis of the project in relation to the Area Plan and Criteria Cell biological goals and objectives.

   a. Reserve Assembly. A discussion of the applicable Area Plan and whether the project includes Criteria Cells should be addressed. Documents processed through the Resource Conservation Agency (RCA) of the MSHCP should be included in the CEQA document.

   b. Goals and Objectives. A discussion of the Area Plan biological goals and objectives for species and habitats and an analysis of the project's species and habitats in relation to those goals and objectives.

   c. MSHCP Policies. A discussion of the applicability of MSHCP policies and procedures, including: the Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools policy (MSHCP Section 6.1.2); Protection of Narrow Endemic Plan Species (MSHCP Section 6.1.3); Additional Survey Needs and Procedures (MSHCP Section 6.3.2); Fuels Management (MSHCP Section 6.4), and the Guidelines Pertaining to the Urban Wildlands Interface (MSHCP Section 6.1.4).

   d. Special Survey Areas. A discussion of what the survey requirements are of the project site and the results of general and focused surveys. Surveys should be conducted within one year of submittal of the CEQA document. Survey requirements and results should be included in the CEQA document.

   e. Biological Resources. A list of the biological resources found on the site and an analysis of how the project implementation would impact those resources.

   f. Mitigation Measures. A list of proposed mitigation measures required by the MSHCP to offset impacts to site species and habitats, including payment of fees or other measures.

2. A complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats.

   a. A thorough assessment of rare plants and rare natural communities, following the Department's November 2009 guidance for Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. The guidance document can be found at the following link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf

b. A complete assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be considered. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service.

c. The Department's California Natural Diversity Data Base in Sacramento should be contacted at (916) 327-5960 to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the California Fish and Game Code.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

a. CEQA Guidelines, 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

b. Project impacts should be analyzed relative to their affects on off-site habitats. Specifically, this should encompass adjacent public lands, open space, adjacent natural habitats, and riparian ecosystems. In addition, impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.

c. The zoning of areas for development projects or other uses that are nearby or adjacent to natural areas may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce these conflicts should be included in the environmental document.

d. A cumulative effects analysis should be developed as described under CEQA Guidelines, 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

e. The document should include an analysis of the effect that the project may have on the Western Riverside Multiple Species Habitat Conservation Plan or on other regional and/or subregional conservation programs in San Diego or Orange Counties. Under Sections 2800-2835 of the California Fish and Game Code, the Department, through the Natural Communities Conservation Planning (NCCP) program is coordinating with local

jurisdictions, landowners, and the Federal Government to preserve local and regional biological diversity.

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated (CEQA Guidelines 15126.6). A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

   a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid and/or otherwise minimize project impacts. Off-site compensation for unavoidable impacts through acquisition and protection of high-quality habitat should be addressed.

   b. The Department considers Rare Natural Communities as threatened habitats having both local and regional significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts.

   c. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. Although the proposed project is within the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) and could be subject to Section 6.1.2, Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, a Lake and Streambed Alteration Agreement Notification is still required by the Department should the site contain jurisdictional waters. The Department's criteria for determining the presence of jurisdictional waters are generally more comprehensive than the MSHCP criteria in Section 6.1.2. The CEQA document should include a jurisdictional delineation if there are impacts to riparian vegetation or State waters.

   The Department opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent or perennial, must be retained or mitigated for and provided with substantial setbacks which preserve the riparian and aquatic values and maintain their value to on-site and off-site wildlife populations.

   a. Under Section 1600 *et seq.* of the California Fish and Game Code, the Department requires the project applicant to notify the Department of any activity that will divert, obstruct or change the natural flow or the bed, channel or bank (which includes associated riparian resources) of a river, stream or lake, or use material from a streambed prior to the applicant's commencement of the activity. Streams include, but are not limited to, intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams, and watercourses with subsurface flow. The Department's issuance of a Lake and Streambed Alteration Agreement for a

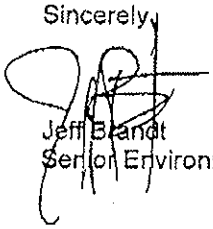
project this is subject to CEQA will require CEQA compliance actions by the Department as a responsible agency. The Department, as a responsible agency under CEQA, may consider the local jurisdiction's (lead agency) Negative Declaration or Environmental Impact Report for the project. However, if the CEQA document does not fully identify potential impacts to lakes, streams, and associated resources (including, but not limited to riparian and alluvial fan sage scrub habitat) and provide adequate avoidance, mitigation, monitoring, and reporting commitments, additional CEQA documentation will be required prior to execution (signing) of the Streambed Alteration Agreement. In order to avoid delays or repetition of the CEQA process, potential impacts to a lake or stream, as well as avoidance and mitigation measures need to be discussed within this CEQA document. The Department recommends the following measures to avoid subsequent CEQA documentation and project delays:

(i) Incorporate all information regarding impacts to lakes, streams and associated habitat within the DEIR. Information that should be included within this document includes: (a) a delineation of lakes, streams, and associated habitat that will be directly or indirectly impacted by the proposed project; (b) details on the biological resources (flora and fauna) associated with the lakes and/or streams; (c) identification of the presence or absence of sensitive plants, animals, or natural communities; (d) a discussion of environmental alternatives; (e) a discussion of avoidance measures to reduce project impacts, (f) a discussion of potential mitigation measures required to reduce the project impacts to a level of insignificance; and (g) an analysis of impacts to habitat caused by a change in the flow of water across the site. The applicant and lead agency should keep in mind that the State also has a policy of no net loss of wetlands.

(ii) The Department recommends that the project applicant and/or lead agency consult with the Department to discuss potential project impacts and avoidance and mitigation measures. Early consultation with the Department is recommended since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources. To obtain a Streambed Alteration Agreement Notification package, please visit our website at: http://www.dfg.ca.gov/habcon/1600/.

Thank you for this opportunity to comment. Please contact Robin Maloney-Rames at (909) 980-3818, if you have any questions regarding this letter.

Sincerely,



Jeff Brandt
Senior Environmental Scientist

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

September 29, 2011

Art Diaz, Senior Civil Engineer
Riverside County Flood Control and Water Conservation District
1995 Market Street
Riverside, CA 92501

Notice of Preparation of a CEQA Document for the
Lakeland Village Master Drainage Plan

The South Coast Air Quality Management District (SCAQMD) appreciates the opportunity to comment on the above-mentioned document. The SCAQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the draft CEQA document. Please send the SCAQMD a copy of the Draft EIR upon its completion. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to the SCAQMD. Please forward a copy of the Draft EIR directly to SCAQMD at the address in our letterhead. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files. These include original emission calculation spreadsheets and modeling files (not Adobe PDF files). Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis
The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. The lead agency may wish to consider using land use emissions estimating software such as URBEMIS 2007 or the recently released CalEEMod. These models are available on the SCAQMD Website at: http://www.aqmd.gov/ceqa/models.html.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

The SCAQMD has developed a methodology for calculating PM2.5 emissions from construction and operational activities and processes. In connection with developing PM2.5 calculation methodologies, the SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD requests that the lead agency quantify PM2.5 emissions and compare the results to the recommended PM2.5 significance thresholds. Guidance for calculating PM2.5 emissions and PM2.5 significance thresholds can be found at the following internet address: http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html.

In addition to analyzing regional air quality impacts the SCAQMD recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LST's can be used in addition to the

Mr. Quinonez and Mr. Diaz
1995 Market Street
Riverside, CA 92501

Mrs. Linda Ridenour
33628 Brand Street
Lake Elsinore, CA 92530

Re: Initial Study Plan and Notice of Preparation

I would like to thank Mr. Quinonez and Mr. Diaz for sending me the Initial Study Plan and the Notice of Preparation.

I would like my name placed on the list for the DEIR.

The following is a list of concerns that I would like addressed.

1. I carefully looked at all the maps provided. On map 6b, I could not find the street names. I think I am within Watershed H. I would suggest an additional map specific for the work being proposed for Lakeland Village. 6c
2. On page 2, I would like clarification of the statement, "but if adopted, can be used by the City of Wildomar and the City of Lake Elsinore as they review and approve new developments."
   Can Lake Elsinore approve new developments in Lakeland Village?
3. It is my understanding that the Adelfa Channel is maintained by the Department of Transportation. If true, this maintained channel of the MDP needs to be re-written.
4. Where is Alternative 4?
5. Appendix A on page 55 does not have all the data listed. Many times the words refer to documents not listed.
6. On Adelfa there is a proposed Water Quality Basin. I want specifics on how this will look. It will be visible from Grand Ave.
7. Will these basins be landscaped?
8. Agricultural and Forest Resources: How will the Lakeland Village Channel Basin land be acquired? Have the property owners been notified?
9. When building the MDP facilities, I would like non-polluting trucks, etc to be used. Be sure maintenance has been done on these trucks. Place filters on the diesel-powered equipment.
10. I would like a copy of the California Natural Diversity Data Base and the California Native Plant Society Inventory.
11. All natural Drainage areas will effect riparian vegetation. All work should be mitigated.
12. Please explain item IVd. Source: Lakeland Village MDP?
13. Reference IVe/Va: Has the Pechanga Tribe been notified. There are at least 6 Indian sites in this area.

14. There is nothing titled the Division of Mines in the Appendix. Also, please enlarge the legends on all maps, especially Figure 3.
15. Seismic and Geological Hazards Reviews are not in the Appendix.
16. On page 31: There is no Figure 4.10.4 and 5. Please provide.
17. What is the National Pollutant Discharge Elimination System?
18. VId refers to Alluvial-fan deposits. There is no legend on Figure 2.
19. What is SWPPP?
20. Grand filtering is important to the ecosystem. Please address this in the PEIR.
21. Please provide the map: Federal Flood Hazard Boundary of Flood Insurance Rate Map.
22. Which debris basin is considered a dam?
23. Will the pedestrian walk ways be covered? It is a hazard if some tripped and fell in to these open channels.
24. Parks (48) this project will correct the drainage failure in Perret Park.

Sincerely,

Mrs. Linda Ridenour
33628 Brand Street
Lake Elsinore, CA
92530
951.678.2300

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
LAKELAND VILLAGE MDP
NOTICE OF PREPARATION OF A DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT
COMMENTS

(please hand in or mail back by October 7, 2011)

Name: Linda Ridenour

Organization (if any):

Address: 33628 Brand St.

City, State, Zip:

Phone (optional): 951-678-2300

E-mail (optional): merlir@VERIZON

	Yes	No
Would you like to remain on our mailing list to receive future project updates?	☒	☐

Comments

Regional Board

Stephanie Tang

From: Glenn Robertson <grobertson@waterboards.ca.gov>
Sent: Friday, October 14, 2011 5:56 PM
To: aadiaz@rcflood.org
Cc: Jeff Brandt; standerfer@dudek.com; Stephanie Tang; Mark Adelson; Marc Brown
Subject: Lakeland Village Master Drainage Plan NOP for DEIR, Lake Elsinore
Attachments: Robertson, Glenn.vcf

To Art Diaz, Riverside County Flood Control & Water Conservation District -

Art, in September and this week I have reviewed the Notice of Preparation for the proposed Lakeland Village system of open and closed stormdrains and detention/water quality basins, many augmenting the existing infrastructure, for the south side of Lake Elsinore. The discussions under the Initial Study categories are fairly expressed and sufficient for now. So, Regional Board staff will not be commenting on the NOP stage, whose comment period ended last week, and we prefer to provide any necessary comments on the DEIR itself next Spring. In the interim we are always available for questions/discussion if issues arise.

Best wishes to you and Dudek staff, Glenn Robertson

Glenn Robertson, Engineering Geologist
CEQA Coordinator
California Regional Water Quality Control Board, Santa Ana Region (8)
3737 Main Street, Suite 500
Riverside, CA 92501-3348
(951) 782-3259
Fax (951) 781-6288
Email grobertson@waterboards.ca.gov
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APPENDIX B

Environmental Constraints Analysis

DUDEK

1650 SPRUCE STREET, SUITE 240
RIVERSIDE, CALIFORNIA 92507
T 951.300.2100 F 951.300.2105

UPDATED MEMORANDUM

To:	Stuart McKibben Riverside County Flood Control District
From:	Dudek
Subject:	Lakeland Village MDP Environmental Constraints Analysis
Date:	February 9, 2011
cc:	Art Diaz, Edwin Quinonez
Attachment(s):	Figures 1–12

INTRODUCTION

The purpose of this constraints analysis is to assist the Riverside County Flood Control District (District) in identifying key environmental issues that should be given consideration during the planning and preliminary design phase of the proposed Lakeland Village Master Drainage Plan (MDP) project (Figure 1 and Figure 2). The enclosed information is intended to facilitate the project planning process and assist the engineering team in evaluating various alternatives. This constraints analysis covers three major environmental constraints topics:

- Biological Resources
- Cultural Resources
- Geologic Resources

Each resource was analyzed relative to the following proposed project alignment alternatives for the Lakeland Village MDP project:

- Alternative 1 (No build)
- Alternative 2 (Upsizing Facilities)
- Alternative 3 (Floodplain Buyout)
- Alternative 4 (Water Quality Basins and Debris Basins)
- Alternative 5 (Combination of Alternative 2 through Alternative 4).

The intent of this analysis is to compile available information, consider these resources during the project-planning phase and provide some insight into environmental issues the District will need to address during the environmental review and permitting process. This constraints

analysis was kicked-off as a result of a meeting on December 7, 2010, between Dudek and the District. The information utilized in this analysis was based on the digital information the District provided to Dudek on December 9, 2010. The analysis herein is based on literature searches and field surveys conducted in December 2010 and January 2011.

PROJECT ALTERNATIVES

This environmental constraints analysis analyzes five primary project alignment alternatives (Figure 3–Figure 8b). The following is a description of each alternative provided by the District.

Alternative 1: Alternative 1 consists of a "no build alternative" in which there are no proposed improvements and flood protection is provided only by the existing drainage facilities in the area. These existing facilities include Lime Street Channel, Ortega Channel, Ortega Channel Laterals A and A-1, Ortega Chanel Lateral A Debris Basin, Lakeland Village Channel, Stoneman Street Channel and Churchill Street Storm Drain.

Alternative 2: Alternative 2 consists of upsizing the MDP facilities as well as new open channels, and storm drains. The implementation of mainline drainage facilities will collect runoff from the Santa Ana Mountains, including any potential debris, and transmit it to Lake Elsinore. All proposed storm drain will be underground.

Alternative 3: Alternative 3 consists of the same drainage facilities, open channels, and storm drains proposed in Alternative 2, but also incorporates areas that will be undeveloped by purchasing properties within the FEMA floodplain.

Alternative 4: Alternative 4 consists of several debris basins on the upstream end of the mainline drainage facilities to capture potential debris from the Santa Ana Mountains. This alternative addresses water quality by proposing water quality basins downstream of existing developments. This alternative also proposes the same open channels and storm drains proposed by Alternative 2.

Alternative 5: Alternative 5 consists of a combination of water quality basins, debris basins, main line drainage facilities with laterals, open channels, storm drains, and flood plain buy-outs.

ENVIRONMENTAL CONSTRAINTS ANALYSIS

The following is a discussion of environmental constraints within the project study area associated with biological resources, cultural resources, and geologic resources.

Biological Resources

Prior to conducting the field investigation, a review of the existing biological resources and species within the vicinity of the project site was conducted using GIS tools. This information was a compilation of the California Department of Fish and Game (CDFG) California Natural Diversity Data Base (CNDDB) (CDFG 2011), the California Native Plant Society Inventory of Rare and Endangered Plants (CNPS 2011), U.S. Fish and Wildlife Service (USFWS) data (USFWS 2011), and the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) (2003). The purpose of this review was to determine if special-status plant and wildlife species are known to occur within the Lakeland Village MDP area or in the nearby vicinity of the MDP area. Part of the resulting components of that analysis is included in Table 1. A general assessment of biological resources was conducted on January 11, 2011, for all the MDP alternatives in order to evaluate the potential environmental constraints for Alternative 1 through 5.

Table 1
Comparative MSHCP and U.S. Fish and Wildlife Service Issues within Each Alternative

Issue	Alternative 1[1]	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Criteria Cell #	Not applicable	None	None	5038 5140 5342 5240 5342	5038 5140 5342 5240 5342
PQP Component[2]	Not applicable	None	Small portions in Buy-out parcels	None	Small portions in Buy-out parcels
Burrowing Owl Survey Area?[3]	Not applicable	Yes	Yes	Yes	Yes
CASSA Survey Area?[4]	Not applicable	Yes	Yes	Yes	Yes
NEPSSA Survey Area?[5]	Not applicable	Yes	Yes	Yes	Yes
USFWS Species[6]	Not applicable	None	None	None	None

[1] Not reviewed because no impacts will occur.
[2] Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) Public/Quasi Public area.
[3] MSHCP burrowing owl survey area. Refer to Figures 5a – Figures 8b.
[4] MSHCP Criteria Area Species Survey Area. Refer to Figure 9.
[5] MSHCP Narrow Endemic Plant Species Survey Area. Refer to Figure 9.
[6] USFWS species occurrence data or critical habitat within alternative area.

The MDP area was also evaluated for the potential to support jurisdictional waters under the federal Clean Water Act, state Fish and Game Code, and state Porter-Cologne Act. It was determined that Alternatives 2 through 5 will result in some level of permitting for jurisdictional waters.

Due to the timing of the surveys, many spring- and summer-blooming annual and cryptic perennial plant species may not have been detectable. Also, timing of the survey limited the observations of neotropical breeding birds that may occur in the area during the spring and summer. The cooler air temperatures also precluded direct observation of reptiles likely to occur in the MDP area. Direct observation of mammal species was also limited because the survey was conducted during the daytime when many of the species potentially occurring within the Lakeland Village MDP area are inactive (i.e., small rodents). Identification of mammals, therefore, primarily relied on detection of surface sign such as scat, burrows, and tracks. Additional focused surveys, as discussed below, may be required once a preferred alternative is selected by the District.

Existing Vegetation Communities

Six vegetation communities were identified within the MDP project area as outlined in Table 2 by alternative.

Table 2
Existing On-site Vegetation Communities and Land Covers

Vegetation Communities and Land Covers	Associated Species	Alternatives				
		1	2	3	4	5
Non-native Grassland	• Shortpod mustard • Filaree • Telegraph weed • Cheeseweed • Fiddleneck • Dove weed	–	•	•	•	•
Riversidean Sage Scrub	• California buckwheat • California sagebrush • Hairy yerba santa • Deerweed • White sage • Laurel sumac • Elderberry • Open herbaceous layer comprised of filaree, tocolate, shortpod mustard, fiddleneck, and various bromes.	–	•	•	•	•
Diegan Sage Scrub	• California sagebrush • California buckwheat • White sage • Laurel sumac • Deerweed • Tocolate	–	•		•	•

Table 2
Existing On-site Vegetation Communities and Land Covers

Vegetation Communities and Land Covers	Associated Species	Alternatives				
		1	2	3	4	5
Chaparral	• Chamise • Laurel sumac • White sage • Black sage • California buckwheat • Ceanothus	–	•	•	•	•
Coast Live Oak Woodland	• Coast live oak • California sycamore • Laurel sumac • Toyon • Hairy yerba santa • Holly-leaved redberry • Sparse herbaceous understory including California croton, filaree, and tocolate.	–			•	•
Urban/Exotic/Residential	• Residential lots • Exotic landscape species	–	•		•	•

Notes:
– = Not applicable
• = Present

A reconnaissance-level site review was conducted to gain a better understanding of the various alternatives. While conducting the assessment, a list of plant and wildlife species was recorded. A complete list of the plant and wildlife species observed in the Lakeland Village MDP area is presented in Table 3 and Table 4 by alternative.

Table 3
Existing On-Site Plant Species

Plant Species	Alternatives				
	1	2	3	4	5
Adenostoma fasciculatum (chamise)		•	•	•	•
Alnus rhombifolia (white alder)				•	•
Amsinckia menziesii (Menzies's fiddleneck)		•	•	•	•
Artemisia californica (California sagebrush)		•	•	•	•
Artemisia douglasiana (Douglas' mugwort)				•	•
Baccharis salicifolia (mulefat)				•	•
**Bromus madritensis* (foxtail chess)				•	•
**Bromus tectorum* (downy brome)					•

Table 3
Existing On-Site Plant Species

Plant Species	Alternatives				
	1	2	3	4	5
Ceanothus sp. (ceanothus)		•	•		
**Centaurea melitensis* (tocalote)		•	•	•	•
Corethrogyne filaginifolia (California aster)		•	•		
Croton californicus (California croton)				•	•
Croton setigerus (doveweed)				•	•
Cylindropuntia ramosissima (pencil cholla)				•	•
Eriodictyon crassifolium var. *crassifolium* (thickleaf yerba santa)			•		•
Eriogonum fasciculatum (California buckwheat)		•	•	•	•
**Erodium cicutarium* (redstem filaree)		•	•	•	•
**Eucalyptus* sp. (eucalyptus)		•	•	•	•
Heteromeles arbutifolia (toyon)				•	•
Heterotheca grandiflora		•	•	•	•
**Hirschfeldia incana* (shortpod mustard)		•	•	•	•
Leymus condensatus (giant wild rye)					•
Lotus scoparius var. *scoparius* (deerweed)		•	•	•	•
Lupinus hirsutissimus (stinging lupine)					•
Malosma laurina (laurel sumac)		•	•	•	•
**Malva parviflora* (cheeseweed)				•	•
Marah macrocarpus var. macrocarpus (wild-cucumber)				•	•
Mimulus aurantiacus (bush monkey flower)				•	•
**Nicotiana glauca* (tree tobacco)				•	•
**Olea europaea* (olive)		•	•	•	•
Opuntia littoralis (coastal prickly-pear)				•	•
Paeonia californica (California peony)				•	•
Platanus racemosa (California sycamore)		•	•	•	•
Populus fremontii (Fremont's cottonwood)		•	•		
Quercus agrifolia (coast live oak)		•	•	•	•
Quercus kelloggii (California black oak)				•	•
Rhamnus ilicifolia (holly-leaf redberry)				•	•
**Rumex crispus* (curly dock)		•	•	•	•
Salix lasiolepis (arroyo willow)		•	•	•	•
**Salsola tragus* (Russian thistle)		•	•	•	•

Table 3
Existing On-Site Plant Species

Plant Species	Alternatives				
	1	2	3	4	5
Sambucus nigra (blue elderberry)		•	•	•	•
Salvia apiana (white sage)		•	•	•	•
Salvia mellifera (black sage)		•	•	•	•
**Schinus molle* (Peruvian peppertree)		•	•	•	•
Solanum xanti (chaparral nightshade)				•	•
Tamarix sp. (tamarisk)		•	•		
**Washingtonia robusta* (Mexican fan palm)		•	•	•	•

Note:
• = Present

Table 4
Existing On-Site Wildlife Species

Wildlife Species		Alternatives				
		1	2	3	4	5
Buteo jamaicensis	Red-tailed hawk				•	•
Psaltriparus minimus	Bushtit				•	•
Ardea alba	Great egret			•	•	•
Corvus corax	Common raven				•	•
Aphelocoma californica	Western scrub-jay				•	•
Melozone crissalis	California towhee			•	•	•
Passerculus sandwichensis	Savannah sparrow				•	•
Pipilo maculatus	Spotted towhee				•	•
Zonotrichia leucophrys	White-crowned sparrow				•	•
Zonotrichia atricapilla	Golden-crowned sparrow				•	•
Carpodacus mexicanus	House finch			•	•	•
Spinus psaltria	Lesser goldfinch				•	•
Tachycineta thalassina	Violet-green swallow				•	•
Eremophila alpestris	Horned lark				•	•
Toxostoma redivivum	California thrasher			•	•	•
Mimus polyglottos	Northern mockingbird			•		•
Callipepla californica	California quail				•	•
Baeolophus inornatus	Oak titmouse				•	•

Table 4
Existing On-Site Wildlife Species

Wildlife Species		Alternatives				
		1	2	3	4	5
Dendroica coronata	Yellow-rumped warbler		•	•	•	•
Melanerpes formicivorus	Acorn woodpecker			•		•
Polioptila caerulea	Blue-gray gnatcatcher		•	•	•	•
Chamaea fasciata	Wrentit			•	•	•
Calypte anna	Anna's hummingbird				•	•
Thryomanes bewickii	Bewick's wren				•	•
Troglodytes aedon	House wren				•	•
Sayornis nigricans	Black phoebe				•	•
Tyrannus vociferans	Cassin's kingbird		•	•	•	•
Canis latrans	Coyote				•	•
Odocoileus hemionus	Mule deer				•	•
Lynx rufus	Bobcat				•	•
Thomomys bottae	Botta's pocket gopher		•	•	•	•
Dipodomys sp.	Kangaroo rat		•	•	•	•
Sylvilagus audubonii	Desert cottontail				•	•
Microtus californicus	California vole		•	•	•	•
Spermophilus beecheyi	California ground squirrel				•	•

Note:
• = Present

Relationship to the Multiple Species Habitat Conservation Plan (MSHCP)

The proposed project is subject to the MSHCP, since the District is a Permittee. Under the MSHCP, as long as a project is determined to be consistent with the MSHCP, impacts (i.e., "take"), is granted to any of the 146 species Covered by the MSHCP that may occur within the project footprint. This means that the species listed above in Table 3 and Table 4 do not have to be specifically surveyed or mitigated for, as long as the project can be deemed consistent with the MSHCP. In order to be consistent with the MSHCP, the proposed project will need to ensure it does not adversely impact riparian and/or riverine resources (Section 6.1.2 of the MSHCP) without adequate mitigation, does not impact any special-survey species (Section 6.1.3 and 6.3.2 of the MSHCP) without mitigation and does not conflict with the Urban/Wildlands Interface Guidelines (Section 6.1.4 of the MSHCP). As a Covered Activity pursuant to Section 7.3.7 of the MSHCP, the proposed MDP project would not be required to set aside lands for MSHCP

Conservation. The environmental constraints analysis does not focus on the required MSHCP consistency analysis, instead that will be completed once a Preferred Alternative is selected.

The general biological resources specific to each Alternative are discussed below.

Alternative 1

Alternative 1 proposes no improvements and flood protection would be provided only by the existing drainage facilities in the area. Implementation of Alternative 1 would result in no changes to existing biological resources in the MDP area.

Alternative 2

Alternative 2 proposes to upsize existing facilities (i.e., Bryant Street debris basin, Bryant Street storm drain, Palomar Channel, Line M, Churchill Street storm drain, Lakeland Village Channel, and Line A) and would include the creation of mainline drainage facilities (i.e., Channel A, Line O-10, Line O-20, Lateral N-1, Line K, Line L, Line J, Line I, Line I-1, Line H-2, Line H-1, Line H, Line G, Line F, Line F-1, Line E, Line D, Line C, and Line C-1) to collect runoff from the Santa Ana Mountains, including any potential debris, and transmit it to Lake Elsinore. All proposed storm drains will be underground, and upsizing of the existing facilities would entail excavation and installation of new pipes within existing alignments.

Implementation of Alternative 2 would require an upsize in storm drain facilities throughout the MDP area. The proposed underground facilities are mainly located below existing streets throughout the MDP project which do not support protected biological resources; therefore, there will be no impacts to biological resources in these areas.

For the areas that do require upsizing, there may be disturbance to accommodate pipeline replacement and widening of existing channels, which could impact existing biological resources. Table 2 above denotes the vegetation communities associated with all the Alternatives, however, based on the field survey, Alternative 2 supports: annual grasslands, Riversidean sage scrub, riparian, oak woodlands and chaparral. Of those, only the annual grasslands and riparian vegetation communities will require additional surveys due to the species that may be present. The annual grassland community supports potential habitat for burrowing owl (Figure 5a and Figure 5b) and the riparian communities (Figure 5a) support potential habitat for special-status riparian birds such as least Bell's vireo.

The facilities within Alternative 2 also fall within the NEPSSA and CASSA survey areas (Table 5 and Figure 9).

Table 5
NEPSSA and CASSA Survey Areas within Alternative 2

Drainage Facility	NEPSSA	CASSA
Southern end of Proposed Lakeland Village Channel	•	
Southern end of Proposed Line I	•	
Southern end of Line J	•	•
Southern end of Line K	•	•
Line L	•	
Line M	•	
Southern end of Stoneman Street Line N	•	•
Southern end of Ontario Way	•	•
Palomar Channel	•	•
Line O-10	•	•
North end of Bryant Street	•	
Palomar Channel existing water quality basin	•	•

Note:
• = Present

Since the project is subject to the MSHCP, as long as the project is determined to be consistent with the MSHCP, species-specific surveys are limited to only those required for MSHCP compliance. Specifically, as shown on Figure 9 - MSHCP Survey Areas, the project is located within the burrowing owl survey area, and per the field assessment, there are areas associated with Alternative 2 that support annual grassland, therefore, making it suitable for burrowing owl (Figure 5a and Figure 5b). There are also areas associated with Alternative 2 (Figure 5a) with riparian vegetation that are suitable for least Bell's vireo. Additionally, some of the areas as depicted in Figure 9 are located within NEPSSA and CASSA survey areas. Pursuant to Section 6.3.2, Section 6.1.2, and Section 6.1.3 of the MSHCP, focused breeding season surveys for burrowing owl, CASSA species, least Bell's vireo, and NEPSSA species, respectively, would be required in suitable habitat areas proposed to be impacted. Implementation of Alternative 2 would require further studies for burrowing owl and CASSA species per Section 6.3.2 of the MSHCP, require a specific assessment of riparian/riverine resources pursuant to Section 6.1.2, and require further studies for NEPSSA species pursuant to Section 6.1.3 of the MSHCP.

Finally, some areas associated with Alternative 2 would likely be considered to be regulated jurisdictional resources and would require a detailed jurisdictional delineation and potential permitting through the Army Corps of Engineers and California Department of Fish and Game. At a minimum, these areas include: Line A, Ortega Basin line west of Ortega Highway, Line D,

Line F, Line F-1, Lakeland Village Channel, Proposed Open Channel associated with the Lakeland Village Channel, Line I, Line K, Line L, existing "L"-shaped water quality basin between Line K and Line L, existing facility line between Line K and Line L, Line M, Line N, Lateral N-1, Proposed Open Channel below Ontario Way, Line O-20, Line O-10, and Channel A, and Bryant Street Storm Drain.

Alternative 3

Alternative 3 consists of the same drainage facilities proposed in Alternative 2, but also incorporates areas that will be undeveloped by purchasing properties within the FEMA floodplain (a.k.a. floodplain buy-out). All of the potential impacts and follow up surveys outlined for Alternative 2 above would apply for this Alternative as well. The only difference is the addition of the buy out parcels, and the impacts associated with those would be added on to the impacts mentioned above.

With regard to the buy-out parcels, no impacts to biological resources are anticipated to occur as a result of the purchase of the properties in the flood plain since no disturbance is anticipated other than removal of existing trash and homes. If that disturbance occurs within non-developed areas (i.e., grassland areas) then there may be some potential for impacts to special-status species within these areas and focused surveys (i.e., burrowing owl) would be required.

Additionally, within the buy-out parcels, there is good wetland or upland habitat restoration potential. These efforts would require that a habitat restoration plan be developed and appropriate measures be taken to protect special-status species during the restoration process.

Vegetation communities that are present within the buy-out parcels include Riversidean sage scrub, non-native grasslands, chaparral and residential/urban/exotic. Of these communities, the grassland areas would need to be surveyed for burrowing owl. Because the project would be expected to be consistent with the MSHCP, no other species-specific concerns would be associated with these other vegetation communities under this component of the Alternative.

Based on our field review, the buy-out parcel areas do support suitable habitat for NEPSSA and CASSA species (Table 6 and Figure 9).

Table 6
NEPSSA and CASSA Survey Areas within Alternative 3

FEMA Buyout Parcel	NEPSSA	CASSA
Southern Lakeland Village Channel	•	
Line M/Line L	•	

Note:
• = Present
Refer to Table 5 for additional NEPSSA and CASSA Survey Areas that would also pertain to Alternative 3.

Per Section 6.1.3 (NEPSSA) and Section 6.3.2 (CASSA) of the MSHCP, if suitable habitat is present, then focused surveys are warranted. Since the MDP area falls within suitable habitat for NEPSSA and CASSA, additional focused surveys would be warranted if this Alternative was chosen as the Preferred Alternative.

While each of the proposed FEMA purchase areas are likely to have jurisdictional resources, these areas are not going to be impacted, therefore, additional surveys within the FEMA zones would not be necessary. However, the Alternative 2 component of Alternative 3 would still require further jurisdictional investigation and potential permitting.

Alternative 4

Alternative 4 includes the same facilities proposed under Alternative 2, but Alternative 4 also includes the creation of several debris basins (i.e., above Skylark Drive, along Bochard Drive, near Morrell Lane, above Ginger Lane, adjacent to Line I, above Lakeland Village Channel, near Line F-1, Ortega Basin, and above Line A; (Figure 7a and Figure 7b) on the upstream end of the mainline drainage facilities to capture potential debris from the Santa Ana Mountains. This alternative also includes the creation of nine new water quality basins (i.e., along Channel A, above the Palomar Channel, below Stoneman Street, along Ginger Lane, below Turner Street, below Lakeland Village Channel, adjacent to Line G, below Grandview Drive, and below Hill Street; Figure 7a and Figure 7b) downstream of existing developments. In total, nine water quality basins and nine debris basins are proposed under Alternative 4 for the Lakeland Village MDP project.

Existing vegetation communities present within the proposed water quality basins includes non-native grassland, Riversidean sage scrub and residential/urban/exotic. The existing vegetation communities present within the proposed debris basins include annual grassland, Riversidean sage scrub, Diegan coastal sage scrub, chaparral, coast live oak woodland, and residential/urban/exotic.

Of those vegetation communities, the grasslands will require follow up surveys for burrowing owl per Section 6.3.2 of the MSHCP. Additionally, since various debris and water quality basins are also located in the NEPSSA and CASSA survey areas (Table 7 and Figure 9), habitat suitability surveys would be needed for features within the survey area.

Table 7
NEPSSA and CASSA Survey Areas within Alternative 4

Basins	NEPSSA	CASSA
Lakeland Village Channel Proposed Debris Basin	•	
Turner Street Proposed Water Quality Basin	•	•
Ginger Lane Proposed Debris Basin	•	
Line O-10 Proposed Water Quality Basin	•	•

Note:
• = Present
Refer to Table 5 for additional NEPSSA and CASSA Survey Areas that would also pertain to Alternative 4.

Based on the field assessment, suitable soils were identified for NEPSSA and CASSA species. Focused surveys for the NEPSSA and CASSA species would be needed per Section 6.1.3 and Section 6.3.2 of the MSHCP, respectively, if this Alternative was chosen as the Preferred Alternative.

In addition to those areas outlined under Alternative 2 as requiring additional jurisdictional delineation and potential permitting, the following areas associated with the proposed debris and water quality basins would also require additional study and permitting: proposed water quality basins associated with Line A and Stoneman Street (Line N), and all proposed debris basins.

Alternative 5

Alternative 5 consists of a combination of water quality basins, debris basins, main line drainage facilities with laterals (as proposed under Alternative 4), and flood plain buy-outs (as proposed under Alternative 3). Alternative 5 would include all the potential impacts to biological resources and survey requirements listed in Alternatives 2, 3 and 4.

Cultural Resources

The assessment of cultural resource considerations within the MDP alternatives is based on results of an archaeological site records and literature search of the California Historical Resources Information System at the Eastern Information Center (EIC), conducted on January 20, 2011.

Archaeological Records Search Results

The EIC records search was conducted to identify all recorded archaeological sites and investigations within 1 mile of the proposed Lakeland Village MDP alternatives. The records search identified all known archaeological sites, historic resources, and previous cultural

resource surveys within this area. The EIC records search is divided up into two categories: known resources and previous cultural studies. The EIC records indicate that 57 cultural resources have been recorded and 68 previous cultural resource studies have been conducted within 1 mile of the proposed MDP area.

Tables 8 summarizes the cultural resources that were identified to be located within or adjacent to (less than 125 feet) all of the existing or proposed MDP facilities and are considered potential constraints to the project.

Table 8
Lakeland Village MDP Cultural Resources Summary

Alternative	MDP Facility Type	Cultural Resource
2, 3	Existing facility line	P-7234, Ortega Highway, crosses the line.
	Existing facility line west of Serena Way.	CA-RIV-4045, prehistoric permanent camp, approximately 125 feet away from the existing facility line west of Serena Way.
2 , 3 ,4, 5	Storm drain along Grand Avenue	P-7220, architectural resource, immediately adjacent.
	Storm drain along Morrell Lane	CA-RIV-3884, prehistoric temporary camp, immediately adjacent.
3, 5	FEMA floodplain conservation area along Grand Avenue between Maiden Lane and Rose Avenue	P-7724, Community Hall (Grand Avenue Civic Association Clubhouse), 17470 Grand Avenue, located within.
4, 5	Water quality basin at Grand Avenue and Hill Street	P-7230, Juan Machado Home/Rippley Ranch, immediately adjacent.
	Water quality basin on Stoneman Street	P-8663/CA-RIV-6176H, Wooden pumphouse, located within.

These cultural resources listed in Table 8 will be discussed in each of the applicable Alternatives below.

Alternative 1

The "no build" alternative assumes continued use of existing facilities. No new facilities or improvements are proposed; therefore, no changes to cultural resources in the area are expected.

Alternative 2

Alternative 2 proposes to upsize existing facilities, add new open channels, and storm drains as depicted in Figure 5a and Figure 5b.

Recorded cultural resources near Alternative 2 that would be an issue for future facilities include:

- Primary No. 7220, an architectural resource, located adjacent to the proposed storm drain along Grand Avenue;

- CA-RIV-3884, a prehistoric temporary camp, located near the proposed storm drain along Morrell Lane (CA-RIV-3884);
- Primary No. 7234 (Ortega Highway), eligible for designation, located within 125 feet of the proposed storm drain along Ortega Highway;
- CA-RIV-4045, a prehistoric permanent camp, located within 125 feet of the existing facility line west of Serena Way.

These four recorded resources are in proximity (less than 125 feet) to the facilities proposed under this Alternative. Therefore, should any impacts be proposed to them as a result of the project construction, further analysis and mitigation would be required.

Given that the proposed facilities under this Alternative are located in a combination of undeveloped areas or developed areas not previously studied, there is the potential that intact, previously undisturbed prehistoric cultural resources are located in areas that could be disturbed as a result of implementation of the MDP. Generally speaking, under this Alternative, if the land is previously undisturbed, or if there is a known cultural resources in the vicinity (Table 8), then further cultural resource evaluation should be conducted. If the land is developed, or associated in close proximity to development, then further evaluation is not recommended.

Alternative 3

Alternative 3 consists of the same drainage facilities proposed in Alternative 2, but also incorporates areas that will be undeveloped by purchasing properties within the floodplain buy-out parcels. See Alternative 2, above, for a discussion of existing facilities and proposed open channels and storm drains.

Only two of the five buy-out areas have been previously studied – the reserve area off of Grandview Drive and the reserve area at Grand Avenue west of Magnolia Street. The other three buy-out parcel areas would need further study.

Primary No. 7724, the community hall constructed in the 1940s located at 17470 Grand Avenue, is located within the buy-out area along Grand Avenue between Maiden Lane and Rose Avenue. This resource would need to be evaluated prior to any proposed demolition.

Generally speaking, the buy-out areas are located within developed or partially developed areas. Due to previous impacts associated with construction and/or installation of urban infrastructure in these areas, it is unlikely that intact, previously undisturbed prehistoric cultural resources are located within the buy-out areas. However, as indicated by the presence of Primary No. 7724, the 1940s community hall within the buy-out area along Grand Avenue between Maiden Lane and

Rose Avenue as well as other architectural resources in the Lake Elsinore area (Table 9), there is the potential that architectural resources (i.e., structures that are at least 50 years old) are located throughout the buy-out areas. Any architectural resources within the buy-out areas would need to be evaluated further prior to any proposed demolition.

Table 9
Estimated Number of Potentially 50-year Old Structures in Buy-Out Areas

Buy Out Area	Potential Historic Structures Impacted
Along Grand Avenue between Maiden Lane and Rose Avenue	Approximately 30 structures
Grand Avenue and Baldwin Boulevard	Approximately 10 structures
Grand Avenue and Perret Boulevard	Approximately 10 structures

Source: 1953 USGS Topo Map

Alternative 4

In addition to the proposed open channels and storm drains in Alternative 2, Alternative 4 also proposes nine new debris and nine new water quality basins as depicted in Figure 7a and Figure 7b.

See Alternative 2, above, for a discussion of the cultural resources associated with the improvements to the existing channels and storm drains.

Of the nine proposed water quality basins, only three, the water quality basin at Grand Avenue and Hill Street, the water quality basin south of Grand Avenue and west of Ortega Highway, and the water quality basin along Stoneman Street, have been previously studied. Portions of two other water quality basins have been previously studied, requiring the other portions of these two water quality basins to be studied. The remaining four unstudied water quality basins will require further study. Generally speaking, the proposed water quality basins are located within undeveloped or minimally developed areas. There is the potential that intact, previously undisturbed prehistoric cultural resources are located within the proposed water quality basins that have not been previously surveyed.

Primary No. 8663/CA-RIV-6176H, a wooden pumphouse, is located within the proposed water quality basin on Stoneman Street. The pumphouse may date to the late 19th or early 20th century. The remains of a residence that may have been constructed in the 1940s or 1950s and was at least partially constructed of adobe brick were identified in the upslope of the pumphouse. The resource would need to be evaluated prior to any proposed demolition. One of the water quality basins, along Grand Avenue, west of Ginger Lane, does support two structures that could be potentially significant and may need further study in order to determine significance. Primary No. 7230, the Juan Machado Home/Ripley Ranch listed in the OHP Directory of Properties in the HPD File as potentially eligible for inclusion on the NRHP, is located immediately adjacent

to the proposed water quality basin at Grand Avenue and Hill Street. The resource would need to be evaluated prior to any proposed demolition.

Of the nine proposed debris basins, only two, the debris basin at the end of Hill Street and the debris basin east of Ortega Highway within the Cleveland National Forest, have been previously studied. A portion of a third debris basin has been previously studied. Therefore, the remaining six debris basins would all need to be evaluated further should this Alternative be chosen as the preferred Alternative.

The proposed debris basins are generally located within undeveloped areas. There is the potential that intact, previously undisturbed prehistoric cultural resources are located within the proposed debris basins that have not been studied previously. None of the nine debris basins support any existing historic structures that could be determined to be significant and need further evaluation.

Alternative 5

Alternative 5 consists of a combination of water quality basins, debris basins, main line drainage facilities with laterals, and flood plain buy-outs.

See Alternatives 2 through 4, above, for a discussion of proposed open channels, storm drains, floodplain buy-out areas, debris basins, and water quality basins. In general, areas associated with undeveloped, previously not-studied and undisturbed areas would need to be evaluated further. That would be most of the basins, and about half of the buy out areas. Some of the lateral improvements that would extend into undeveloped, undisturbed or unstudied areas would also require further study.

Geotechnical Resources

The following analysis pertains to all five Alternatives.

The Lakeland Village MDP area (refers to Alternatives 1–5) is generally located within the eastern slopes of the Santa Ana Mountains and is comprised of undeveloped natural slopes and drainages that descend towards Lake Elsinore. The Lakeland Village MDP area is situated along the western fringe of the Elsinore Trough. Surficial deposits and bedrock units within the MDP study area include alluvial-fan deposits, alluvial-valley deposits, pauba formation, basalt, granitic rocks, and metasedimentary rocks (Figure 10).

Groundwater within the Lakeland Village MDP area flows primarily from the Santa Ana Mountains to Lake Elsinore and is generally controlled by the Lake Elsinore Groundwater Basin. Shallow groundwater, within 20 feet below ground surface should be expected in the low lying

areas within approximately 30 feet in elevation above lake level (i.e., east of Grand Avenue) near Lake Elsinore. Additionally, groundwater conditions may occur within natural drainages at higher elevations and may also accumulate within bedrock fractures and at bedrock/fill contacts. The drainage facilities from any selected Alternative will need to be designed and constructed to accommodate for such conditions.

The Lakeland Village MDP is located within a seismically active region as a result of being located near the active margin between the North American and Pacific tectonic plates. Based on published data (Blake, 2002), the following are the most significant active fault zones that are capable of seismic ground shaking and could impact the MDP study area (Figure 11):

- Elsinore Fault Zone, which passes through the eastern edge of the MDP study area, including the local Wildomar fault and Willard fault segments, is capable of generating a Maximum Earthquake Magnitude (Mw) of 6.8 per the Richter scale.

- San Jacinto Fault Zone, located approximately 22 miles northeast of the MDP study area, is capable of generating earthquakes in excess of 7.1 Mw.

- Newport-Inglewood Fault Zone (offshore), located approximately 28 miles west of the MDP study area, is capable of generating earthquakes in excess of 6.9 Mw.

- San Andreas Fault Zone (southern section), located approximately 38 miles northeast of the MDP study area, is considered a dominant active fault and is capable of generating earthquakes in excess of 7.4 Mw.

The State identified one Alquist-Priolo Earthquake Fault Zone within the Lakeland Village MDP area - Wildomar Segment of the Elsinore Fault Zone, which traverses the southeastern portion of the Lakeland Village MDP area (Figure 11). The County mapped fault zones are also located within the Lakeland Village MDP area. According to the Riverside County General Plan Safety Element and Appendix H – Geotechnical Report, any proposed development or facility designed for human occupancy within these fault zones must be investigated for the potential for ground rupture hazards. The proposed open channels, storm drains, debris basins, and water quality basins proposed under all the Alternatives, lie within or within proximity of these fault zones. Although the project does not propose facilities that would be inhabited by humans, site-specific evaluations such as borings should be conducted to ensure the facility is not being constructed within a rupture zone, to determine the effects on future drainage facilities.

The intensity of earthquake ground shaking within the MDP study area varies depending upon the distance from the location to the fault, magnitude of the earthquake, and site-specific geology. Leighton performed a deterministic analysis using EQFAULT (Blake, 2002) to

determine the average peak site accelerations based on different attenuation relationships. Average peak site accelerations varied from approximately 0.53g near the lake (alluvium soil) to 0.63g along the western hilly side of the MDP area (rock conditions). Leighton also performed a probabilistic analysis using the FRISKSP program (Blake, 2002) to estimate peak ground accelerations with a 10% probability of exceedance in 50 years per the 2001 California Building Code (CBC). The analysis indicated that an average peak ground acceleration of 0.71g for sites near the lake and 0.81g for sites in the western hilly side of the MDP area is expected. The 2007 CBC recommends that evaluation of liquefaction potential be performed based on a "Design Ground Motion" estimated from the "Maximum Considered Earthquake" defined as a seismic event having a 2% chance probability of exceedance in 50 year period. The "Design Ground Motion" is equivalent to two-thirds of the ground motion values estimated from the "Maximum Considered Earthquake." As such, an average peak ground acceleration of 0.53g is estimated for sites near the lake and 0.49g for sites in the western hilly side of the MDP area.

Ground shaking can cause secondary seismic hazards such as liquefaction and/or lateral spreading, landslides, rock falls, subsidence and ground fissuring. As depicted in Figure 12, alluvial deposits within the MDP study area lie within a designated liquefaction hazard zone. A site-specific evaluation such as geotechnical borings and engineering analysis for liquefaction hazard may be required if settlement sensitive structures are planned within these areas. Additionally, site-specific evaluations such as geotechnical borings for future facilities should also include evaluation for settlement associated with dynamic densification of "dry" soils. Liquefaction may also produce lateral spreading of soils adjacent to Lake Elsinore. MDP Facilities located further from the lake or drainage courses are anticipated to be at less risk from lateral spreading than those adjacent to the lake embankment. The majority of the proposed open channels, storm drains, debris basins, and water quality basins are located near Lake Elsinore, within the alluvial deposits. Detailed analysis of lateral spreading affects to properties adjacent to the lake edge and drainages should be performed by a geotechnical consultant on a site-by-site basis. In order to reduce the effects and magnitude of seismically induced dynamic settlements and lateral spreading, ground improvement techniques such as removal and recompaction or insitu densification of liquefiable layers may be implemented during specific facility design.

Site-specific geologic review should be performed to determine whether the potential for land sliding or slope instability exists for any future facility in the upper areas of the study area (i.e., debris basins). The potential for rock fall due to natural weathering and instability or rock falls due to a seismic event are possible in local areas of the Lakeland Village MDP. Site-specific geologic review should be performed to evaluate for such hazards and provide appropriate corrective measures.

Seiches could be a concern for low lying areas within the Lakeland Village MDP area. Portions of the Lakeland Village MDP area lie within the boundaries of the FEMA 100-year flood plain. Potential flood hazards should be evaluated on a case-by-case basis during individual site developments. It is understood that if the District selects Alternative 3 or Alternative 5, these potential flood hazard areas would be purchased by the District in order to protect properties from flooding.

CONCLUSIONS

Biological Resources

In summary, with the exception of Alternative 1, all Alternatives would have a potential to affect biological resources and some additional studies will be needed to determine the actual impacts to jurisdictional, and special-status wildlife and plant resources. The Alternatives are ranked below (Table 10) in order of relative potential special-status resources (1 being the least impactive/sensitive):

Table 10
Biological Constraints Summary

Rank	Alternative	Summary of Biological Considerations
1	Alternative 1	• No special surveys required. No biological impacts
2	Alternative 3	• Requires Burrowing Owl survey • Requires Riparian bird Survey • Requires NEPSSA survey • Requires CASSA survey • Requires Jurisdictional Delineation
3	Alternative 2	• Requires Burrowing Owl Survey • Requires Riparian bird survey • Requires NEPSSA survey • Requires CASSA survey • Requires Jurisdictional Delineation
4	Alternative 4	• Requires Burrowing Owl survey • Requires Riparian bird survey • Requires NEPSSA survey • Requires CASSA survey • Requires Jurisdictional Delineation
5	Alternative 5	• Requires Burrowing Owl survey • Requires Riparian bird survey • Requires NEPSSA survey • Requires CASSA survey • Requires Jurisdictional Delineation

Cultural Resources

In summary, with the exception of Alternative 1, all Alternatives would have a potential to affect cultural resources. The Alternatives are ranked below (Table 11) in order of relative potential cultural resource impacts (1 being the least impactive):

Table 11
Lakeland Village MDP Alternatives and Recorded Cultural Resources

Rank	Alternative	Recorded Cultural Resources potentially affecting project
1	Alternative 1	• No resources. No cultural impacts.
2	Alternative 2	• Primary No. 7220, Architectural resource • Primary No. 7234, Ortega Highway • CA-RIV-3884, Prehistoric temporary camp • CA-RIV-4045, Prehistoric permanent camp
3	Alternative 3	• Primary No. 7220, Architectural resource • Primary No. 7234, Ortega Highway • Primary No. 7724, Community Hall • CA-RIV-3884, Prehistoric temporary camp • CA-RIV-4045, Prehistoric permanent camp
4	Alternative 4	• Primary No. 7220, Architectural resource • Primary No. 7230, Juan Machado Home/Rippley Ranch • Primary No. 7234, Ortega Highway • Primary No. 8663/CA-RIV-6176H, Wooden Pumphouse • CA-RIV-3884, Prehistoric temporary camp • CA-RIV-4045, Prehistoric permanent camp
5	Alternative 5	• Primary No. 7220, Architectural resource • Primary No. 7230, Juan Machado Home/Rippley Ranch • Primary No. 7234, Ortega Highway • Primary No. 7724, Community Hall • Primary No. 8663/CA-RIV-6176H, Wooden Pumphouse • CA-RIV-3884, Prehistoric temporary camp • CA-RIV-4045, Prehistoric permanent camp

Alternative 1, the "no build" alternative, would be the preferred alternative in regards to cultural resources. Continuing use of existing facilities would not impact cultural resources.

Of the alternatives that propose new facilities, Alternative 2 is the preferred alternative in regards to cultural resources. Even though upsizing an existing facility line has the potential to impact Primary No. 7220, an architectural resource; and Primary No. 7234, Ortega Highway, a resource eligible for local listing, construction methods, such as directional drilling that would avoid impacts to the resource could be implemented. Although the survey of proposed open channels and storm drains in undeveloped areas has the potential to identify intact, previously undisturbed

prehistoric resources that would require evaluation, the survey of proposed storm drains in developed areas is unlikely to identify any such resources. In addition, due to the relatively narrow width of proposed project components, the survey of proposed open channel and storm drain areas is unlikely to identify previously unknown architectural resources.

Should the District select Alternative 3, additional evaluation/surveying will be required for Primary No. 7220, architectural resource; Primary No. 7234, Ortega Highway; and Primary No. 7724, Community Hall.

Should the District select Alternative 4, further evaluation will be required for four of the unstudied proposed water quality basins as well as a portion of the other two partially studied water quality basins. Of the nine debris basins proposed, six and half would need further study. Also, additional evaluation/surveying will be required for Primary No. 7220, architectural resource; Primary No. 7234, Ortega Highway; and Primary No. 7724, Community Hall.

Should the District select Alternative 5, additional evaluation will be required for Primary No. 7220, architectural resource; Primary No. 7230, Juan Machado Home/Rippley Ranch; Primary No. 7724, Community Hall; and Primary No. 8663/CA-RIV-6176H, wooden pumphouse, as well as surveying basins.

Geologic Resources

Site-specific earthwork and grading specifications should be developed by the geotechnical consultant when an Alternative is selected. Typical earthwork considerations for the Lakeland Village MDP area include remedial grading, and suitability of native soils for fills. Based on the information compiled by Leighton, there are significant seismic/geologic constraints within the Lakeland Village MDP study area and each Alternative is generally exposed to the same geologic risk. To summarize, the following actions should take place once an Alternative is selected by the District:

- Any proposed development or facility must consider the potential for ground rupture hazards along any of the mapped faults. If warranted, a fault investigation can be performed by excavating a trench across the site to determine the location of faulting, and establish required setbacks. The California Geologic Survey Note 49 provides further methods of evaluation of site ground rupture.
- The intensity of ground shaking on drainage facilities shall be evaluated based on site-specific seismic evaluations.
- The 2007 CBC recommends that evaluation of liquefaction potential be performed based on a "Design Ground Motion" estimated from the "Maximum Considered Earthquake."

- A site-specific evaluation will be required for planned facilities within a liquefaction hazard zone (refer to Figure 12) to evaluate the liquefaction-induced settlement.
- Ground improvement techniques are typically implemented to reduce the effects and magnitude of seismically induced dynamic settlements.
- Detailed analysis of lateral spreading affects to properties adjacent to the lake edge and drainages should be performed by the geotechnical consultant.
- Possible floodplain buyouts for Alternative 3 and Alternative 5 should consider the areas with potential flood hazard.
- A site-specific geologic review shall be performed to determine whether the potential for land sliding or slope instability exist, especially for planned facilities located on the higher elevations of the MDP study area.
- Grading and earthwork construction shall conform to Standard Specifications for Public Works Construction (Greenbook) and/or County grading ordinances. However, site-specific earthwork and grading specifications shall be developed by the geotechnical consultant.

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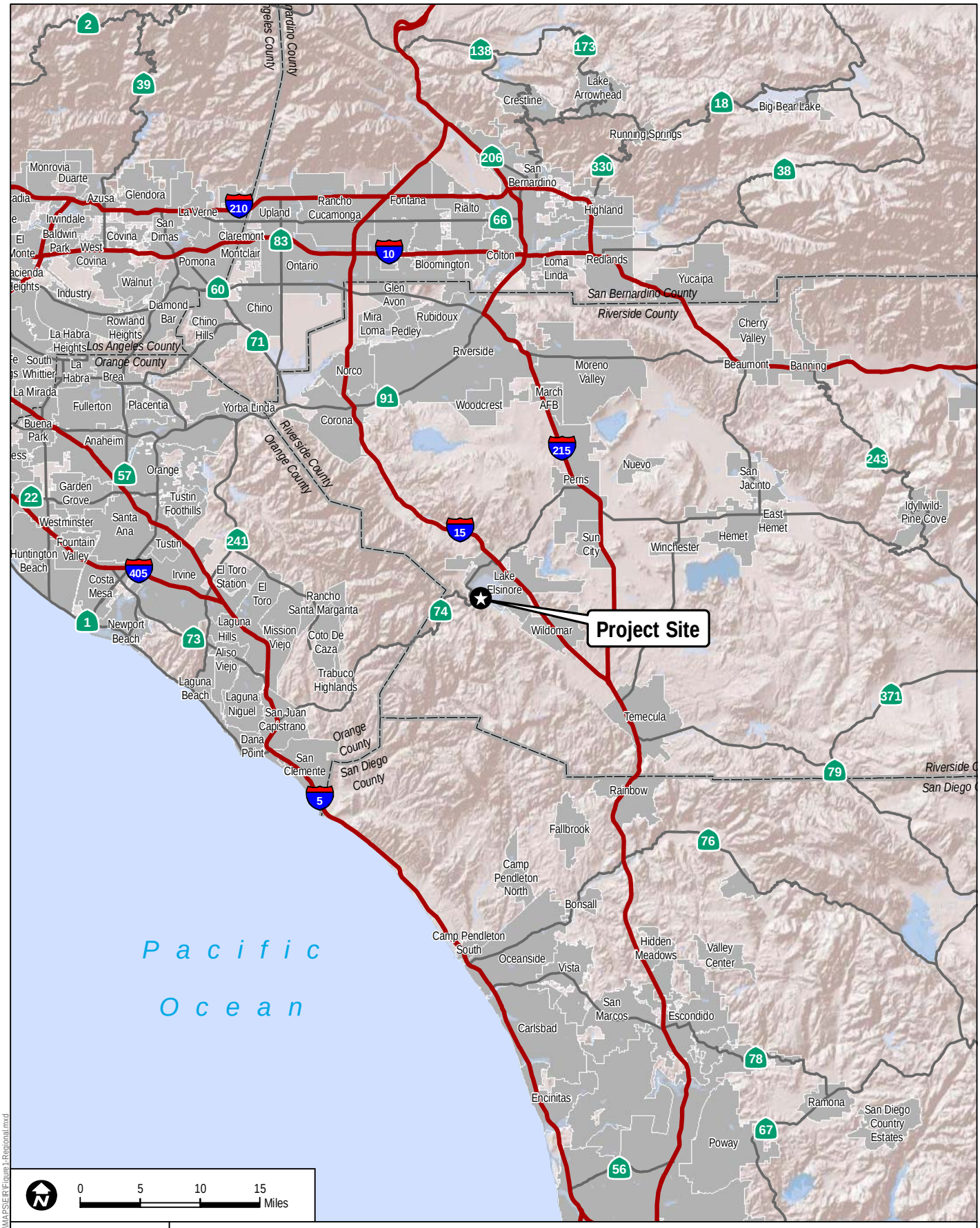

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FIGURE 1

Regional Map

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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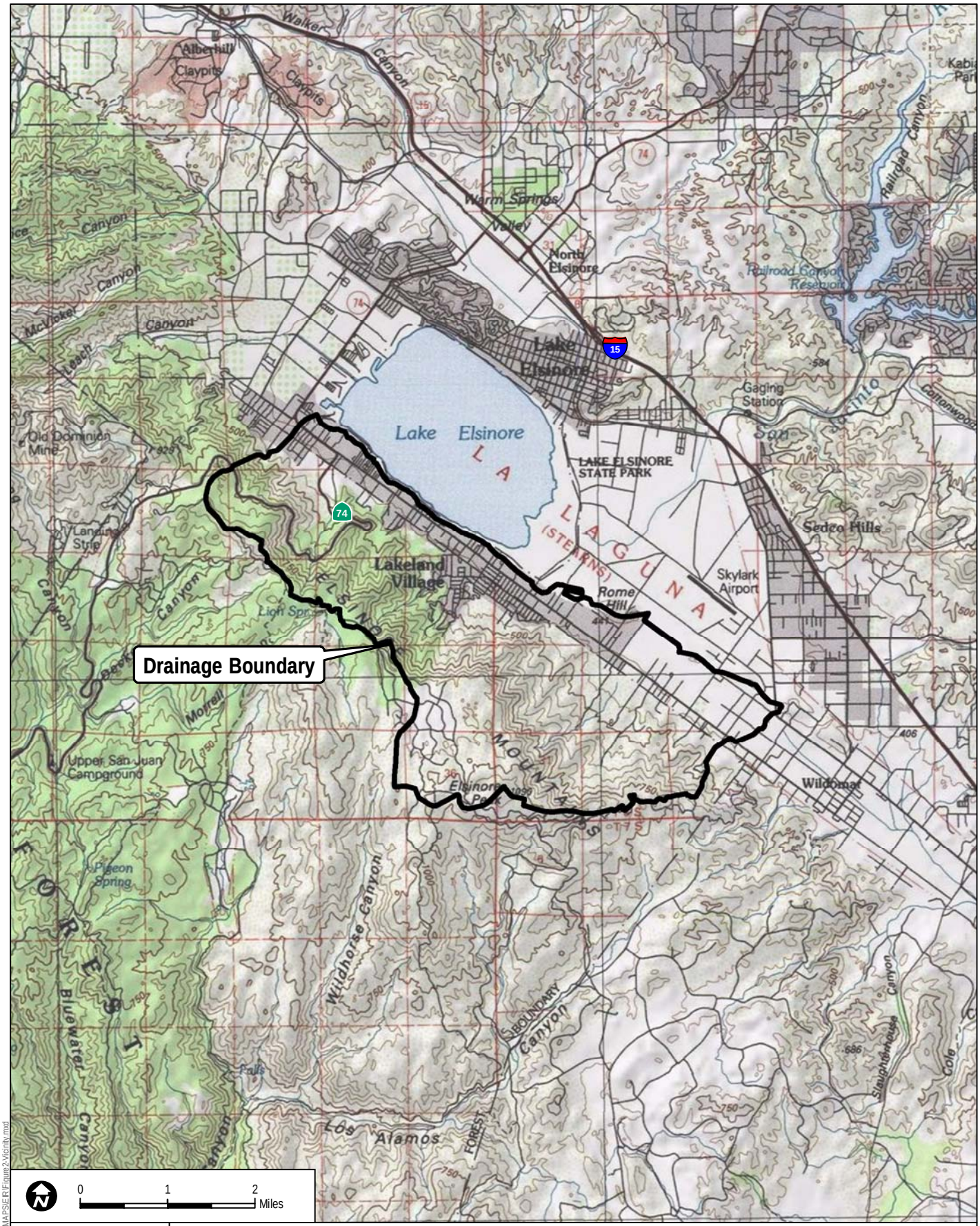

SOURCE: USGS 7.5-Minute Series Alberhill, Elsinore, Sitton Peak and Wildomar Quadrangles.

FIGURE 2
Vicinity Map

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FEBRUARY 2011

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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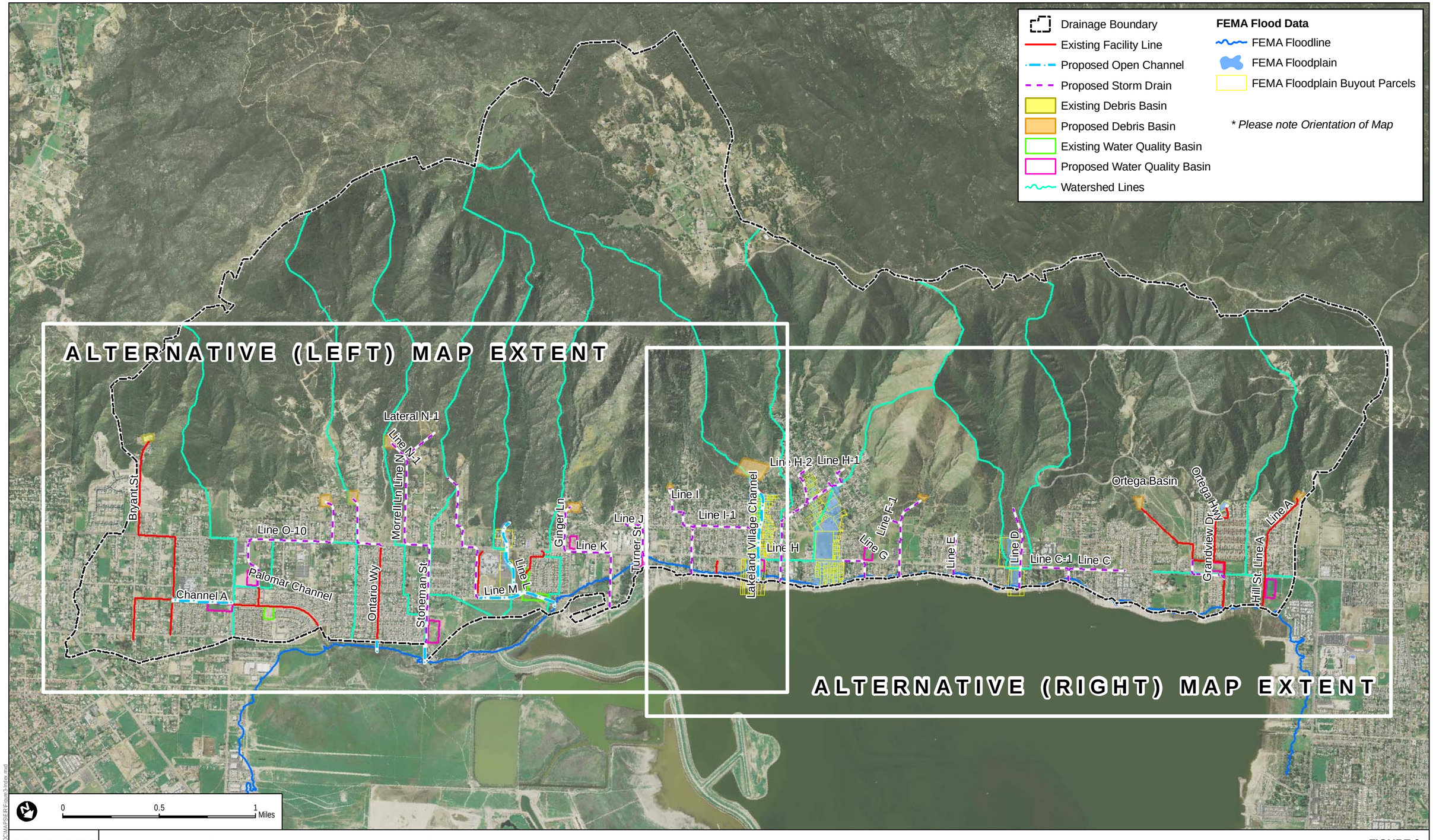

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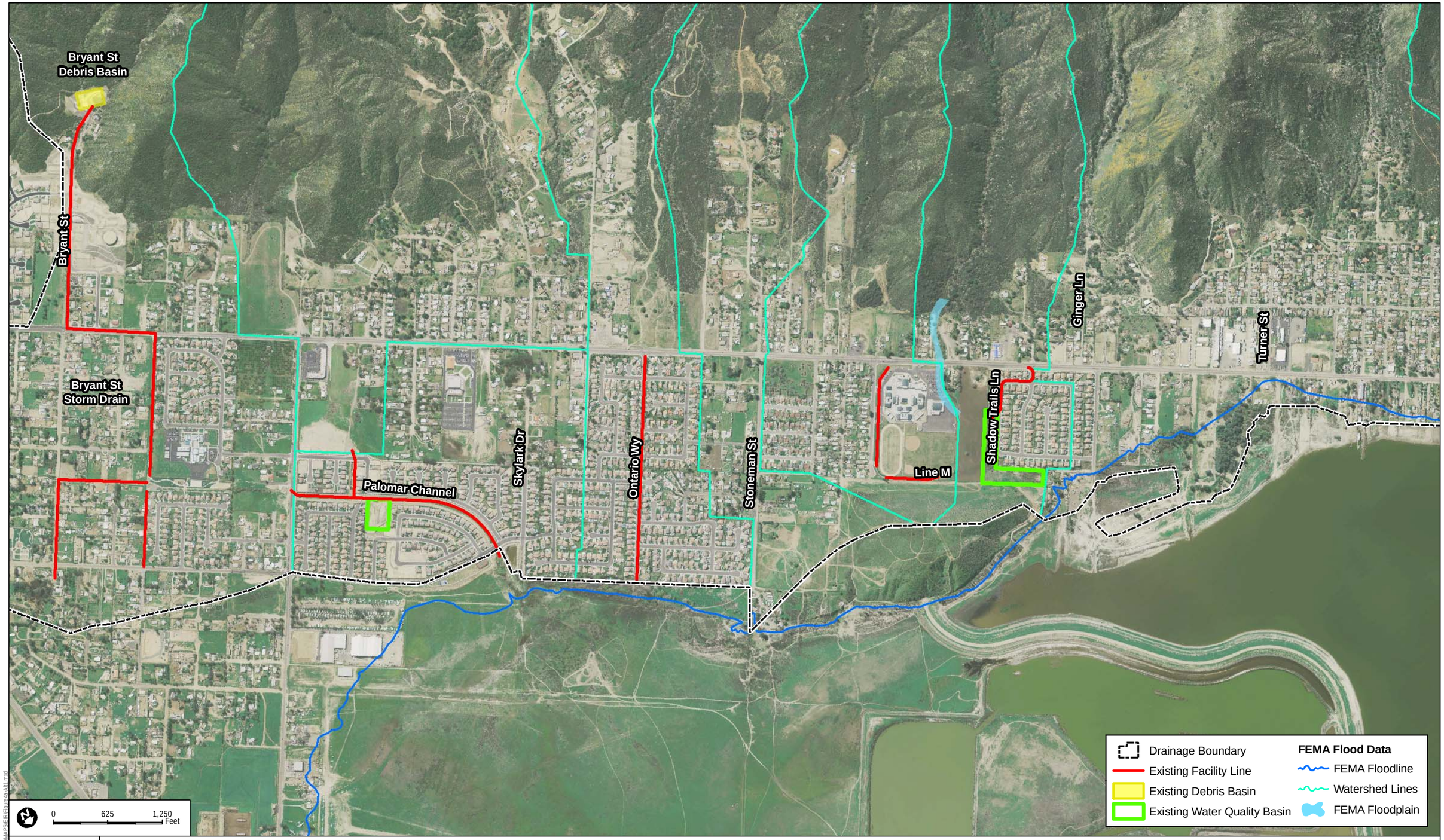
SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 3

Alternatives Index Map

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

Z:\Projects\6736\MAPDOC\MAPDOC\MAPDOCEIR\Figure3_Index.mxd



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SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 4a

Alternative 1 (Left) - No Build

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

Z:\Projects\6736\GIS\MAPDOC\MAPSIEIR\Figure4a-Alt1.mxd

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SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 4b

Alternative 1 (Right) - No Build

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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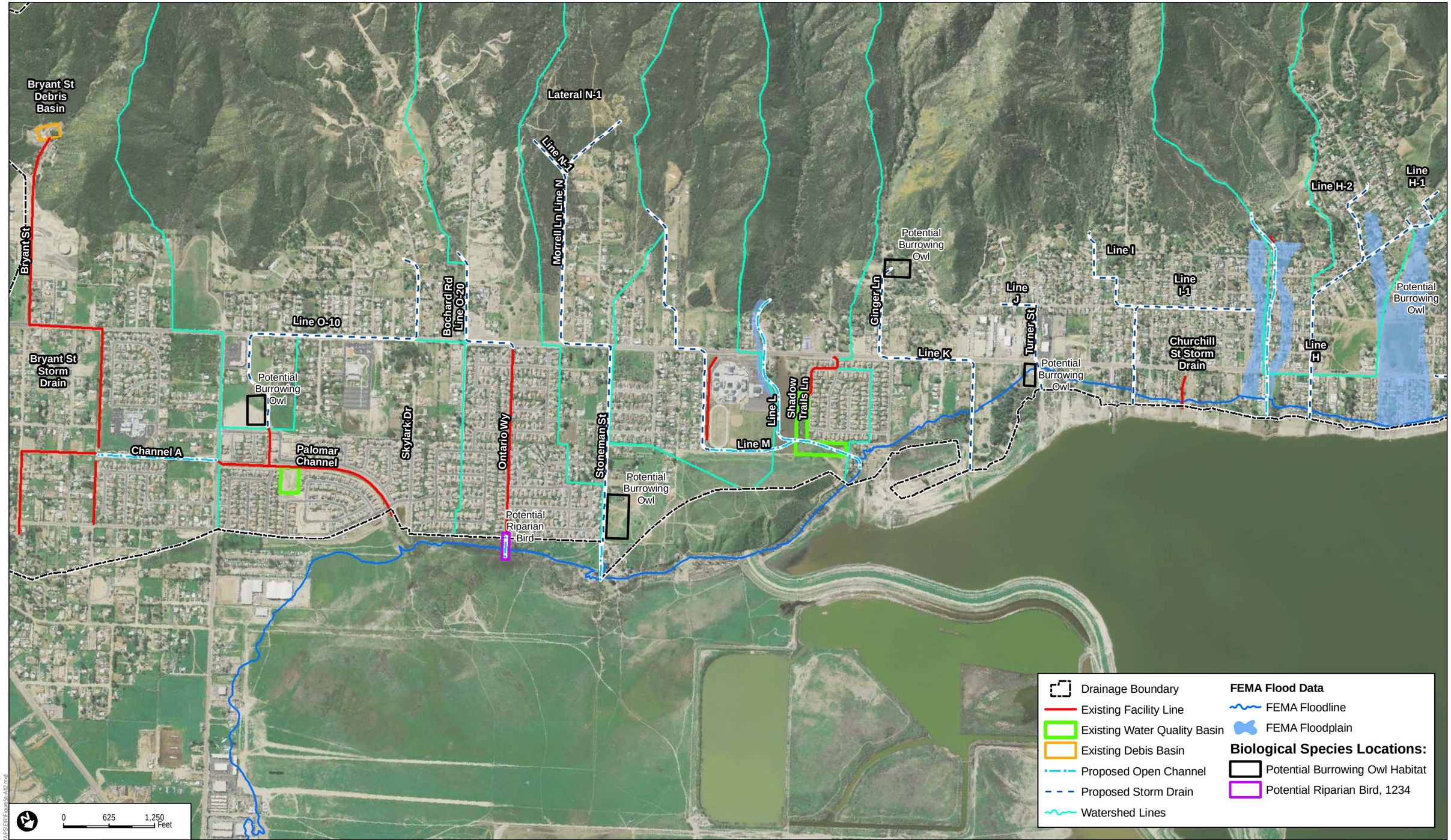

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DUDEK

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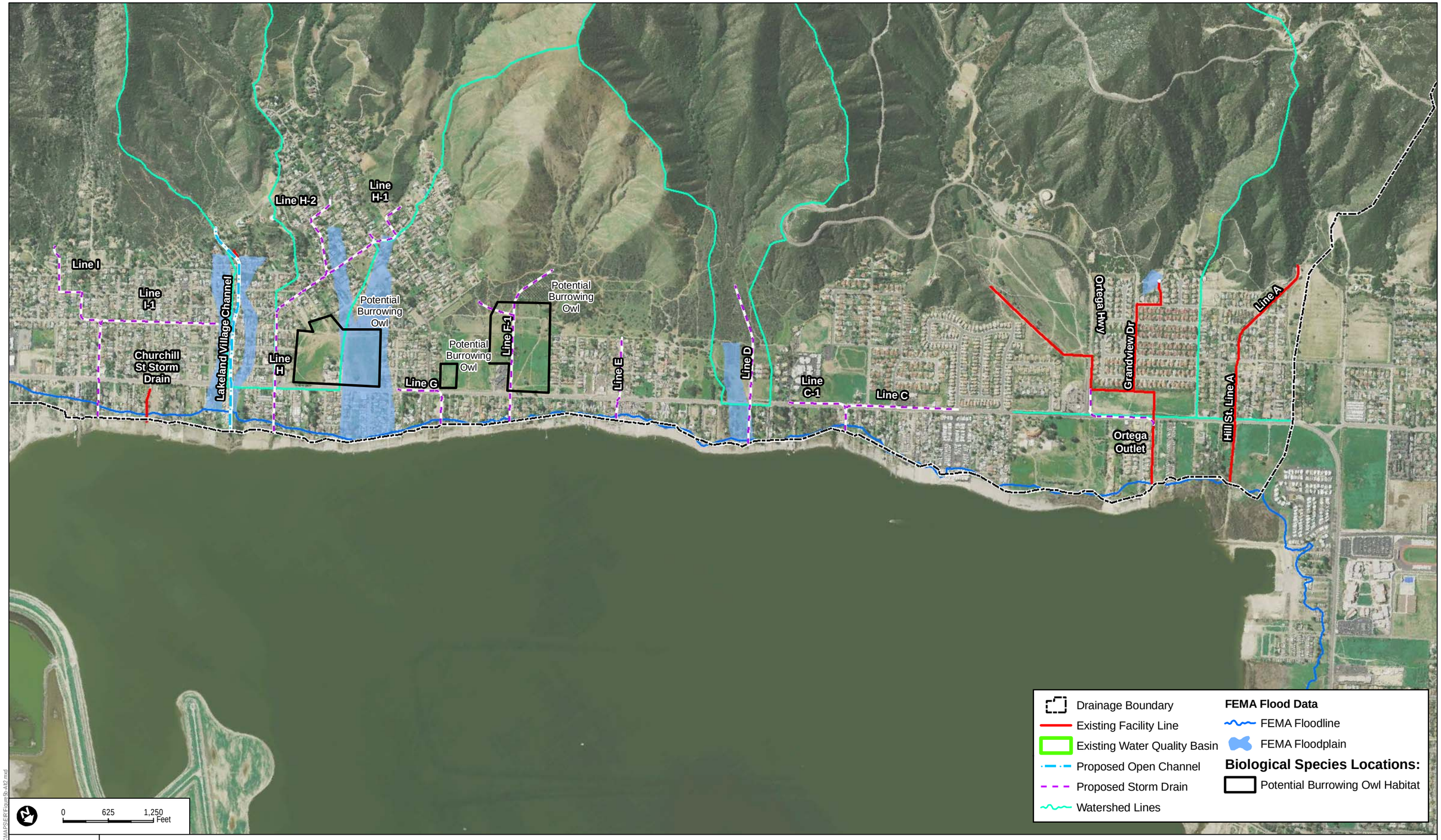
FEBRUARY 2011

SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 5a

Alternative 2 (Left) - Upsizing Facilities

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR



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FEBRUARY 2011

SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 5b

Alternative 2 (Right) - Upsizing Facilities

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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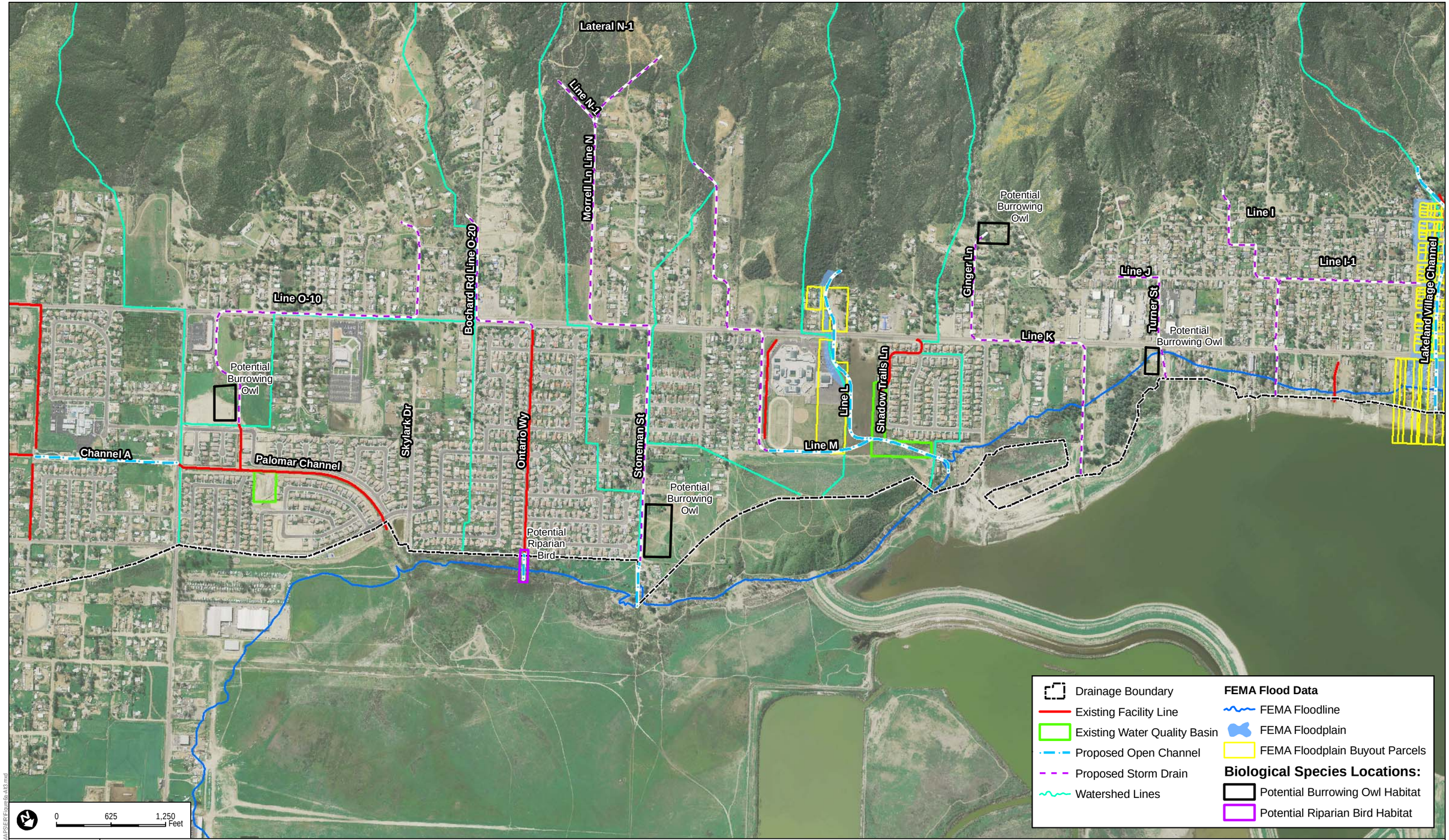

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SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 6a

Alternative 3 (Left) - Floodplain Buyout

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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Line H-2
Line H-1
Lakeland Village Channel
Potential Burrowing Owl
Line H
Line G
Potential Burrowing Owl
Line F-1
Potential Burrowing Owl
Line E
Line D
Line C-1
Line C
Ortega hwy
Grandview Dr
Ortega Outlet

Drainage Boundary
Existing Facility Line
Proposed Open Channel
Proposed Storm Drain
Watershed Lines

FEMA Flood Data
FEMA Floodline
FEMA Floodplain
FEMA Floodplain Buyout Parcels

Biological Species Locations:
Potential Burrowing Owl Habitat

0 625 1,250 Feet

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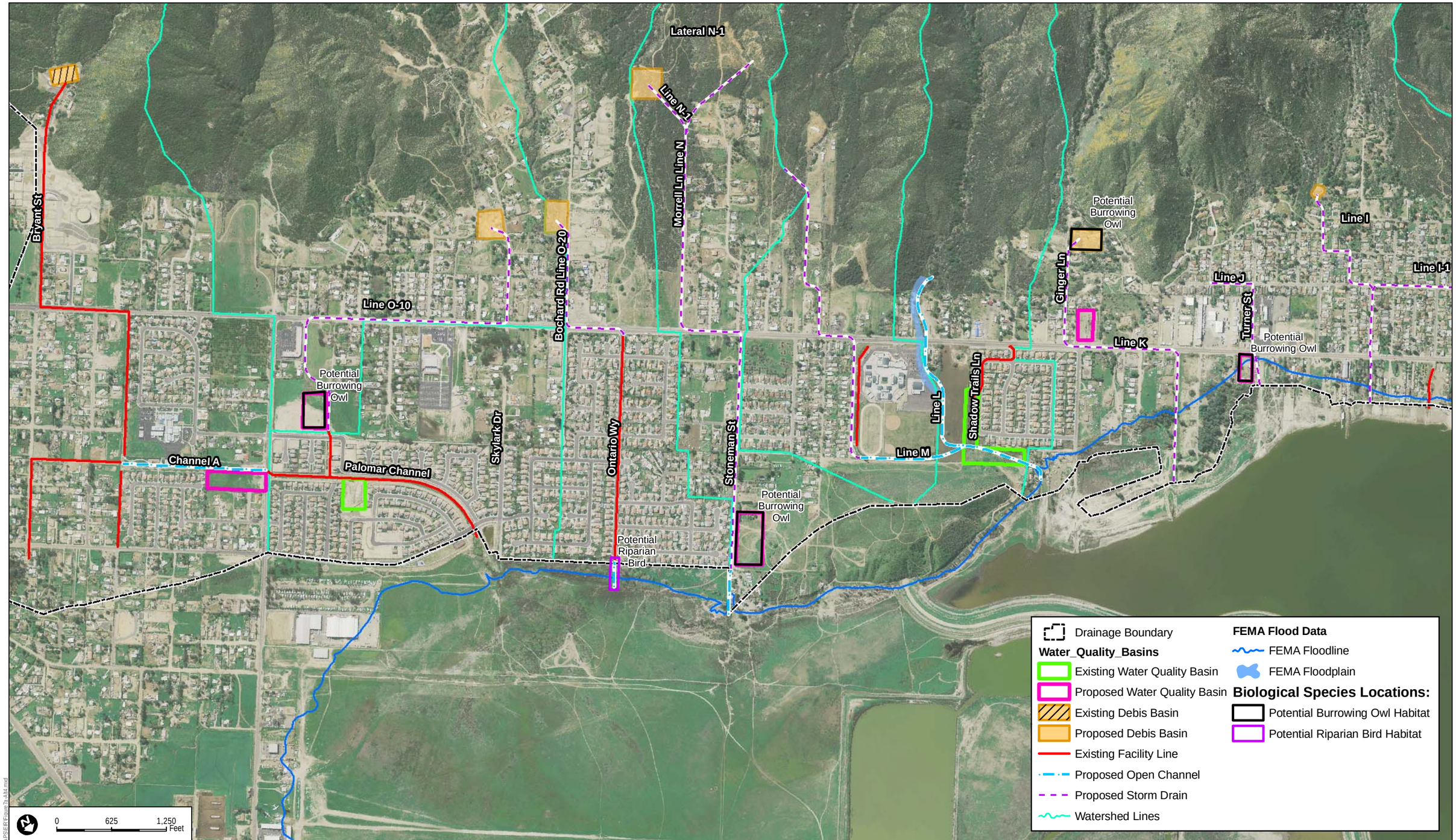
SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 6b

Alternative 3 (Right) - Floodplain Buyout

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR



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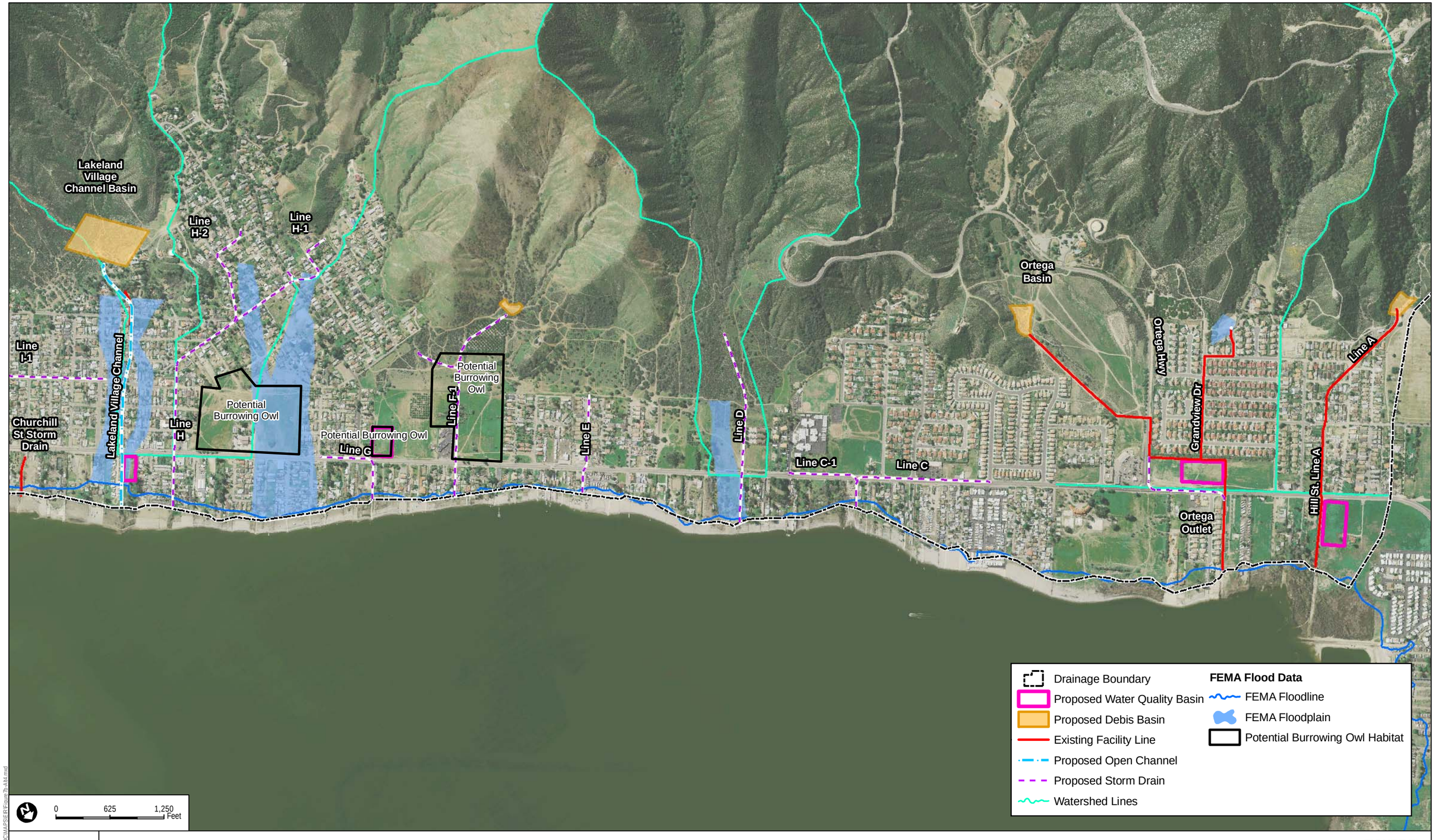
SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 7a

Alternative 4 (Left) - Water Quality Basins and Debris Basins

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR



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SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 7b

Alternative 4 (Right) - Water Quality Basins and Debris Basins

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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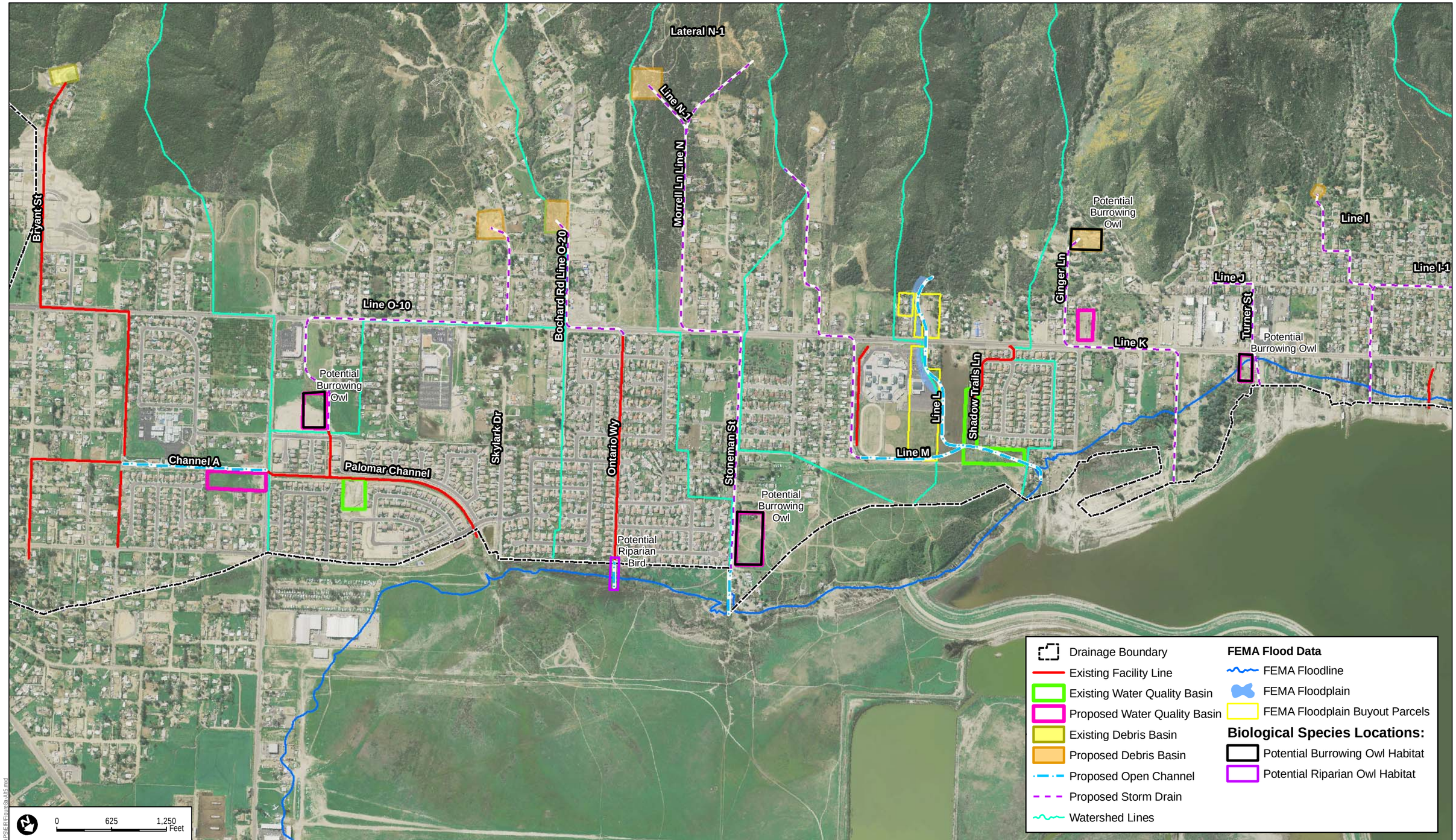

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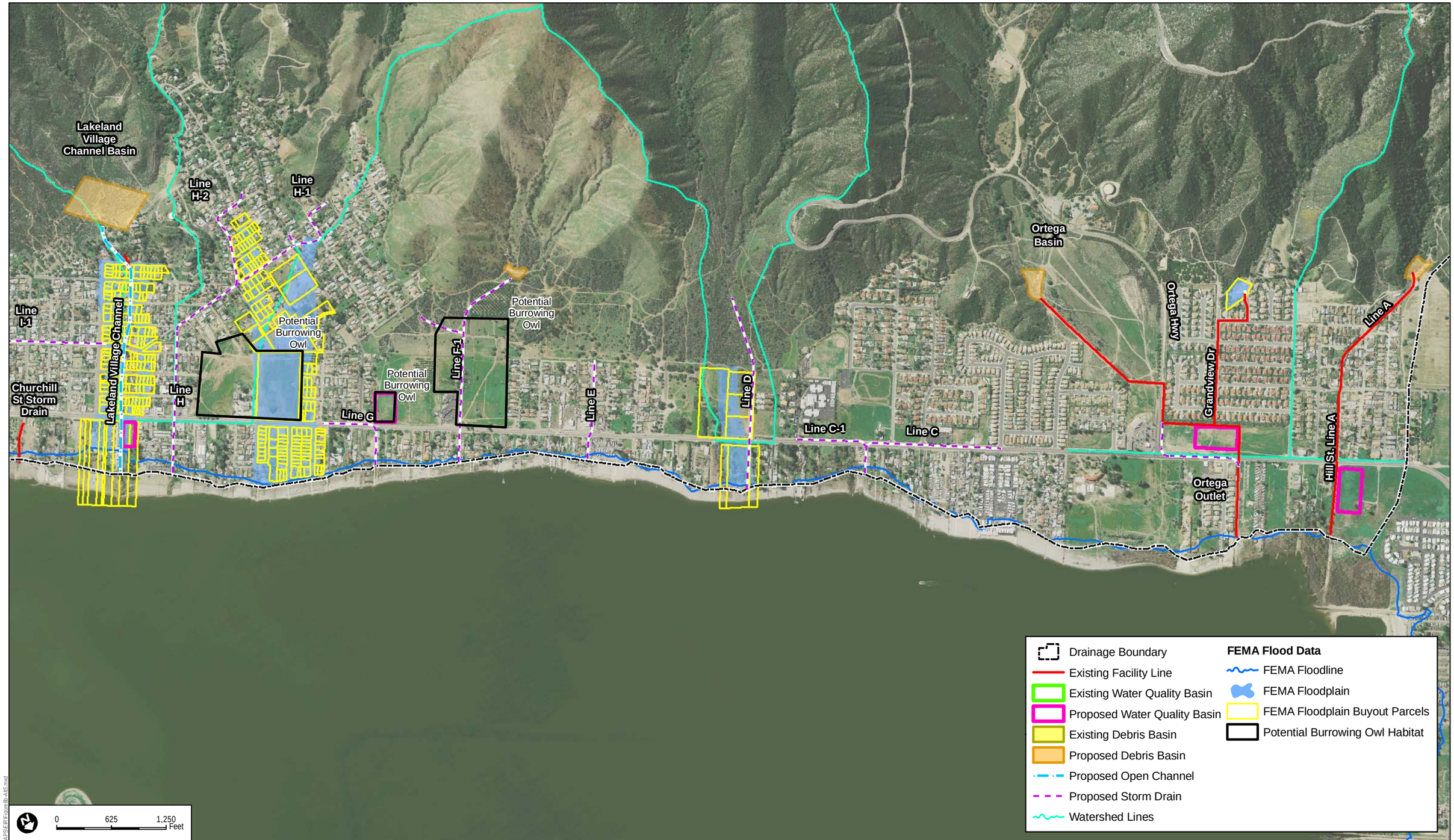
SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 8a

Alternative 5 (Left) - Combination of Alternative 2 through Alternative 4

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR



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SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, Digital Globe 2008

FIGURE 8b

Alternative 5 (Right) - Combination of Alternative 2 through Alternative 4

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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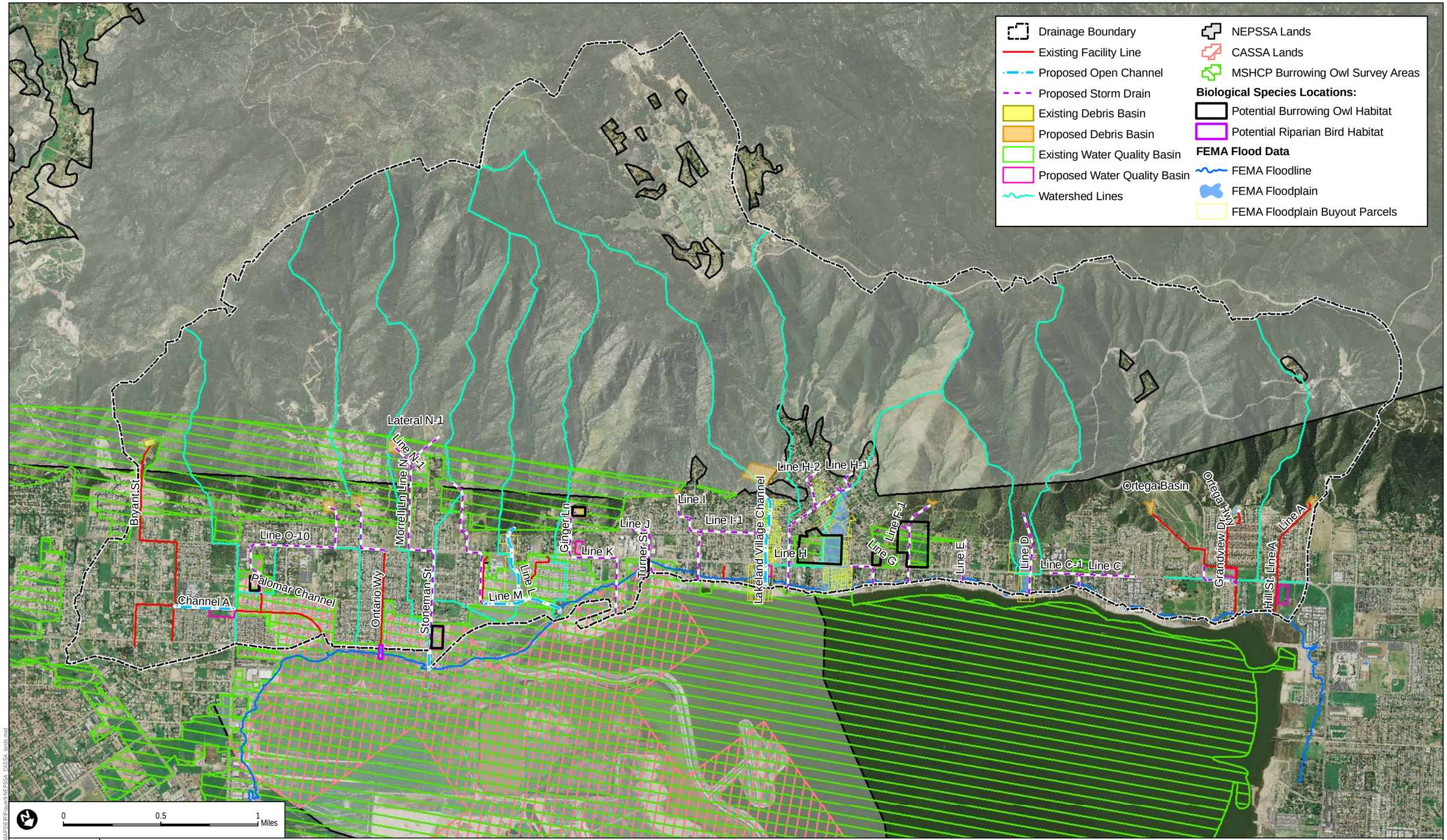

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SOURCE: Riverside County Flood COntrol and Water Conservation District 2010, County of Riverside MSHCP, Digital Globe 2008

FIGURE 9

MSHCP Survey Areas

ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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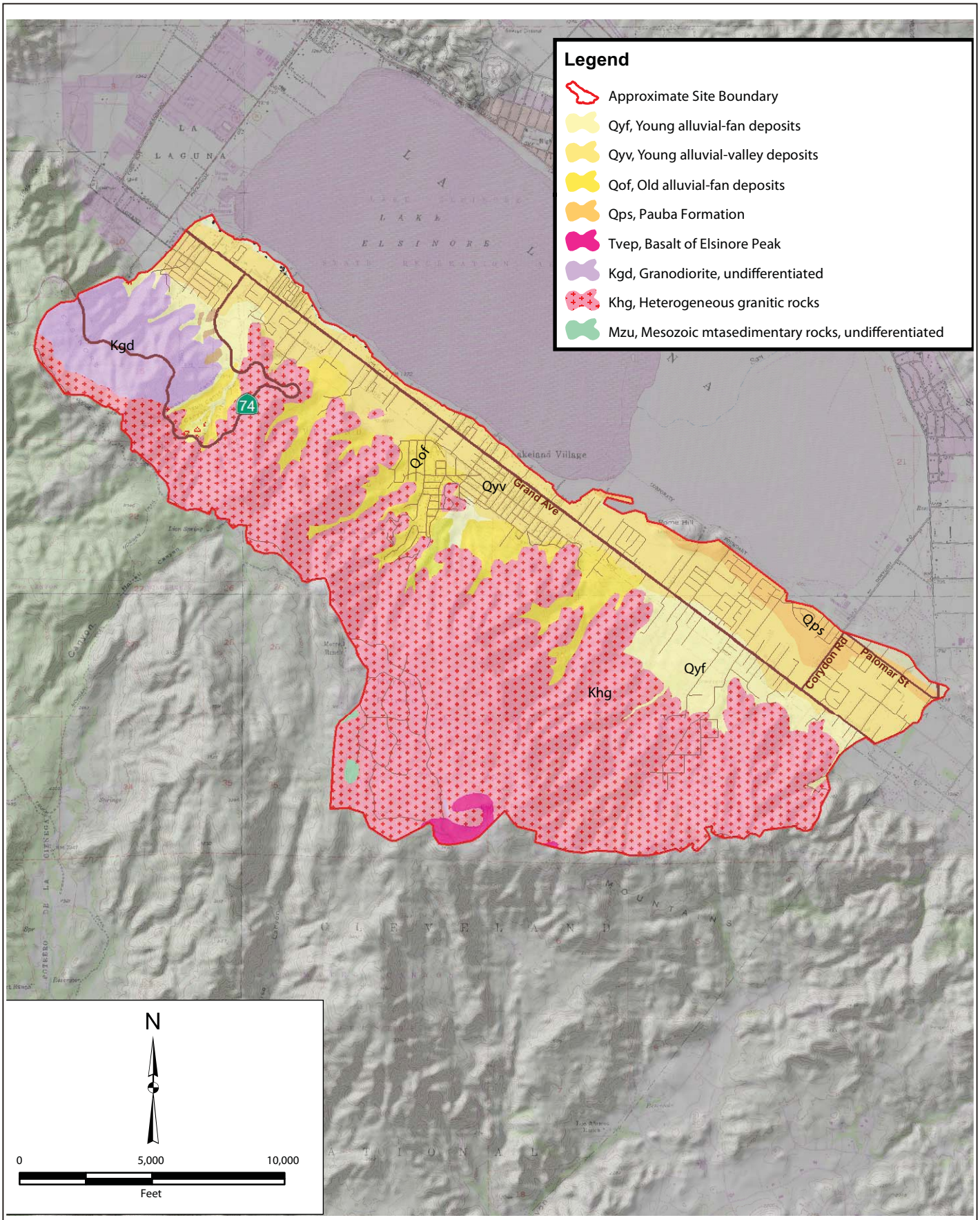

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SOURCE: Leighton Consulting, Inc. 2011

FIGURE 10
Regional Geology Map

ENVIRONMENTAL CONTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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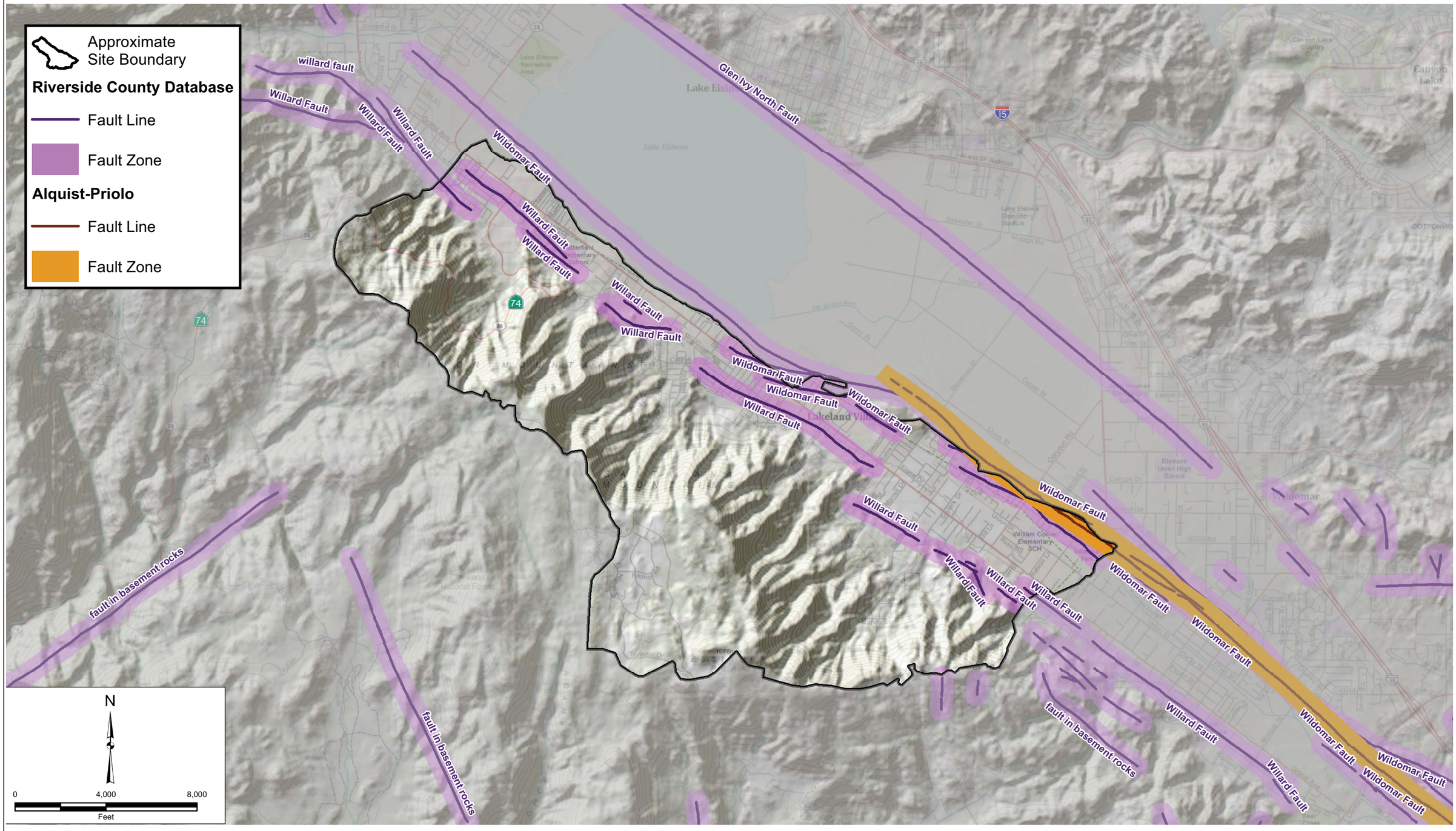

SOURCE: Leighton Consulting, Inc. 2011

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FIGURE 11

Fault Hazard Map

ENVIRONMENTAL CONTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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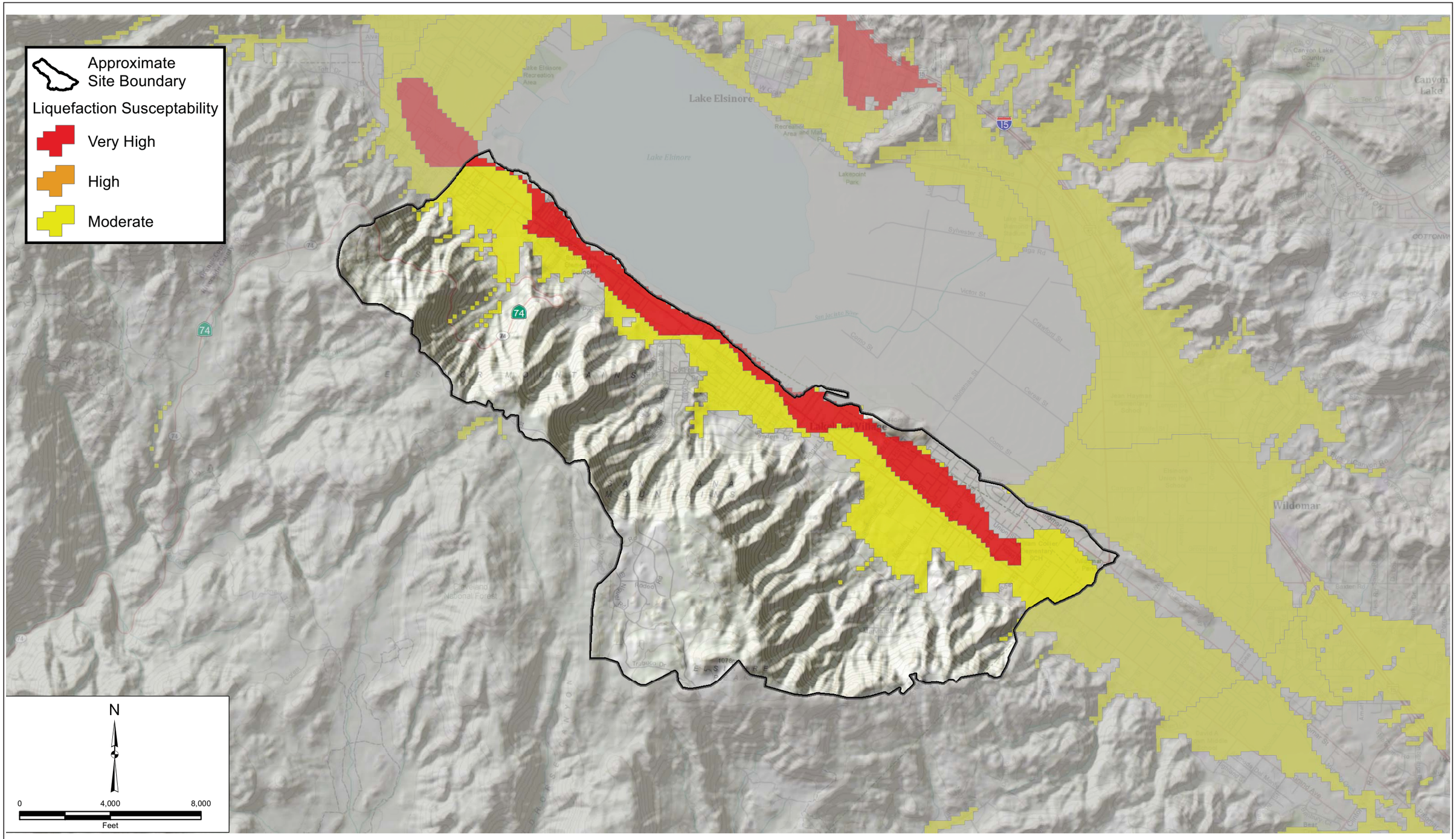

SOURCE: Leighton Consulting, Inc. 2011

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FIGURE 12

Liquefaction Hazard Map

ENVIRONMENTAL CONTRAINTS ANALYSIS FOR LAKELAND VILLAGE MDP EIR

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APPENDIX C

CalEEMod Data

Lakeland MDP

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Light Industry	503.6	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Southern California Edison
Climate Zone	10		2.4		
		Precipitation Freq (Days)			
			28		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	13.03	121.30	61.68	0.13	93.07	5.08	98.15	3.50	5.08	8.58	0.00	13,578.83	0.00	1.03	0.00	13,600.52
2013	12.07	110.30	56.74	0.12	25.43	4.55	29.98	3.48	4.55	8.04	0.00	13,259.45	0.00	0.96	0.00	13,279.69
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	13.03	121.30	61.68	0.13	89.30	5.08	94.38	1.47	5.08	6.55	0.00	13,578.83	0.00	1.03	0.00	13,600.52
2013	12.07	110.30	56.74	0.12	21.49	4.55	26.04	1.45	4.55	6.01	0.00	13,259.45	0.00	0.96	0.00	13,279.69
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading 1 (SDI.E) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.09	0.00	6.09	3.31	0.00	3.31						0.00
Off-Road	4.30	34.61	20.32	0.03		1.76	1.76		1.76	1.76		3,424.35		0.38		3,432.42
Total	**4.30**	**34.61**	**20.32**	**0.03**	**6.09**	**1.76**	**7.85**	**3.31**	**1.76**	**5.07**		**3,424.35**		**0.38**		**3,432.42**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.64	7.40	3.81	0.01	14.27	0.27	14.54	0.03	0.27	0.30		941.75		0.03		942.41
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.04	0.06	0.51	0.00	0.10	0.00	0.11	0.00	0.00	0.01		76.40		0.00		76.50
Total	**0.71**	**7.83**	**4.51**	**0.01**	**14.39**	**0.28**	**14.68**	**0.03**	**0.28**	**0.32**		**1,071.90**		**0.03**		**1,072.69**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.37	0.00	2.37	1.29	0.00	1.29						0.00
Off-Road	4.30	34.61	20.32	0.03		1.76	1.76		1.76	1.76	0.00	3,424.35		0.38		3,432.42
Total	**4.30**	**34.61**	**20.32**	**0.03**	**2.37**	**1.76**	**4.13**	**1.29**	**1.76**	**3.05**	**0.00**	**3,424.35**		**0.38**		**3,432.42**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.64	7.40	3.81	0.01	14.27	0.27	14.54	0.03	0.27	0.30		941.75		0.03		942.41
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.04	0.06	0.51	0.00	0.10	0.00	0.11	0.00	0.00	0.01		76.40		0.00		76.50
Total	**0.71**	**7.83**	**4.51**	**0.01**	**14.39**	**0.28**	**14.68**	**0.03**	**0.28**	**0.32**		**1,071.90**		**0.03**		**1,072.69**

3.3 Grading 2 (SDI.B) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00						0.00
Off-Road	2.87	21.12	14.05	0.02		1.35	1.35		1.35	1.35		2,298.79		0.26		2,304.19
Total	**2.87**	**21.12**	**14.05**	**0.02**	**0.02**	**1.35**	**1.37**	**0.00**	**1.35**	**1.35**		**2,298.79**		**0.26**		**2,304.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.64	7.40	3.81	0.01	14.27	0.27	14.54	0.03	0.27	0.30		941.75		0.03		942.41
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.04	0.06	0.51	0.00	0.10	0.00	0.11	0.00	0.00	0.01		76.40		0.00		76.50
Total	**0.71**	**7.83**	**4.51**	**0.01**	**14.39**	**0.28**	**14.68**	**0.03**	**0.28**	**0.32**		**1,071.90**		**0.03**		**1,072.69**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00						0.00
Off-Road	2.87	21.12	14.05	0.02		1.35	1.35		1.35	1.35	0.00	2,298.79		0.26		2,304.19
Total	**2.87**	**21.12**	**14.05**	**0.02**	**0.01**	**1.35**	**1.36**	**0.00**	**1.35**	**1.35**	**0.00**	**2,298.79**		**0.26**		**2,304.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.64	7.40	3.81	0.01	14.27	0.27	14.54	0.03	0.27	0.30		941.75		0.03		942.41
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.04	0.06	0.51	0.00	0.10	0.00	0.11	0.00	0.00	0.01		76.40		0.00		76.50
Total	**0.71**	**7.83**	**4.51**	**0.01**	**14.39**	**0.28**	**14.68**	**0.03**	**0.28**	**0.32**		**1,071.90**		**0.03**		**1,072.69**

3.4 Paving - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.76	10.79	6.46	0.01		0.94	0.94		0.94	0.94		906.26		0.16		909.58
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**1.76**	**10.79**	**6.46**	**0.01**		**0.94**	**0.94**		**0.94**	**0.94**		**906.26**		**0.16**		**909.58**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.03	0.03	0.32	0.00	0.07	0.00	0.07	0.00	0.00	0.00		47.75		0.00		47.81
Total	**0.06**	**0.40**	**0.51**	**0.00**	**0.09**	**0.01**	**0.10**	**0.00**	**0.01**	**0.01**		**101.50**		**0.00**		**101.59**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.76	10.79	6.46	0.01		0.94	0.94		0.94	0.94	0.00	906.26		0.16		909.58
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**1.76**	**10.79**	**6.46**	**0.01**		**0.94**	**0.94**		**0.94**	**0.94**	**0.00**	**906.26**		**0.16**		**909.58**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.03	0.03	0.32	0.00	0.07	0.00	0.07	0.00	0.00	0.00		47.75		0.00		47.81
Total	**0.06**	**0.40**	**0.51**	**0.00**	**0.09**	**0.01**	**0.10**	**0.00**	**0.01**	**0.01**		**101.50**		**0.00**		**101.59**

3.5 Grading 3 (EC.E) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.06	0.00	0.06	0.00	0.00	0.00						0.00
Off-Road	1.56	11.11	7.82	0.01		0.76	0.76		0.76	0.76		1,257.58		0.14		1,260.50
Total	**1.56**	**11.11**	**7.82**	**0.01**	**0.06**	**0.76**	**0.82**	**0.00**	**0.76**	**0.76**		**1,257.58**		**0.14**		**1,260.50**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.40	4.59	2.36	0.01	0.82	0.17	0.99	0.02	0.17	0.19		583.98		0.02		584.39
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.03	0.03	0.32	0.00	0.07	0.00	0.07	0.00	0.00	0.00		47.75		0.00		47.81
Total	**0.46**	**4.99**	**2.87**	**0.01**	**0.91**	**0.18**	**1.09**	**0.02**	**0.18**	**0.20**		**685.48**		**0.02**		**685.98**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00						0.00
Off-Road	1.56	11.11	7.82	0.01		0.76	0.76		0.76	0.76	0.00	1,257.58		0.14		1,260.50
Total	**1.56**	**11.11**	**7.82**	**0.01**	**0.02**	**0.76**	**0.78**	**0.00**	**0.76**	**0.76**	**0.00**	**1,257.58**		**0.14**		**1,260.50**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.40	4.59	2.36	0.01	0.82	0.17	0.99	0.02	0.17	0.19		583.98		0.02		584.39
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.03	0.03	0.32	0.00	0.07	0.00	0.07	0.00	0.00	0.00		47.75		0.00		47.81
Total	**0.46**	**4.99**	**2.87**	**0.01**	**0.91**	**0.18**	**1.09**	**0.02**	**0.18**	**0.20**		**685.48**		**0.02**		**685.98**

3.6 Grading 4 (EC.BC) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00						0.00
Off-Road	2.87	21.12	14.05	0.02		1.35	1.35		1.35	1.35		2,298.79		0.26		2,304.19
Total	**2.87**	**21.12**	**14.05**	**0.02**	**0.01**	**1.35**	**1.36**	**0.00**	**1.35**	**1.35**		**2,298.79**		**0.26**		**2,304.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.40	4.59	2.36	0.01	1.62	0.17	1.79	0.02	0.17	0.19		583.98		0.02		584.39
Vendor	0.03	0.37	0.19	0.00	0.04	0.01	0.05	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.04	0.06	0.51	0.00	0.20	0.00	0.21	0.00	0.00	0.01		76.40		0.00		76.50
Total	**0.47**	**5.02**	**3.06**	**0.01**	**1.86**	**0.18**	**2.05**	**0.02**	**0.18**	**0.21**		**714.13**		**0.02**		**714.67**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00						0.00
Off-Road	2.87	21.12	14.05	0.02		1.35	1.35		1.35	1.35	0.00	2,298.79		0.26		2,304.19
Total	**2.87**	**21.12**	**14.05**	**0.02**	**0.01**	**1.35**	**1.36**	**0.00**	**1.35**	**1.35**	**0.00**	**2,298.79**		**0.26**		**2,304.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.40	4.59	2.36	0.01	1.62	0.17	1.79	0.02	0.17	0.19		583.98		0.02		584.39
Vendor	0.03	0.37	0.19	0.00	0.04	0.01	0.05	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.04	0.06	0.51	0.00	0.20	0.00	0.21	0.00	0.00	0.01		76.40		0.00		76.50
Total	**0.47**	**5.02**	**3.06**	**0.01**	**1.86**	**0.18**	**2.05**	**0.02**	**0.18**	**0.21**		**714.13**		**0.02**		**714.67**

3.7 Grading 5 (DB.E) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.18	0.00	6.18	3.33	0.00	3.33						0.00
Off-Road	9.62	82.77	41.08	0.08		3.66	3.66		3.66	3.66		8,557.87		0.86		8,575.99
Total	**9.62**	**82.77**	**41.08**	**0.08**	**6.18**	**3.66**	**9.84**	**3.33**	**3.66**	**6.99**		**8,557.87**		**0.86**		**8,575.99**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	3.31	38.08	19.58	0.05	86.70	1.40	88.11	0.16	1.40	1.56		4,843.07		0.16		4,846.44
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.07	0.09	0.83	0.00	0.17	0.01	0.18	0.01	0.01	0.01		124.15		0.01		124.31
Total	**3.41**	**38.54**	**20.60**	**0.05**	**86.89**	**1.42**	**88.32**	**0.17**	**1.42**	**1.58**		**5,020.97**		**0.17**		**5,024.53**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.41	0.00	2.41	1.30	0.00	1.30						0.00
Off-Road	9.62	82.77	41.08	0.08		3.66	3.66		3.66	3.66	0.00	8,557.87		0.86		8,575.99
Total	**9.62**	**82.77**	**41.08**	**0.08**	**2.41**	**3.66**	**6.07**	**1.30**	**3.66**	**4.96**	**0.00**	**8,557.87**		**0.86**		**8,575.99**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.31	38.08	19.58	0.05	86.70	1.40	88.11	0.16	1.40	1.56		4,843.07		0.16		4,846.44
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.07	0.09	0.83	0.00	0.17	0.01	0.18	0.01	0.01	0.01		124.15		0.01		124.31
Total	**3.41**	**38.54**	**20.60**	**0.05**	**86.89**	**1.42**	**88.32**	**0.17**	**1.42**	**1.58**		**5,020.97**		**0.17**		**5,024.53**

3.8 Grading 6 (DB.BC) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					0.12	0.00	0.12	0.02	0.00	0.02						0.00
Off-Road	2.87	21.12	14.05	0.02		1.35	1.35		1.35	1.35		2,298.79		0.26		2,304.19
Total	**2.87**	**21.12**	**14.05**	**0.02**	**0.12**	**1.35**	**1.47**	**0.02**	**1.35**	**1.37**		**2,298.79**		**0.26**		**2,304.19**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.31	38.08	19.58	0.05	20.14	1.40	21.54	0.16	1.40	1.56		4,843.93		0.16		4,847.31
Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.04	0.06	0.51	0.00	0.10	0.00	0.11	0.00	0.00	0.01		76.40		0.00		76.50
Total	**3.38**	**38.51**	**20.28**	**0.05**	**20.26**	**1.41**	**21.68**	**0.16**	**1.41**	**1.58**		**4,974.08**		**0.16**		**4,977.59**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.05	0.00	0.05	0.01	0.00	0.01						0.00
Off-Road	2.87	21.12	14.05	0.02		1.35	1.35		1.35	1.35	0.00	2,298.79		0.26		2,304.19
Total	**2.87**	**21.12**	**14.05**	**0.02**	**0.05**	**1.35**	**1.40**	**0.01**	**1.35**	**1.36**	**0.00**	**2,298.79**		**0.26**		**2,304.19**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.31	38.08	19.58	0.05	20.14	1.40	21.54	0.16	1.40	1.56		4,843.93		0.16		4,847.31

Vendor	0.03	0.37	0.19	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.75		0.00		53.78
Worker	0.04	0.06	0.51	0.00	0.10	0.00	0.11	0.00	0.00	0.01		76.40		0.00		76.50
Total	**3.38**	**38.51**	**20.28**	**0.05**	**20.26**	**1.41**	**21.68**	**0.16**	**1.41**	**1.58**		**4,974.08**		**0.16**		**4,977.59**

3.8 Grading 6 (DB.BC) - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.12	0.00	0.12	0.02	0.00	0.02						0.00
Off-Road	2.69	19.72	14.01	0.02		1.22	1.22		1.22	1.22		2,298.79		0.24		2,303.84
Total	**2.69**	**19.72**	**14.01**	**0.02**	**0.12**	**1.22**	**1.34**	**0.02**	**1.22**	**1.24**		**2,298.79**		**0.24**		**2,303.84**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.02	34.46	18.20	0.05	20.14	1.25	21.38	0.16	1.25	1.41		4,854.33		0.15		4,857.41
Vendor	0.03	0.33	0.18	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.80		0.00		53.82
Worker	0.04	0.05	0.47	0.00	0.10	0.00	0.11	0.00	0.00	0.01		74.71		0.00		74.81
Total	**3.09**	**34.84**	**18.85**	**0.05**	**20.26**	**1.26**	**21.52**	**0.16**	**1.26**	**1.43**		**4,982.84**		**0.15**		**4,986.04**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.05	0.00	0.05	0.01	0.00	0.01						0.00

Off-Road	2.69	19.72	14.01	0.02		1.22	1.22		1.22	1.22	0.00	2,298.79		0.24		2,303.84
Total	**2.69**	**19.72**	**14.01**	**0.02**	**0.05**	**1.22**	**1.27**	**0.01**	**1.22**	**1.23**	**0.00**	**2,298.79**		**0.24**		**2,303.84**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.02	34.46	18.20	0.05	20.14	1.25	21.38	0.16	1.25	1.41		4,854.33		0.15		4,857.41
Vendor	0.03	0.33	0.18	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.80		0.00		53.82
Worker	0.04	0.05	0.47	0.00	0.10	0.00	0.11	0.00	0.00	0.01		74.71		0.00		74.81
Total	**3.09**	**34.84**	**18.85**	**0.05**	**20.26**	**1.26**	**21.52**	**0.16**	**1.26**	**1.43**		**4,982.84**		**0.15**		**4,986.04**

3.9 Grading 7 (WQB.E) - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.47	0.00	6.47	3.33	0.00	3.33						0.00
Off-Road	9.16	77.75	38.84	0.08		3.37	3.37		3.37	3.37		8,557.87		0.82		8,575.06
Total	**9.16**	**77.75**	**38.84**	**0.08**	**6.47**	**3.37**	**9.84**	**3.33**	**3.37**	**6.70**		**8,557.87**		**0.82**		**8,575.06**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.82	32.13	16.97	0.04	18.78	1.16	19.94	0.15	1.16	1.31		4,526.37		0.14		4,529.25
Vendor	0.03	0.33	0.18	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.80		0.00		53.82

Worker	0.06	0.08	0.76	0.00	0.17	0.01	0.18	0.01	0.01	0.01		121.41		0.01		121.56
Total	**2.91**	**32.54**	**17.91**	**0.04**	**18.97**	**1.18**	**20.15**	**0.16**	**1.18**	**1.33**		**4,701.58**		**0.15**		**4,704.63**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.52	0.00	2.52	1.30	0.00	1.30						0.00
Off-Road	9.16	77.75	38.84	0.08		3.37	3.37		3.37	3.37	0.00	8,557.87		0.82		8,575.06
Total	**9.16**	**77.75**	**38.84**	**0.08**	**2.52**	**3.37**	**5.89**	**1.30**	**3.37**	**4.67**	**0.00**	**8,557.87**		**0.82**		**8,575.06**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.82	32.13	16.97	0.04	18.78	1.16	19.94	0.15	1.16	1.31		4,526.37		0.14		4,529.25
Vendor	0.03	0.33	0.18	0.00	0.02	0.01	0.03	0.00	0.01	0.01		53.80		0.00		53.82
Worker	0.06	0.08	0.76	0.00	0.17	0.01	0.18	0.01	0.01	0.01		121.41		0.01		121.56
Total	**2.91**	**32.54**	**17.91**	**0.04**	**18.97**	**1.18**	**20.15**	**0.16**	**1.18**	**1.33**		**4,701.58**		**0.15**		**4,704.63**

Lakeland MDP

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Light Industry	503.6	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Southern California Edison
Climate Zone	10		2.4		
		Precipitation Freq (Days)			
			28		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Off-road Equipment - Modified

Trips and VMT - Modified

Grading - Modified

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2012	0.68	6.03	3.28	0.01	3.67	0.28	3.95	0.21	0.28	0.49	0.00	617.20	617.20	0.05	0.00	618.25
2013	0.13	1.19	0.64	0.00	0.31	0.05	0.36	0.03	0.05	0.08	0.00	136.89	136.89	0.01	0.00	137.08
Total	**0.81**	**7.22**	**3.92**	**0.01**	**3.98**	**0.33**	**4.31**	**0.24**	**0.33**	**0.57**	**0.00**	**754.09**	**754.09**	**0.06**	**0.00**	**755.33**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2012	0.68	6.03	3.28	0.01	3.44	0.28	3.72	0.09	0.28	0.36	0.00	617.20	617.20	0.05	0.00	618.25
2013	0.13	1.19	0.64	0.00	0.28	0.05	0.33	0.01	0.05	0.06	0.00	136.89	136.89	0.01	0.00	137.08
Total	**0.81**	**7.22**	**3.92**	**0.01**	**3.72**	**0.33**	**4.05**	**0.10**	**0.33**	**0.42**	**0.00**	**754.09**	**754.09**	**0.06**	**0.00**	**755.33**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading 1 (SDI.E) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.17	0.00	0.17	0.09	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.12	0.95	0.56	0.00		0.05	0.05		0.05	0.05	0.00	85.41	85.41	0.01	0.00	85.61
Total	**0.12**	**0.95**	**0.56**	**0.00**	**0.17**	**0.05**	**0.22**	**0.09**	**0.05**	**0.14**	**0.00**	**85.41**	**85.41**	**0.01**	**0.00**	**85.61**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.20	0.10	0.00	0.36	0.01	0.36	0.00	0.01	0.01	0.00	23.65	23.65	0.00	0.00	23.66
Vendor	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.35	1.35	0.00	0.00	1.35
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.00	0.00	1.98
Total	**0.02**	**0.21**	**0.12**	**0.00**	**0.36**	**0.01**	**0.36**	**0.00**	**0.01**	**0.01**	**0.00**	**26.98**	**26.98**	**0.00**	**0.00**	**26.99**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.07	0.00	0.07	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.12	0.95	0.56	0.00		0.05	0.05		0.05	0.05	0.00	85.41	85.41	0.01	0.00	85.61
Total	**0.12**	**0.95**	**0.56**	**0.00**	**0.07**	**0.05**	**0.12**	**0.04**	**0.05**	**0.09**	**0.00**	**85.41**	**85.41**	**0.01**	**0.00**	**85.61**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.20	0.10	0.00	0.36	0.01	0.36	0.00	0.01	0.01	0.00	23.65	23.65	0.00	0.00	23.66
Vendor	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.35	1.35	0.00	0.00	1.35
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.00	0.00	1.98
Total	**0.02**	**0.21**	**0.12**	**0.00**	**0.36**	**0.01**	**0.36**	**0.00**	**0.01**	**0.01**	**0.00**	**26.98**	**26.98**	**0.00**	**0.00**	**26.99**

3.3 Grading 2 (SDI.B) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.08	0.58	0.39	0.00		0.04	0.04		0.04	0.04	0.00	57.33	57.33	0.01	0.00	57.47
Total	**0.08**	**0.58**	**0.39**	**0.00**	**0.00**	**0.04**	**0.04**	**0.00**	**0.04**	**0.04**	**0.00**	**57.33**	**57.33**	**0.01**	**0.00**	**57.47**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.20	0.10	0.00	0.36	0.01	0.36	0.00	0.01	0.01	0.00	23.65	23.65	0.00	0.00	23.66
Vendor	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.35	1.35	0.00	0.00	1.35
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.00	0.00	1.98
Total	**0.02**	**0.21**	**0.12**	**0.00**	**0.36**	**0.01**	**0.36**	**0.00**	**0.01**	**0.01**	**0.00**	**26.98**	**26.98**	**0.00**	**0.00**	**26.99**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.08	0.58	0.39	0.00		0.04	0.04		0.04	0.04	0.00	57.33	57.33	0.01	0.00	57.47
Total	**0.08**	**0.58**	**0.39**	**0.00**	**0.00**	**0.04**	**0.04**	**0.00**	**0.04**	**0.04**	**0.00**	**57.33**	**57.33**	**0.01**	**0.00**	**57.47**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.20	0.10	0.00	0.36	0.01	0.36	0.00	0.01	0.01	0.00	23.65	23.65	0.00	0.00	23.66
Vendor	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.35	1.35	0.00	0.00	1.35
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	1.98	0.00	0.00	1.98
Total	**0.02**	**0.21**	**0.12**	**0.00**	**0.36**	**0.01**	**0.36**	**0.00**	**0.01**	**0.01**	**0.00**	**26.98**	**26.98**	**0.00**	**0.00**	**26.99**

3.4 Paving - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.05	0.03	0.00		0.00	0.00		0.00	0.00	0.00	4.11	4.11	0.00	0.00	4.12
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.01**	**0.05**	**0.03**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**4.11**	**4.11**	**0.00**	**0.00**	**4.12**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.00	0.00	0.25
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.00	0.00	0.23
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.47**	**0.47**	**0.00**	**0.00**	**0.48**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.05	0.03	0.00		0.00	0.00		0.00	0.00	0.00	4.11	4.11	0.00	0.00	4.12
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.01**	**0.05**	**0.03**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**4.11**	**4.11**	**0.00**	**0.00**	**4.12**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.00	0.00	0.25
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.00	0.00	0.23
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.47**	**0.47**	**0.00**	**0.00**	**0.48**

3.5 Grading 3 (EC.E) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.85	2.85	0.00	0.00	2.86
Total	**0.00**	**0.03**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.85**	**2.85**	**0.00**	**0.00**	**2.86**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	1.33	0.00	0.00	1.33
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.12
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.00	0.11
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.56**	**1.56**	**0.00**	**0.00**	**1.56**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.85	2.85	0.00	0.00	2.86
Total	**0.00**	**0.03**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.85**	**2.85**	**0.00**	**0.00**	**2.86**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	1.33	0.00	0.00	1.33
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.12
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11	0.00	0.00	0.11
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.56**	**1.56**	**0.00**	**0.00**	**1.56**

3.6 Grading 4 (EC.BC) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	5.21	5.21	0.00	0.00	5.22
Total	**0.01**	**0.05**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**5.21**	**5.21**	**0.00**	**0.00**	**5.22**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	1.33	0.00	0.00	1.33
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.12
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.00	0.00	0.18
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.63**	**1.63**	**0.00**	**0.00**	**1.63**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.05	0.04	0.00		0.00	0.00		0.00	0.00	0.00	5.21	5.21	0.00	0.00	5.22
Total	**0.01**	**0.05**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**5.21**	**5.21**	**0.00**	**0.00**	**5.22**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	1.33	0.00	0.00	1.33
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.12
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.00	0.00	0.18
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.63**	**1.63**	**0.00**	**0.00**	**1.63**

3.7 Grading 5 (DB.E) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.20	0.00	0.20	0.11	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.31	2.69	1.33	0.00		0.12	0.12		0.12	0.12	0.00	252.25	252.25	0.03	0.00	252.78
Total	**0.31**	**2.69**	**1.33**	**0.00**	**0.20**	**0.12**	**0.32**	**0.11**	**0.12**	**0.23**	**0.00**	**252.25**	**252.25**	**0.03**	**0.00**	**252.78**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.11	1.19	0.61	0.00	2.56	0.05	2.60	0.01	0.05	0.05	0.00	143.71	143.71	0.00	0.00	143.81
Vendor	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.59	1.59	0.00	0.00	1.59
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.80	3.80	0.00	0.00	3.81
Total	**0.11**	**1.20**	**0.65**	**0.00**	**2.57**	**0.05**	**2.61**	**0.01**	**0.05**	**0.05**	**0.00**	**149.10**	**149.10**	**0.00**	**0.00**	**149.21**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.08	0.00	0.08	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.31	2.69	1.33	0.00		0.12	0.12		0.12	0.12	0.00	252.25	252.25	0.03	0.00	252.78
Total	**0.31**	**2.69**	**1.33**	**0.00**	**0.08**	**0.12**	**0.20**	**0.04**	**0.12**	**0.16**	**0.00**	**252.25**	**252.25**	**0.03**	**0.00**	**252.78**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.11	1.19	0.61	0.00	2.56	0.05	2.60	0.01	0.05	0.05	0.00	143.71	143.71	0.00	0.00	143.81
Vendor	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.59	1.59	0.00	0.00	1.59
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.80	3.80	0.00	0.00	3.81
Total	**0.11**	**1.20**	**0.65**	**0.00**	**2.57**	**0.05**	**2.61**	**0.01**	**0.05**	**0.05**	**0.00**	**149.10**	**149.10**	**0.00**	**0.00**	**149.21**

3.8 Grading 6 (DB.BC) - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	1.04
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.04**	**1.04**	**0.00**	**0.00**	**1.04**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	2.21	2.21	0.00	0.00	2.21
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.02
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.04
Total	**0.00**	**0.02**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**2.27**	**2.27**	**0.00**	**0.00**	**2.27**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.01	0.01	0.00		0.00	0.00		0.00	0.00	0.00	1.04	1.04	0.00	0.00	1.04
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.04**	**1.04**	**0.00**	**0.00**	**1.04**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	2.21	2.21	0.00	0.00	2.21

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.02
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.04
Total	**0.00**	**0.02**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**2.27**	**2.27**	**0.00**	**0.00**	**2.27**

3.8 Grading 6 (DB.BC) - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.14	0.10	0.00		0.01	0.01		0.01	0.01	0.00	14.59	14.59	0.00	0.00	14.63
Total	**0.02**	**0.14**	**0.10**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**14.59**	**14.59**	**0.00**	**0.00**	**14.63**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.23	0.12	0.00	0.13	0.01	0.14	0.00	0.01	0.01	0.00	31.03	31.03	0.00	0.00	31.05
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.00	0.00	0.34
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.49	0.00	0.00	0.49
Total	**0.02**	**0.23**	**0.12**	**0.00**	**0.13**	**0.01**	**0.14**	**0.00**	**0.01**	**0.01**	**0.00**	**31.86**	**31.86**	**0.00**	**0.00**	**31.88**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Off-Road	0.02	0.14	0.10	0.00		0.01	0.01		0.01	0.01	0.00	14.59	14.59	0.00	0.00	14.63
Total	**0.02**	**0.14**	**0.10**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**14.59**	**14.59**	**0.00**	**0.00**	**14.63**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.23	0.12	0.00	0.13	0.01	0.14	0.00	0.01	0.01	0.00	31.03	31.03	0.00	0.00	31.05
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.00	0.00	0.34
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.49	0.00	0.00	0.49
Total	**0.02**	**0.23**	**0.12**	**0.00**	**0.13**	**0.01**	**0.14**	**0.00**	**0.01**	**0.01**	**0.00**	**31.86**	**31.86**	**0.00**	**0.00**	**31.88**

3.9 Grading 7 (WQB.E) - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.05	0.00	0.05	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.07	0.58	0.29	0.00		0.03	0.03		0.03	0.03	0.00	58.21	58.21	0.01	0.00	58.33
Total	**0.07**	**0.58**	**0.29**	**0.00**	**0.05**	**0.03**	**0.08**	**0.03**	**0.03**	**0.06**	**0.00**	**58.21**	**58.21**	**0.01**	**0.00**	**58.33**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.23	0.12	0.00	0.13	0.01	0.14	0.00	0.01	0.01	0.00	31.00	31.00	0.00	0.00	31.02
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37	0.00	0.00	0.37

Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.86	0.00	0.00	0.86
Total	**0.02**	**0.23**	**0.13**	**0.00**	**0.13**	**0.01**	**0.14**	**0.00**	**0.01**	**0.01**	**0.00**	**32.23**	**32.23**	**0.00**	**0.00**	**32.25**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.02	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.07	0.58	0.29	0.00		0.03	0.03		0.03	0.03	0.00	58.21	58.21	0.01	0.00	58.33
Total	**0.07**	**0.58**	**0.29**	**0.00**	**0.02**	**0.03**	**0.05**	**0.01**	**0.03**	**0.04**	**0.00**	**58.21**	**58.21**	**0.01**	**0.00**	**58.33**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.02	0.23	0.12	0.00	0.13	0.01	0.14	0.00	0.01	0.01	0.00	31.00	31.00	0.00	0.00	31.02
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37	0.00	0.00	0.37
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.86	0.00	0.00	0.86
Total	**0.02**	**0.23**	**0.13**	**0.00**	**0.13**	**0.01**	**0.14**	**0.00**	**0.01**	**0.01**	**0.00**	**32.23**	**32.23**	**0.00**	**0.00**	**32.25**

APPENDIX D

Seismic and Geological Hazards Review

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

T R A N S M I T T A L

To: DUDEK
1650 Spruce Street, Suite 240
Riverside, CA 92507

Date: March 22, 2011
Project No: 603066-001

Attention: Ms. Stephanie Standerfer, Senior Project Manager

Transmitted:	***The Following:***	***For:***
X Mail/Overnight	____ Draft Report	X Your Use
____ Courier	X Final Report	____ As Requested
____ Pick Up	____ Extra Report	
	____ Proposal	
	____ Other	

Subject: Seismic and Geologic Hazards Review-Lakeland Village Master Drainage Plan (MDP) Riverside County, California

LEIGHTON CONSULTING, INC.

By: Simon I. Saiid, GE / Robert F. Riha, CEG

Copies to: (4) Addressee

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SEISMIC AND GEOLOGIC HAZARDS REVIEW
LAKELAND VILLAGE MASTER DRAINAGE PLAN (MDP)
RIVERSIDE COUNTY, CALIFORNIA

Prepared For:

DUDEK
1650 Spruce Street, Suite 240
Riverside, CA 92507

Project No. 603066-001

March 22, 2011

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

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March 22, 2011

Project No. 603066-001

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1650 Spruce Street, Suite 240
Riverside, CA 92507

Attention: Ms. Stephanie Standerfer, Senior Project Manager

Subject: Seismic and Geologic Hazards Review, Lakeland Village Master Drainage Plan (MDP), Riverside County, California

In accordance with your authorization, we have performed a seismic and geologic hazards review for the Environmental Impact Report (EIR) for the Lakeland Village Master Drainage Plan (MDP) located in Riverside County, California. This report summarizes our findings and conclusions related to potential seismic and geologic hazards within the MDP study area. The results of our review indicate that there are significant seismic/geologic constraints within the MDP study area. However, the overall MDP should be considered feasible from a geologic/seismic viewpoint provided site-specific geotechnical/geologic evaluations are performed to address the general concerns and constraints outlined in this report for each future drainage facility.

If you have any questions regarding this report, please do not hesitate to contact the undersigned. We appreciate this opportunity to be of service on this project.

Respectfully submitted,
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1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this report was to compile and summarize the known seismic and geologic hazards within the Lakeland Village MDP study area and provide an overview of the known typical geotechnical constraints that might be expected during future drainage improvements design and construction. More specifically, our scope for this report included the following:

- An overall geologic setting which includes a general description of the type of native soil, groundwater conditions, rock units and geologic structure.
- The potential geologic hazards within the MDP study area including mapped fault traces and County and/or State of California Alquist-Priolo Earthquake Fault Zone (AP Zone) within the MDP study area. Additionally, areas that are prone to liquefaction or dry seismic settlement, and other seismic hazards such as ground rupture, rock fall hazards, landslides, subsidence, Tsunamis and Seiches, are discussed.

1.2 MDP Location and General Description

The Lakeland Village MDP study area is generally located in southwest Riverside County, California. More specifically, the study area covers most of the east slopes of the elevated Santa Ana Mountains west of the City of Lake Elsinore (see Figure 1). The majority of the study area is comprised of undeveloped natural slopes and drainages descending toward Lake Elsinore. The low lying areas along the west side of the lake are generally developed and consist primarily of residential and local retail developments.

2.0 GEOLOGY

2.1 Regional Settings

The Lakeland Village MDP study area is generally located within the eastern slopes of the Santa Ana Mountains, west of the fault controlled Elsinore-Temecula trough, within the Peninsular Ranges geomorphic province of California. Tectonic uplift of the plateau and subsequent erosion has resulted in remnants of the Miocene-age Santa Rosa Basalt capping the underlying Cretaceous-age granodiorite bedrock in this area. Specifically, the MDP study area is situated along the western fringe of the fault controlled, down dropped graben, known as the Elsinore Trough (Kennedy, 1997). The Glen Ivey North Fault, along with other local faults, are part of the Elsinore Fault Zone, which extends form the San Gabriel Valley southeasterly to beyond the United States-Mexico border.

2.2 Area Geology

The area is underlain by numerous surficial deposits and/or bedrock units based on published geologic maps (Figure 2). The major surficial deposits and bedrock units that are most likely to be encountered during future developments are briefly described below:

- **Artificial Fill (not a mapped unit):** Artificial fills are generally referred to as undocumented fills or engineered (documented) fills. Undocumented fills are typically those fills that were placed without the review and testing of a geotechnical consultant. Engineered fills are those fills that were observed and tested by a geotechnical consultant. Most artificial fills within the MDP study area are expected to be engineered and placed during construction of existing public roads and private developments. The engineering characteristics and vertical or horizontal extent of these fills are site-specific.

- **Young Alluvial-Fan Deposits (map symbol Qyf):** These deposits generally consist of unconsolidated, bouldery, cobbley, gravelly, sandy, or silty alluvial fan deposits, and headward channel parts of alluvial fans.

- **Young Alluvial-Valley Deposits (map symbol Qyv):** These are active and recently active fluvial deposits along valley floors. These deposits consist of unconsolidated sandy, silty, or clay-bearing alluvium within the lower elevations and near the present Lake Elsinore.

- **Old Alluvial-Fan Deposits (map symbol Qof):** These deposits generally consist of reddish brown, gravel and sand alluvial fan deposits; indurated, commonly slightly dissected.

- **Pauba Formation (map symbol Qps):** The Pauba-sandstone formation (Pleistocene) is poorly to moderately well-indurated, extensively crossbedded, channeled and filled sandstone and siltstone that contains local intervening cobble-and-boulder conglomerate beds. This formation is generally found in the southern portion of the MDP study area.

- **Basalt of Elsinore Peak (map symbol Tvep):** This vesicular basalt flows overlies Paleogene sandstone and restricted to Elsinore Peak area(Miocene)

- **Granodiorite-undifferentiated (map symbol Kgd)**: This is a Cretaceous-age formation with intermediate composition granitic rocks, mainly biotite-hornblende and biotite granodiorite.

- **Heterogeneous granitic rocks (map symbol Khg)**: This unit generally comprises the majority of the high slopes along the western half of the study area. This Cretaceous-age formation includes heterogeneous, compositionally diverse granitic rocks mostly of tonalitic and granodiorite composition, but includes some monzogranite and gabbro.

- **Mesozoic metasedimentary rocks-undifferentiated (map symbol Mzu):** This quartz-bearing metasedimentary rocks, chiefly biotite schist; includes unknown Mesozoic metasedimentary rocks and rocks of other designated Mesozoic units.

2.3 Groundwater

Groundwater within the MDP study area is generally controlled by the overall Lake Elsinore Groundwater Basin which lies in a closed basin formed between strands of the Elsinore fault zone. Depending on rainfall and seasonal variation, shallow groundwater should be expected within the alluvial fan and valley deposits along Lake Elsinore. In addition, groundwater conditions should be anticipated within natural drainages at higher elevations and may also accumulate within layers of differing permeability, within bedrock fractures and at bedrock/fill contacts. Groundwater should flow generally from the surficial materials within the study area the adjacent mountains toward Lake Elsinore. Current levels in Lake Elsinore typically vary from elevation 1234 to 1244 Mean Sea Level (msl) depending on seasonal conditions.

3.0 SEISMIC/FAULTING CONSTRAINTS

3.1 General

Lakeland Village MDP, like the rest of Southern California, is located within a seismically active region as a result of being located near the active margin between the North American and Pacific tectonic plates. Based on published data (Blake, 2002a), the most significant known active Fault Zones that are capable of seismic ground shaking and can impact the MDP study area include (see also Figure 3):

- *Elsinore Fault Zone:* This fault zone, which includes the local Wildomar fault and Willard fault segments, pass through the eastern edge of the MDP study area. The Elsinore fault zone is capable of generating a Maximum Earthquake Magnitude (Mw) of 6.8 per the Richter scale.

- *San Jacinto Fault Zone:* This fault zone is located approximately 22 miles northeast of the MDP study area and capable of generating earthquakes in excess of 7.1 Mw.

- *Newport-Inglewood Fault Zone (offshore):* This fault zone is located approximately 28 miles west of the MDP study area and capable of generating earthquakes in excess of 6.9 Mw.

- *San Andreas Fault Zone (southern section):* This fault zone, located approximately 38 miles northeast of the MDP study area, is considered the dominant active fault in California. This fault zone is capable of generating earthquakes in excess of 7.4 Mw.

The Alquist-Priolo Hazards Act (A-P Act) passed by the State legislature in 1972 (renamed the Alquist-Priolo Earthquake Fault Zoning Act in 1994) established earthquake fault zones along faults considered by the State Division of Mines and Geology to be active or potentially active. An active fault is considered one which has experienced surface displacement within the last 11,000 years, while a potentially active fault is a fault which has moved during the past 1.6 million years but proven to have not moved within the past 11,000 years. Such displacement can be recognized by the existence of cliffs in alluvium, terraces, offset stream courses, the alignment of depressions, sag ponds, fault troughs and saddles, and the existence of markedly linear steep mountain fronts. However, some active faults are not visible at the surface and can only be located through detailed subsurface investigations.

The State Geologist designates seismic hazard zones and the State issues earthquake fault zone maps to assist cities and counties in avoiding the hazard of surface fault rupture. The State has identified one Alquist-Priolo Earthquake Fault zone within the MDP study area. The Wildomar

Segment of the Elsinore Fault Zone traverses the MDP study area in the far southeasterly portion of the study area (See Figure 3). The earthquake fault zones typically extend about 500 feet in width on either side of a major active fault trace and about 200 to 300 feet in width on either side of a well-defined minor active fault, as designated by the State. In addition to the State A-P Act, the County of Riverside has zoned fault systems and required similar special studies prior to land development. The Willard fault is within a Riverside County Earthquake Fault Zones (Figure 3). Development of a building for human occupancy is generally restricted within 50 feet of an identified fault (Riverside, 2003).

3.2 Fault Rupture

Faults throughout southern California have formed over millions of years. Some of these faults are generally considered inactive under the present geologic conditions. As indicated above, several State and County Faults systems are mapped within the MDP study area boundary and any proposed development or facility must investigate the potential for and setback from ground rupture hazards (Riverside County, 2003). This is typically accomplished by excavation of a trench across the site, determining the location of faulting, and establishing structural setbacks. Methods for the evaluation of site ground rupture are further presented in the California Geologic Survey Note 49 (CGS, 2002).

3.3 Ground Shaking

The intensity of earthquake ground shaking within the MDP study area varies from one location to another depending primarily upon the distance to the fault, the magnitude of the earthquake, and the site-specific geology. The effect of seismic shaking on future facilities should be evaluated based on site-specific seismic evaluations.

In order to provide a general description of ground shaking within the MDP study area, we performed a deterministic analysis using a computer program called EQFAULT (Blake, 2000a). Based on this analysis, the average peak site accelerations based on different attenuation relationships vary from approximately 0.53g near the lake (alluvium soil) to 0.63g along the western hilly side of the MDP area (rock conditions). A probabilistic analysis was also performed utilizing FRISKSP program (Blake, 2000b) to estimate peak ground accelerations with a 10 percent probability of exceedance in 50 years per the 2001 California Building Code (CBC). This analysis indicate that an average peak ground accelerations of 0.71g for sites near the lake (alluvium soils) and 0.81g for sites in the western hilly side of the MDP area (rock conditions) should be expected.

The 2007 CBC recommends that evaluation of liquefaction potential be performed based on a "Design Ground Motion" estimated from the "Maximum Considered Earthquake" defined as a seismic event having a 2 percent chance probability of exceedance in 50 year period. The "Design Ground Motion" is equivalent to two-thirds of the ground motion values estimated from the "Maximum Considered Earthquake." As such, an average peak ground accelerations of 0.53g is estimated for sites near the lake (D profile) and 0.49g for sites in the western hilly side of the MDP area (rock conditions, C profile).

3.4 Secondary Seismic Hazards

Ground shaking can induce "secondary" seismic hazards such as liquefaction and/or lateral spreading, landslides, rock falls, subsidence and ground fissuring. Areas of the MDP study area known to be at risk from these hazards have been mapped and shown on Figures 4 (Liquefaction Hazard Map).

3.4.1 Dynamic Settlement / Liquefaction and "Dry" Settlement

Liquefaction of saturated cohesionless soils can be caused by strong ground motion resulting from earthquakes. Soil liquefaction is a phenomenon in which saturated, cohesionless soils lose their strength due to the build-up of excess pore water pressure during cyclic loading such as that induced by earthquakes. The primary factors affecting the liquefaction potential of deposit are: 1) intensity and duration of earthquake shaking, 2) soil type and relative density, 3) overburden pressures, and 4) depth to groundwater. Soils most susceptible to liquefaction are clean, loose, uniformly graded, fine-grained sands, and non-plastic silts that are saturated. Silty sands, under certain site conditions, may also be susceptible to liquefaction. As depicted on Figure 4, most of the alluvial deposits lie within liquefaction hazard zone per County of Riverside (Figure 4) and require a site-specific evaluation for liquefaction hazard.

In addition to liquefaction settlement, dynamic densification of "dry" or moist soil above the water table can occur. The site-specific evaluation for future development should also include evaluation for settlement associated with dynamic densification of "dry" soils. To reduce the effects and magnitude of seismically-induced dynamic settlements, remedial grading measures or ground improvement techniques are normally implemented.

3.4.2 Lateral Spreading

The phenomenon of liquefaction may also produce lateral spreading of soils adjacent to a body of water or water course (Lake Elsinore). Lateral spreading is therefore considered as a liquefaction-induced ground failure whereby block(s) of surficial intact natural or artificial fill soils displace laterally downslope or towards a free face along a shear zone that has formed within the liquefied sediment (Bartlett and Youd, 1995). The

displacement of the ground surface associated with this lateral spreading may be on the order of several inches to several feet at the top of the slope and may affect areas well beyond the top-of-slope. Developments located further from the lake or drainage courses are anticipated to be at less risk from lateral spreading than those adjacent to the lake embankment. Detailed analyses of lateral spreading affects to properties adjacent to the lake edge and drainages should be performed by the geotechnical consultant on a site-by-site basis. To reduce the effects or magnitude of lateral spreading, remedial grading measures or ground improvement techniques are normally implemented.

3.4.3 Differential Subsidence and Ground Fissuring

Ground fissuring typically develops along previous established planes of weakness such as active and possibly potentially active fault traces as well as along steep buried contacts between bedrock to recent alluvial soils. The active Elsinore-Wildomar and the Willard fault may develop fissuring along the fault trace during a significant seismic event or groundwater elevation change. As such, there is a low to high potential for ground fissuring and associated differential subsidence along the active fault zones. If commercial water wells are installed within or near the subsidence zone, the potential for ground fissuring and differential settlement could be substantially increased.

3.4.4 Seiches

A seiche can results from a number of factors including wind-driven current, tides, variation in atmospheric pressures and ground shaking. A seiche is an oscillation of a landlocked body of water that can cause water damage to buildings, roads, and other facilities that surround the body of water (Lake Elsinore). It is expected that such hazard could be a concern for low lying areas within the MDP study area.

3.4.5 Flooding

Portions of the MDP study area lie within the boundaries of the FEMA 100-year flood plain. Potential flood hazard should be evaluated on a case-by-case basis during individual site developments. This report does not address such flood hazard risk.

3.4.6 Landslides

The potential for earthquake related landsliding within the MDP study area limits is based on known conditions and published geologic maps. The State Seismic Hazard Zones (CGS, 2007) provides locations of previous known landsliding or where local conditions indicate a potential for ground displacements. Site-specific geologic review should be performed to determine whether the potential for landsliding or slope instability exists for any future facility.

3.4.7 Rock Fall Hazards

The potential for rock fall due to natural weathering and instability or rock falls due to a seismic event are possible in local areas of the MDP study area. The hazard areas are limited to those where rocks and boulders exist, either within the site, or upslope. Site-specific geologic review should be performed to evaluate such hazard and provide appropriate corrective measures. To reduce the potential effects from rock falls in these areas, mitigation may include avoidance, rock removal, anchoring or catchment devises.

4.0 CONSTRUCTION CONSIDERATIONS

4.1 Grading and Earthwork Considerations

Grading and earthwork construction for future facilities within the MDP study area should conform to Standard Specifications for Public Works Construction (Greenbook) and/or County grading ordinances. Site-specific earthwork and grading specifications should be developed by the geotechnical consultant for each site. The following are typical earthwork considerations for the MDP study area:

4.1.1 Remedial Grading

Remedial grading requirements for any given site are determined based on a site-specific geotechnical investigation to provide stable ground for any proposed structures. Generally, the upper weathered formational materials or loose soils are removed until dense, relatively "non-compressible" soils (alluvium or Formation materials) are encountered. This remedial removal will typically reduce the adverse impact of the static or dynamic settlements on settlement-sensitive facilities.

4.1.2 Suitability of Native Soils for Fills

Topsoil and vegetation layers, root zones, and similar surface materials are typically not suitable for re-use as engineered fill and normally striped and stockpiled for either re-use in landscape areas or removed from the site. Most alluvial materials and bedrock materials are considered suitable for re-use as compacted engineered fills. However, excavations in the bedrock materials may generate oversize materials that are difficult to handle in engineered fills. Typically, cobbles and boulders larger than 6-inches in diameter are not placed in structural fill under settlement-sensitive improvements and may require special handling and grading procedures.

4.2 Site- Specific Geotechnical / Geologic Evaluation

Site-specific geotechnical evaluations should be performed to address the geologic and seismic concerns and provide recommendations to mitigate for such potential hazards as outlined in this report. The geotechnical evaluation should include a review of published geologic maps, aerial photographs, site-specific field explorations (borings and/or trenches), and appropriate laboratory testing on representative soils samples to generate basis for site grading, foundation design and mitigative measures. The State of California has prepared guidelines for the evaluation and mitigation of seismic hazards (http://www.conservation.ca.gov/cgs/shzp/webdocs/Documents/sp117.pdf).

4.3 Fault Investigation

As indicated in previous sections of this report, site-specific fault investigation with respect to development located within the mapped Fault Zones (Figure 3) should be completed as necessary. However, fault investigations within other parts of the MDP study area may also be deemed necessary by the geologic consultant. The location of the fault(s) should be determined within the project site in order to establish fault setback recommendations for buildings/structures as per State guidelines. The location(s) of active faults and recommended structure setbacks limits should be surveyed and presented on the site development plan prepared by the project civil engineer. The State of California has prepared guidelines for the evaluation of surface fault rupture (http://www.conservation.ca.gov/cgs/information/publications/cgsnotes/note49/Documents/note49.pdf).

5.0 LIMITATIONS

This report was prepared solely for Dudek Consulting on behalf of the Riverside County Flood Control and Water Conservation District and their design team, solely for their preparation of the Project Environmental Impact Report (EIR). This report was prepared in accordance with generally accepted geologic and geotechnical engineering practices at this time in California. No warranty is expressed or implied.

This report was necessarily based in part upon data obtained from a review of available reports, analyses, histories of occurrences, and limited information on historical events and observations. Such information is necessarily incomplete. It is understood that site-specific subsurface geotechnical data is necessary for future developments. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can, and do, occur over time.

This report is not authorized for use by, and is not to be relied upon by any party except, Dudek Consulting on behalf of the Riverside County Flood Control and Water Conservation District with whom Leighton Consulting, Inc. has contracted for the work. Use of or reliance on this report by any other party is at that party's risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify Leighton Consulting, Inc. from and against any liability which may arise as a result of such use or reliance, regardless of any fault, negligence, or strict liability of Leighton Consulting, Inc.

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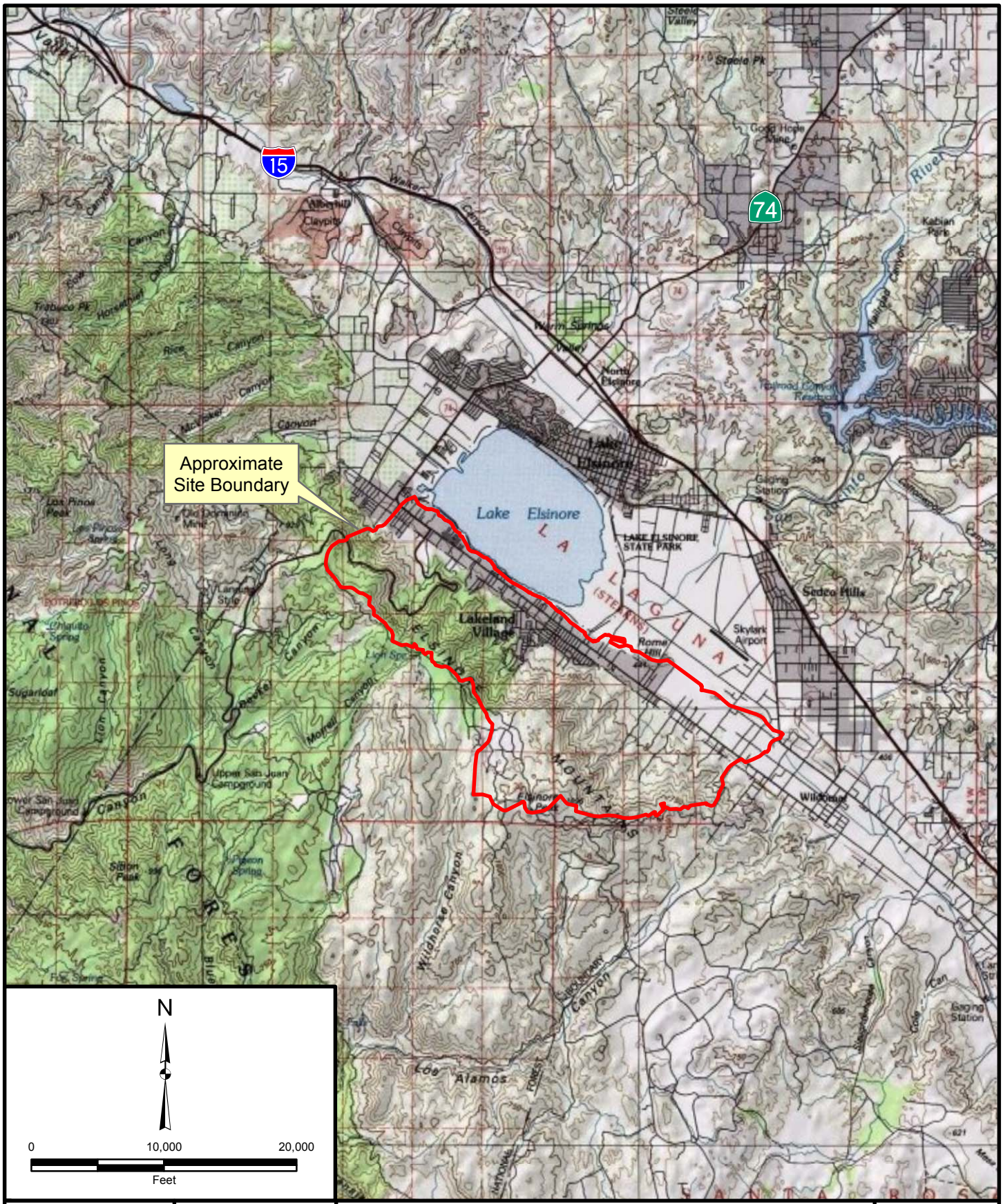

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Scale: 1 " = 10,000 '	Date: March, 2011

Base Map: ESRI Resource Center, 2010
Thematic Info: Leighton
Author: (mmurphy)

SITE LOCATION MAP

Lakeland Village MDP
Lake Elsinore, CA

Figure 1

Leighton

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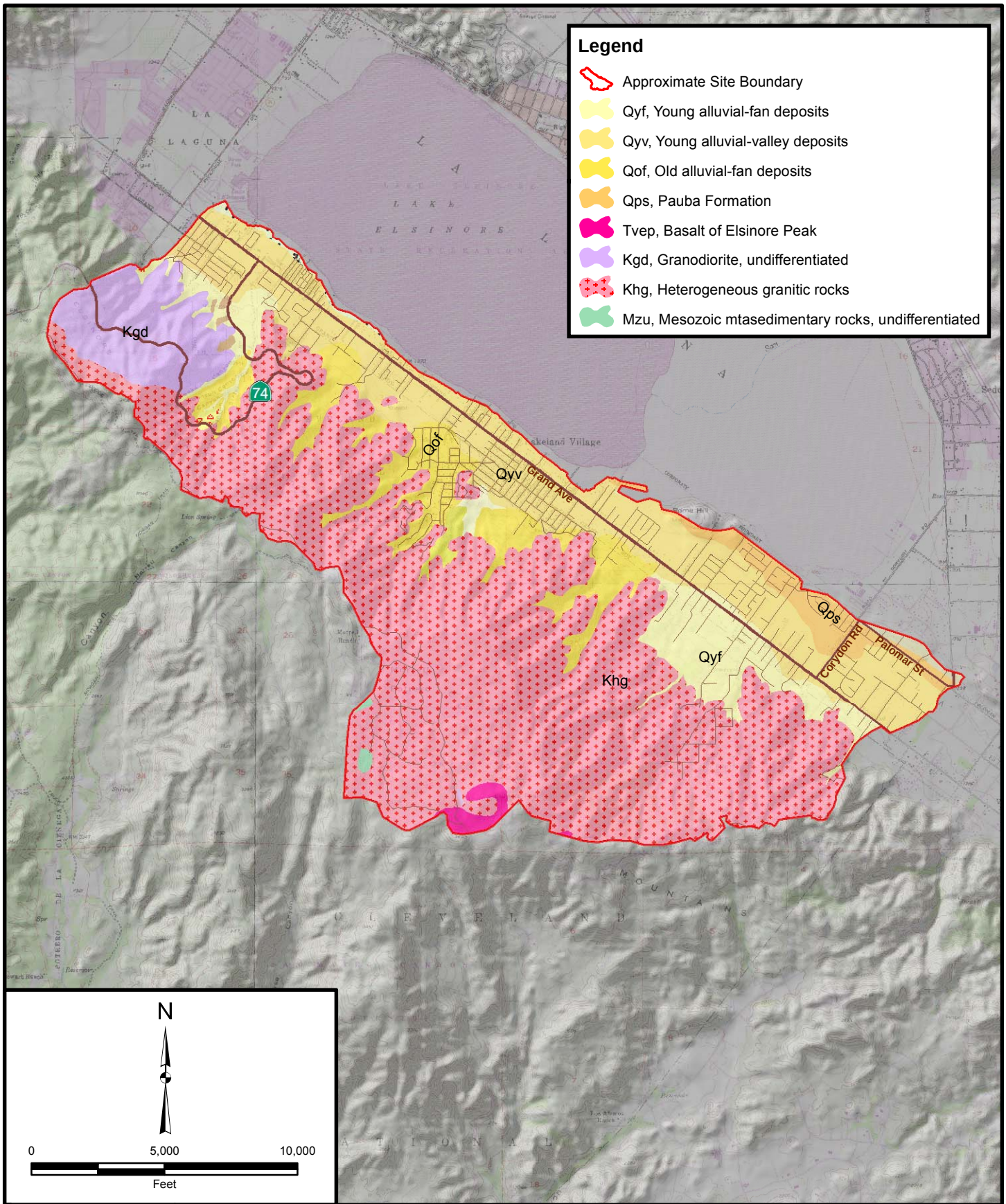

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Thematic Info: USGS Geology, Santa Ana San Bernardino Quad; Leighton
Author: (kmanchikanti)

REGIONAL GEOLOGY MAP
Lakeland Village MDP
Riverside County, California

Figure 2

Leighton

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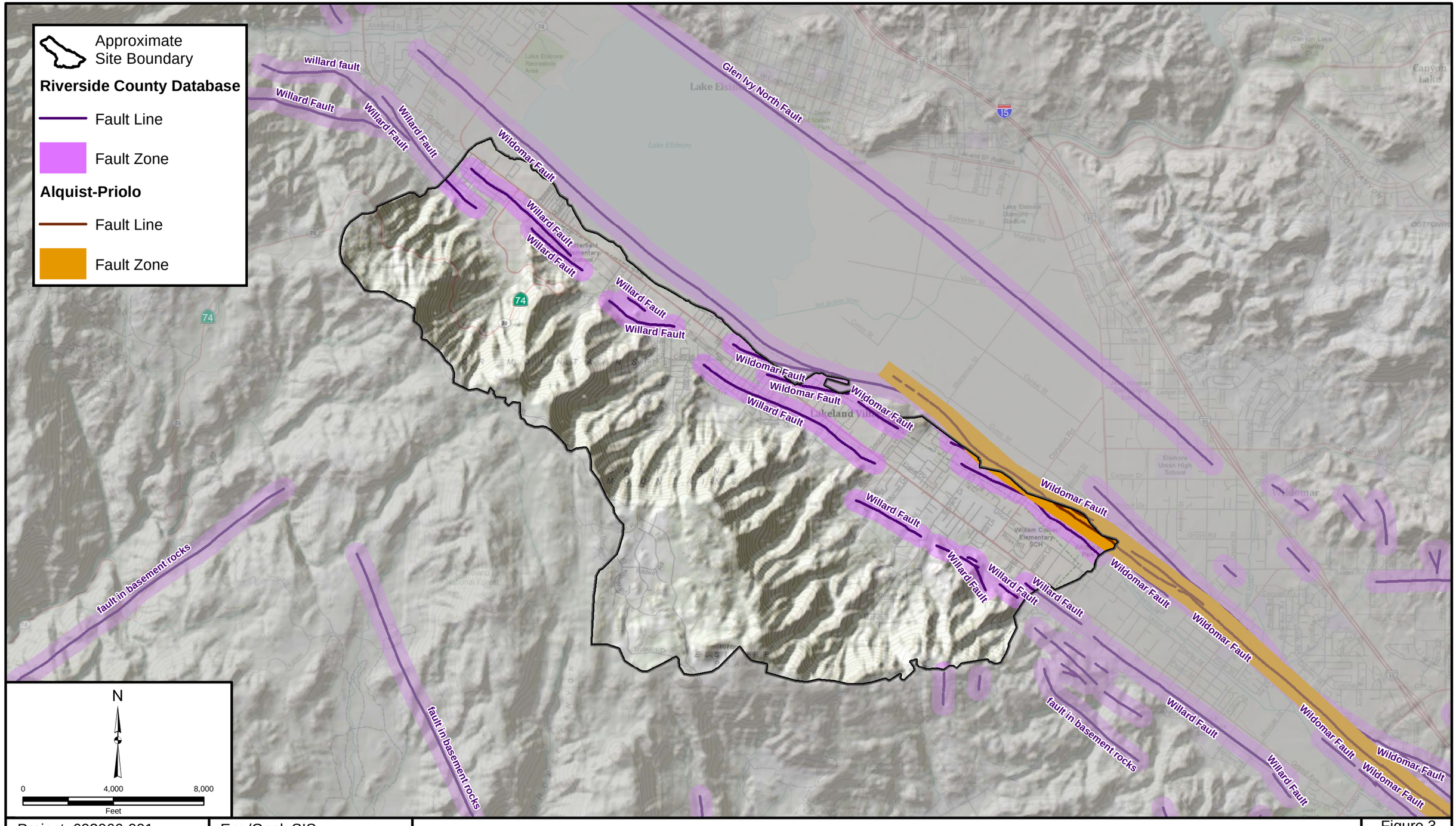

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Author: (mmurphy)

FAULT HAZARD MAP

Lakeland Village MDP
Riverside County, California

Figure 3

Leighton

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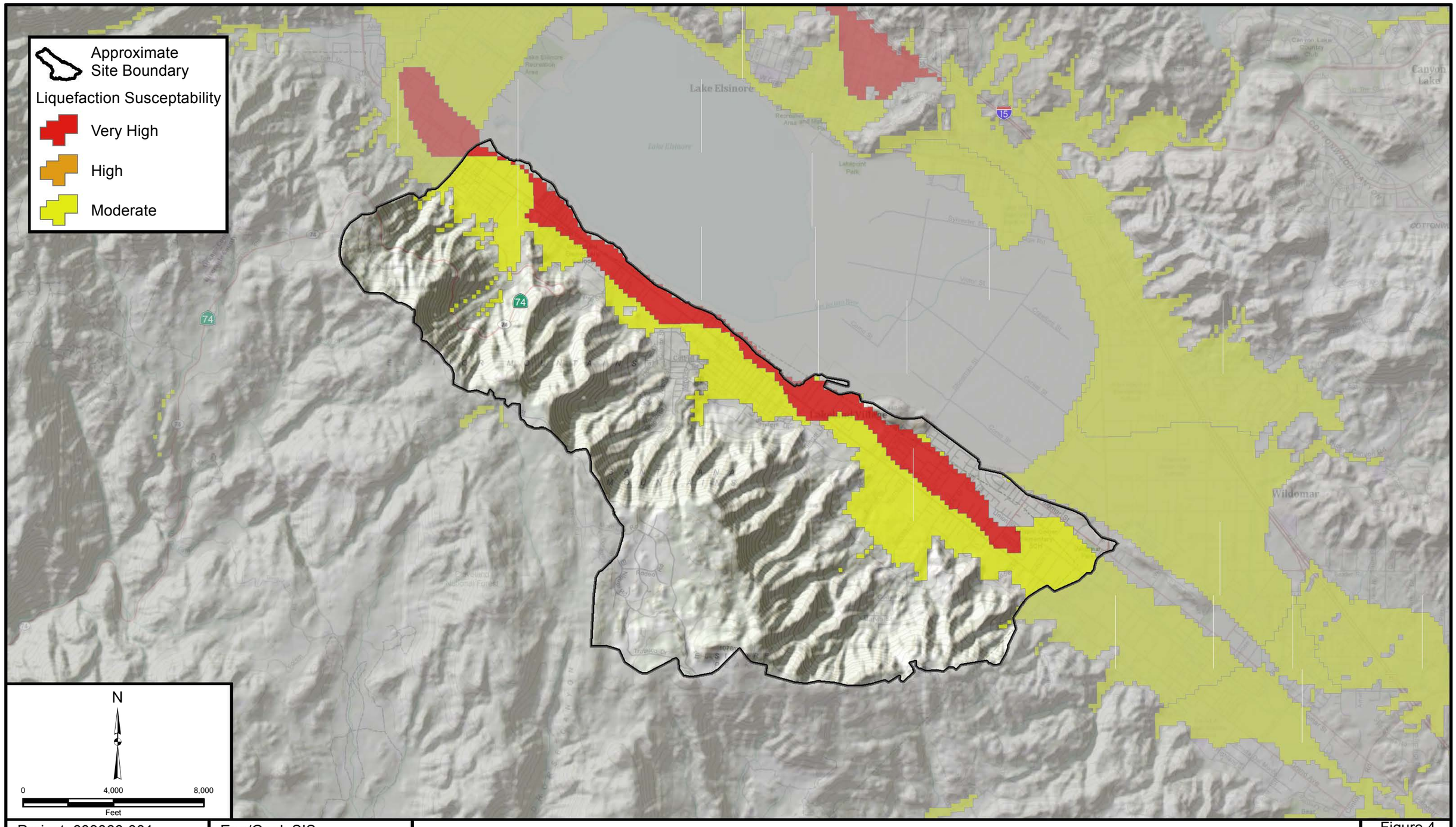

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Scale: 1 " = 4,000 '	Date: March, 2011

Base Map: Aerials Express, 2008
Thematic Info: Riverside County; Leighton
Author: (kmanchikanti)

LIQUEFACTION HAZARD MAP

Lakeland Village MDP

Riverside County, California

Figure 4

Leighton

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