Appendix 5.4

Biological Resources Appendices

Appendix 5.4A

Biological Technical Report for the Entrada South Site

Dudek

April 2015

Biological Technical Report for the

Entrada South Site

Los Angeles County, California

APRIL 2015

PREPARED FOR:

The Newhall Land and Farming Company
25124 Springfield Court, Suite 300
Valencia, California 91355

PREPARED BY:

Dudek
25124 Springfield Court, Suite 210
Valencia, California 92024

BIOLOGICAL TECHNICAL REPORT
for the
Entrada South Site
Los Angeles County, California

Prepared for:

The Newhall Land and Farming Company
25124 Springfield Court, Suite 300
Valencia, California 91355
Contact: Alex Herrell

Prepared by:

DUDEK
25124 Springfield Court, Suite 210
Valencia, California 91355
Contact: Sherri Miller, Kathleen Dayton, Dave Compton

APRIL 2015

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1 INTRODUCTION

The 501.4-acre Entrada South Project (or Project) is a proposed residential and commercial development on unincorporated land owned by The Newhall Land and Farming Company (the Applicant). The Project Site is located just west of Interstate 5 (I-5) and the City Santa Clarita, and immediately south of the Six Flags Magic Mountain theme park in northwestern Los Angeles County (the County) (Figures 1 and 2). The Project Site is currently undeveloped land, but about 26% of the site (approximately 130 acres) has been previously altered by oil extraction activities, agriculture and other manmade disturbances.

1.1 Environmental Planning Background and Regional Context

This biological technical report (BTR) provides the technical information for biological resources in support of the Entrada South Environmental Impact Report (EIR), which constitutes the first County assessment of the environmental impacts of the Entrada South Project.

Several regional planning efforts or projects have occurred in the Project vicinity in the recent past that are relevant to or provide contextual information for the Entrada South Project:

- Newhall Ranch Specific Plan EIR (March 1999), with Revised Additional Analysis (May 2003).
- Environmental Impact Statement (EIS/EIR for the Newhall Ranch Resources Management and Development Plan/Spineflower Conservation Plan (RMDP/SCP) project (U.S. Army Corps of Engineers (Corps) and California Department of Fish and Game (CDFG) 2010).
- Natural River Management Plan (NRMP) (Corps and CDFG 1998)
- Santa Clarita Valley Area Plan One Valley One Vision (OVOV).

The Entrada South Project Site also includes 192 acres of External Map Improvements that overlap with a portion of the Mission Village Project Site located immediately to the west, and to a small extent with the Westridge Project to the south. These External Map Improvements will be developed either by the Mission Village Project (as part of the Newhall Ranch Specific Plan area) or by the Entrada South Project, whichever occurs first.

1.1.1 Newhall Ranch Specific Plan EIR

The Newhall Ranch Specific Plan Program EIR (1999, 2003) included the Applicant's lands immediately west of the Entrada South site as well as a small portion of the Project Site that overlaps with the Mission Village Project Site within the Specific Plan area. As a result, the Specific Plan EIR analyzed (1) biological resources on lands on and adjacent to Entrada South,

and (2) biological resources of very similar character (i.e., vegetation communities, topography, and soils) to the biological resources on Entrada South. This BTR incorporates the results of the many biological studies conducted in the Specific Plan area since 1988 (see summary of studies reviewed for this BTR in Table 2). The approved Specific Plan also sets forth a comprehensive set of plans, development regulations, design guidelines, and implementation programs to develop the Specific Plan site, consistent with the goals, objectives, and policies of the Los Angeles County General Plan and Santa Clarita Valley Area Plan, as amended by General Plan Amendment No. 94-087-(5) (approved May 27, 2003). Although the Entrada South Project is not directly subject to the Specific Plan, the proposed Project will incorporate similar approaches to evaluating and mitigating significant impacts to biological resources on the site resulting from Project implementation.

1.1.2 RMDP/SCP

In 2010, the Corps and CDFG[1] approved the EIS/EIR for the RMDP/SCP Project (Corps and CDFG 2010; Figure 3). The RMDP/SCP Project consists of two components. The first is the RMDP, which is a conservation, mitigation, and permitting plan for sensitive biological resources within the RMDP Project area. The Applicant relied on the RMDP to obtain federal and state permits for implementing certain infrastructure and facilities required to build out the approved Specific Plan, Entrada South, and Valencia Commerce Center (VCC). Those facilities included the Magic Mountain Parkway extension through the Specific Plan area and Entrada South to Interstate 5 (I-5). The RMDP directs both resource management and development within the RMDP area, as shown on Figure 2.0-3 of the EIS/EIR. The second component is the Spineflower Conservation Plan (SCP), which is a conservation and management plan to permanently protect the San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*, "spineflower"), a federal candidate and state-listed endangered species, through an actively managed system of preserves. The SCP addresses known spineflower populations located within the Specific Plan area, and at study areas located at VCC and Entrada South.

[1] The California Department of Fish and Game (CDFG) was officially renamed the California Department of Fish and Wildlife (CDFW) as of January 1, 2013. Where references are made in this document to the department for background information, documents, permits, consultations, etc. prior to January 1, 2013, the title CDFG is used and after January 1, 2013, CDFW is used.

SOURCE; Shaded Relief 2015

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FIGURE 1
Regional Map

Biological Technical Report for the Entrada South Site

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SOURCE: USGS 7.5-Minute Series Newhall and Val Verde Quadrangle

FIGURE 2
Vicinity Map

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Biological Technical Report for the Entrada South Site

\\DUDEK-FILES\GIS\Data\Projects\8738\012013_Scopes\MAPDOC\GIS_RMaps\212_EntradaSouth_BTR_EIR\2013_October_Draft\Figure 2 Vicinity.mxd

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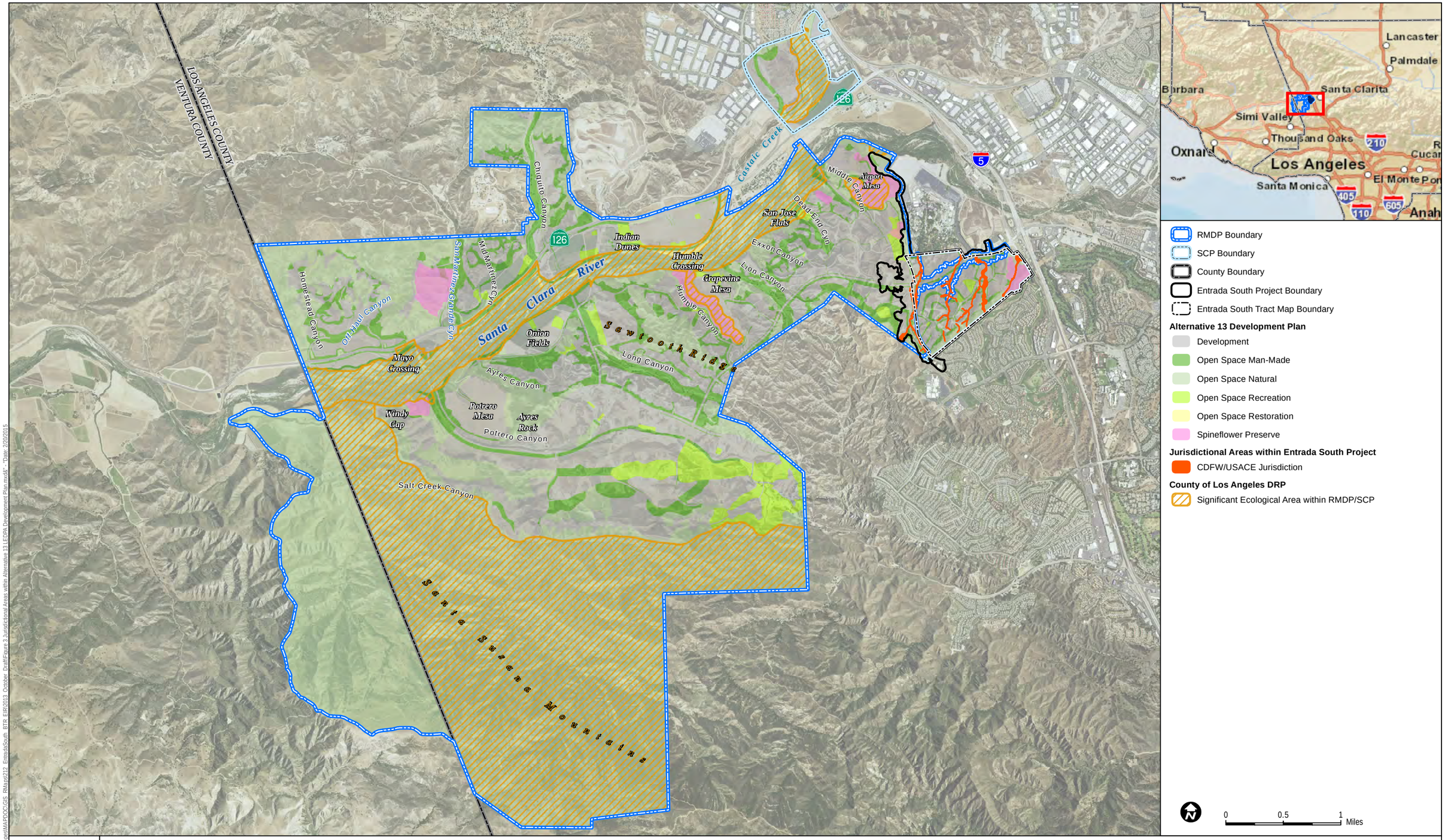

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SOURCE: NAIP 2014

FIGURE 3

Entrada South Site Jurisdictional Areas within Alternative 13 LEDPA Development Plan

Z:\Projects\0730\01\2013_Scopes\MAP\DOC\GIS_RMaps\212_EntradaSouth_BTR_EIR\2013_October_Draft\Figure 3 Jurisdictional Areas within Alternative 13 LEDPA Development Plan.mxd& - "Date: 2/20/2015

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Because the infrastructure components of the RMDP would facilitate development of the Specific Plan and Entrada South (i.e., Magic Mountain Parkway extension and related drainages), and because such development would result in impacts to the spineflower, which necessitated the SCP and an Incidental Take Permit (ITP), the Corps and CDFG elected to prepare a comprehensive EIS/EIR. This document analyzed (1) the direct environmental impacts of the RMDP's infrastructure/facilities (bank stabilization, roads, bridges, etc.); (2) the direct impacts of the SCP and ITP for spineflower; (3) the indirect impacts from those residential, commercial, and non-residential projects that would be facilitated by the RMDP/SCP Project (i.e., Specific Plan, Entrada South, and VCC); and (4) the secondary impacts that could occur outside the development footprints of such facilitated projects. Thus, Entrada South was among the projects whose overall impacts were evaluated in the EIS/EIR.

The EIS/EIR, along with its technical appendices, provided the most up-to-date analysis of existing biological conditions within the RMDP/SCP area, including those within the Entrada South Project Site as of 2010. It is based on more than 100 biological surveys conducted over a span of 22 years, as described later in this BTR. In addition, the EIS/EIR includes extensive discussions of the life histories of each special-status species that exists or has the potential to exist within the RMDP/SCP area, including the Entrada South Project Site. Further, it also evaluates impacts from the projects facilitated by the RMDP/SCP, including to: (1) vegetation communities and land covers; (2) wildlife movement, including live-in habitat linkages, travel corridors, and wildlife crossings; (3) common plant and wildlife species; and (4) special-status plant and wildlife species. Entrada South's impacts are also included in the EIS/EIR's cumulative impacts analysis. Where biological impacts are caused by non-biological factors, such as hydrology or noise, the EIS/EIR evaluates those effects as well. Finally, Entrada South's impacts are factored into the RMDP/SCP mitigation measures, including those that establish ratios for habitat preservation, enhancement, restoration, and creation. Since the EIS/EIR was completed in 2010, several additional biological surveys have been conducted both on the Entrada South Project Site and in the immediate Project vicinity:

- Vegetation mapping updates in 2012
- Focused botanical surveys in 2012
- Focused surveys for the federally listed coastal California gnatcatcher (*Polioptila californica californica*), the special-status grasshopper sparrow (*Ammodramus savannarum*), and other wildlife in 2012
- Focused surveys for special-status bats in 2012
- Waters (including wetlands) jurisdictional delineation in 2012.

These more recent studies are described later in this BTR.

While the EIS/EIR provides important impact information from a resource planning context, it is important to note that this BTR does not incorporate by reference the EIS/EIR. Nor does this BTR "tier" from the EIS/EIR. This BTR is a stand-alone document. Nevertheless, the studies supporting the EIS/EIR, in addition to studies conducted since 2010, are used in this BTR when they contain the best available information on biological resources on the Entrada South Project Site and in the Project region. These studies conducted up to 2010 also provided the foundation for the RMDP/SCP mitigation strategy, which is now part of the conservation and special management preserve system in the Santa Clara River Watershed, at least with respect to lands owned by the Applicant.

As part of the RMDP/SCP Project, the Applicant requested and obtained from CDFG ITPs for spineflower and three other special-status species: the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), southwestern willow flycatcher (*Empidonax traillii extimus*), and least Bell's vireo (*Vireo bellii pusillus*) (i.e., "Covered Species"). Newhall and CDFG also entered into a Master Streambed Alteration Agreement (MSAA) for Project-related changes to the Santa Clara River and its tributaries. In addition, Newhall obtained from Corps a Clean Water Action Section 404(b)(1) permit, following review and approval of its Least Environmentally Damaging Practical Alternative (LEDPA). Note that the analysis on which the MSAA and LEDPA approvals were granted covered Project impacts to jurisdictional waters located within the Entrada South Project Site.

The LEDPA process resulted in a Final Newhall Ranch Project LEDPA that was a modified version of the Draft LEDPA described in the Final RMDP/SCP EIS/EIR (Carpenter 2011). The Final LEDPA avoids an additional 18.4 acres of waters of the United States compared to the Draft LEDPA, primarily by reconfiguring development in Potrero Canyon and relocating development in San Martinez Grande Canyon (thus allowing bank stabilization to occur entirely in upland areas).

Note also that the LEDPA, in response to input from CDFG, provides for increased spineflower preserve acreage by adding two new spineflower preserves—the Magic Mountain and Spring preserves. Finally, the LEDPA provides for larger riparian corridors within five major tributaries: lower Potrero Canyon (by eliminating Potrero Canyon Bridge); Long Canyon (new channel construction); and in Lion, San Martinez Grande, and Chiquito Canyons by incorporating limited channel grading to expand the drainages and adjacent riparian areas and realign their banks. Of the total 660.1 acres of waters of the United States present on the RMDP site, the LEDPA would avoid permanent or temporary impacts to approximately 87% (576.9 acres), compared to 85% avoidance for the Draft LEDPA. The Section 404 Individual Permit (IP) based on the LEDPA authorized fill of approximately 47.9 acres of the Corps-jurisdictional waters of the United States and temporary disturbance of 35.3 acres.

The MSAA and IP authorized the conversion to buried storm drain of Magic Mountain Canyon (6,111 linear feet), Unnamed Canyon 1 (4,647 linear feet), and Unnamed Canyon 2 (416 linear feet). The IP authorized the fill of 7.21 acres of Corps-jurisdictional non-wetland waters, and the MSAA authorized the fill of 7.38 acres of CDFG-jurisdictional streambed associated with the extension of Magic Mountain Parkway through the Entrada South Project Site.

However, the MSAA did not cover jurisdictional impacts associated with the residential and commercial development portions of the Entrada South Project. The Entrada South Project would result in impacts to 14.68 acres of CDFW-jurisdictional streambed, only 7.38 acres of which are covered under the existing MSAA. Therefore, impacts to approximately 7.3 acres would have to be covered under a new permit or streambed alteration agreement for Entrada South. Likewise, the Entrada South Project would result in impacts to 8.01 acres of waters of the United States, only 7.21 acres of which are covered under the existing IP. Therefore, the Applicant will have to obtain a new permit for Entrada South to cover the remaining 0.8 acre of impacts to waters of the United States.

With respect to spineflower, surveys conducted for the EIS/EIR documented that the Entrada South Project Site supports populations of the species. Newhall is authorized to disturb spineflower on Entrada, but only if such disturbance is consistent with the SCP and covered under the approved spineflower ITP. The SCP requires, among other things, that Newhall establish a spineflower preserve system comprised of the major population areas within Newhall's holdings. One of the preserves is located on the Entrada South Project Site and consists of 1.04 acres of occupied spineflower habitat, 16.36 acres of unoccupied habitat, and 9.79 acres of buffer, for a total preserve area of 27.19 acres.

Taking into consideration the extensive environmental planning context, this BTR includes a description and evaluation of known and potential biological resources on the Project Site and analyzes impacts to these biological resources pursuant to the California Environmental Quality Act (CEQA) and the County requirements. Based on the identification of significant impacts to biological resources, this BTR recommends mitigation measures that would reduce these impacts to less than significant. This BTR recommends that some mitigation measures identical or substantially similar to RMDP/SCP mitigation measures be adopted as part of the Entrada South Project.

1.1.3 Natural River Management Plan

The NRMP (Corps and CDFG 1998) was prepared for the Valencia Company, a wholly owned subsidiary of the Applicant, for approximately 15 miles of the Santa Clara River main channel and tributaries in the Santa Clarita Valley. The NRMP provides a "long-range management plan" to protect the river and its natural functions, while identifying acceptable development along the

river and its two major tributaries. The NRMP study area covered the reach of the Santa Clara River from approximately Saugus to downstream of the confluence with Castaic Creek, where it overlaps with the RMDP. The NRMP requires the Applicant to place wetlands and riparian lands into a conservation easement upon completion of the Valencia development project. The Applicant obtained approval of the NRMP in 1998 (Corps and CDFG 1998). The NRMP and RMDP are to be implemented in a coordinated and complementary fashion. Although regulatory permits associated with the NRMP and RMDP do not apply to the Entrada South Project (with the exception of the extension of Magic Mountain Parkway through the Entrada South Project Site as noted above), this BTR evaluates the potential effects of the Entrada South Project on the NRMP and RMDP.

1.1.4 Santa Clarita Valley Area Plan One Valley One Vision

The OVOV component of the 2010 Santa Clarita Valley Area Plan was prepared by the Los Angeles County Department of Regional Planning in 2012 (County of Los Angeles 2012). The 2010 Santa Clarita Valley Plan (adopted by the Board of Supervisors on November 27, 2012) itself is a component of the Los Angeles County General Plan that focuses on development in the unincorporated portions of the Santa Clarita Valley, and replaces the Santa Clarita Valley Plan adopted by the Board of Supervisors in 1984, as amended in 1990. The 2010 Santa Clarita Valley Plan is intended to guide planning for an approximately 20-year period, and includes background maps, goals, and policies for land use and circulation planning, and policy-level discussions of other issues such as open space preservation, trail planning, hillside development, and historic preservation. OVOV, which covers approximately 250.2 square miles (or 160,128 acres), is a joint planning effort of the County of Los Angeles Board of Supervisors and the Santa Clarita City Council that recognizes the need for coordinated land planning, including common goals and objectives for the valley and conservation and management of natural resources. Implementation of OVOV policies within unincorporated areas of the valley, including the Entrada South Project Site, will be managed by the County of Los Angeles as part of its General Plan, which will include zoning regulations and guidance for new development.

2 PROJECT SETTING

2.1 Project Location

The 501.4-acre Project Site is located in an unincorporated portion of the Santa Clara River Valley in northwestern Los Angeles County (Figure 1). The Project Site lies just west of I-5 and the City of Santa Clarita and south of the Santa Clara River and the Six Flags Magic Mountain theme park (Figure 2). The Project Site is located in the U.S. Geological Survey (USGS) 7.5-minute Newhall quadrangle map, Township 4 North, Range 16 West, and generally in Sections 19, 20 and 30.

The Project region is located in a broad ecological and biogeographic transition zone for the coastal and mountain ecoregions. This alluvial Santa Clara River Valley also provides access via the Santa Clara River to the edges of the Mojave Desert and the foothills of the San Gabriel Mountains. While much of the region has been subject to rapid urbanization and historical agricultural and oil development practices, large areas of open space and natural lands border the region. The Los Padres National Forest is located to the north of the Project Site and the Angeles National Forest lies to the north and east. The Santa Susana Mountains, a region of gently rolling hills and sharp, steep walled canyons, is south of the Project Site.

2.2 Climate

The Project region has a Mediterranean climate with cool, wet winters and hot, dry summers. Rainfall occurs primarily between October and March, with the heaviest rainfall occurring in mountainous regions in the Angeles and Los Padres national forests. According to the Piru 2 ESE weather station in Los Angeles County, the mean annual rainfall for the region is 17.4 inches of rain per year (WRCC 2012); however, some portions of the region remain in the rain shadow of the Santa Susana Mountains and receive considerably less rainfall than areas north of the Santa Clara River.

2.3 Geology

The Project Site is located within the Transverse Range geomorphic province of southern California in the eastern portion of the Ventura depositional basin. This basin was produced by tectonic downwarping in the geologic past to produce a large-scale synclinal structure in which a thick sequence of Cenozoic sediments has accumulated. These sediments have been lithified into a sequence of sedimentary rock that has subsequently been uplifted, tilted, and tectonically deformed. They are cut by segments of the Del Valle and Salt Creek faults. Bedrock formations found in the area include the Modelo, Towsley, Pico, Saugus, and Pacoima formations, as well as Quaternary Terrace deposits. Surficial deposits found in the area include Quaternary alluvium, slopewash, soil, and artificial fill (Allan E. Seward Engineering Geology, Inc. 2002, 2004).

2.4 Soils

Soils mapping is from the U.S. Department of Agriculture (USDA) Soil Survey, Antelope Valley Area (USDA 2015a) and the USDA Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO) database (USDA 2015b). The soils on and immediately adjacent to the Project Site are shown in Figure 4 and listed in Table 1.

Table 1
Soils on and Adjacent to the Entrada South Site

Soil Mapping Unit	Acres
Castaic-Balcom silty-clay loams (30% to 50% slopes)	320.5
Hanford sandy loam (2% to 9% slopes)	0.4
Metz loam (2% to 5% slopes)	29.1
Mocho loam (0% to 2% slopes)	9.0
Mocho loam (2% to 9% slopes)	9.5
Saugus loam (30% to 50% slopes)	72.8
Sorrento loam (2% to 5% slopes)	19.6
Yolo loam (0% to 2% slopes)	0.3
Yolo loam (2% to 9% slopes)	33.6
Zamora loam (9% to 15% slopes)	6.6

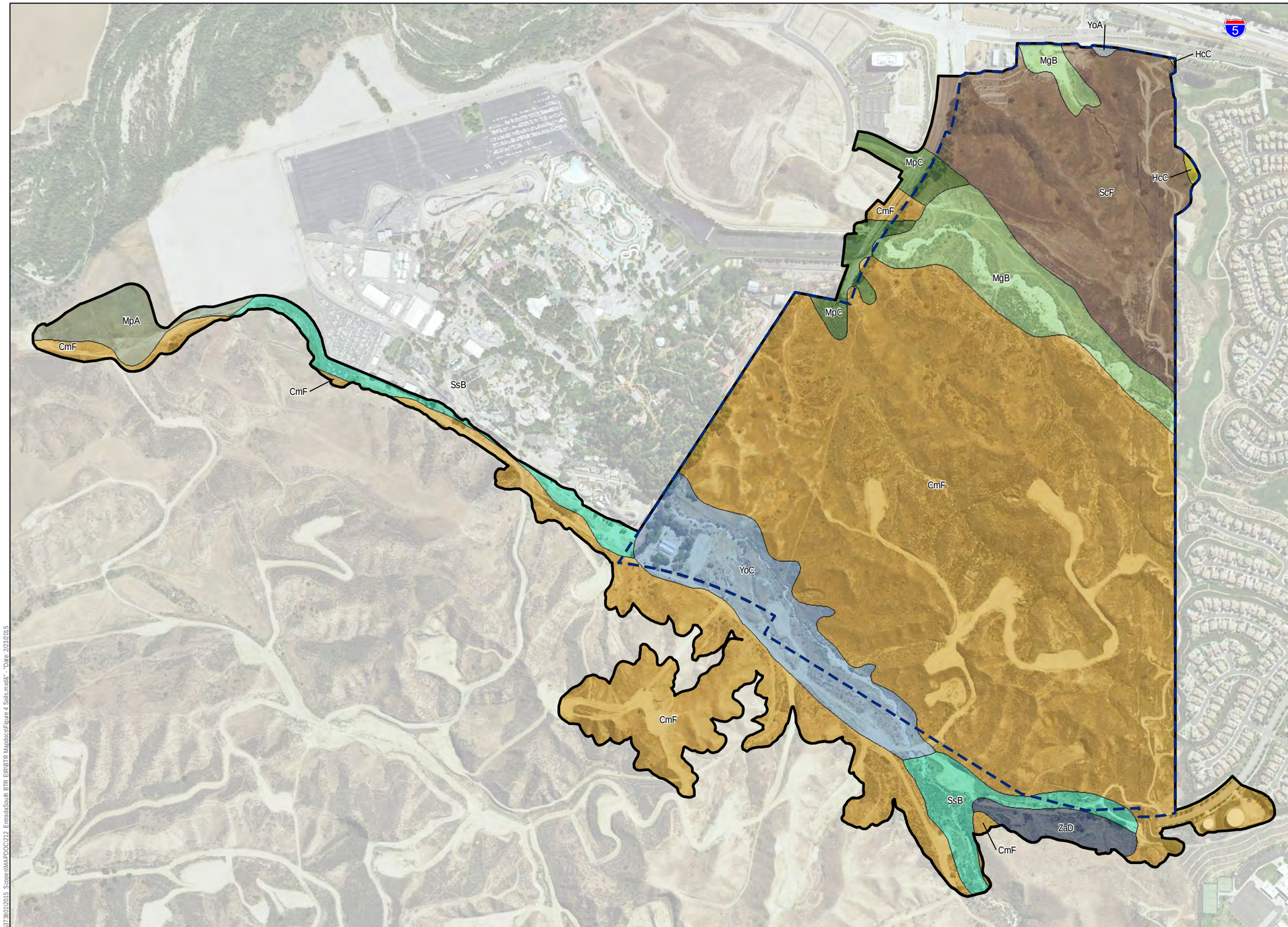
Source: USDA 2015a, 2015b.

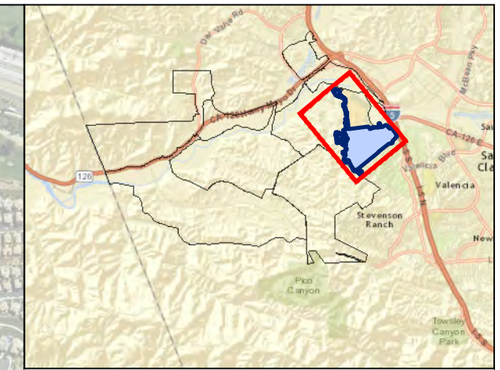
Castaic-Balcom silty-clay loam (CmF), 30% to 50% slopes, is by far the most dominant soil type on the Project Site, accounting for 64% of the total area and comprising the central portion and western edge of the site. This soil is well-drained and formed from soft shale and sandstone. It consists of about 60% Castaic silty clay loam and 40% Balcom silty clay loam (USDA 2015a).

Hanford sandy loam (HcC), 2% to 9% slopes, occurs in a very limited area along the southeastern edge of the Project Site. This is a well-drained to somewhat excessively drained soil formed from granitic alluvium. It is dominated by sandy loam and fine sandy loam.

Metz loam (MgB), 2% to 5% slopes, occurs along an unnamed north–south trending canyon in the east-central portion of the Project Site and in a small polygon on the eastern edge of the site. This soil is somewhat excessively drained and formed in mixed alluvium.

Mocho loam (MpA), 0% to 2% slopes, is limited to a level area in the northern tail of the Project Site northwest of the Six Flags Magic Mountain theme park. Mocho loam (MpC), 2% to 9% slopes, is located along the northern boundary of the main Project Site. The Mocho soils are moderately well-drained soils that formed in sedimentary alluvium and typically occur in alluvial fans along major drainageways (e.g., the Santa Clara River).





Entrada South Project Boundary

Entrada South Tract Map Boundary

Soils

- CmF = Castaic-Balcom silty clay loams, 30 to 50 percent slopes
- HcC = Hanford sandy loam, 2 to 9 percent slopes
- MgB = Metz loam, 2 to 5 percent slopes
- MpA = Mocho loam, 0 to 2 percent slopes
- MpC = Mocho loam, 2 to 9 percent slopes
- ScF = Saugus loam, 30 to 50 percent slopes
- SsB = Sorrento loam, 2 to 5 percent slopes
- YoA = Yolo loam, 0 to 2 percent slopes
- YoC = Yolo loam, 2 to 9 percent slopes
- ZaD = Zamora loam, 9 to 15 percent slopes

0 500 1,000 Feet

DUDEK

SOURCE: ESRI Online Bing Basemap, USDA NRCS SSURGO soils

FIGURE 4

Soils

Biotechnical Report for the Entrada South Site

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Saugus loam (ScF), 30% to 50% slopes, dominates the eastern third of the Project Site, accounting for 15% of the site. This is a well-drained soil on uplands that formed from weakly consolidated sediment any may contain pebble and cobblestones in some areas.

Sorrento loam (SsB), 2% to 5% slopes, occurs along the northern extension of the Project Site west of and adjacent to the Six Flags Magic Mountain theme park and in the southwestern corner of the Project Site in Magic Mountain Canyon. This is a well-drained soil on alluvial fans that formed from mixed alluvium.

Yolo loam (YoA), 0% to 2% slopes, is limited to the eastern boundary of the Project Site. Yolo loam (YoC), 2% to 9% slopes, occurs in Magic Mountain Canyon in the western portion of the site. The Yolo soils are well-drained soils on alluvial fans that formed in sedimentary alluvium.

Zamora loam (ZaD), 9% to 15% slopes, is limited to a small drainage in the southwestern portion the Project Site that is a tributary to Magic Mountain Canyon. The Zamora soils are well-drained soils located on terraces that formed in old alluvium from material that was dominantly sedimentary.

2.5 Terrain

The Project Site is located south of the Santa Clara River on rugged terrain dominated by steep slopes. It is dissected by four south–north trending tributaries to the Santa Clara River, including one along Magic Mountain Canyon and three unnamed tributaries (Figure 5). All four tributaries exit the Project Site through storm drain systems before eventually discharging to the Santa Clara River. Topographically, the southern portion of the site is dominated by several north–south-trending ridges. A narrow panhandle (roughly 330 feet wide) extends along the western portion of the site to a fairly level former pasture area. Site elevations range from approximately 1,000 feet above mean sea level (amsl) along the Santa Clara River to approximately 1,438 feet amsl on the ridges in the southwestern portion of the Project Site.

2.6 Existing and Planned Conservation

The protection of open space in the RMDP/SCP study area (Open Area) occurs within the tract map boundaries in the form of seven Spineflower Preserves, the San Martinez Grande Adaptive Management Area, the Mariposa Lily Reserve, natural open space land use designation, and the Santa Clara River SMA/SEA. The total Open Area protected within the tract map boundaries (Landmark Village, Mission Village, Homestead South, Homestead North, Potrero Village, Entrada South, and VCC) totals 3,770 acres. Outside the tract maps, open space is protected by the High Country SMA/SEA (4,167 acres) and the Salt Creek area (1,518 acres). The total Open Area protected within the study area totals 9,417 acres (Figure 3).

This large, interconnected system of conservation areas provides the core of mitigation for the Applicant's Projects, including Entrada South, as discussed in more detail in Section 5.0

of this BTR and in the Comprehensive Mitigation Implementation Plan (CMIP; see Appendix A).

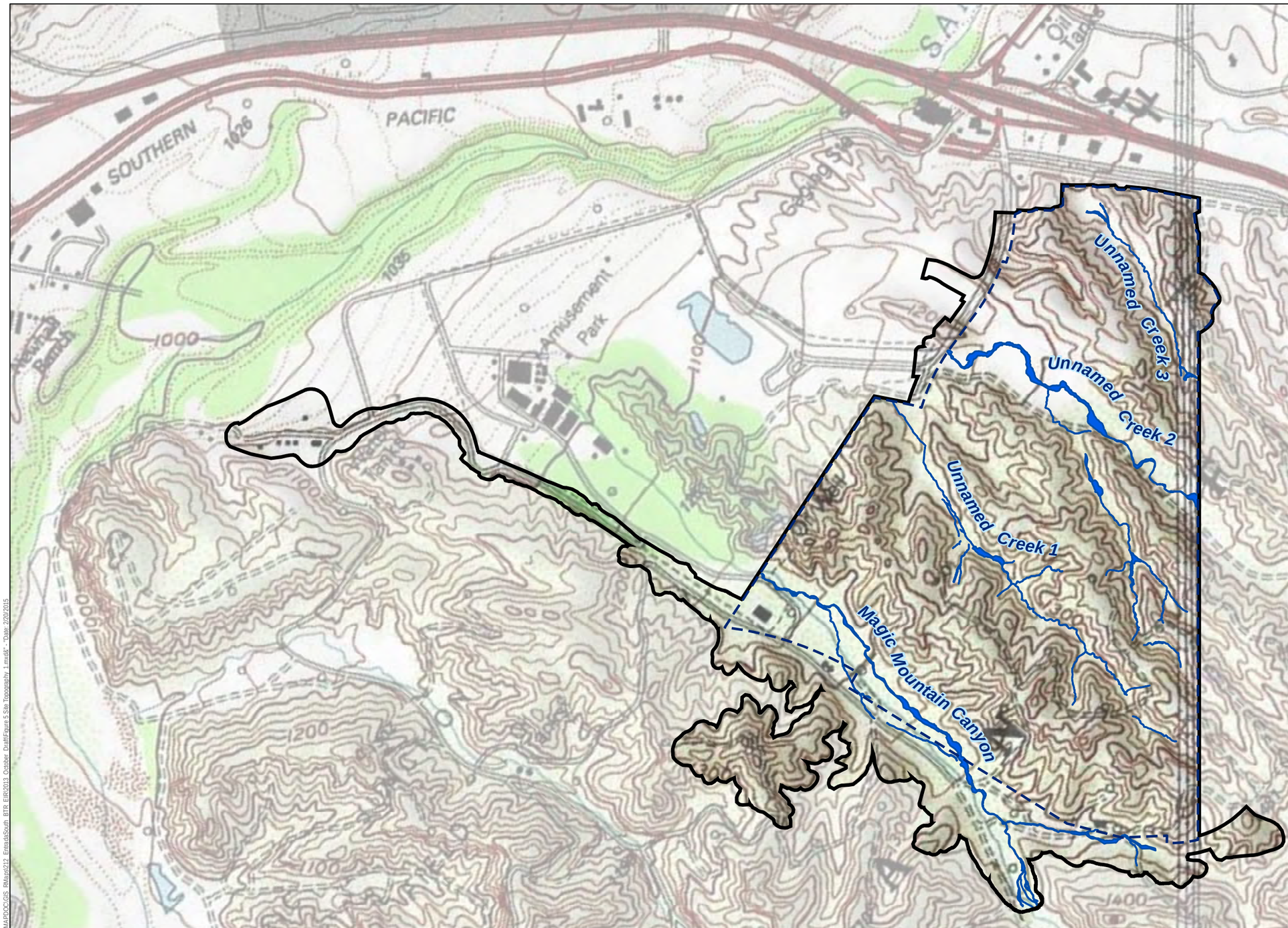
The Santa Clara River SMA/SEA overlays the Santa Clara River and provides an important east-west riparian corridor in the region. This corridor also serves as an important connection between the upland habitats to the north and south of the River. The Santa Clara River SMA/SEA is composed of aquatic, riparian, and floodplain habitats within the Santa Clara River corridor that supports a variety of listed and special-status species. In 2013, the County revised the Santa Clara River SMA/SEA to include the two previously recorded conservation easements protecting the Grapevine Mesa and Airport Mesa occurrences of the spineflower.

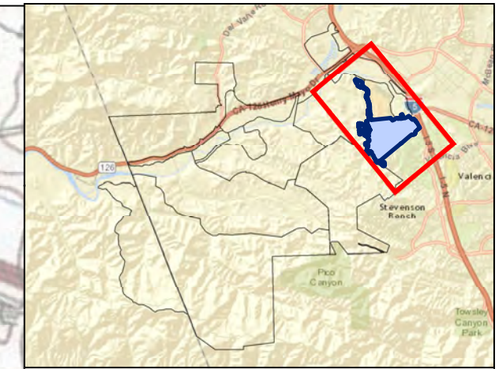
The High Country SMA/SEA is located in the southern portion of the Newhall Ranch Specific Plan site and includes oak savannahs, high ridgelines, and various canyon drainages, including the portion of Salt Creek in Los Angeles County. Contiguous with the High Country SMA/SEA is the Salt Creek conservation area in Ventura County. The entire Salt Creek is a regionally significant wildlife corridor that provides an important north-south habitat link to the Santa Clara River that allows for wildlife movement between the Santa Susanna Mountains and the Santa Clara River and provides a direct connection between the Santa Clara River SMA/SEA and the High Country SMA/SEA.

The spineflower preserve provides an additional approximately 227 acres of conservation as mitigation for impacts to the spineflower associated with Newhall Project impacts, including Entrada South (Dudek 2010) (Figure 3).

The South Coast Missing Linkages Project (SCMLP) (Penrod et al. 2006) is also relevant to Entrada South with regard to regional habitat connectivity issues insofar as the Entrada South Project is within the general area analyzed for regional-scale habitat linkages and its mitigation for Project impacts contribute to regional habitat connectivity. The SCMLP is a planning document showing broad-scale regional connections that would provide for landscape-scale habitat connectivity between the Santa Susana Mountains to the south and the Los Padres National Forest to the north. As shown in Figure 6, these conceptual linkages encompass the High Country SMA/SEA and the Salt Creek conservation area within the Newhall Ranch Specific Plan area and the Santa Clara River west of the Specific Plan area. Penrod et al. (2006) considered the High Country SMA/SEA and Salt Creek area, along with regional open space conservation areas and initiatives such as "SOAR" (Save Open Space and Agricultural Resources)[2] in Ventura County in recommending a linkage design that would connect the Santa Monica Mountains, San Gabriel Mountains, and the Sierra Madre Mountains.

[2] SOAR is a non-profit organization that seeks to maintain agricultural, open space, and rural lands within Ventura County and surrounding regions. Development activities within the SOAR boundaries are limited by county ordinance.





Entrada South Standalone Project Boundary
Entrada South Tract Boundary
Tributary

0 750 1,500 Feet

SOURCE: ESRI Online Bing Basemap, Forma topo

DUDEK

FIGURE 5
Site Topography

Biological Technical Report for the Entrada South Site

DRAFT

Z:\Projects\3730010\2013_Scopes\MAPDOC\GIS_Rel\apd212_EntradaSouth_BTR_EIR\2013_October_Draft\Figure 5-Site Topography_1.mxd\< - Date: 2/20/2015

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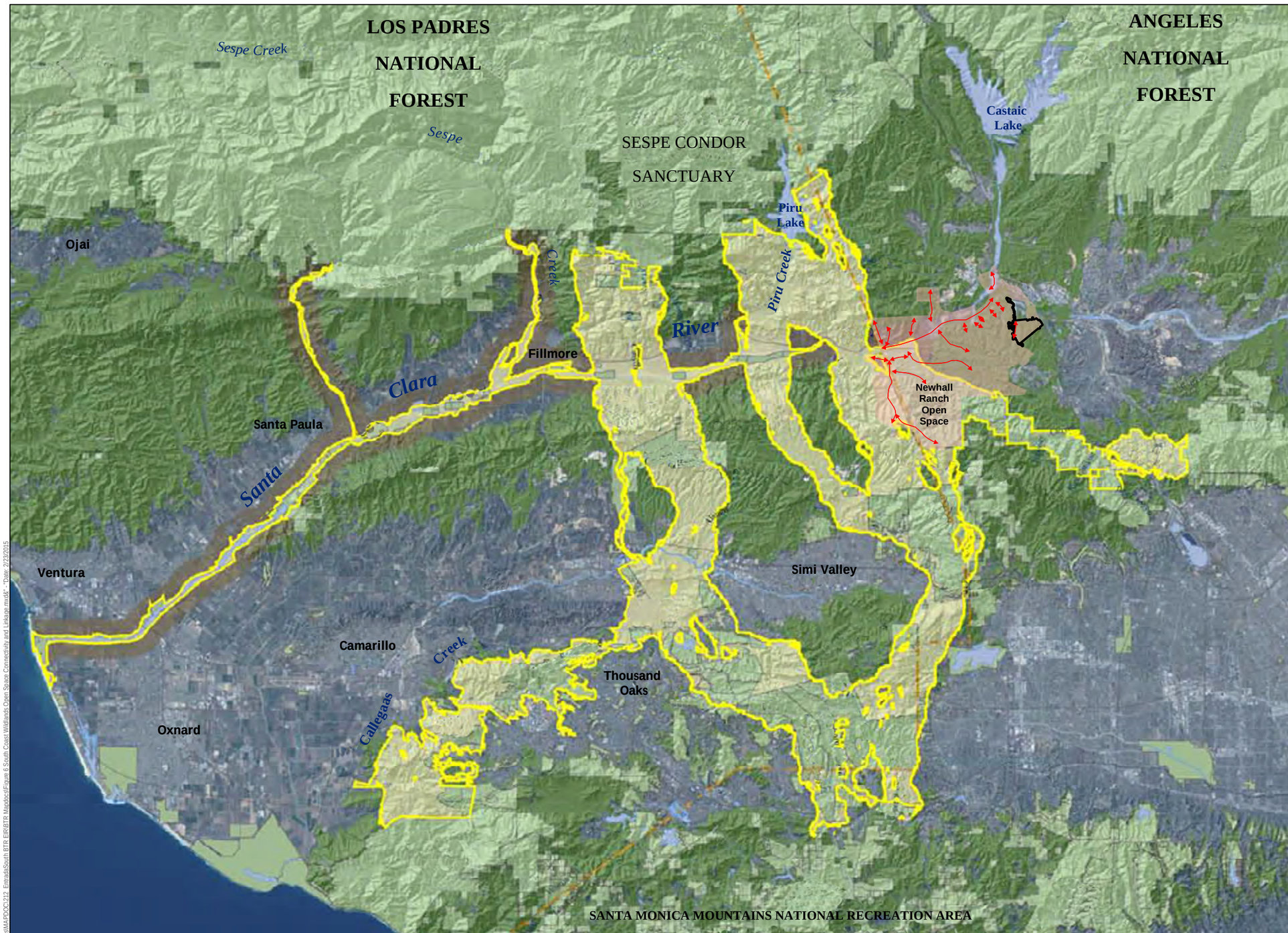

Entrada South

Newhall Ranch

Habitat Corridors

Linkage Design *

Protected Lands

Riparian Buffer

Important Habitat Areas

Hydrography

Lakes and Reservoirs

County Boundary

Roads

* Linkage design is based on analyses for mountain lion, mule deer, and badger.

0 3.75 7.5 Miles

SOURCE: South Coast Wildlands (2006)

DUDEK

FIGURE 6

South Coast Wildlands Open Space Connectivity and Linkage

7:\Projects\3730010\2015_Scopes\MA\PDOC\212_EntradaSouth BTR EIR\BTR Maps\Docs\Figure 6 South Coast Wildlands Open Space Connectivity and Linkage.mxd\x - Date: 2/23/2015

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However, it is important to note that portions of the SCMLP linkage design, as shown in the planning document, do not currently exist as managed preserve areas and there is no guarantee that all lands with the linkage design will be preserved in the future. However, the RMDP/SCP EIS/EIR determined that significant impacts would occur to wildlife resources.[3] As noted above, open space would be protected within the High Country SMA/SEA (4,167 acres) located in the Specific Plan area and the Salt Creek area (1,518 acres) located in Ventura County, both of which are within the linkage design and substantially contribute to its completion.

2.7 Non-Preserve Land Uses

2.7.1 On-Site Land Uses

Most of the Project Site is undeveloped due to its rugged terrain, but there is direct disturbance from past and ongoing oil and natural gas operations on about 26% (approximately 130 acres) of the site, including associated dirt roads and oil pad ground clearance zones. There is also an existing disturbance along Magic Mountain Canyon adjacent to the Six Flags Magic Mountain theme park, which has been used for fire suppression related to fireworks displays at the park. The northern most part of the Project Site next to the Santa Clara River is an agricultural field used as non-irrigated pasture.

2.7.2 Surrounding Land Uses

There is significant development influence near the Project Site, including I-5 to the east, State Route 126 (SR-126) to the north, and secondary road infrastructure to the south, east, and north. The Westridge development, a medium-density residential housing and an integrated golf course is adjacent to the site on the south and southeast, and major commercial land use adjacent to the north and east includes the Six Flags Magic Mountain theme park. Additionally, Southern California Edison (SCE) and Southern California Gas Company have transmission corridors within easements along the southern boundary of the Project Site. SCE actively maintains the easements/transmission lines and access roads.

2.8 Watersheds

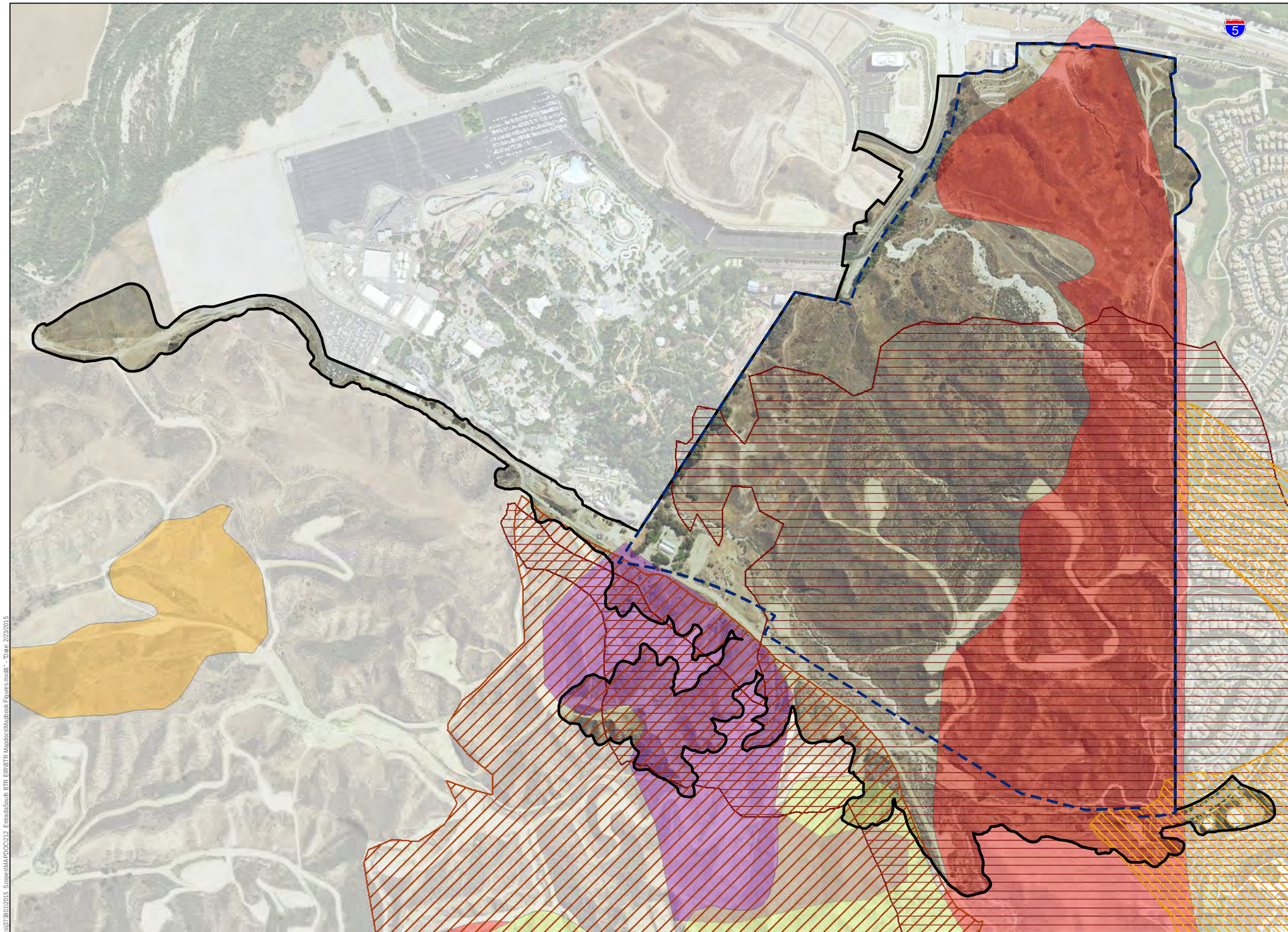
The Project Site is within the Santa Clara River Watershed, which drains approximately 1,620 square miles of natural and urban areas north and east of Los Angeles in southern California (Dudek 2008a). The watershed is divided into 14 sub-basins, which range in size from the

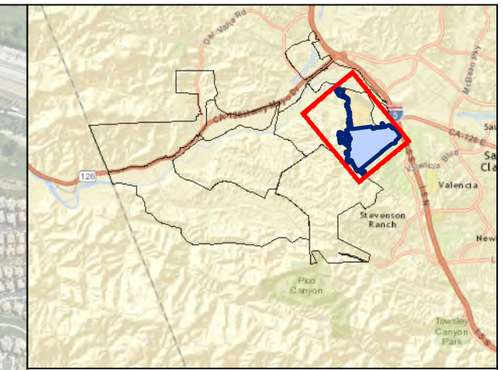
[3] U.S. Army Corps of Engineers and California Department of Fish and Wildlife (Corps and CDFW). 2010. Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan Joint Environmental Impact Statement and Environmental Impact Report. Final. SCH No. 2000011025. Los Angeles, California: Corps and CDFW. June 2010.

7,433-acre Sisar sub-basin in the western part of the watershed to the 291,730-acre Eastern sub-basin, within which the Project Site is located. Reflecting urban and agricultural uses, in terms of total area converted, the Eastern sub-basin has the most land conversion at 27,353 acres, or 9% of the sub-basin (based on California GAP data reported in Dudek 2008a). However, most of the upper part of the Eastern sub-basin is open space contained within the Angeles National Forest.

2.9 Fire History

The large majority of the Project Site has burned at least once since 1982, with controlled burns on the western two-thirds of the site in 1983 and 1986 (Figure 7). The most recent wildfire occurred on the southern portion of the site in 2007.





Entrada South Project Boundary

Entrada South Tract Map Boundary

Historical Fires

YEAR

- 1945
- 1962
- 1969
- 1989
- 2007
- 2012

Controlled Burns

YEAR

- 1982
- 1983
- 1986

0 500 1,000 Feet

AERIAL SOURCE: NAIP 2014, FIRE HISTORY: CDF 2014

DUDEK

FIGURE 7

Fire History

Biotechnical Report for the Entrada South Site

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3 METHODS

3.1 Literature Review

Dudek compiled and reviewed technical literature to evaluate the natural resources found or potentially occurring on the Project Site. Much of the information referenced in this BTR was collected for prior planning and permitting efforts. In particular, the RMDP/SCP EIS/EIR, which CDFG approved in 2010, specifically analyzed the effects of the Entrada South Project, incorporated numerous environmental surveys and studies conducted in support of the RMDP/SCP EIS/EIR. This work effort included a review of the scientific literature on the entire suite of special-status species in the planning area. Since approval of the RMDP/SCP EIS/EIR, several field surveys have also been conducted in the Entrada South Project vicinity, including Mission Village, Landmark Village, Homestead South, Potrero Village, and VCC in the RMDP/SCP area, as well as the Legacy site just west and south of Entrada South. The database used for this BTR includes more than 500 individual field surveys resulting in more than 160 technical reports (Table 2). Table 2 shows that many of the studies were conducted since 2003 in direct support of the RMDP/SCP, and more than 30 additional surveys were conducted from 2010 through 2013 following approval of the RMDP/SCP, including several on the Project Site that are discussed in more detail in Section 3.2. The SCP alone represents 8 years of field surveys and research studies; peer science review; extensive consultation with CDFG and leading botanical experts; preserve design; and preparation of a conservation and management plan, including adaptive management, and conservation funding to address all known spineflower populations on the Applicant's lands, including Entrada South. CDFG approved the SCP in December 2010.

Table 2
Biological Surveys Conducted on Project Site and Vicinity through 2013

Type of Survey	Reference
General Biological Resource Surveys	Compliance Biology, Inc. 2006d
	Dudek 2006g; 2012l
	RECON and Impact Sciences Inc. 1996
	SMEA 1995b
Special-Status Plants (including oaks)	FL*x* 2002a,b,c, 2004a,b; 2005; 2006a,b
	Dudek 2006 a,b,c,d,e,f,g; 2007a,b,c; 2011; 2012b,g,l,n; 2013a, b, c, d
	Dudek and Associates Inc. 2002a,b,c; 2003, 2004a,b,c,g,j,n
	Impact Sciences Inc. 2006b,c,d
	LDC 2011, 2014
	RJA 2007
Special-Status Birds	Bloom Biological Inc. 2007; 2008; 2009; 2011, 2012, 2013
	Compliance Biology Inc. 2003a,b; 2006a; 2008

Table 2
Biological Surveys Conducted on Project Site and Vicinity through 2013

Type of Survey	Reference
	Impact Sciences 2000
	Dudek 2012c,d,f,i,k,l; 2013e
	Guthrie 1988; 1989; 1990; 1991a,b; 1992; 1993a,b; 1994a,b; 1995a,b; 1996a,b; 1997a,b; 1998a,b; 1999a,b,c; 2000a,b,c,d,e,f,g; 2001a,b; 2002a,b; 2003a,b; 2004a,b,c,d,e,f,g,h,l; 2005a,b,c; 2006a,b,c
	Labinger and Greaves 1999
	Labinger et al. 1995;1996; 1997a,b
	Niemela 2009
	PCR 1998
	Priest 2007a,b
	SAIC 2003
Special-Status Amphibians and Reptiles	Bloom 2007
	Carpenter 2007; 2009
	Dudek 2012m
	Compliance Biology, Inc. 2004d,e,f,g; 2006b,c; 2012a,b,c,d
	Ecological Sciences, Inc. 2003a,b,c,d,e,f; 2004a,b,c,d; 2005a,b
	Huntley 2006
	Impact Sciences Inc. 2001; 2002; 2006a
	RECON 1999a,b
	Sandburg 2001
	SMEA 1994a,b
Special-Status Mammals	Huntley 2008
	Impact Sciences Inc. 2005
	Johnson 2006
	Brown-Berry Biological Consulting 2012
	Dudek 2012e,h,l; 2013e,f
	Compliance Biology, Inc. 2013
	Rahn Conservation Consulting, LLC 2013a,b
Special-Status Invertebrates	Compliance Biology, Inc. 2004a,b,c; 2005; 2012a,b,c,d
	Dudek 2008b
	Huntley 2010
	RECON 1999c
Special-Status Aquatic Resources	ENTRIX 1994; 1995; 1996; 1998; 1999; 2000; 2006a,b; 2009
	Haglund 1989
	Haglund and Baskin 2000
	Impact Sciences Inc. 2003a,b,c,d
	SMEA 1995a
	Swift 2009
Jurisdictional Delineation	Glenn Lukos Associates Inc. 2006
	URS 2014

Dudek identified general floristic and special-status botanical resources occurring or potentially occurring on the Project Site by consulting the following sources: the California Natural Diversity Database (CNDDB) for the Newhall Santa Susana, Oat Mountain, Mint Canyon, San Fernando, Green Valley, Warm Springs Mountain, Whitaker Peak, Thousand Oaks, and Val Verde quadrangle maps (CDFG 2012); Inventory of Rare and Endangered Plants of California (CNPS 2012); RMDP/SCP Final EIS/EIR (Corps and CDFG 2010); plant surveys conducted adjacent to the site to present; and plant surveys conducted on the Project Site in 2011 and 2012 (Dudek 2012a, 2012b). General information regarding vegetation communities was obtained from Sawyer et al. (2009). Vegetation community and land cover classifications used in this report primarily follow the Hierarchical List of Natural Communities with Holland Types recognized by the CNDDB (CDFG 2010), with a few exceptions. In certain instances, the vegetation communities observed in the field did not match the vegetation communities described in CDFG (2010).

Dudek identified general and special-status wildlife species present or potentially present on the Project Site were identified through the CNDDB search for the quadrangles listed above, the RMDP/SCP Final EIS/EIR (Corps and CDFG 2010), and the numerous wildlife surveys conducted in the Project region. General information regarding species distributions was obtained from the CDFW California Wildlife Habitat Relationships (CWHR) Program (http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx); from Stebbins (2003) and California Herps (http://www.californiaherps.com) for reptiles and amphibians; Birds of North America (http://bna.birds.cornell.edu/bna), Garrett and Dunn (1981) and Shuford and Gardali (2008) for birds; Ingles (1965) and Hall (1981) for mammals; and Emmel and Emmel (1973) for butterflies.

3.2 Field Reconnaissance

Several biological surveys specific to the Entrada South Project Site have been conducted, including vegetation mapping, general plant surveys, general wildlife surveys, and focused surveys for special-status/regulated species (Table 3). The surveys conducted between 2002 and 2007 were conducted as part of the RMDP/SCP baseline data development in support of the preparation of the EIS/EIR, but included five special-status plants surveys, vegetation mapping, and a general wildlife survey on the Entrada South site. The surveys conducted on site from 2011 to 2013 provide additional and up-to-date Project-specific information in support of the Entrada South EIR.

Table 3
Summary of Biological Surveys Conducted on the Entrada South Project Site

Study Title	Survey Focus	Survey Date (s)	Survey Personnel	Cumulative Staff Hours Survey Time (time of day)	Air Temp. Range (°F)
2002 Sensitive Plant Survey Results for the Entrada Site. (Dudek and Associates Inc. 2002b)	Special-Status Plants	5/7-9, 12, 13, 9/17/02	ME, JV, CW	120 hrs	N/A
2003 Sensitive Plant Survey Results for the Entrada Site. (Dudek and Associates Inc. 2004e)		4/14-17, 22-24/03	ME, MSE, KaM, AT, AS, TW, VJ, NG, AP	140 hrs	N/A
2004 Sensitive Plant Survey Results for the Entrada Site. (Dudek and Associates Inc. 2004h)		4/14-16, 20, 21, 24/04, 8/19/04	MSE, DF, MB, DG, VJ, NG, AP	165 hrs	N/A
2005 Sensitive Plant Survey Results for the Entrada Site. (Dudek 2006b)		4/18-21, 25-29/05	CK, KaM, SB, CO, DF, MB, RK	320 hrs	N/A
2006 Sensitive Plant Survey Results for the Entrada Site. (Dudek 2006e)		5/22-24/06	CK, CO, PS, MM, SaS	140 hrs	N/A
2007 Sensitive Plant Survey Results for the Entrada Site (Dudek 2007b)		6/5-8, 12, 13/07	BS, CF, GH, DG, CF, TS, BW, MO	230 hrs	N/A
2011 Sensitive Plant Survey Results for Entrada Site (Dudek 2012a)		7/5/12	KD, SM, TC	30 hrs	N/A
2013 Survey Results for San Fernando Valley Spineflower within the Spineflower Conservation Plan Area (Dudek 2013a)	San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)	4/18, 19, 22/13	EW, KD, RI, DM	48 hrs	N/A
Biological Resources Technical Report, Entrada. (Dudek 2006g)	Vegetation Map	8/1/06	SM, PB	NR	N/A
	General Wildlife Assessment	9/1/06	PL	NR	NR
2012 Botanical Survey Results for Entrada South Site. (Dudek 2012b)	Vegetation Map Update	4/19/12	KD, BS	8 hrs	N/A
	Special-Status Plants/San Emigdio Blue Butterfly Habitat Assessment	6/11-13, 19/12	EW, KD, CF, DM, ChK, KM	72 hrs	N/A
2012 and 2013 Botanical Survey Results for Homestead South Village Site. (Dudek 2013b)	Vegetation Map Update	5/8/12-5/9/12	KD, BS, HM, EW	10 hrs	N/A
	Special-Status Plants/San Emigdio Blue Butterfly Habitat Assessment	6/18, 26-29, 7/2, 3, 5, 6, 9, 10/12 and 5/3/13	CK, DM, DG, BS, KD, MB, RM, HM, TC, EW	146 hrs	N/A

Table 3
Summary of Biological Surveys Conducted on the Entrada South Project Site

Study Title	Survey Focus	Survey Date (s)	Survey Personnel	Cumulative Staff Hours Survey Time (time of day)	Air Temp. Range (°F)
2012 and 2013 Botanical Survey Results for the Advanced Mitigation Sites. (Dudek 2013c)	Vegetation Map Update	5/8/12	KD	2 hrs	N/A
	Special-Status Plants/San Emigdio Blue Butterfly Habitat Assessment	6/21-22, 7/15/2012	DG, RM, KD, CK	12.5 hrs	N/A
	Special-Status Plants	4/23, 5/8-10, 13/2013	DM, RM, DG, JP	23.5	N/A
2013 Botanical Survey Results for the Potrero Village Site. (Dudek 2013d)	Vegetation Map Update	5/9/13	EW	7	N/A
	Special-Status Plants/San Emigdio Blue Butterfly Habitat Assessment	4/30, 5/1-3, 6-9/13	JP, KD, BS, HM, DM, EW, CK, KM	70	N/A
Focused California Gnatcatcher Survey, Entrada North and South Projects. (Dudek 2012d)	Survey Area 1	3/22, 4/2, 12, 19, 26, 5/3/12	TC, PL	28 hrs	53°–82°
	Survey Area 2	3/23, 4/5, 16, 24, 5/1, 17/12	TC, TW	26 hrs	52°–82°
	Survey Area 3	3/27, 5/3, 17, 24, 6/14, 28/12	TC, TL, PL, JP	27 hrs (0625-1145)	52°–80°
Focused Grasshopper Sparrow and General Wildlife Report for the Entrada South Site. (Dudek 2012c)	Grasshopper Sparrow and General Wildlife	5/23, 25, 6/14/12	DC	7.5 hrs (0615-1000)	60°–77°
Bat Survey, Entrada South Project. (Dudek 2012e)	Bat Acoustic Monitoring – Survey Point 1	5/17-23, 2012	TC	6 Survey Nights	N/A
	Bat Acoustic Monitoring – Survey Point 2	6/12-19, 2012	TC	7 Survey Nights	N/A
	Bat Acoustic Monitoring – Survey Point 3	7/16-23, 2012	TC	7 Survey Nights	N/A
	Bat Acoustic Monitoring – Survey Point 3	8/9-16,2012	TC	7 Survey Nights	N/A

Table 3
Summary of Biological Surveys Conducted on the Entrada South Project Site

Study Title	Survey Focus	Survey Date (s)	Survey Personnel	Cumulative Staff Hours Survey Time (time of day)	Air Temp. Range (°F)
Results of Small Mammal Trapping Surveys; Entrada South Project (Compliance Biology, Inc. 2013)	Special-Status Small Mammals	8/23-27/2012	CB	5 Survey Nights	
Results of Focused Western Spadefoot Toad and Fairy Shrimp Habitat Surveys on the Entrada South Project Site. (Compliance Biology, Inc. 2012a)	Presence/Absence of Western Spadefoot Toad (*Spea hammondii*) and Fairy Shrimp	2/6, 4/2, 4/18/12	CB	NR	NR

Personnel: AP = Anuja Parikh; AS = Andrew Sanders; AT =Andrew Thomson; BS = Britney Strittmater; BW = Briana Wood; CB = Compliance Biology, Inc.; CF = Callie Ford; ChK = Chris Kallstrand; CK = Colin Khoury; CO = Chris Oesch; CW = Cathleen Wiegand; DC = Dave Compton; DF = Dave Flietner; DG = Doug Gettinger; DM = Danielle Mullen; EW = Emily Wier; GH = Galen Hagen; JP = Jeffrey Priest; JV = Julie Vanderwier; KD = Kathleen Dayton; KaM =Kam Muri; KM = Karen Mullen; MB = Michelle Balk; ME = Mark Elvin; MM = Makela Mangrich; MO = Marcus Obregon; MSE = Megan Enright; NG = Nathan Gale; PB = Phil Behrends; PL =Paul Lemons; PS = Patricia Schuyler; RI = Randall McInvale; RK = Rebekah Krebs; SaS = Saudomini Sindhar; SB = Scott Boczkiewicz; SM = Sherri Miller; SS = Sparrow Serrano; TC = Traci Caddy; TS = Travis Smith; TL = Thomas Liddicoat; TW = Tricia Wotipka; VJ = Vipul Joshi
N/A – Not applicable to this survey type
NR – Not recorded during this survey

3.2.1 Vegetation Community and Land Cover Mapping

In 2006, vegetation communities and land covers on the Project Site were mapped in the field directly onto a 200-scale (1-inch = 200-feet) false-color digital orthographic map (AirPhotoUSA 2005) of the Entrada South site (Dudek 2006g). This information was developed concurrent with mapping the vegetation communities in the entire RMDP/SCP Project Site. These boundaries and locations were digitized using ArcGIS software. Vegetation community classifications used in the initial mapping primarily followed the Vegetation Classification and Mapping Program, List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CDFG 2003) with a few exceptions. In certain instances, the vegetation communities observed in the field did not match the vegetation communities described by CDFG (2003).

In 2012, the vegetation map was updated using the Hierarchical List of Natural Communities with Holland Types recognized by the CNDDB (CDFG 2010), with a few exceptions. In certain instances, the vegetation communities observed in the field did not match the vegetation communities described by CDFG (CDFG 2010) (Table 3; Dudek 2012b). These discrepancies in the mapping data were reconciled by overlaying the existing vegetation map polygons onto the latest available aerial photography, revised to match vegetation signatures on site in 2012, and spot-checked in the field to confirm trends. The vegetation map was

further revised to reflect the wetlands delineation performed by URS Corporation in 2012 (URS 2014), described in Section 3.2.4.

3.2.2 Flora

Appendix B lists all plant species encountered during the botanical field surveys conducted for the RMDP/SCP (2002–2007) and Entrada South (2012). Species that could not be identified in the field were brought into the laboratory for further investigation. Latin and common names for plant species with a California Rare Plant Rank (CRPR) (formerly the CNPS List) follow the California Native Plant Society (CNPS) Online Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2012). For plant species without a CRPR, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2012) and common names follow the USDA Natural Resources Conservation Service PLANTS Database (USDA 2015c).

The large majority of the surveys for special-status species were conducted during the spring blooming period (primarily April), which coincides with the blooming period for the majority of special-status species with potential to occur on site. However, Parish's big sagebrush (*Artemisia tridentata* ssp. *parishii*) blooms October to November and would not be identifiable during the time of the surveys. Other species with suitable habitat on site, such as Malibu baccharis (*Baccharis malibuensis*), island mountain-mahogany (*Cercocarpus betuloides* var. *blancheae*), undescribed everlasting (*Gnaphalium* sp. *nova*), Palmer's grapplinghook (*Harpagonella palmeri*), and white rabbit-tobacco (*Pseudognaphalium leucocephalum*), which may bloom outside the times the surveys were conducted, would still have been observable outside of the blooming period.

Variation in rainfall also may affect the detection of plants due to reduced germination and/or limited blooming periods. For example, lower-than-average rainfall occurred in winter 2011 and 2012, and no rainfall occurred after March 2012 (WRCC 2012). However, botanical surveys have been conducted on the Project over numerous years (Table 3) and under various environmental conditions, so variable rainfall patterns likely are not a substantial limit on the survey results for botanical resources.

3.2.3 Fauna

A general reconnaissance survey for wildlife on the Project Site was conducted in 2006 as part of the broader RMDP/SCP surveys, and several focused wildlife surveys were conducted in 2012 (Table 3). In general, wildlife surveys were conducted by walking transects throughout the Project Site, surveying all portions of the site (all canyons, ridgelines, and vegetation types). Biologists periodically stopped during surveys to listen for wildlife vocalizations. All

wildlife species detected during field surveys by sight (with the aid of binoculars), calls, tracks, scat, and other sign were recorded and are listed in Appendix C. Focused surveys for particular special-status wildlife species are described in detail in Section 3.2.4.

Note that with the exception of the bat study (Dudek 2012e) and small mammal trapping study (Compliance Biology, Inc. 2013) conducted on Entrada South, the wildlife surveys on site were conducted during the day. Because some reptiles and amphibians and many mammals are only active at night and dormant or in refugia during the daytime, their presence can only be visually confirmed through diagnostic sign such as scat and tracks. In addition, meandering transects are not highly effective for detecting reptiles and amphibians that typically are cryptic and secretive in their habitats. For this reason, biologists on the RMDP/SCP Project employed focused surveys using appropriate methods for detecting such species, including pit-fall trapping for reptiles and amphibians (Impact Sciences Inc. 2006a) and camera stations, scent/track stations, and spotlight surveys for medium and large mammals (Impact Sciences, Inc. 2005). In addition to the bat and small mammal trapping studies on Entrada South, acoustic bat surveys and small mammal trapping have also been conducted elsewhere in the RMDP/SCP area (e.g., Dudek 2012h, 2013f; Brown-Berry Biological Consulting 2012; Impact Sciences, Inc. 2005; Johnson 2006). The potential for such species to occur on the Project Site can be inferred from these studies. Another limitation is the seasonal timing of surveys. Most wildlife surveys were conducted on the Project Site in the spring/early summer, which is optimal for detecting nesting birds. However, fall migrants and wintering species that may use the site for limited periods may not have been detected. The potential for these occasional species to occur on the Project Site is determined based on several factors, including suitable habitat present on site, known or suspected migratory and wintering patterns, and the professional experience and judgment of the field biologists.

Latin and common names for wildlife species generally are from Crother (2008) for reptiles and amphibians, the American Ornithologists' Union (AOU) (1998, 2000, 2013) for birds, Wilson and Reeder (2005) for mammals, and the North American Butterfly Association (NABA) (2001, 2003, 2012) for butterflies. Exceptions for Latin names are noted for some species where taxonomic information in the peer-reviewed scientific literature supersedes the general citation.

3.2.4 Special-Status and/or Regulated Resources

Special-status biological resources are those defined as follows: (1) species that have been given special recognition by federal, state, or local resource agencies and environmental organizations due to limited, declining, or threatened population sizes; (2) species and habitat types recognized by local and regional resource agencies as special status; (3) habitat areas or vegetation communities that are unique, are of relatively limited distribution, or are of particular value to wildlife; (4) wildlife corridors and habitat linkages; and (5) Corps-jurisdictional waters of the United States (including wetlands), CDFW-jurisdictional streams, and waters of the state subject

to the permitting authority of the Los Angeles Regional Water Quality Control Board (RWQCB). Regulated biological resources may or may not be considered special status, but are regulated under local, state, and/or federal laws.

Special-status plant species are defined as plants that are state- and/or federally listed or that otherwise have a CRPR. Dudek conducted botanical surveys for special-status plant species on the Project Site annually from 2002 through 2007, and 2011 through 2013 (Table 3). Botanical surveys of the site generally were conducted during the spring blooming season, primarily in April. Approximately 1,265 field-hours were spent conducting botanical surveys within the Project Site over the 9 years of surveys. Surveys were conducted in teams of two or more biologists, with at least one senior-level botanist included with each team. Biologists were able to observe reference populations of the state-listed endangered San Fernando Valley spineflower and other special-status plant species in order to ensure flowering status and develop a search-image (i.e., a mental picture to aid detection) prior to conducting surveys of the Entrada South site. Surveys focused on the identification and location of San Fernando Valley spineflower. Additional special-status plant species observed during San Fernando Valley spineflower surveys, including CRPR 1B and 4 species and Los Angeles County sensitive species, were also recorded. Section 4.0, Results, provides a full discussion of special-status plants considered to have potential to occur on the Project Site and those considered unlikely to occur on the Project Site.

Because the County considers oak trees sensitive, Newhall retained Land Design Consultants (LDC) to conduct an oak tree inventory from November 2004 to January 2005 in conjunction with the broader RMDP/SCP Project surveys. LDC briefly re-surveyed in November 2006 to check for any removals or mortalities in the 2 years since the original survey (LDC 2011). In 2009, LDC resurveyed trees that were in the potential encroachment zone of the Project, defined as within 200 feet of proposed development. This information is reported in the 2011 update of the 2007 report. Each tree was evaluated for a variety of health, structural, and aesthetic qualities, and the tree number, location, canopy, and protected zone of each tree was recorded and mapped. Trunk diameter was measured at breast height (or diameter breast eight [dbh]), approximately 4.5 feet above natural grade. For trees that exhibited lateral branching at or below breast height, the trunk diameter measurement was made at the nearest point where the measurement could be accomplished without being impeded by the branches. For multi-trunk trees, biologists recorded the number of trunks and the dbh of each trunk. Trees with a dbh of 36 inches or more were classified as “heritage” trees. In 2011, LDC prepared an update memorandum for the status of oak trees on the site (LDC 2011). In 2014, LDC prepared an updated letter as an amendment to the 2011 Entrada South oak tree report to describe changes to the oak tree impacts resulting from the revisions made to the Vesting Tentative Tract Map No. 53295 (LDC 2014).

Based on the vegetation communities on the Project Site and the literature review described in Section 3.1, focused surveys were conducted for several special-status wildlife taxa, including: coastal California gnatcatcher, grasshopper sparrow, western spadefoot (*Spea hammondii*), fairy shrimp (*Branchinecta* spp. and *Streptocephalus woottoni*), special-status bats, and special-status small mammals, as described below.

Coastal California Gnatcatcher

Dudek conducted and/or supervised focused protocol surveys for the federally listed threatened coastal California gnatcatcher were conducted on the Project Site in three separate areas in spring and summer of 2012 (Dudek 2012d). Dudek biologists with federal permits for California gnatcatcher surveys conducted such surveys on site pursuant to the accepted protocol of the U.S. Fish and Wildlife Service's (USFWS's) *Coastal California Gnatcatcher (Polioptila californica californica) Presence/Absence Survey Protocol* (1997). The survey included six visits at a minimum of seven-day intervals, and total survey time on the Project was approximately 81 hours. Survey routes completely cover all areas of suitable coastal scrub habitat on site. Survey conditions (time of day and weather conditions) were within protocol limits specific in the survey protocol. The biologists played a tape of recorded vocalizations was played approximately every 50 to 100 feet to elicit a response from any gnatcatcher present on site. All other avian species detected during surveys were recorded. The full survey report is provided in Dudek (2012d).

Grasshopper Sparrow

Dudek conducted a focused survey for the special-status grasshopper sparrow, as well as other wildlife species, was conducted on the Project Site in 2012 (Table 3). There is no accepted survey protocol for grasshopper sparrow, so the survey methods were based on the best available information for the species and Dudek's experience in detecting grasshopper sparrows. Two surveys were conducted on the site in late May and mid-June during morning daylight hours (prior to 11:00 a.m.) During the initial survey, the entire site was covered by vehicle to obtain views into all areas, and walked in areas where views could not be obtained from roads. When suitable habitat was identified, all habitat was walked within 100 meters (approximately 330 feet), while listening and watching for grasshopper sparrows. At least 15 minutes was spent per survey in all suitable areas (open native and non-native grassy areas) that were small enough to be covered from a single observation point. Longer periods were required in larger habitat areas. The timing of the surveys coincided with the breeding period for grasshopper sparrows, when this species is regularly singing, but was after the period when most migrants are believed to pass through (Garrett and Dunn 1981). The full survey report is provided in Dudek (2012c).

Bats

Acoustic surveys for special-status bats were conducted on the Project Site at four point locations in spring/summer of 2012 (Table 3). Passive acoustic surveys using Anabat SD2 ultrasonic detectors (Titley Electronics, Ballina, Australia) were conducted over a total of 27 detector nights at four point locations within the Entrada South site (Figure 8). The Anabat was set to record bat vocalizations each night starting before dusk from 6:00 p.m. to 6:00 a.m. the following morning to coincide with peak bat activity periods, and data were downloaded at the end of each survey week.

After completion of the passive surveys, the acoustic data were sent to bat expert Dr. Michael O'Farrell for species identification. Dr. O'Farrell made the species-level identifications using the methods of O'Farrell et al. (1999) based on frequency characteristics, call shape, and comparison with a comprehensive library of vocal signatures developed by O'Farrell and colleagues. Thus, species richness (number of species verified as present) was obtained for each location. An index of abundance, or the magnitude of each species contribution to spatial use, was obtained using the sum of 1-minute time increments for which a species was detected as present, divided by the number of nights of sampling (Miller 2001). The full survey report is provided in Dudek (2012e).

Small Mammals (excluding bats)

Compliance Biology, Inc. conducted live trapping for special-status small mammals (i.e., rodents) potentially occurring of the Project Site. Five separate traplines were established in representative habitat types and 15 to 20 traps were set on each trapline over a five-night period in August 2012. Traps were baited with a mixture of rolled oats, bird seed, and dry cat food. Traps were checked each morning and then closed for the day. The full trapping report is provided in Compliance Biology, Inc. (2013).

Western Spadefoot and Fairy Shrimp

Compliance Biology, Inc. conducted a focused survey on the Project Site for western spadefoot and fairy shrimp (vernal pool fairy shrimp (*Branchinecta lynchi*), Riverside fairy shrimp (*Streptocephalus woottoni*) and conservancy fairy shrimp (*B. conservatio*)) in winter/spring of 2012. This survey took place during two discrete periods: a visit in February and two visits in April after some late season storms. Environmental conditions for the surveys were not ideal due to rainfall patterns in 2012 (large storms early in the season, an extended dry period in the middle of the rainy season, and storms late in the season). Extended inundation periods are required for the western spadefoot and fairy shrimp to complete the aquatic phases of their life cycles. Therefore, one focus of the survey was to identify potential breeding pool locations based on topography and suitable soils, in addition to surveying sites supporting standing water at the time of the surveys. Biologists systematically walked all of the flat areas of the Project Site in search

of either standing water or larger depressions that appeared to have held standing water in the past. Additionally, biologists surveyed all dirt roads, as western spadefoot toads and fairy shrimp use deep road ruts that fill with rainwater. Finally, biologists inspected areas with standing water for presence of western spadefoot and fairy shrimp. The full survey report is provided in Compliance Biology, Inc. (2012a).

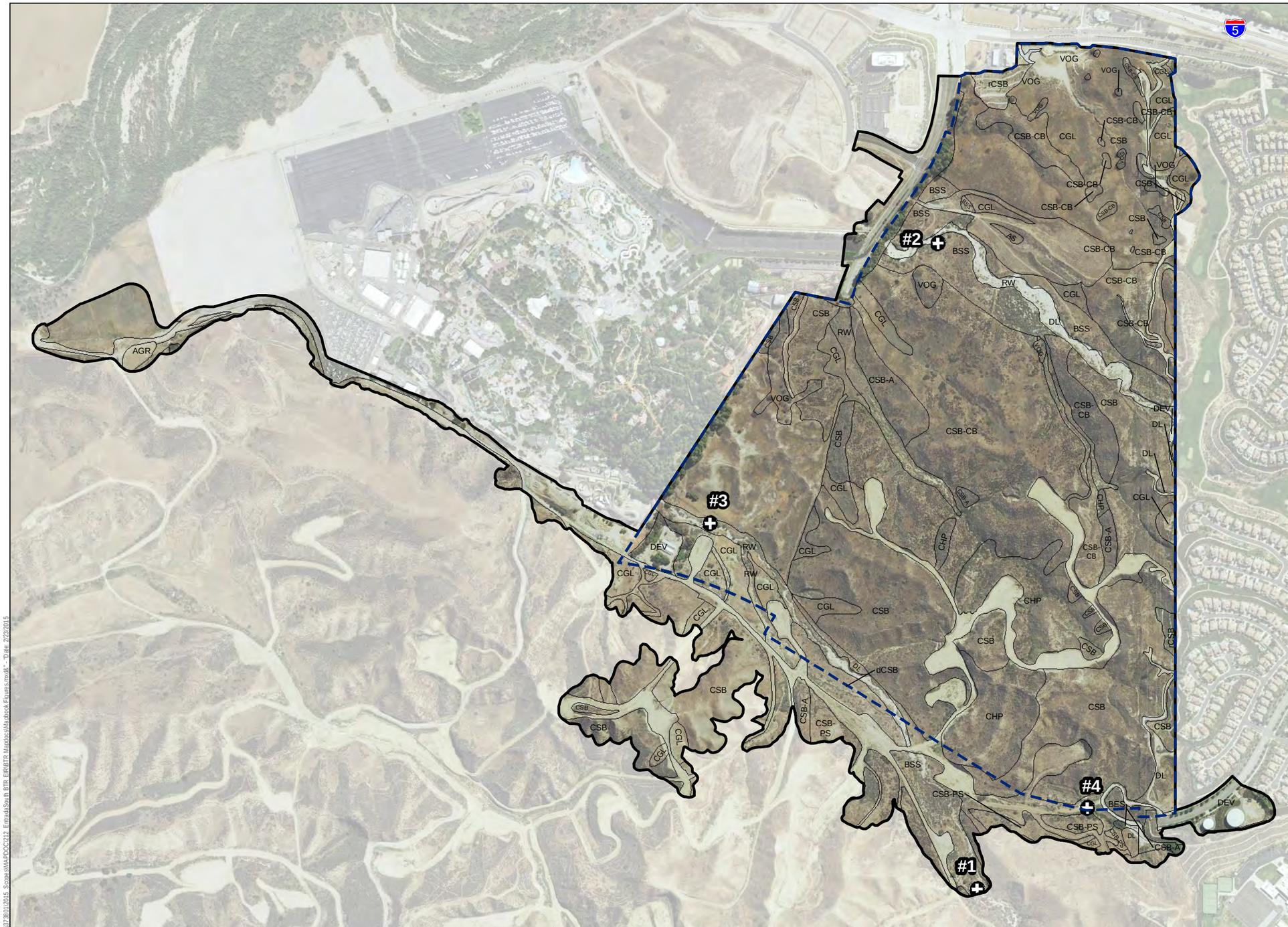
Wetland Delineation and Jurisdictional Determination

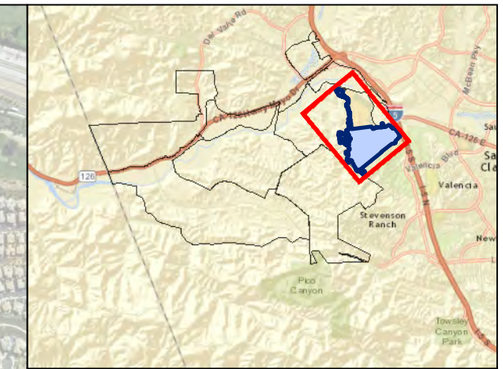
URS Corporation (URS 2014) prepared a *Wetland Delineation and Jurisdictional Determination Report* for the Project Site that includes an assessment and delineation of Corps-jurisdictional waters of the United States (including wetlands), CDFG-jurisdictional streams, and waters of the state subject to the permitting authority of the Los Angeles RWQCB.

Prior to field efforts, URS reviewed the USGS Newhall 7.5-minute quadrangle map, soil data (USDA 2015b), the National Hydrography Dataset (NHD) (USGS 2012), and a high quality aerial photograph of the Entrada South site and the surrounding lands to locate potential hydrologic features. This review identified the presence of four jurisdictional water courses on the site: Magic Mountain Canyon and unnamed drainages, called "Unnamed-1," "Unnamed-2," and "Unnamed-3" in the report. The RMDP/SCP EIS/EIR had previously identified these drainages as jurisdictional waters of the United States and as CDFG streambeds. Recent aerial photographs of the site did not indicate the presence of any new canyons or drainages, so the present delineation effort focused on these four areas. URS performed the formal field delineation of waters of the United States (including wetlands), waters of the state, and CDFG-jurisdictional streambeds on the Project Site on August 30 and 31 and September 4, 5, 20, 21, 25, and 26, 2012. URS Biologists Julie Love and William Fletcher conducted the field delineations using Global Positioning System (GPS) for accessible areas and hand-mapping for inaccessible areas and later digitization using ArcGIS software.

Delineation of Waters of the United States

Waters of the United States can be wetland or non-wetland. The extent of non-wetland waters was determined based on the location of the ordinary high water mark (OHWM), as indicated by signs of flow, drift deposits, changes in vegetation, and other field indicators. As for potential wetlands, these were delineated according to the methods described in the Wetland Delineation Manual (Corps 1987) and the Arid West Regional Supplement to that manual (Corps 2008). In accordance with the Wetland Delineation Manual, sampling points were established within all areas containing potential wetlands, and were situated in areas most likely to exhibit wetland characteristics, based on visual observations. Each sampling point was analyzed for hydrophytic vegetation, hydric soil, and wetland hydrology, and a Wetland Delineation Data Form was completed at each point. See URS (2014) for full details of methods.





Entrada South Project Boundary

Entrada South Tract Map Boundary

Bat Point Locations

Vegetation

- AGR = Agriculture
- AS = Alluvial scrub
- BES = Blue elderberry stands
- BSS = Big sagebrush scrub
- CGL = California annual grassland
- CHP = Undifferentiated chaparral
- CSB = California sagebrush scrub
- bCSB = Burned California sagebrush scrub
- rCSB = Restored California sagebrush scrub
- CSB-A = California sagebrush scrub-Artemisia
- CSB-CB = California sagebrush scrub-California buckwheat
- CSB-PS = California sagebrush scrub-purple sage
- DEV = Developed
- DL = Disturbed land
- EDS = Eriodictyon scrub
- RW = River wash
- VOG = Valley oak/grass

0 500 1,000 Feet

AERIAL SOURCE: NAIP 2014

DUDEK

FIGURE 8

Anabat Survey Locations

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Delineation of CDFG-Jurisdictional Streambeds

The extent of streambeds falling under the jurisdiction of the CDFG pursuant to Section 1600 et seq. of the California Fish and Game Code was determined based on the presence of a defined physical bed, bank, or channel, or the outer edge of riparian vegetation contiguous with the bank of the watercourse. Mapping methods were the same as for waters of the United States.

Delineation of Waters of the State

The extent of waters of the state on site subject to the authority of the Los Angeles RWQCB under the Porter–Cologne Water Quality Control Act was determined to be coterminous with the extent of waters of the United States, due to the simple nature of the drainages present and the absence of any aquatic features that would be under the jurisdiction of one agency but not the other. Therefore, the geographic information system (GIS) shape files representing Corps jurisdiction were also used to calculate the extent of waters of the state.

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4 RESULTS

The Project Site is situated at the nexus of the Transverse, Coast, and Sierra Nevada ranges; the Mojave Desert; and coastal plains (Baldwin et al. 2012). Ecotone areas such as this are often characterized by higher biological diversity than similar-sized areas within the core of a physiographic region (Boyd 1999). However, a large portion of the Entrada South site has either been developed or is used for agriculture.

4.1 Vegetation Communities, Land Covers, and Floral Diversity

The vegetation of the Project Site was originally mapped in 2006 as part of the RMDP/SCP Project vegetation. The site's vegetation map was then updated in 2012 (Dudek 2012b). The majority of the Entrada South site consists of annual grassland, scrub and chaparral habitat, and disturbed land, but also includes small mapped areas of woodland and riparian vegetation. The National Vegetation Classification System (NVCS) uses a hierarchical system of mapping that includes the alliance and association as the lower levels, which are predominantly floristic. Most of the Project area is mapped at the fine-grained alliance or association level. The general physiognomic and physical location and general habitat type provide the hierarchical structure for the vegetation communities/land covers identified on site. These are predominantly physiognomic, based on physical landscape features and vegetation structure.

An alliance is "a floristically defined vegetation type identified by its dominant and/or characteristic species" (Sawyer et al. 2009). Floristics play a predominant role in defining alliances in which "diagnostic species, including some from the primary layer, which have moderately similar composition that reflects regional to subregional climate, substrates, hydrology, moisture/nutrient factors, and disturbance regimes" (Sawyer et al. 2009). The association level is defined as "diagnostic species, usually from multiple growth forms or layers, which have similar composition that reflects topo-edaphic climate, substrates, hydrology, and disturbance regimes" (Sawyer et al. 2009).

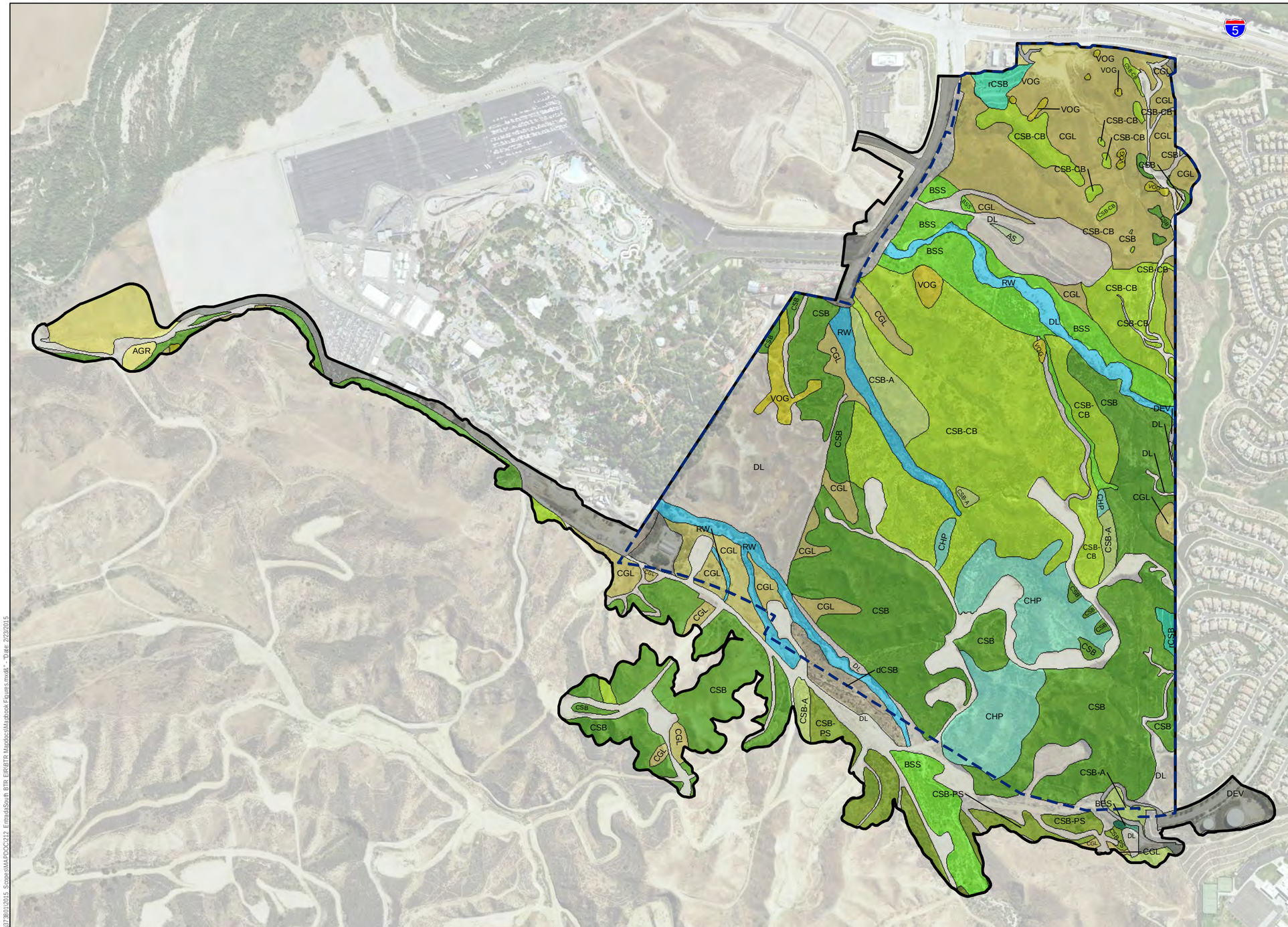
Table 4 provides the list of vegetation communities and land covers and their acreages on site. These vegetation communities and land covers are shown on Figure 9. These vegetation communities and land covers are described in detail below at the floristic alliance where applicable.

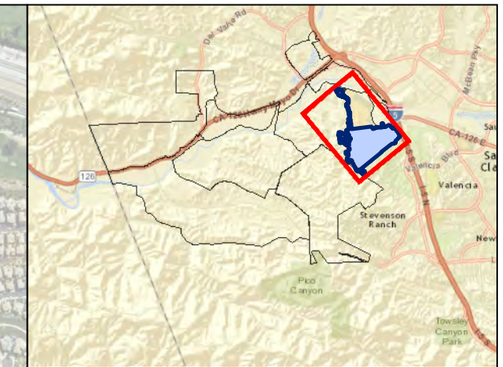
Table 4
Existing Vegetation Communities, Floristic Alliances and Associations, and Land Cover Types on the Entrada South Project Site

General Physiognomic and Physical Location[1]	General Habitat Type	Floristic Alliance	Association	CDFG (2010) Nomenclature	Acreage
Grass and Herb Dominated Communities	Non-native Grassland	California annual grassland	Not mapped to association level	California Annual and Perennial Grassland	65.8
Scrub and Chaparral	Coastal Scrub	California sagebrush scrub	Not mapped to association level	*Artemisia californica* (California sagebrush scrub) Alliance (includes 4.8 acres of disturbed)	123.4
			California sagebrush-coastal sagebrush	*Artemisia californica*	9.9
			California sagebrush-purple sage	*Artemisia californica-Salvia leucophylla* (California sagebrush) Alliance	11.6
		Restored California sagebrush scrub	Not mapped to association level	*Artemisia californica* (California sagebrush scrub) Alliance	2.9
		California sagebrush–California buckwheat scrub	Not mapped to association level	*Artemisia californica–Eriogonum fasciculatum* (California sagebrush– California buckwheat scrub) Alliance	85.3
	Undifferentiated Chaparral Scrubs	Not mapped to alliance level	Not mapped to association level	California Chaparral	25.1
		Thickleaf yerba santa scrub (Provisional Alliance)	Not mapped to association level	*Eriodictyon crassifolium* (Thickleaf yerba santa scrub) Alliance	0.1
Broad Leafed Upland Tree Dominated	Oak Woodland and Forest	Valley oak forest and woodland	Valley oak/grass	*Quercus lobata / grass*	5.4
Riparian and Bottomland Habitat	Low to High Elevation Riparian Scrub	Blue elderberry stands	Blue elderberry	*Sambucus nigra* (Blue elderberry stands) Alliance	0.2
	Other Riparian/ Wetland	Riverwash	Not mapped to association level	N/A	17.6
		Alluvial scrub	Not mapped to association level	N/A	0.3
		Big sagebrush scrub	Not mapped to association level	*Artemisia tridentata* (Big sagebrush) Alliance	24.7
Man-Made Land Cover Types		Agriculture	N/A	NA	8.0
		Developed	N/A	N/A	25.0
		Disturbed land	N/A	N/A	96.1
				Total	**501.4**

Source: CDFG 2010.

Note: [1] The general physiognomic and physical location, general habitat type, floristic alliance,and assocation provide a step-down hierarchical structure (from general to specific) for the vegetation communities/land covers identified on site using the Hierarchical List of Natural Communities with Holland Types recognized by the CNDDB.





Entrada South Project Boundary

Entrada South Tract Map Boundary

Vegetation

- AGR = Agriculture
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- DEV = Developed
- DL = Disturbed land
- EDS = Eriodictyon scrub
- RW = River wash
- VOG = Valley oak/grass

0 500 1,000 Feet

AERIAL SOURCE: NAIP 2014

DUDEK

FIGURE 9

Vegetation

Biotechnical Report for the Entrada South Site

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4.1.1 California Annual Grassland

California annual grassland is characterized by a mixture of weedy, introduced annuals, primarily grasses (Sawyer and Keeler-Wolf 1995; Holland 1986). California annual grassland typically includes wild oat (*Avena* spp.), bromes (*Bromus diandrus*, *B. madritensis*, *B. hordeaceus*), black mustard (*Brassica nigra*), filaree (*Erodium* spp.), dove weed (*Croton setigerus*), Russian thistle (*Salsola tragus*), and Maltese star-thistle (*Centaurea melitensis*). It may occur where disturbance by maintenance (e.g., mowing, scraping, disking, and spraying), grazing, repetitive fire, agriculture, or other mechanical disruption has altered soils and removed native seed sources from areas formerly supporting native vegetation (Holland 1986).

Entrada South supports about 65.8 acres of California annual grassland, which equates to approximately 13% of the Project Site. The 65.8 acres of California annual grassland on site represents about 3% of the approximately 2,300 acres of California annual grassland in the RMDP/SCP Project area, which includes the Entrada South Project Site.

4.1.2 California Sagebrush Scrub, California Sagebrush–California Buckwheat

The California sagebrush scrub alliance, including restored areas, comprises the large majority of the coastal scrub on the Project Site. It is mapped where California sagebrush (*Artemisia californica*) is the dominant shrub or co-dominant species on site (Sawyer et al. 2009), and includes some association-level mapping for *Artemisia californica* and *Artemisia californica-Saliva leucophylla* (San Juan purple sage). This alliance also includes mapping of disturbed California sagebrush, which includes areas with California sagebrush–California buckwheat is mapped where California sagebrush–California buckwheat (also called Eastern Mojave buckwheat) (*Eriogonum fasciculatum*) are about equally dominant. Where the percent cover of California sagebrush association species was 20% to 50% cover, these areas were mapped as the disturbed form. Where the percent cover of these species was greater than 50%, these areas were mapped as the non-disturbed form.

California sagebrush scrub is a native plant community characterized by a variety of soft, low, aromatic, drought-deciduous shrubs, such as California sagebrush, Eastern Mojave buckwheat, California brittlebush (*Encelia californica*), and sages (*Salvia* spp.), with scattered evergreen shrubs, including lemonade sumac (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), and toyon (*Heteromeles arbutifolia*). It typically develops on south-facing slopes and other xeric situations.

The California sagebrush scrub on the Project Site is dominated by a mixture of California sagebrush, black sage (*Salvia mellifera*), San Luis purple sage, and Eastern Mojave buckwheat. Other species present within this community include chaparral yucca (*Hesperoyucca whipplei*), clustered tarweed (*Deinandra fasiculata*), common deerweed (*Acmispon glaber*), black mustard,

and Maltese star-thistle, with scattered chaparral species including chamise (*Adenostoma fasciculatum*), sugar sumac (*Rhus ovata*), toyon, and Mendocino bushmallow (*Malacothamnus fasciculatus*). California sagebrush scrub occurs on site on dryer slopes, generally south- or west-facing. California sagebrush–California buckwheat has a similar composition, but with a co-dominance of Eastern Mojave (California) buckwheat.

The Entrada South site supports about 233.0 acres of California sagebrush scrub and California sagebrush–California buckwheat, which equates to approximately 46% of the Project Site. The 233.0 acres is about 6% of the approximately 3,600 acres of California sagebrush scrub and California sagebrush–California buckwheat in the RMDP/SCP project area, which includes the Entrada South Project Site.

4.1.3 Undifferentiated Chaparral Scrubs

Undifferentiated chaparral scrub is a drought- and fire-adapted community of broad-leafed shrubs, 1.5 to 3.0 meters tall, typically forming dense impenetrable stands. It develops primarily on mesic north-facing slopes and in canyons. This habitat association is typically a mixture of chamise, ceanothus (*Ceanothus* spp.), scrub oak (*Quercus berberidifolia*), laurel sumac, and black sage. Dominant chaparral species on site include a mixture of chamise, hoaryleaf ceanothus (*Ceanothus crassifolius*), redberry buckthorn (*Rhamnus crocea*), sugar sumac, and toyon. Other species that occur in this community on site include Mendocino bushmallow, hollyleaf redberry (*Rhamnus ilicifolia*), mainland (hollyleaf) cherry (*Prunus ilicifolia*), and California sagebrush scrub species as described above. The Project Site supports a small amount of thickleaf yerba santa (*Eriodictyon crassifolium*) scrub, which is a provisional alliance (CDFG 2010).

Entrada South supports about 25.2 acres of undifferentiated chaparral scrub and thickleaf yerba santa scrub, which equates to approximately 5.0% of the site. The 25.2 acres is about 1.2% of the approximately 2,100 acres of undifferentiated chaparral scrub in the RMDP/SCP project area, which includes the Entrada South Project Site.

4.1.4 Valley Oak Forest and Woodland

On site, valley oak/grass, an association of the valley oak woodland floristic alliance, includes primarily valley oaks (*Quercus lobata*) sparsely populated (up to 10% canopy cover) within California annual grassland. Three coast live oaks (*Quercus agrifolia*) and two valley oak-scrub oak hybrids[4] are present on site (LDC 2014; Eckardt, pers. comm. 2013).

[4] MacDonald oaks

Only 1.0% of the Entrada South site, about 5.4 acres, supports valley oak/grass. The 5.4 acres of valley oak/grass on site is about 1.0% of the approximately 470 acres of valley oak/grass in the RMDP/SCP project area, which includes the Entrada South Project Site.

4.1.5 Blue Elderberry Stands

Blue elderberry stands include areas supporting blue elderberry (*Sambucus nigra*). The Entrada South site supports 0.2 acre of blue elderberry stands, or only 0.04% of the site. In the overall RMDP/SCP area blue elderberry is uncommon, totaling only about 13 acres, or 0.09% of the total area. The 0.2 acre of blue elderberry on site is about 1.5% of the community in the combined RMDP/SCP project area, which includes the Entrada South Project Site.

4.1.6 Riverwash

Riverwash occurs within the main tributary washes on the Project Site. Riverwash areas are unvegetated or sparsely vegetated with seedlings, sparse grasses, and forbs, and are subject to scouring by seasonal storm flows.

Entrada South supports about 17.6 acres of riverwash, which equates to approximately 3.5% of the site. These 17.6 acres comprise about 5.3% of the approximately 330 acres of riverwash in the RMDP/SCP project area, which includes the Entrada South Project Site.

4.1.7 Alluvial Scrub

Alluvial scrub occurs in creeks and washes on alluvial material. This community does not fit into a defined CDFG (2010) plant community classification, but is defined by the dominant plant species in the washes on site, including transitional sage scrub species and wetland species that can tolerate more xeric conditions. On site this community occurs solely in a very small area within the Santa Clara River and its tributaries. Species in this community on site include big sagebrush (*Artemisia tridentata*), mulefat (*Baccharis salicifolia*), tree tobacco (*Nicotiana glauca*), California broomsage (*Lepidospartum squamatum*), big saltbush (*Atriplex lentiformis*), and California sagebrush.

The Entrada South site supports 0.3 acre of alluvial scrub, or only 0.06% of the site. In the overall RMDP/SCP area alluvial is very uncommon, totaling only about 1.3 acres, or 0.01% of the total area. The 0.3 acre of alluvial scrub on site is about 23% of the community in the combined RMDP/SCP project area, which includes the Entrada South Project Site.

4.1.8 Big Sagebrush Scrub

Big sagebrush scrub is composed mostly of soft-woody shrubs, 0.5 to 2 meters tall, usually with bare ground underneath and between shrubs (Holland 1986). This community is dominated or co-dominated by big sagebrush, with a low, intermittent and grassy understory (Sawyer et al. 2009). California sagebrush scrub and chaparral species also occur in this vegetation community. This community generally occurs in alluvial areas along washes.

Entrada South supports about 24.7 acres of big sagebrush scrub, which equates to approximately 4.9% of the Project Site. These 24.7 acres comprise about 27% of the approximately 90 acres of big sagebrush scrub in the RMDP/SCP project area, which includes the Entrada South Project Site.

4.1.9 Agriculture

Agriculture on the Project Site is limited to the polygon at the extreme northern extent of the Project Site adjacent to the Santa Clara River. Agriculture refers to areas where irrigated row and field crops are being grown (i.e., intensive agriculture). This area may support grass species such as barley (*Hordeum* spp.) and wild oat. This land has little biological resource value because it provides very limited habitat value for most native species. However, this area may supply grain and water for native and migratory birds.

Approximately 1.6% of the Entrada South site, about 8.0 acres, supports agriculture. These 8.0 acres comprise about 0.5% of the approximately 1,650 acres of agriculture in the RMDP/SCP project area, which includes the Entrada South Project Site.

4.1.10 Developed

Developed land refers to areas supporting manmade structures including homes, yards, roadways, and other highly modified lands supporting structures associated with dwellings or other permanent structures. Developed land on the Project Site refers to existing roads.

Approximately 5.0% of the Entrada South site, about 25.0 acres, supports developed areas. These 25.0 acres comprise more than the approximately 11.6 acres of developed land in the RMDP/SCP project area, with the only other developed land cover mapped in the RMDP/SCP area 2.2 acres on VCC.[5]

[5] It should be noted that for the purpose of the RMDP/SCP almost all of the manmade facilities, including roads, oil and gas operations, and buildings associated with the Applicant's operations were mapped as disturbed land uses.

4.1.11 Disturbed Land

Disturbed land typically occurs in areas where soils have been recently or repeatedly disturbed by grading or compaction resulting in the growth of very few native perennials, and are usually dominated by bare ground or non-native dicotyledonous species including filaree (*Erodium* spp.), black mustard, thistles (e.g., *Cynara cardunculus*, *Carduus pycnocephalus*, and *Centaurea melitensis*), doveweed (*Croton setigerus*), and others. Within the Entrada South study area, disturbed land occurs on permeable surfaces without vegetation, as well as with weedy annual non-native vegetation including Russian thistle, tocalote, doveweed, and black mustard.

Approximately 19% of the Entrada South site, about 96.1 acres, supports disturbed land. These 96.1 acres comprise about 8.0% of the approximately 1,200 acres of disturbed land in the RMDP/SCP project area. This land cover comprises approximately 8% of the combined RMDP/SCP project area, so the Entrada South site supports approximately the same proportion of disturbed land compared to its representation in the RMDP/SCP project area, which includes the Entrada South Project Site.

4.1.12 Floral Diversity

The Project Site is situated at the nexus of the Transverse, Coast, and Sierra Nevada ranges; the Mojave Desert; and coastal plains (Hickman 1996). Such ecotones often support higher biological diversity than similar-sized areas within the core of a physiographic region (Boyd 1999), and as such, a high diversity of plant species is expected. Over the 10 years of field surveys on the Project Site between 2002 and 2013 (see Table 3), and under a broad range of annual precipitation levels, a cumulative total of approximately 362 plant taxa was identified on the Project Site, including 354 species identified to at least the species level, and 8 taxa identified only to genus level. Of these, 275 of the taxa (76%) are native to the region and 87 (24%) are non-native. The 362 taxa represent 57 different families, indicating a high level of floral richness on site. The cumulative list of plant species identified on the Entrada South site in between 2002 and 2013 is provided as Appendix B.

4.2 Wildlife

4.2.1 General Wildlife

The Entrada South site supports habitat for a diverse number of upland, woodland, and riparian wildlife species. The grassland, shrubland, and woodland upland communities and the riparian vegetation associated with the adjacent Santa Clara River and its tributaries provide a diversity of suitable habitats for wildlife species. With the exception of the agriculture, and disturbed and developed lands, which are regularly maintained, these habitats are suitable for supporting a variety of wildlife species. A total of 118 wildlife taxa was identified on the Project Site

during site-specific wildlife surveys in 2006 and 2012. Appendix C provides the full cumulative list of wildlife species observed on the Project Site, and Table 3 provides a summary of wildlife surveys conducted.

4.2.2 Birds

Seventy-six bird species representing 29 families were observed on site, including species common to grasslands, shrublands, woodlands and riparian/wetland habitats. Species representative of these habitat types include grassland species such as western meadow lark (*Sturnella neglecta*) and horned lark (*Eremophila alpestris*), and raptors that forage in grasslands such as red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and white-tailed kite (*Elanus leucurus*). Common shrubland species observed on the site include California towhee (*Melozone crissalis*), spotted towhee (*Pipilo maculatus*), California quail (*Callipepla californica*), western scrub-jay (*Aphelocoma californica*), bushtit (*Psaltriparus minimus*), wrentit (*Chamaea fasciata*), and phainopepla (*Phainopepla nitens*). Common woodland and riparian/wetland species observed on site include red-winged blackbird (*Agelaius phoeniceus*), common yellowthroat (*Geothlypis trichas*), oak titmouse (*Baeolophus inornatus*), acorn woodpecker (*Melanerpes formicivorus*), Bewick's wren (*Thryomanes bewickii*), and house wren (*Troglodytes aedon*). Several of the bird species observed on site are species that are urban-tolerant or attracted to urban settings, including rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), song sparrow (*Melospiza melodia*), white-crowned sparrow (*Zonotrichia leucophrys*), house finch (*Carpodacus mexicanus*), cliff swallow (*Petrochelidon pyrrhonota*), Brewer's blackbird (*Euphagus cyanocephalus*), brown-headed cowbird (*Molothrus ater*), northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), Anna's hummingbird (*Calypte anna*), American robin (*Turdus migratorius*), back phoebe (*Sayornis nigricans*) and western kingbird (*Tyrannus verticalis*). Some less common species observed on site that indicate high avian diversity and high habitat quality include white-throated swift (*Aeronautes saxatalis*), Vaux's swift (*Chaetura vauxi*), Lazuli bunting (*Passerina amoena*), black-headed grosbeak (*Pheucticus melanocephalus*), greater roadrunner (*Geococcyx californianus*), Bullock's oriole (*Icterus bullockii*), canyon wren (*Catherpes mexicanus*), and ash-throated flycatcher (*Myiarchus cinerascens*). In addition, several special-status bird species were observed on the Project Site, as discussed in Section 4.3.2. For the full cumulative list of birds observed on the Project Site, see Appendix C.

4.2.3 Amphibians and Reptiles

Biologists directly observed one amphibian on the Project Site: the western toad (*Anaxyrus boreas*). However, because the Project Site contains a relatively small amount of wetland habitat for amphibians, and because wildlife surveys were primarily conducted in the daytime for birds or remotely at night for bats, one would not expect to observe most amphibians directly by sight

or indirectly by call. The only other common amphibian highly likely to occur on the Project Site is the Baja California treefrog (*Pseudacris hypochondriaca*).

Biologists observed four common reptile species on the Project Site: western fence lizard (*Sceloporus occidentalis*), common side-blotched lizard (*Uta stansburiana*), western rattlesnake (*Crotalus oreganus*), and gophersnake (*Pituophis cantifer*). Based on pitfall surveys conducted in the Project vicinity (Impact Sciences Inc. 2006a), several other common reptiles are expected to occur on the Project Site, including southern alligator lizard (*Elgaria multicarinata*), coastal whiptail (*Aspidoscelis tigris stejnegeri*), western skink (*Plestidon skiltonianus*), and common kingsnake (*Lampropeltis getula*).

4.2.4 Fish

Six fish species were detected in those reaches of the Santa Clara River potentially affected by the Entrada South Project, including four native species and two non-native species. The native species are arroyo chub (*Gila orcutti*), unarmored threespine stickleback, Santa Ana sucker (*Catostomus santaanae*), and prickly sculpin (*Cottus asper*). The arroyo chub, unarmored threespine stickleback, and Santa Ana sucker are special-status fish and are discussed in more detail in Section 4.3. The two non-native species are mosquitofish (*Gambusia affinis*) and largemouth bass (*Micropterus salmoides*).

A seventh fish species, the federally listed endangered southern steelhead (*Oncorhynchus mykiss*), occupies downstream reaches of the Santa Clara River and its tributaries (Titus et al. 2010; Stoeker and Kelly 2005), but has not historically occurred in those portions of the river adjacent to the Entrada Project Site (Titus et al. 2010) and potentially directly affected by the Project. However, because discharges from the Project Site may reach steelhead habitat downstream during storm events (that flow across the "Dry Gap" approximately 5 miles downstream of the Project area), this BTR evaluates the Project's potential to impact downstream steelhead, including juveniles migrating from freshwater natal streams to the ocean.

4.2.5 Mammals

Biologists detected 25 mammal species on the Project Site, including 10 bat species detected during acoustic surveys (bats are addressed in Section 4.3.2 in the discussion of special-status wildlife). Most of the mammals are common in grassland, shrubland, and woodland and riparian habitats, including cottontail rabbits (*Sylvilagus* spp.), California ground squirrel (*Spermophilus beecheyi*), woodrat (*Neotoma* sp.), Botta's pocket gopher (*Thomomys bottae*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), and mule deer (*Odocoileus hemionus*). Other mammals likely to occur include Virginia opossum (*Didelphis virginiana*) and various rodents (*Peromyscus* spp., *Chaetodipis californicus*, *Reithrodontomys megalotis*). Less commonly observed mammals detected on the site

include long-tailed weasel (*Mustela frenata*), bobcat (*Lynx rufus*), and mountain lion (*Puma concolor*). For the full cumulative list of mammals observed on the Project Site, see Appendix C.

4.2.6 Butterflies and Moths

Twelve invertebrate species, including 11 butterfly species and 1 moth species, were observed on the Project Site, among them cabbage white (*Pieris rapae*), Behr's metalmark (*Apodemia mormo virgulti*), painted lady (*Vanessa cardui*), and western tiger swallowtail (*Papilio rutulus*). For the full cumulative list of butterflies and moths observed on the Project Site, see Appendix C.

4.3 Special-Status/Regulated Resources

The following resources are discussed in this section: (1) plant and animal species present or potentially present on the Project Site that are given special recognition by federal, state, or local resource agencies and environmental organizations owing to declining, limited, or threatened populations, that are the result, in most cases, of habitat reduction; (2) habitat areas that are unique, of relatively limited distribution, or of particular value to wildlife; and (3) vegetation communities that are unique, of relatively limited distribution, or of particular value to wildlife.

Sources used for determination of special-status biological resources are as follows:

- State- and federally listed plant species (CDFW 2014a)
- CNPS CRPR 1B, 2, 3, and 4 species (CNPS 2012)
- Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2014b)
- CDFG natural communities (CDFG 2010)
- Special Animals species (CDFG 2011)
- CNDDB (CDFG 2012)
- County of Los Angeles sensitive species (County of Los Angeles 2006).

4.3.1 Special-Status Plant Species

Focused surveys for special-status plants were conducted on the Project Site over nine survey years since 2002 (Table 3); and the status of the special-status is known with a high degree of certainty. The status of special-status plant species on the Project Site is organized in two tables: (1) Table 5, Special-Status Plants on the Project Site, and (2) Table 6, Special-Status Plants Not Observed and Not Expected to Occur on the Project Site. The special-status species in Table 6 are not further analyzed in this BTR because no direct, indirect, or cumulative impacts are expected. In addition, the potential for bryophytes (non-vascular plants including mosses, liverworts, and hornwort) to occur on the Project Site was evaluated, and is discussed at the end of this subsection.

In addition to state, federal and Los Angeles County special-status designations, the CNPS (2012) assigns a CRPR (California Rare Plant Rank) to designate the degree of concern for and rarity of plant taxa in California. Special-status plants are assigned to one of six CRPR categories.

CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere

CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere

CRPR 2A: Plants extirpated in California, but common elsewhere

CRPR 2B: Plants rare, threatened, or endangered in California, but more common elsewhere

CRPR 3: Needs review

CRPR 4: Plants of limited distribution (a watch list)

In addition to the CRPR, CNPS assigns threat categories to the lists as follows:

0.1—Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat) (e.g., 1B.1 would be a plant rare, threatened, or endangered in California and elsewhere and more than 80% of the occurrences threatened or with a high degree of threat).

0.2—Moderately threatened in California (20% to 80% occurrences threatened/moderate degree and immediacy of threat)

0.3—Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

It should be noted that the CNPS rarely assigns a threat category of 0.1 to CRPR 4 plants because they generally have large enough populations to not be significantly threatened in California.

Table 5
Special-Status Plants Observed on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/LA County	CRPR	Primary Habitat Associations/Life Form/Blooming Period	Status on Entrada South	Status Elsewhere in RMDP/SCP Project Area
Artemisia tridentata ssp. *parishii*	Parish's big sagebrush	None/None/LA County	None	Big sagebrush scrub on the margins of drainage channels/perennial shrub/November-August	Co-occurs with *Artemisia tridentata* ssp. *tridentata*. Moderate potential to occur on site based on analyses of plants collected from Landmark Village (see discussion in text). Parish's big sagebrush is considered sensitive by the County of Los Angeles.	Observed in the Salt Creek and Landmark Village. Plants were found primarily intermixed with big sagebrush. Has not been observed on VCC.
Calochortus clavatus var. *gracilis*	slender mariposa lily	None/None/LA County	1B.2	Chaparral and coastal scrub/perennial herb (geophyte)/March-May	Observed on site during surveys in 2003-2005. Number of counted flowering individuals have ranged from 419 in 2004 to 7,780 in 2003; approximately 3,900 individuals were documented in 2005 when last observed. Not detected on site during surveys in 2006, 2007, 2011, 2012 and 2013.	Observed on VCC in 2004 and 2005, primarily on northwest- and southwest-facing ridges and slopes located just east of Hasley Canyon. Documented annually within the Specific Plan area from 2003 to 2006, primarily on east-, northeast-, and southwest-facing ridges and slopes in the following areas: the San Martinez Grande Canyon, Chiquito Canyon, Off-Haul Canyon, Potrero Canyon, Long Canyon, Middle Canyon, Grapevine Mesa, and Airport Mesa areas as well as the lower Castaic Creek area. Also observed in the Salt Creek area primarily in the northern portion and at the southwestern end, as well as along the southern end of the High Country SMA/SEA from 2003 through 2006. The estimated number of individuals in the study area ranged from 693 in 2006 to 65,297 in 2004. CNDDB records also exist for mouth of Pico Canyon. Observed within the Potrero Village Project Site in 2013. Observed along Salt Creek in the advanced mitigation sites in 2013.

Table 5
Special-Status Plants Observed on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/LA County	CRPR	Primary Habitat Associations/Life Form/Blooming Period	Status on Entrada South	Status Elsewhere in RMDP/SCP Project Area
Calystegia peirsonii	Peirson's morning-glory	None/None/LA County	4.2	Chaparral, coastal scrub, cismontane woodland, grassland/ perennial herb/May-June	Observed in chaparral and California sagebrush throughout the site in 2005, but not observed during 2006, 2007, 2011, 2012, and 2013 surveys.	Observed on VCC in 2003-2006 and in Specific Plan area annually in 2002-2006. Also observed in the High Country SMA/SEA and Salt Creek area in 2003 and 2006. Generally widespread on ridges and slopes, weakly climbing over chaparral, coastal scrub, and grasslands. Observed within the Mission Village Project Site in 2012. Observed within the Homestead South Village Project Site in 2012. Observed along Salt Creek in the advanced mitigation sites in 2012.Observed within the Potrero Village Project Site in 2013.
Cercocarpus betuloides var. *blancheae*	island mountain-mahogany	None/None/LA County	4.3	Chaparral, closed-cone coniferous forest/evergreen shrub/February-May	Observed in chaparral on site. Several individuals were detected on site in 2012.	Observed annually 2002-2006 in Specific Plan area and in Salt Creek area in 2003, primarily in chaparral at the base of north-facing slopes. Has not been observed on VCC. Observed within the Mission Village Project Site in 2012. Observed within the Homestead South Village Project Site in 2012. Observed along Salt Creek in the advanced mitigation sites in 2012. Observed within the Potrero Village Project Site in 2013.
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	FC/SE/LA County	1B.1	Coastal scrub, sandy soils/annual herb/April-June	Cumulatively documented in the southeastern, central, and western portions of the site. Total on-site cumulative occupied footprint is 2.10 acres of the site.	Over all survey years observed in four general areas within Specific Plan in Airport Mesa, Grapevine Mesa, Potrero Canyon, and San Martinez Grande Canyon, and on the western side of the VCC planning area, just east of Hasley Canyon. For the 2002-2007 and 2011-2013 periods, a total of 20.68 cumulative occupied acres were mapped.

Table 5
Special-Status Plants Observed on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/LA County	CRPR	Primary Habitat Associations/Life Form/Blooming Period	Status on Entrada South	Status Elsewhere in RMDP/SCP Project Area
Prunus ilicifolia ssp. *ilicifolia*	mainland (hollyleaf) cherry	None/None/LA County	None	Undifferentiated chaparral, big sagebrush scrub, and riverwash	Observed on site during field surveys. Fourty-six individual plants mapped on site in 2012.	Observed 2001-2006 in Specific Plan area and on VCC 2003-2006 within undifferentiated chaparral, big sagebrush scrub, and riverwash. Observed within the Mission Village Project Site in 2012. Observed within the Homestead South Village Project Site in 2012. Observed along Salt Creek in the advanced mitigation sites in 2012.

Key:
Status:
Federal: FC = Federal Candidate for listing
State: SE = California Endangered
CRPR: List 1B = Plants rare, threatened, or endangered in California and elsewhere
List 4 = Plants of limited distribution (a watch list)
Note: See text for threat ranks.
LA County: Sensitive Species Occurring or Potentially Occurring within the Los Angeles Significant Ecological Area (SEA) (County of Los Angeles 2006)

Table 6
Special-Status Plants Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State	CNPS List	Primary Habitat Associations/Life Form/Blooming Period	Status in Project Vicinity
Arenaria paludicola	marsh sandwort	FE/SE	1B.1	Dense freshwater marsh/perennial herb/May-August	No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrences are in the Santa Ana River and in Santa Barbara. Limited suitable habitat present on site.
Astragalus brauntonii	Braunton's milk-vetch	FE/None/ LA County	1B.1	Chaparral, coastal scrub, grasslands; often on carbonate substrates/ perennial herb/March-July	No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in the Simi Hills.
Atriplex coulteri	Coulter's saltbush	None/None /LA County	1B.2	Coastal scrub and grasslands on alkaline or clay substrate/perennial herb/March-October	No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in the Simi Hills.
Atriplex serenana var. *davidsonii*	Davidson's saltscale	None/None	1B.2	Coastal bluff scrub and coastal scrub on alkaline substrate/ annual herb/May-October	No CNDDB records exist for the Newhall or Val Verde quads.
Baccharis malibuensis	Malibu baccharis	None/None	1B.1	Chaparral, coastal scrub, cismontane woodland/deciduous shrub/August	No CNDDB records exist for the Newhall or Val Verde quads; closest known populations are in the western Santa Monica Mountains near Malibu.
Berberis nevinii	Nevin's barberry	FE/SE/LA County	1B.1	Chaparral, coastal scrub, riparian scrub, cismontane woodland on sandy or gravelly substrate/evergreen shrub/March-April	Nearest CNDDB records exist for San Francisquito Canyon at confluence with Santa Clara River.
Brodiaea filifolia	thread-leaved brodiaea	FT/SE/LA County	1B.1	Clay substrate openings in chaparral, sage scrub, and grasslands/perennial herb (geophyte)/March-June	No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in San Dimas.
*California macrophylla (*formerly *Erodium macrophyllum)*	round-leaved filaree	None/None /LA County	1B.1	Cismontane woodland and grasslands on clay substrate/annual herb/March-May	No CNDDB records exist for the Newhall or Val Verde quads; however, records exist for Simi Valley, and this plant was observed in the hills east of Castaic Lake in 2003.
Calochortus fimbriatus (formerly *Calochortus weedii* var. *vestus*)	late-flowered mariposa lily	None/None	1B.3	Chaparral, cismontane and riparian woodland/perennial herb (geophyte)/ June-August	No CNDDB records exist for the Newhall or Val Verde quads.

Table 6
Special-Status Plants Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State	CNPS List	Primary Habitat Associations/Life Form/Blooming Period	Status in Project Vicinity
Calochortus plummerae	Plummer's mariposa lily	None/None /LA County	4.2	Chaparral, coastal scrub, cismontane woodland, grasslands on rocky granitic substrate/perennial herb (geophyte)/May-July	Not observed on site in 2006 and 2012 surveys. A *Calochortus* species with narrow seed capsules and a fibrous bulb coat was observed on site in 2002, but could not be confirmed as *C. plummerae*. A search of this area in 2005 only revealed *C. venustus*.
Calystegia sepium ssp. *binghamiae*	Santa Barbara morning-glory	None/None	1B.1	Marshes and swamps/perennial herb/ April-May	No CNDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat on site
Centromadia parryi ssp. *australis*	southern tarplant	None/None /LA County	1B.1	Mesic edges of marshes in grasslands/annual herb/May-November	No CNDDB records exist for the Newhall or Val Verde quads.
Deinandra minthornii	Santa Susana tarplant	None/SR/ LA County	1B.2	Chaparral and coastal scrub on rocky substrate/deciduous shrub/July-November	No CNDDB records exist for the Newhall or Val Verde quads; however, records exist for the Simi Hills and Oat Mountain.
Delphinium parryi ssp. *blochmaniae*	dune larkspur	None/None /LA County	1B.2	Maritime chaparral, coastal dunes/ perennial herb/ April-may	Not expected to occur on site due to lack of suitable habitat.
Dodecahema leptoceras	slender-horned spineflower	FE/SE/LA County	1B.1	Alluvial scrub on sandy substrate/ annual herb/April-June	Historical CNDDB records exist for the Newhall or Val Verde quads in alluvial habitat.
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's Dudleya	None/None /LA County	1B.1	Clay openings in chaparral and coastal scrub, grasslands/perennial herb/April-June	No CNDDB records exist for the Newhall or Val Verde quads.
Dudleya cymosa ssp. *marcescens*	marcescent dudleya	FT/SR/LA County	1B.2	Chaparral, often on volcanic substrate/perennial herb (geophyte)/ April-June	No CNDDB records exist for Newhall and Val Verde quads.
Dudleya cymosa ssp. *ovatifolia*	Santa Monica dudleya	FT/None/ LA County	1B.2	Chaparral and coastal scrub, often on volcanic substrate/perennial herb (geophyte)/March-June	Not observed during field surveys. No CNDDB records exist for Newhall and Val Verde quads.
Dudleya multicaulis	many-stemmed dudleya	None/None	1B.2	Coastal bluff scrub, coastal scrub, valley and foothill grassland, rocky, often clay substrate/perennial herb/ April-June	No CNDDB records exist for the Newhall or Val Verde quads; closest known occurrences are in Calabasas and San Dimas.

Table 6
Special-Status Plants Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State	CNPS List	Primary Habitat Associations/Life Form/Blooming Period	Status in Project Vicinity
Dudleya parva	Conejo dudleya	FT/None	1B.2	Coastal scrub and grassland on rocky, gravelly clays/perennial herb/May-June	No CNDDB records exist for the Newhall or Val Verde quads.
Gnaphalium sp. *nova*	Undescribed everlasting	None/None	None	Sparsely vegetated secondary alluvial benches and riverwash/Sept–Oct	Though recorded nearby along Castaic Creek and the Santa Clara River, this perennial species would likely have been observed during surveys if present. Low likelihood of occurrence within study area.
Helianthus inexpectatus	Newhall sunflower	None/ None	1B.1	Marshes and swamps, riparian woodland/freshwater, seeps/ perennial rhizomatous herb/ Aug–Oct/ 1,001	No suitable habitat observed in study area.
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower	None/None /LA County	1A	Marshes and swamps/perennial herb/ August-October	A *Helianthus* population discovered in 2002 at Castaic Spring on the south side of the Santa Clara River between Middle Canyon and San Jose Flats was determined by some experts to be this subspecies, but determined by other experts not to be this subspecies. Based on pollen electron microscopy and chromosome counts, it is likely that the Newhall *Helianthus* species is a hybrid between *H. nuttallii* and *H. californicus* or an intermediate evolutionary step between the two species (Porter and Fraga 2004). Limited suitable habitat on site.
Horkelia cuneata var. *puberula*	mesa horkelia	None/None	1B.1	Chaparral, cismontane woodland, coastal scrub on sandy or gravelly substrate/perennial herb/February-December	No CNDDB records exist for the Newhall or Val Verde quads.
Juglans californica	southern California black walnut	None/None /LA County	4.2	Chaparral, cismontane woodland, coastal scrub, alluvial scrub/ deciduous tree/March-May	This perennial deciduous tree would likely have been observed during surveys if present.
Juncus acutus	Spiny rush	None/ None	4.2	Coastal dunes (mesic), meadows and seeps (alkaline seeps), marshes and swamps (coastal salt)/ perennial rhizomatous herb/ (Mar) May–Jun/ 10– 2,953	Though recorded nearby along the Santa Clara River, this perennial species would likely have been observed during surveys if present. Low likelihood of occurrence within study area.

Table 6
Special-Status Plants Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State	CNPS List	Primary Habitat Associations/Life Form/Blooming Period	Status in Project Vicinity
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None /LA County	1B.1	Marshes, swamps, plays, vernal pools/ annual herb/ February-June	Observed as a component of an erosion control seed mix applied along dirt roads associated with the gas and power transmission line easement running the southeastern edge of the study area. These plants are growing in conditions outside the natural habitat for this species. Limited suitable habitat on site.
Malacothamnus davidsonii	Davidson's bush-mallow	None/None /LA County	1B.2	Chaparral, coastal scrub, riparian woodland/ deciduous scrub/June-January	Nearest CNDDB occurrences are in Van Nuys and Sunland quads.
Nama stenocarpum	mud nama	None/None /LA County	2B.2	Edges of lakes, rivers, ponds, vernal pools/annual/January-July	No CNDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat on site
Nasturtium gambelii (formerly *Rorippa gambelii*)	Gambel's water cress	FE/ST/LA County	1B.1	Marsh and swamps (freshwater and brackish)/ perennial herb/April-September	No CNDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat on site.
Navarretia ojaiensis	Ojai navaretia	None/None	1B.1	Chaparral (openings), coastal scrub (openings), valley and foothill grassland/ annual herb/ May–Jul/ 902–2,034	Observed in the vicinity of Salt Creek during the 2003 field season on gentle to moderate north-facing slopes.
Nemophila parviflora var. *quercifolia*	oak-leaved nemophila	None/None	4.3	Cismontane woodland, Lower montane coniferous forest/ annual herb/ May-Jun	Limited suitable habitat on site.
Nolina cismontana	chaparral nolina	None/None	1B.2	Chaparral, coastal scrub on sandstone or gabbro substrate/ perennial shrub/April-July	No CNDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present on site.
Opuntia basilaris var. *brachyclada*	short-joint beavertail	None/None /LA County	1B.2	Chaparral, Joshua tree woodland, Mojavean desert scrub/succulent shrub/ April-June	This variety was tentatively identified on site by Dudek in 2002; however, further investigation indicated that these plants were not consistent with *Opuntia basilaris* var. *brachyclada*. Therefore, *O. basilaris* plants were not mapped during surveys of the study area in 2003- 2005.
Pentachaeta lyonii	Lyon's pentachaeta	FE/SE/LA County	1B.1	Openings in chaparral and coastal scrub, grasslands/annual herb/March-August	No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrences are in the Simi Valley.

Table 6
Special-Status Plants Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State	CNPS List	Primary Habitat Associations/Life Form/Blooming Period	Status in Project Vicinity
Senecio aphanactis	chaparral ragwort	None/None /LA County	2B.2	Chaparral, coastal scrub, cismontane woodland on alkaline substrate/annual herb/January-April	Historical CNDDB record for Saugus, south of Santa Clara River.
Sidalcea neomexicana	salt spring checker-bloom	None/None /LA County	2B.2	Chaparral, coastal scrub, and playas on alkaline substrate/perennial herb/March-June	No CNDDB records exist for the Newhall or Val Verde quads.
Thelypteris puberula var. *sonorensis*	Sonoran maiden fern	None/None /LA County	2B.2	Meadows and seeps/perennial herb/ fertile January-September	No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrence at Point Dume. Limited suitable habitat present on site.

Status Key:
Federal: FE = Federal Endangered
FT = Federal Threatened
State: SE = California Endangered
ST = State Threatened
SR = State Rare
CRPR: List 1A = Plants presumed extirpated in California and either rare or extinct elsewhere
List 1B = Plants rare, threatened, or endangered in California and elsewhere
List 2B = Plants rare, threatened, or endangered in California, but more common elsewhere
List 4 = Plants of limited distribution (a watch list)
Note: see text for threat ranks.
LA County: Sensitive Species Occurring or Potentially Occurring within the Los Angeles SEA (County of Los Angeles 2006)

Five special-status plants have been documented on the Project Site during studies conducted between 2002 and 2013, including:

- San Fernando Valley spineflower (SE, FC, 1B.1, LA County)
- Mainland cherry (LA County)
- Island mountain-mahogany (4.3, LA County)
- Slender mariposa lily (1B.2, LA County)
- Peirson's morning-glory (List 4.2, LA County).

In addition, Parish's big sagebrush (LA County) is expected to be present on site, as discussed in more detail below.

San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)

The San Fernando Valley spineflower ("spineflower") is a state-listed endangered and federal candidate species. It has the highest level of sensitivity of the special-status plants documented on the Project Site. For many years, biologists considered the spineflower extinct, until it was

rediscovered in 1999 at Laskey Mesa on Ahmanson Ranch, which is located in Ventura County. A review of information of historical occurrence spineflower in the CNDDB indicate that it was previously thought to occur in sandy to gravelly soils of washes, riverbeds, and upland areas primarily on the margins of the San Fernando Valley at the base of the Santa Susana Mountains, San Gabriel Mountains, and the Simi Hills. Munz (1974) provides distribution information to include Orange and San Diego counties.

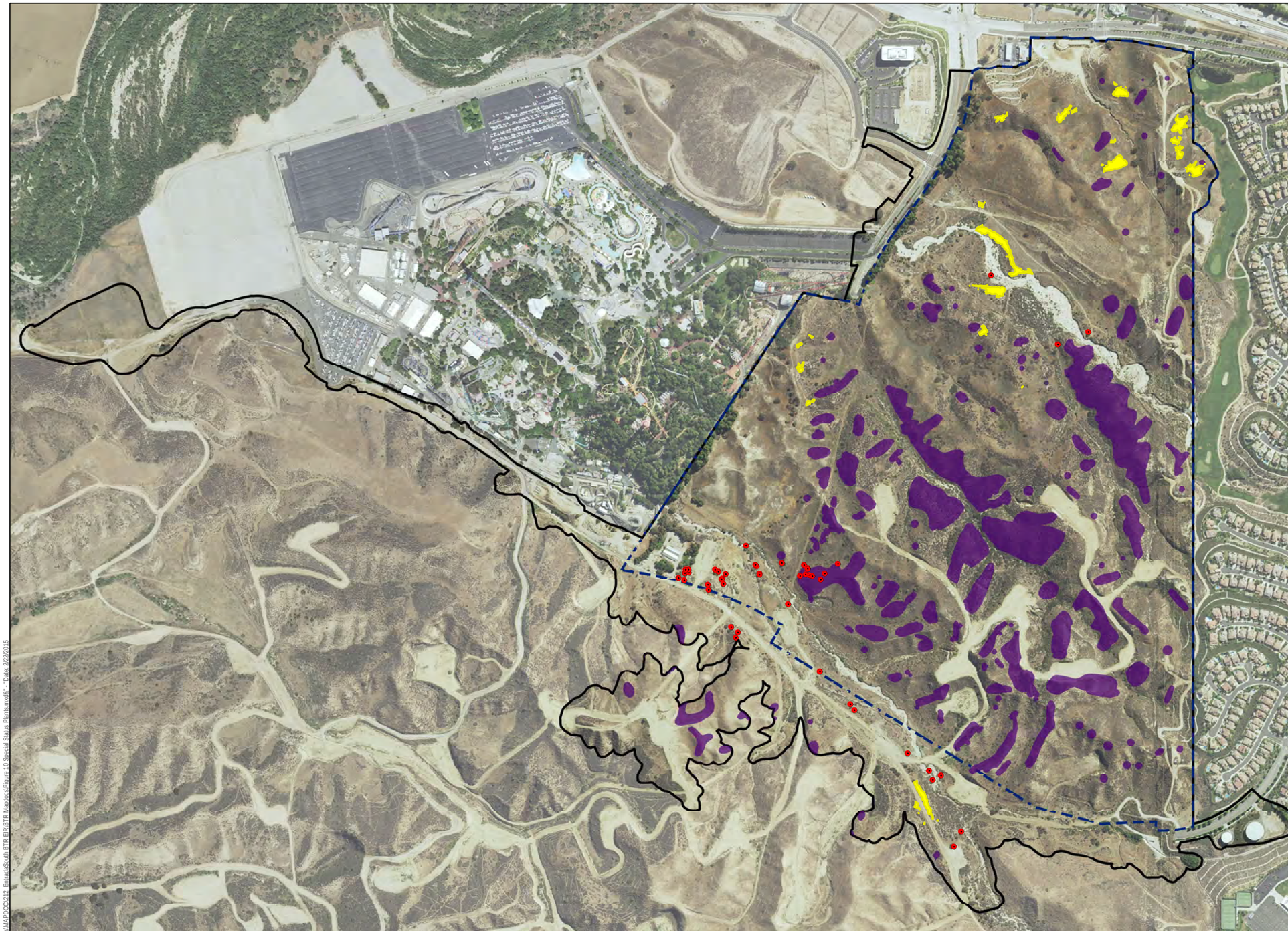
In surveys conducted on the Applicant's lands from 2002 to 2007 and from 2011 to 2013, spineflower was regularly observed in several general areas: Airport Mesa, Grapevine Mesa, Potrero Canyon, and San Martinez Grande Canyon, on the western side of VCC just east of Hasley Canyon and on the Entrada South site.

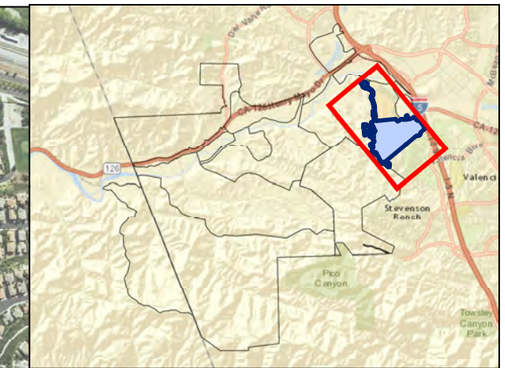
Spineflower was first detected on the Project Site in 2000. At this time, three polygons totaling approximately 1,000 to 2,000 individuals were mapped (pers. com. FLx, March 23, 2004). Since then, occupied polygons have been identified in several areas on site, including the southeastern portion, the central area in and beside a main wash (Unnamed Creek-2; see Section 4.3.4 and Figure 13), and the western portion adjacent to the Six Flags Magic Mountain theme park on the south side and west side (Figure 10). Total cumulative occupied habitat (i.e., the cumulative occupied area representing the overlap of polygons mapped in each of the years depicted in Table 7) on the Entrada South site is 2.10 acres. Surveys conducted in 2002 identified only about 20 individuals in the 2002 cohort. However, plants that germinated sometime prior to 2002 were still visible and totaled approximately 1,399,550 individuals. The results of nine surveys conducted for spineflower on the Project Site between 2002 and 2013 are summarized in Table 7.

Table 7
San Fernando Valley Spineflower Documented on the Entrada South Site (2002–2013)

Year	Precipitation in Inches (% of Average)[1,2]	Population Estimate	Occupied Acres (to nearest 10th acre)
2002	4.5 (25%)	20	<0.1
2003	18.8 (102%)	1,183,504	1.5
2004	13.4 (73%)	45,733	0.5
2005	41.0 (223%)	750,482	1.3
2006	20.2 (110%)	299,174	1.0
2007	4.5 (25%)	258	0.02
2011	24.5 (133%)	Quantitative population estimates not made; of 21 occupied polygons 20 were qualitatively rated as "low abundance" and 1 as "medium abundance"	0.3
2012	10.9 (59%)	1,838	0.1
2013	Not available	480-777	0.1

1 Rainfall year data are from July 1 (prior year) to June 30 of the survey year, and were collected at the "Piru RAWS" weather station (WRCC 2013).
2 The percent of average is based on the 1960–2011 historical average of 18.4 inches at the "Piru 2 ESE" weather station (WRCC 2012).





Entrada South Project Boundary

Entrada South Tract Map Boundary

mainland cherry cumulative - *Prunus ilicifolia ssp. ilicifolia*

San Fernando Valley spineflower cumulative occupied habitat - *Chorizanthe parryi var. fernandina*

slender mariposa lily cumulative occupied habitat - *Calochortus clavatus var. gracilis*

0 750 1,500 Feet

DUDEK

SOURCE: ESRI Online Bing Basemap

FIGURE 10

Special-status Plants

Biological Technical Report for the Entrada South Site

DRAFT

7:\Projects\07280110\015_Scope\MAP\DOC\212_EntradaSouth BTR EIR\BTR Maps\Docs\Figure 10 Special Status Plants.mxd< "Date: 2/22/2015

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In 2012 and 2013, the spineflower individuals were found in big sagebrush scrub, California sagebrush–California buckwheat scrub, alluvial scrub, California annual grassland, and disturbed land (Dudek 2012b, 2013). Elevations of the occupied polygons on this site range from approximately 1,190 to 1,200 feet amsl. Spineflower individuals were found in a variety of microhabitats on the Entrada South site. This subspecies was generally associated with either a sparsely vegetated, grassy slope or the bench above the wash that runs through the site, or in an opening in big sagebrush scrub. Species associated with spineflower and recorded on site include common deerweed (*Acmispon glaber* var. glaber), coastal sagebrush, slender oat (*Avena barbata*), wild oat (*Avena fatua*), black mustard, compact brome (*Bromus madritensis*), Maltese star-thistle, whitemargin sandmat (*Chamaesyce albomarginata*), turkish rugging (*Chorizanthe staticoides*), common sandaster (*Corethrogyne filaginifolia*), doveweed, cryptantha (*Cryptantha* sp.), Eastern Mojave buckwheat, slender woolly buckwheat (*Eriogonum gracile* var. *gracile*), Palmer's rabbitbrush (*Ericameria palmeri* var. *pachylepis*), redstem stork's bill (*Erodium cicutarium*), telegraphweed (*Heterotheca grandiflora*), California four o'clock (*Mirabilis laevis* var. *crassifolia*), prickly Russian thistle (*Salsola tragus*), common Mediterranean grass (*Schismus barbatus*), and vinegarweed (*Trichostema lanceolatum*).

Spineflower occurrences on site were found in areas with relatively low percent vegetative cover and high cover of bare ground found on silty clay loam and loam soil types. However, past occurrences have been observed in much higher vegetative cover, likely in relation to precipitation that year. For example, in a very wet year in 2005, spineflower occurrences were most common in areas with 90% to 95% vegetative cover (Dudek and Associates Inc. 2006b).

In 2012 and 2013, spineflower estimated populations were smaller than in most previous surveys; but below average precipitation may be responsible for the reduced plant numbers (Table 7). Lower-than-average rainfall in winter 2011 through 2012 (WRCC 2013), and no rainfall beyond March 2012 in that year, may also have limited the number of annuals that germinated in 2013 and limited the blooming period of those that did germinate.

Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)

Slender mariposa lily is a CRPR 1B.2 and Los Angeles County sensitive species known to occur on the Project Site. This species is fairly widespread in the RMDP/SCP area, and was observed on VCC in 2004 and 2005 and in the Specific Plan area from 2003 to 2006 in San Martinez Grande Canyon, Chiquito Canyon, Off-Haul Canyon, Potrero Canyon, Long Canyon, Middle Canyon, Grapevine Mesa, Airport Mesa areas, and the lower Castaic Creek area. It was also observed in the Salt Creek area and along the southern end of the High Country SMA/SEA from 2003 through 2006. In 2013, this species was observed within the Potrero Village Project Site and along Salt Creek in the advanced mitigation sites.

On the Project Site, the number of counted flowering individuals has ranged from 419 in 2004 to 7,780 in 2003; however, it has not been observed since 2005 when approximately 3,900 individuals were documented (Dudek and Associates 2006b) (Figure 10). In 2002, a *Calochortus* species was observed on site but current-year flowers were not available to identify it to species. This species was considered locally abundant on site up to 2005. Slender mariposa lily was not found on site during surveys in 2006, 2007, 2011 and 2012. Lower-than-average rainfall throughout 2011 and 2012 likely prevented germination in many areas, and the blooming period that did occur may also have been shorter than usual. The mapped occupied acreage of this species on the Entrada South Project Site is 42.8 acres.

Slender mariposa lily typically occurs in chaparral, California sagebrush scrub, and grassland, often on clay and/or rocky soils. The slender mariposa lily on the Project Site primarily has been found on south-facing slopes (70% of all individuals identified), and to a lesser extent on southeast-facing slopes (20% of all individuals identified) in California grassland, California sagebrush, and California buckwheat scrub. Plants were generally mapped in areas of high vegetative cover and on a variety of soil types, including silty loam, sandy loam, and clay loam.

Mainland Cherry (*Prunus ilicifolia* ssp. *ilicifolia*)

Mainland cherry is not a listed species and does not have a CRPR, but is considered sensitive by the County of Los Angeles. Mainland cherry occurs on the Project Site and was also regularly observed from 2001 to 2006 in the Specific Plan area and on VCC from 2003 to 2006. Mainland cherry was also observed within the Mission Village Project Site, the Homestead South Village Project Site, and along Salt Creek in the advanced mitigation sites in 2012.

In 2012, 46 mainland cherry individuals were documented on the Project Site (Figure 10) (Dudek 2012b). It was also observed on site in 2003–2005. Mainland cherry occurs as a shrub or tree that occurs in undifferentiated chaparral, big sagebrush scrub, and riverwash on the Project Site.

Island Mountain-mahogany (*Cercocarpus betuloides* var. *blancheae*)

Island mountain-mahogany is CRPR 4.3 and Los Angeles County sensitive species. It is a perennial evergreen shrub that occurs in closed-cone coniferous forest and chaparral habitats. It has been observed on the Project Site and was observed annually from 2002 to 2006 in the Specific Plan area and in Salt Creek area in 2003, primarily in chaparral at the base of north-facing slopes. It has not been observed on VCC. Island mountain-mahogany was also observed within the Mission Village Project Site, the Homestead South Village Project Site, and along Salt Creek in the advanced mitigation sites in 2012, and within the Potrero Village Project Site in 2013.

Individuals were observed on the Project Site in 2012 along the main wash that runs north–south through the site and along the drainage east of the main was, as well as scattered in the southern

portion of the site. This species was also documented on site during surveys in 2003–2007. Given the low sensitivity status of the species, the exact locations of individuals of this species within the Project Site have not been mapped.

Peirson's Morning-glory (*Calystegia peirsonii*)

Peirson's morning-glory is a CRPR 4.2 and Los Angeles County sensitive species that is endemic to Los Angeles County in the northern San Gabriel Mountains and adjacent Mojave Desert (Antelope Valley). It is a weakly climbing rhizomatous perennial, typically found in chaparral, coastal scrub, chenopod scrub, cismontane woodland, lower montane coniferous forest, and grasslands. The species was observed on VCC from 2003 to 2006 and in Specific Plan area annually from 2002 to 2006. It was also observed in the High Country SMA/SEA and Salt Creek area in 2003 and 2006. Peirson's morning-glory was also observed within the Mission Village Project Site, the Homestead South Village Project Site, and along Salt Creek in the advanced mitigation sites in 2012, and within the Potrero Village Project Site in 2013. It is generally widespread on ridges and slopes, weakly climbing over chaparral, coastal scrub, and grasslands.

Peirson's morning-glory had been widespread on the Project Site on ridges and slopes in surveys prior to 2006, but has not been observed on site since 2005. Given the low sensitivity status of the species, the exact locations of individuals of this species within the Project Site have not been mapped.

Parish's Big Sagebrush (*Artemisia tridentata* ssp. *parishii*)

Parish's big sagebrush does not have a CRPR but is considered sensitive by Los Angeles County. This subspecies has been observed in the Salt Creek area and Landmark Village. Plants were found primarily intermixed with big sagebrush. It has not been observed on VCC and has not been positively confirmed on Entrada South. This special-status subspecies co-occurs with the more common subspecies *Artemisia tridentata* ssp. *tridentata*. According to the Jepson Manual (Hickman 1996), the differentiating characteristics between the two subspecies are inflorescence branches drooping and fruit hairy in the *parishii* subspecies, and inflorescence branches erect to spreading and fruit glandular in *tridentata* subspecies. *Artemisia tridentata* plants were evaluated from Landmark Village in the Specific Plan area in November 2005 and both subspecies were identified. However, it also appears that subspecies may hybridize, as the full range of characteristics (drooping and erect inflorescence branches and hairy and glandular fruit) were found among the collected specimens. Although specimens on Project Site were not collected for detailed evaluation, there is a moderate potential that *Artemisia tridentata* ssp. *parishii* occurs within big sagebrush scrub in the study area.

Bryophytes (Non-vascular Plants) and Lichens

Bryophytes (non-vascular plants including mosses, liverworts, and hornworts) consist of plants that lack specialized water- or nutrient-conducting tissue. Lacking water-transporting tissue, bryophytes must live in proximity to a moisture source and are commonly found in damp or shady microhabitats. Overall, the Project Site is fairly arid and supports little of this type of habitat; however, limited areas of mosses were found on north-facing slopes, in chaparral, and along shady banks and cut faces of ephemeral stream channels.

Lichens, in contrast, are not classified as plants but are instead unique mutualistic associations of fungi with green algae and/or cyanobacteria. Lichens are extremely widespread in nature; they are found at nearly every latitude and altitude on earth. Lichens often grow on exposed rocks but are also found on bare soil, tree trunks, or in one instance, completely submerged in water (Raven et al. 1992). Generally, the Project Site contains little habitat appropriate for the growth of lichens as rocky substrates are limited.

No special-status non-vascular plants or lichens were observed on site or are known to occur in the proximity of the Project Site. Bryophytes and lichens are therefore not discussed further in this BTR because no direct, indirect, or cumulative impacts are expected.

4.3.2 Special-Status Wildlife Species

The status of special-status wildlife species on the Project Site is organized in two tables: (1) Table 8, Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Project Site, and (2) Table 9, Special-Status Wildlife Not Observed and Not Expected to Occur on the Project Site. Table 8 also includes the federally listed southern steelhead. Although the steelhead has not been documented in the Santa Clara River in the Project vicinity, it occurs in the river and its tributaries downstream below the Dry Gap (Titus et al. 2010; Stoeker and Kelly 2005) and potentially would be affected by Project discharges during storm events when surface waters flow across the Dry Gap.

The special-status species listed in Table 9 are not further analyzed in this BTR because no direct, indirect, or cumulative impacts are expected. Mapped locations for special-status wildlife on the Project Site are shown on Figure 11. Figure 11 also shows special-status wildlife recorded within 0.5 mile of the Project Site.

In addition to federally and state-listed threatened species, Tables 8 and 9 include other federal, state, and Los Angeles County designations that are considered special status in this BTR:

- Birds of Conservation Concern (BCC) are bird species the USFWS considers to be of high conservation priority beyond those listed as threatened or endangered (see http://library.fws.gov/Bird_Publications/BCC2008.pdf).
- California Species of Special Concern (CSC) are vertebrate species that are of concern due to suspected declining populations, limited ranges, and or continuing threats that increase their chance of extinction or extirpation in California (CDFG 2011).
- California Fully Protected (FP) species are vertebrate species that the state identified for special protection prior to Endangered Species Act protection due to rarity or a threat of extinction. Most FP species have been state- and/or federally listed as threatened or endangered, but there are some exceptions (e.g., white-tailed kite).
- Watch List (WL) species are bird species in a new category of "taxa to watch" that was created in the *California Bird Species of Special Concern* (Shuford and Gardali 2008). Species on the WL are not currently state- or federally listed as threatened or endangered, CSC, or FP species (CDFG 2011).
- Special Animals (SA) are vertebrate and invertebrate species that do not have other state designations (i.e., CSC, FP, WL) that are listed on the Special Animals list (CDFG 2011). "Special Animals" is also a general term for all species the CDFW is currently interested in tracking through the CNDDB. CDFW therefore considers the Special Animals list to be "species at risk" or "special-status species" (CDFG 2011).
- Los Angeles County (LA County) species are considered sensitive species by the County and known to occur in County Significant Ecological Areas (SEAs) (County of Los Angeles 2006). Several of these species have no state or federal special-status designation.

Table 8
Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Insects (Butterflies)					
Plebulina emigdionis	San Emigdio blue butterfly	None/SA/LA County	Often near streambeds, washes, or alkaline areas. Associated with four-wing saltbush (*Atriplex canescens)* and quail bush (*Atriplex lentiformis*).	The Project Site supports scattered four-wing saltbush in one area totaling 0.4 acre in the southernmost portion of the area along the eastern boundary of the site adjacent to The Old Road. The site has moderate potential to support the butterfly, and the 0.4 acre area will not be directly impacted.	A colony was observed in Potrero Canyon west of the Project Site in association with quail bush plants (Compliance Biology, Inc. 2004a). This is the only known occupied site in RMDP/SCP area.
Terrestrial Mollusks					
Helminthoglypta traskii traskii	Trask shoulderband	None/SA	Moist microhabitats in coastal scrub, riparian, and chaparral, including woodrat nests, brush, decaying yucca clumps, logs, rocks, stick litter, and rocks.	Not observed on site, but moderate potential to occur on the Project Site based on presence of suitable habitat.	Suitable microhabitats within coastal scrub, riparian, and chaparral occur throughout the RMDP/SCP area, including the Santa Clara River. Reconnaissance surveys for the Trask shoulderband snail were negative (Huntley, pers. comm. 2010); however, the presence of two non-special-status helminthoglyptid taxa (southern California shoulderband snail and Vasquez rocks shoulderband snail) suggest potential to occur through suitable habitat in RMDP/SCP area.

Table 8
Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Amphibians					
Anaxyrus californicus	arroyo toad	FE/CSC/LA County	Stream channels for breeding(typically 3rd order); adjacent stream terraces and uplands for foraging and wintering	Adults may aestivate on site in the agricultural area adjacent to the River in areas mapped as moderate and low habitat quality. No aquatic breeding habitat is present on site.	Focused surveys have detected adults and tadpoles both upstream and downstream of the Project Site in the Santa Clara River within and upstream of the Applicant's lands.
Spea hammondii	western spadefoot	None/CSC/LA County	Open areas in lowland grasslands, chaparral and pine–oak woodlands; requires temporary rain pools that last approximately three weeks.	Surveys in 2012 were negative, but survey conditions were suboptimal for detection. Moderate potential to occur based on presence of suitable habitat.	Known from Specific Plan area in Potrero Canyon, between Grapevine Mesa and Lion Canyon, and east of Lion Canyon.
Reptiles					
Anniella pulchra pulchra[1]	silvery legless lizard	None/CSC/LA County	Stabilized dunes, beaches, dry washes, chaparral, scrubs, pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils.	Not documented on site, but moderate potential to occur based on presence of suitable habitat.	Observed during raking studies in Specific Plan area in leaf litter of coast live oak woodland. Expected to be fairly widespread in RMDP/SCP, including the Salt Creek area and VCC, but not abundant.
Aspidoscelis tigris stejnegeri	coastal whiptail	None/SA/LA County	Open areas in semiarid grasslands, scrublands, and woodlands.	Not documented on site, but high potential to occur based on presence of suitable habitat.	Observed in vicinity in the High Country SMA/SEA and Castaic Mesa. Expected to be fairly widespread in RMDP/SCP, including the Salt Creek area and VCC, but not abundant.

Table 8
Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Charina trivirgata	rosy boa	None/SA/LA County	Desert and chaparral habitats with rocky soils in coastal canyons and hillsides, desert canyons, washes and mountains.	Not documented on site, but moderate potential to occur based on presence of suitable habitat.	Not documented in RMDP/SCP area, but known from region. Likely to occasionally occur in suitable habitat throughout RMDP/SCP area.
Diadophis punctatus modestus	San Bernardino ringneck snake	None/SA	Inhabits open, relatively rocky areas, often in somewhat moist microhabitats near intermittent streams. Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous vegetation.	Not documented on site, but moderate potential to occur based on presence of suitable habitat.	Not documented in RMDP/SCP area, but known from region. Likely to occasionally occur in suitable habitat throughout RMDP/SCP area.
Emys marmorata	western pond turtle	None/CSC	Slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter	Not detected on site during wildlife surveys. Not expected to breed or forage on site due to lack of aquatic habitat, but moderate potential to aestivate or nest in the agricultural area adjacent to the Santa Clara River.	Known from various locations along the Santa Clara River on the Applicant's lands, including near the Project Site, and along Salt Creek. A relatively common and regularly observed species in the Santa Clara River.
Phrynosoma blainvillii	coast (Blainville's) horned lizard	None/CSC/LA County	Exposed gravelly-sandy soils with minimal shrubs, riparian woodland clearings, dry chamise chaparral, and annual grasslands with scattered seepweed or saltbush	Not documented on site, but high potential to occur based on presence of suitable habitat.	Observed in Specific Plan area during reptile surveys in 2004 and 2006. Likely to occur in suitable habitat throughout RMDP/SCP, including the Salt Creek area and VCC, but in low numbers.

Table 8
Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Salvadora hexalepis virgultea	coast patch-nosed snake	None/CSC/LA County	Inhabits brushy or shrubby vegetation. Requires small mammal burrows for refuge and overwintering sites.	Not documented on site, but moderate potential to occur based on presence of suitable habitat.	Not documented in RMDP/SCP area, but known from broader region. Likely to occur in suitable habitat throughout RMDP/SCP area, but in very low numbers.
Birds					
Accipiter cooperii (nesting)	Cooper's hawk	None/WL/LA County	Dense stands of live oak, riparian woodlands, or other woodland habitats near water.	Nest observed along southern boundary in 2007. Also observed on site during 2006 and 2012 surveys. Observed in pepper trees along northern boundary of site in 2012.	A relatively common species throughout the RMDP/SCP area. Known to be a year-round breeding and foraging resident in the Specific Plan area and on VCC and commonly occurs along the Santa Clara River, Potrero Canyon, and Salt Creek.
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	None/WL/LA County	Coastal scrub and chaparral.	Observed on site during 2006 and 2012 surveys. Observed in 10 different locations in 2012, but nests/territories were not specifically identified.	A fairly common year-round breeding resident in coastal scrub in the Specific Plan area, Salt Creek, and VCC. Observed over multiple years in annual surveys. Habitat also available in the southeastern portion of the High County SMA/SEA.
Ammodramus savannarum (nesting)	grasshopper sparrow	None/CSC	Dense, dry or well-drained annual and native grasslands with mix of grasses and forbs. May occur in fallow agricultural fields, especially those periodically planted in oats and barley.	High potential to occur based on presence of suitable habitat. Focused surveys on site in 2012 were negative.	Although not documented in RMDP/SCP area or VCC during annual surveys, the Project area is just south of the southern edge of the portion of this species' summer range which is approximately at the Los Angeles/Kern County boundary.

Table 8
Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
					More than 2,300 acres of annual grasslands are present in the RMDP/SCP area.
Artemisiospiza (Amphispiza) belli belli[2]	Bell's sage sparrow	BCC/WL/LA County	Coastal scrub and chaparral.	Observed on site during 2012 surveys. Nests/territories were not specifically identified.	Observed in Castaic Mesa, near Soledad Canyon on the Legacy Village site and adjacent to Specific Plan area and Salt Creek. Suitable habitat throughout RMDP/SCP area in coastal scrub and chaparral, especially in the northeastern part of the Specific Plan area and southeastern portion of High Country SMA/SEA.
Aquila chrysaetos (nesting and wintering)	golden eagle	BCC/FP,WL/ LA County	Open country, especially hilly and mountainous regions; grassland, coastal sage scrub, chaparral, oak savannas, open coniferous forest	High potential to occasionally forage on site; nesting and roosting habitat available adjacent to site.	One pair has been frequently observed in upper Potrero Canyon, but no nests have been identified in the RMDP/SCP area to date. Individuals have been regularly observed, including over the Santa Clara River in the Castaic Junction area and elsewhere along the Santa Clara River and in woodland west of Grapevine Mesa. Suitable foraging and nesting habitat is available in the Specific Plan area, Salt Creek, High Country SMA/SEA, and VCC.

Table 8
Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Athene cunicularia hypugaea (burrow sites and some wintering sites)	western burrowing owl	BCC/CSC/LA County	Grasslands, open scrub, and agriculture, particularly with ground squirrel burrows.	Incidentally observed on site on one occasion. A single individual was observed on site near the agricultural area in winter 2006 that may have been wintering or temporarily using the area during migration. Has not been observed on site during other wildlife surveys.	An individual was observed west of the Entrada site in December 2006 and April 2007 on Mission Village, but otherwise has not been confirmed elsewhere in the RMDP/SCP area.
Baeolophus inornatus (nesting)	oak titmouse	BCC/SA	Montane hardwood-conifer, montane hardwood, blue oak, valley oak and coastal oak woodlands, montane and valley foothill riparian habitats.	Observed on site in 2012 and expected to regularly occur in the oak woodlands on site.	A common breeding resident in the RMDP/SCP area in coast live oak and cottonwood riparian communities. Has been observed over multiple years in annual surveys on Entrada South and in the Specific Plan area and VCC.
Buteo regalis (wintering)	ferruginous hawk	BCC/WL/LA County	Open, dry country, grasslands, open fields, agriculture	Not observed on site, but high potential to occur occasionally as a winter forager based on presence of suitable habitat.	An infrequent seasonal migrant in the RMDP/SCP area. Individuals were observed almost every day in east alfalfa fields, Wolcott fields, and Potrero Canyon, and other agriculture fields along the Santa Clara River in winter 2008.
Calypte costae (nesting)	Costa's hummingbird	None/SA	Shrubs and arid habitats. Edges of desert riparian and valley foothill riparian, coastal scrub, desert scrub, desert succulent scrub, arid shrublands, lower elevation chaparral, and palm oasis.	Observed on site during 2006 and 2012 surveys. Nests/territories were not specifically identified. Expected to be regular summer resident on site.	Observed regularly over multiple years of the annual surveys on the Entrada South site, Specific Plan area and VCC. Considered to be a summer resident but not abundant in the RMDP/SCP area.

Table 8
Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Chaetura vauxi (nesting)	Vaux's swift	None/CSC/LA County	Late stage conifer forest and mixed conifer-deciduous forest.	Observed on site during 2006 and 2012 surveys. However, special-status designation is for nesting areas. The Project Site is outside the species nesting range, so observed individuals were likely migrants.	Observed regularly over multiple years in surveys along the Santa Clara River. However, observations are assumed to be of migrants because nesting habitat is not present in the RMDP/SCP area.
Elanus leucurus (nesting)	white-tailed kite	None/FP/LA County	Inhabits herbaceous and open stages of most habitats, common in cismontane in California. Nests are placed near top of dense oak, willow or other tree stand; usually 6–20 meters (20–100 feet) above ground. Nest located near open foraging area.	Observed on site during 2006 and 2012 surveys. Individuals were observed foraging 2012, but the kite has been observed to successfully nest on site and in the immediate Project vicinity over multiple years.	Documented to successfully nest in the Specific Plan area along the Santa Clara River, Salt Creek, VCC and Entrada South. Suitable foraging and nesting habitat available throughout the RMDP/SCP area.
Eremophila alpestris actia	California horned lark	None/WL/LA County	Grasslands, disturbed areas, agriculture fields, and beach areas.	Observed on site during 2012 surveys in agriculture adjacent to the Santa Clara River. Nests were not identified, but it has high potential to nest on site.	Regularly observed over multiple years in plowed and graded field adjacent to Santa Clara River and Castaic Creek. Considered to be breeding resident in RMDP/SCP area, but nesting has not been documented.
Falco columbarius (wintering)	merlin	None/WL/LA County	Coastlines, wetlands, woodlands, agricultural fields, and grasslands.	Moderate potential to occur as a winter forager based on presence of suitable habitat.	Individuals have been observed on different occasions hunting and flying over agriculture fields along the Santa Clara River and in Potrero Canyon in the RMDP/SCP area.

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Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Falco peregrinus anatum (nesting)	American peregrine falcon	BCC,FD/FP, SD/LA County	Nests on cliffs, buildings, bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present	Observed on site on a transmission tower along the southern boundary of the site in 2012.	Observed at the Wolcott agriculture field and the Santa Clara River corridor near the Grapevine Mesa area in the Specific Plan area and expected to occur throughout RMDP/SCP area where suitable foraging habitat is available. Its special-status designation is for nesting sites. No individuals have been observed to nest in in the area, but it may nest the Santa Susana Mountains, south of the RMDP/SCP area.
Gymnogyps californianus	California condor	FE/SE, FP/LA County	Forages over wide areas of open rangelands, roosts on cliffs and in large trees and snags	Moderate potential to occasionally land on site to feed on large mammal carcasses (e.g., mule deer).	Until April 2008, California condors had not been known to nest or land within the Project vicinity within the last 25 years .In April 2008, a California condor was observed feeding on a dead calf in a Potrero side canyon. In January 2009 up to five condors were detected feeding on a dead calf in the middle section of Potrero Canyon south of Potrero Mesa. GPS flight data indicate frequent flyovers of the Project area when moving between the Sespe Wilderness area to the northwest and the San Gabriel Mountains to the southeast of the

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Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
					Project Site. It is expected to continue to foraging opportunistically in the RMDP/SCP area for dead cattle and other large mammal carcasses.
Lanius ludovicianus (nesting)	loggerhead shrike	BCC/CSC/LA County	Grasslands, open shrublands with scattered shrubs, trees, fences, or other perches, riparian, and woodlands	Observed on site but nesting not confirmed. Guthrie (2000d; 2004g) indicated it may have nested on and adjacent to the site.	Commonly observed in coastal scrub and grasslands in Specific Plan area and VCC and expected to be breeding resident. Specifically observed in Potrero Canyon, Tapo Canyon, near Magic Mountain ranch gate, Wolcott agricultural fields, VCC, and Salt Creek.
Picoides nuttallii (nesting)	Nuttall's woodpecker	BCC/SA	Lower elevation riparian deciduous and oak habitats.	Observed on site during 2006 and 2012 surveys.	Common, year-round resident in RMDP/SCP area in cottonwood and willow riparian habitat along the Santa Clara River and Castaic Creek. Observed almost every year since avian surveys were initiated in 1988.
Polioptila californica californica	coastal California gnatcatcher	FT/CSC/LA County	Various sage scrub communities, often dominated by California sage and buckwheat; generally avoids nesting in areas with a slope of greater than 40%, and typically less than 820 feet	Not observed during protocol surveys in 2012, but at least moderate potential to occur based on presence of suitable habitat and recent observations of both transient individuals (2007 and 2008) and a breeding pair (2012) in Project vicinity.	Scattered observations in RMDP/SCP area and vicinity, including documentation of nesting. An individual believed to be a dispersing transient was detected on VCC in October 2007 during biological monitoring. An individual was also detected in August 2008

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Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
			in elevation.		during monitoring for improvements of Del Valle Training Center Road located south of the town of Val Verde off of Chiquito Canyon. In June 2012, a breeding pair was detected on the Mission Village site just west of the Project Site.
Selasphorus sasin/rufus (nesting)	Allen's/rufous hummingbird	BCC/SA	Breeds in coastal scrub, valley foothill hardwood, and valley foothill riparian habitats. Migrates in woodland and scrub habitats.	Hummingbirds identified as Allen's were observed on site in 2006 and 2012.	Allen's/rufous hummingbirds have been observed in the Specific Plan area along the Santa Clara River, in upland areas on the Project Site, and along Castaic Creek in VCC. Individuals thought to be migrants. However, the RMDP/SCP area is within these species' year-round range and provides suitable nesting, foraging and migrating habitat.
Setophaga (Dendroica) petechia brewsteri	yellow warbler	BCC/CSC/LA County	Riparian thickets and woodlands.	Observed during 2006 survey conducted in early September, so nesting was not confirmed on site.	Observed over multiple years during annual bird surveys during migration and the nesting season, and nests in riparian areas in the vicinity, including the Project Site, the Specific Plan area, Salt Creek, and VCC. Could nest anywhere in suitable riparian habitat throughout the RMDP/SCP area.

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Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Spinus (Carduelis) lawrencei (nesting)	Lawrence's goldfinch	BCC/SA	Valley foothill hardwood, valley foothill hardwood-conifer; and, in S. CA., desert riparian, palm oasis, pinyon-juniper and lower montane habitats.	Observed on site in 2007 but not during 2006 and 2012 surveys.	Occurs as a resident in coastal scrub in the northern and northeastern portions of the RMDP/SCP area and has been observed in riparian habitats of the Santa Clara River over multiple years in the Specific Plan area and Entrada South. Suitable nesting and foraging habitat in the Specific Plan area, Salt Creek, VCC and Entrada South.
Spizella atrogularis (nesting)	black-chinned sparrow	BCC/SA	Mixed chaparral, chamise-redshank chaparral, sagebrush and other brushy habitats.	Observed in 2012 surveys, but nests/territories not identified.	Not detected outside of Entrada South site in multiple avian surveys. Apparently uncommon in RMDP/SCP area, but suitable chaparral and coastal scrub habitat is present in the northeastern portion of the Specific Plan area and southeastern portion of High Country SMA/SEA.
Spizella passerina (nesting)	chipping sparrow	None/SA	Open woodlands with sparse or low shrubs	Not observed in 2006 and 2012 surveys, but observed on site in previous annual surveys.	Observed as a common migrant in the Specific Plan area within and adjacent to the Santa Clara River, near Grapevine Mesa, and Homestead Canyon, on VCC and on Entrada South. Likely to be widespread in RMDP/SCP and suitable habitat present in Potrero Canyon and the High Country SMA/SEA. Site is within year-round range so potentially nests on site.

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Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Mammals					
Antrozous pallidus	pallid bat	None/CSC/LA County	Arid habitats, including grasslands, shrublands, woodlands and forests; for roosting, prefers rocky outcrops, cliffs and crevices with access to open habitats for foraging.	Not detected during acoustic surveys in 2012. However, high potential to forage on site based on presence of suitable habitat. Moderate potential to roost on site in woodlands.	Detected in the Specific Plan area and day roosts documented in buildings in Potrero Canyon 3-4 miles west of the Project Site. Likely to be forage throughout the RMDP/SCP area and potentially roost in area in buildings and woodlands.
Corynorhinus townsendii	Townsend's big-eared bat	None/SC, CSC/LA County	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, also man-made structures and tunnels.	Not detected during 2012 surveys on site but detected on Potrero Village site in 2013. High potential to occasionally forage on site, but low potential to roost due to lack of suitable roosting habitat.	Present, but uncommon in RMDP/SCP area. Detected on Potrero Village site in 2013 (Dudek 2013f). Not detected in 2004 and 2006 surveys in Specific Plan area, but suitable foraging habitat is present throughout RMDP/SCP area. Brown-Berry Biological Consulting (2012) indicated possible presence but echolocation calls were not adequate to confirm presence.

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Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Eumops perotis californicus	western mastiff bat	None/CSC/LA County	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees and tunnels.	Detected on site at two survey locations during acoustic surveys in 2012. Moderate potential to roost on site in woodlands.	Detected in the Specific Plan area in 2006. Likely to forage throughout the RMDP/SCP area and potentially roost in area in woodlands.
Lasionycteris noctivagans	silver-haired bat	None/SA	Old growth forest, maternity roosts in trees (primarily woodpecker hollows), large diameter snags 50 feet aboveground; hibernates in hollow trees, under sloughing bark, in rock crevices, and occasionally in buildings, mines, and caves; forages in or near coniferous or mixed deciduous forest, often following stream or river drainages.	Not detected during 2012 surveys on site. Moderate potential occur. Suitable roosting and foraging habitat is present on the Project Site.	Detected at the SR-126/Commerce Center Drive Project in 2013 (Rahn 2013a,b) but has not been detected in other bat surveys. Potential to forage throughout the RMDP/SCP area and potentially roost in area in woodlands.
Lasiurus blossevillii	western red bat	None/CSC	Forages along open streams and rivers; roosts in tree canopy in forest, woodland, riparian, mesquite bosque and orchards, including fig, apricot, peach, pear, almond, walnut, and orange.	Detected on site at two survey locations during acoustic surveys in 2012. Suitable roosting and foraging habitat is present on the Project Site.	Detected in the RMDP/SCP vicinity in 2004 in willow riparian habitat and 2006 under The Old Road Bridge. Likely to forage throughout the RMDP/SCP area and potentially roost in area in woodlands.

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Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Lasiurus cinereus	hoary bat	None/SA	Forest, woodland riparian, and wetland habitats, also juniper scrub, riparian forest, and desert scrub in arid areas; roosts in tree foliage and sometimes cavities, such as woodpecker holes.	Detected on site at one survey location during acoustic surveys in 2012. Suitable roosting and foraging habitat is present on the Project Site.	No detected in RMDP/SCP area in 2004 or 2006 surveys, but high potential to occur based on Entrada South surveys and available suitable foraging and roosting habitat.
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None/CSC/LA County	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, rangelands	Not detected during 2006 and 2012 surveys. Moderate potential to occur based on presence of suitable habitat.	Apparently uncommon in RMDP/SCP area, with only one observation at the mouth of Potrero Canyon in the Specific Plan area.
Myotis ciliolabrum[3]	western small-footed myotis	None/SA/LA County	Arid woodlands and shrublands, but near water; roosts in caves, crevices, mines, abandoned buildings	Detected on site at three survey locations during acoustic surveys in 2012.	Potentially occurs elsewhere in RMDP/SCP area but presence has not been confirmed elsewhere. In 2004, an acoustic signature in the 40 kHz frequency range of species was recorded in the Specific Plan area, but without additional information (e.g., longer time-series recording or capture), the identification could not be confirmed. In 2006, 40 kHz bat species were recorded in locations along Potrero Creek, along the Santa Clara River at Walcott Road, and at the plant nursery site in upper Long Canyon, but again species identification could not be

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Special-Status Wildlife Observed or with Moderate to High Potential to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
					confirmed. Species has low potential to roost on site due to lack of suitable roosting habitats.
Myotis evotis	western long-eared myotis	None/SA/LA County	Semiarid shrublands, sage scrub, chaparral, and agricultural areas, but typically associated with coniferous forests; roosts in hollow trees, under exfoliating tree bark, caves, mines, cliff crevices, sinkholes, and rocky outcrops on the ground, as well as buildings and under bridges	Detected on Potrero Village site during 2013 surveys. Suitable roosting and foraging habitat present.	Potentially occurs elsewhere in RMDP/SCP area but presence has not been confirmed elsewhere. In 2006, 40 kHz bat species were recorded in locations along Potrero Creek, along the Santa Clara River at Walcott Road, and at the plant nursery site in upper Long Canyon, but again species identification could not be confirmed. Species has low potential to roost on site due to lack of suitable roosting habitats.
Myotis thysanodes	fringed myotis	None/SA/LA County	Primarily drier woodlands, including oak, pinyon-juniper, ponderosa pine, and also desert scrub, mesic coniferous forest, grassland, and sage-grass steppe from sea level to 9,350 feet; roosts in crevices in buildings, mines, rocks, cliff faces, and bridges, and large, decadent trees and snags	Not detected during acoustic surveys in 2012, but high potential to forage on site based on presence of suitable habitat.	Detected in Specific Plan area in coast live oak habitat in 2004. Moderate potential to roost in large trees/snags in RMDP/SCP area.
Myotis volans	long-legged myotis	None/SA/LA County	Primarily coniferous forests, but also seasonally in riparian and desert habitats; roosts in crevices in cliffs,	Not detected during acoustic surveys in 2012, but moderate potential to forage on site based on presence of suitable habitat.	Potentially occurs elsewhere in RMDP/SCP area. Its presence has not been confirmed, but bats with acoustic signatures within its 40 kHz

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Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
			caves, mines, buildings, exfoliating tree bark, and snags		range were detected 2004 and 2006 in the Specific Plan area. These bats could have been western small-footed myotis, long-legged myotis, or little brown bat (*Myotis lucifugus*), or all three species
Myotis yumanensis	Yuma myotis	None/SA	Riparian, arid scrublands and deserts, and forests associated with water (streams, rivers, tinajas); roosts in bridges, buildings, cliff crevices, caves, mines, and trees;	Detected on site at all four survey locations during acoustic surveys in 2012. Moderate potential to roost in trees on site.	Not detected in Specific Plan area during acoustic surveys in 2004, but was observed in 2006. Potentially occurs throughout RMDP/SCP area, especially in association with the Santa Clara River.
Neotoma lepida intermedia	San Diego desert woodrat	None/CSC/LA County	Open chaparral, coastal scrub, cactus patches and the understory of tree thickets.	Woodrat sign (middens, scat) was detected on site during general wildlife surveys, but live-trapping in August 2012 did not capture any woodrats. The site has suitable habitat for San Diego desert woodrat and is within its range, therefore the species is considered to have high potential to occur on site.	A woodrat species was captured during small mammal trapping in the Specific Plan area, but not identified to species level. Based on the known range of this species and the availability of suitable habitat in the RMDP/SCP, the San Diego desert woodrat has high potential occur.

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Scientific Name	Common Name	Status Federal/ State/ LA County	Primary Habitat Associations	Status on Entrada South	Status Elsewhere in RMDP/SCP Area
Nyctinomops femorosaccus	pocketed free-tailed bat	None/CSC/LA County	Arid lands, including pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, palm oases; roosts in high cliffs or rock outcrops with dropoffs, caverns, buildings.	Detected on site at two survey locations during acoustic surveys in 2012. Low potential to roost on site due to lack of suitable roosting habitat.	Detected in the Specific Plan area in lower Potrero Canyon in 2006. High potential to forage throughout the RMDP/SCP area, but potential roosts sites are probably limited to buildings due to a lack natural roosting features.
Odocoileus hemionus	mule deer	None/Regulated	Variety of habitats including forests, woodlands, brush, meadows and standing waters.	Species observed on site during September 2006 and 2012 wildlife surveys.	Common throughout RMDP/SCP area.
Puma concolor	mountain lion	None/ Regulated	Occurs in a variety of scrub and forested habitats.	Mountain lion scat was detected on site during gnatcatcher surveys. Site may be a part of a resident lion's home range or support transient individual on occasion.	Uncommon but regularly observed in RMDP/SCP area. Could occur in suitable habitat throughout RMDP/SCP, especially where deer are present.
Taxidea taxus	American badger	None/CSC	Grasslands, agriculture, drier open stages of shrub, forest, and herbaceous habitats with friable soils.	Not detected on site, but moderate potential to occur based on the presence of suitable habitat.	Uncommon but regularly observed in RMDP/SCP area, including at least two observations in 2013.Could occur in suitable habitat throughout RMDP/SCP.

[1] A taxonomic revision has been published for *Anniella pulchra* which names four new species of California legless lizards and which would make the *Anniella* species on Entrada South unknown because it occurs in an uncertain contact zone between *A. pulchra* and one of the new species *A. stebbinsi* (Papenfuss, T.J. and J.F. Parnum. 2013. "Four new species of California legless lizards (*Anniella*). *Brevivora* 536:1-17). Because this revision was just published in September 2013 and because it may take some time for the wildlife agencies to respond to this new information, for the purpose of this BTR the current species name *Anniella pulchra* is retained.

[2] The American Ornithological Union (AOU) (2013) recently split *Amphispiza belli* (sage sparrow) into two species based on genetics, morphology, and ecological niche modeling: *Artemisiospiza belli* (Bell's sparrow) and *Artemisiospiza nevadensis* (sagebrush sparrow). The subspecies *A. belli belli* has been retained and its special-status designation per the Special Animals List (CDFG 2011) is also retained in this BTR.

[3] Dudek (2012e) identified *Myotis melanorhinus* on site. The taxonomy of this species is uncertain. According to Wilson and Reeder (2005) some authors include it as *M. ciliolabrum* or *M. leibii* or as a subspecies of *M. ciliolabrum*. Given that CDFG (2011) includes *M. ciliolabrum* on the Special Animals list for California, the "*melanorhinus"* individuals identified in Dudek (2012e) are treated as the special-status *M. ciliolabrum* in this BTR.

Status Key:

Federal: BCC = USFWS Bird of Conservation Concern
FD = Federal Delisted
FE = Federal Endangered
FT = Federal Threatened

State: CSC = California Species of Special Concern
FP = Fully Protected
Regulated = A game species (mule deer) or take requires depredation permit (mountain lion)
SA = Special Animal List (CDFG 2011)
SC = State Candidate
SD = State Delisted
SE = California Endangered
ST = State Threatened
WL = Watch List
LA County: Sensitive Species Occurring or Potentially Occurring within the Los Angeles SEA (County of Los Angeles 2006)

Table 9
Special-Status Wildlife Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/Other	Primary Habitat Associations	Status On Site or Potential To Occur
Invertebrates				
Branchinecta lynchi	vernal pool fairy shrimp	FT/SA/LA County	Vernal pools; cool-water pools with low to moderate dissolved solids	Surveys in 2012 were negative for all three fairy shrimp species, but survey conditions were suboptimal for detection due to atypical precipitation pattern. However, based on negative surveys in Project vicinity where conditions were appropriate for detection, the fairy shrimp are considered to have low potential to occur on site. There is no indication of vernal pools or other seasonal pools in the Project vicinity that are suitable for fairy shrimp. The nearest documented vernal pools in relation to the Project vicinity that could be source populations for fairy shrimp include at least two vernal pools located in the Plum Canyon area of Los Angeles County (Cruzan Mesa), approximately 10 miles from the Project vicinity, and the Carlsberg vernal pools in Moorpark in Ventura County, approximately 15 miles from the Project vicinity (Root 2008). Both the Carlsberg and Cruzan Mesa pools support the vernal pool fairy shrimp (USFWS 1998). For the RMDP/SCP, which included the Entrada South site in the analysis, the USFWS concurred that the RMDP/SCP was not likely to adversely affect listed fairy shrimp because these species are not known to occur in the RMDP/SCP area and suitable habitat is not known to occur in the area (Root 2008).
Branchinecta sandiegoenensis	San Diego fairy shrimp	FE/SA/LA County	Vernal pools	
Streptocephalus woottoni	Riverside fairy shrimp	FE/SA/LA County	Vernal pools	
Danaus plexippus (wintering sites)	monarch butterfly	None/SA	Overwinters in eucalyptus groves	Individuals were observed on site during 2012 wildlife surveys and in 2004 during butterfly surveys. However, the site does not support a known wintering site.

Table 9
Special-Status Wildlife Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/Other	Primary Habitat Associations	Status On Site or Potential To Occur
Euphrydryas editha quino	quino checkerspot butterfly	FE/SA	Occurs in localized colonies, always closely associated with the larval foodplant dot-seed plantain (*Plantago erecta*) and clay or cryobiotic soils	Not expected to occur on site. Based on a focused habitat assessment in 2004, it was concluded that the primary larval food plant (Plantago erecta) does not occur on the site. Last documented in the Santa Susana Mountains, approximately 30 miles south and southwest of the Project Site in 1954.
Fish				
Catostomus santaanae	Santa Ana sucker	FT/CSC/LA County	Small, shallow, cool, clear streams less than 7 meters in width and a few centimeters to more than a meter in depth; substrates are generally coarse gravel, rubble and boulder	Does not occur on site due to lack of aquatic habitat. Documented throughout the Santa Clara River in the RMDP/SCP area. The population in the Santa Clara River system is not listed as threatened because it is introduced to the area.
Gasterosteus aculeatus williamsoni	unarmored threespine stickleback	FE/SE,FP/LA County	Slow-moving and backwater areas.	Does not occur on site due to lack of aquatic habitat. Documented throughout the Santa Clara River in the RMDP/SCP area.
Gila orcuttii	arroyo chub	None/CSC/LA County	Warm, fluctuating streams with slow-moving or backwater sections of warm to cool streams at depths > 40 centimeters; substrates of sand or mud	Does not occur on site due to lack of aquatic habitat. Documented throughout the Santa Clara River in the RMDP/SCP area.
Oncorhynchus mykiss irideus	steelhead rainbow trout (Southern California ESU)	FE/CSC/LA County	Clean, clear, cool well-oxygenated streams. Needs relatively deep pools in migration and gravelly substrate to spawn.	Does not occur on site due to lack of aquatic habitat. Occurs downstream of the Project area. Within the Santa Clara River drainage, southern steelhead historically inhabited Piru Creek, Sespe Creek, Santa Paula Creek, Hopper Creek, and possibly Pole Creek (Titus et al. 2010). Presently, southern steelhead occur downstream of the proposed Project in the Santa Clara River watershed in Piru Creek between the confluence with the Santa Clara River and Santa Felicia Dam, in Sespe Creek, in Santa Paula Creek, and possibly in Hopper and Pole

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Scientific Name	Common Name	Status Federal/ State/Other	Primary Habitat Associations	Status On Site or Potential To Occur
				Creeks (Stoeker and Kelly 2005). Although reconnaissance surveys conducted along the Santa Clara River and tributary drainages within the Specific Plan area, which includes the Project area, were negative in 2004 and 2005 (ENTRIX 2009), this species was included in this category (Potential to Occur on Site) due to potential downstream effects of the proposed Project.
Amphibians				
Rana draytonii	California red-legged frog	FT/CSC/LA County	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	Very low potential to occur based on lack of suitable habitat and negative results of numerous surveys in the Santa Clara River. The species has been documented within the Piru Creek and San Francisquito Creek tributaries to the River, and non-breeding frogs could occur in the River, but are unlikely to move onto the Project Site.
Rana mucosa	Sierra Madre yellow-legged frog	FE/ SC,CSC/LA County	Meadow streams, isolated pools, lake borders, rocky stream courses within ponderosa pine, montane hardwood-conifer and montane riparian habitat types	Not expected to occur on site due to lack of suitable habitat and because site is outside species' range.
Reptiles				
Thamnophis hammondii	two-striped gartersnake	None/CSC/L A County	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Low potential to occur on site due to lack of aquatic habitat, but known from the Santa Clara River.
Thamnophis sirtalis ssp.	south coast gartersnake	None/CSC	Marshes, meadows, sloughs, ponds, slow-moving water courses	Low potential to occur based lack of suitable habitat. Species now very rare in its range.
Birds				
Accipiter striatus (nesting)	sharp-shinned hawk	None/WL/LA County	Nests in coniferous forests, ponderosa pine, black oak, riparian deciduous, mixed conifer, Jeffrey pine; winters in lowland woodlands and other habitats	High potential to occur during winter months, but special-status designation is for nesting areas. Project Site is outside its breeding range.

Table 9
Special-Status Wildlife Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/Other	Primary Habitat Associations	Status On Site or Potential To Occur
Agelaius tricolor (nesting colony)	tricolored blackbird	BCC/SE, CSC/LA County	Nests near fresh water, emergent wetland with cattails or tules; forages in grasslands, woodland, agriculture	High potential to occur based on upland habitats present and sightings along Castaic Creek north of Project Site; however the special-status designation is for nesting colonies and no nesting habitat present on site.
Ardea alba (nesting colony)	great egret	None/SA	Nests colonially in large trees. Rookery sites are typically located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	Moderate potential to forage on site; however, no nesting colonies have been observed on Project Site or in the Project vicinity during annual bird surveys.
Ardea herodias (nesting colony)	great blue heron	None/SA	Variety of habitats, but primarily wetlands; lakes, rivers, marshes, mudflats, estuaries, saltmarsh, riparian habitats	Moderate potential to forage on site; however, no nesting colonies have been observed on Project Site or in the Project vicinity during annual bird surveys.
Asio flammeus (nesting)	short-eared owl	None/CSC/LA County	Grassland, prairies, dunes, meadows, irrigated lands, saline and freshwater emergent wetlands	Moderate potential to occur on site during winter months for foraging. However, special-status designation is for nesting and site is outside its nesting range.
Asio otus (nesting)	long-eared owl	None/CSC/LA County	Riparian, live oak thickets, other dense stands of trees, edges of coniferous forest	Moderate potential to occur on site, especially foraging, but low potential to nest on site due to lack of well-developed forest and woodland habitat (such as along the Santa Clara River) and because of close proximity to development. Special-status designation is for nesting sites. Observed near Via Canyon in 2005.
Botaurus lentiginosus	American bittern	None/SA	Emergent habitat of freshwater marsh and vegetation borders of ponds and lakes	Observed during September 2006 survey flying overhead toward pond on adjacent golf course. However, low potential to occur on site based on lack of suitable habitat.
Buteo swainsoni (nesting)	Swainson's hawk	BCC/ST/LA County	Open grassland, shrublands, croplands	Not observed on site but occasionally migrants have been observed in Project vicinity and it may rarely forage in Project vicinity. Special-status designation is for nesting sites in the Central Valley and western Antelope Valley. Does not nest in Project vicinity.

Table 9
Special-Status Wildlife Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/Other	Primary Habitat Associations	Status On Site or Potential To Occur
Charadrius montanus (wintering)	mountain plover	BCC/CSC/LA County	Winters in shortgrass prairies, plowed fields, open sagebrush and sandy deserts	Low potential to occur. The disturbed land and annual grassland is suitable habitat, but these communities have marginal habitat quality on site to support this species. This species only winters in southern California and only rarely occurs
Circus cyaneus (nesting)	northern harrier	None/CSC/L A County	Open wetlands (nesting), pasture, old fields, dry uplands, grasslands, rangelands, coastal sage scrub	Observed foraging on site in 2012, but low potential to nest on site based on lack of suitable habitat. Special-status designation is for nesting sites. It has been observed elsewhere in Project vicinity and suitable nesting habitat is available in vicinity.
Coccyzus americanus occidentalis (nesting)	western yellow-billed cuckoo	FC,BCC/SE/ LA County	Dense, wide riparian woodlands and forest with well-developed understories	Very low potential to occur within riparian habitats on site. Single individuals thought to be migrants have occasionally been observed along the Santa Clara River, but nesting has not been documented.
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE/SE /LA County	Riparian woodlands along streams and rivers with mature, dense stands of willows or alders; may nest in thickets dominated by tamarisk	Very low potential to occur within riparian habitats on site. Single individuals thought to be migrants have regularly been observed along the Santa Clara River, but nesting has not been documented.
Falco mexicanus (nesting)	prairie falcon	BCC/WL/LA County	Grassland, savannas, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs	Moderate potential to forage on site, but not expected to nest on site based lack of suitable nesting habitat; special-status designation is for nesting habitat. Individuals have been observed in Project vicinity in Potrero Canyon and along the Santa Clara River, Castaic Creek, and Salt Creek, but were thought to be migrants. Nearest potential nesting habitat is in High Country.
Haliaeetus leucocephalus (nesting and wintering)	bald eagle	BCC,FD/SE, FP/LA County	Seacoasts, rivers, swamps, large lakes; winters at large bodies of water in lowlands and mountains	Not expected to occur on site based on lack of suitable habitat on the site and in Project vicinity. Has not been observed during annual surveys.

Table 9
Special-Status Wildlife Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/Other	Primary Habitat Associations	Status On Site or Potential To Occur
Icteria virens (nesting)	yellow-breasted chat	None/CSC/LA County	Dense, relatively wide riparian woodlands and thickets of willows, vine tangles and dense brush.	Low potential to occur in riparian habitats on site due lack of adequate habitat structure. Regularly observed in riparian thickets along the Santa Clara River during annual surveys.
Ixobrychus exilis (nesting)	least bittern	BCC/CSC/LA County	Dense emergent wetlands of cattails and tules.	Not expected to occur on site based on lack of suitable habitat.
Numenius americanus (nesting)	long-billed curlew	BCC/WL	Nests in grazed, mixed grass, and short-grass prairies. Localized nesting along the California coast. Coastal estuaries, mudflats, open grasslands and croplands are used in winter for foraging.	Moderate potential to occur on site during winter months for foraging. However, special-status designation is for nesting and site is outside its nesting range.
Nycticorax nycticorax (nesting colony)	black-crowned night heron	None/WL	Marshes, ponds, reservoirs, estuaries; nests in dense-foliaged trees and dense fresh or brackish emergent wetlands.	Not expected to occur on site based on lack of suitable habitat.
Pandion haliaetus (nesting)	osprey	None/WL/LA County	Large waters (lakes, reservoirs, rivers) supporting fish; usually near forest habitats, but widely observed along the coast.	Not expected to occur on site based on lack of suitable foraging habitat. One migrant was been observed in the Project vicinity in 2000. Otherwise, there are no large bodies of water on site or adjacent to the Project Site that could support fish for long periods of time.
Phalacrocorax auritus (nesting colony)	double-crested cormorant	None/WL/LA County	Lakes, rivers, reservoirs, estuaries, ocean; nests in tall trees, rock ledges on cliffs, rugged slopes.	Not expected to occur on site based on lack of suitable habitat.
Piranga rubra (nesting)	summer tanager	None/CSC	Nests in riparian woodland; winter habitats include parks and residential areas	Low potential to nest in riparian habitats on site due lack of adequate habitat structure. Regularly observed along the Santa Clara River during annual surveys.
Plegadis chihi (nesting colony)	white-faced ibis	None/WL/LA County	Nests in marsh; winter foraging in shallow lacustrine waters, muddy ground of wet meadows, marshes, ponds, lakes, rivers, flooded fields and estuaries.	Not expected to occur on site based on lack of suitable habitat.

Table 9
Special-Status Wildlife Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/Other	Primary Habitat Associations	Status On Site or Potential To Occur
Progne subis (nesting)	purple martin	None/CSC/LA County	Nests in tall sycamores, pines, oak woodlands, coniferous forest; forages over riparian, forest and woodland	Not observed during surveys. May occasionally forage on site and in Project vicinity, but area is outside its nesting range. There is limited suitable nesting habitat because there are no tall sycamores, pines, or coniferous forest communities on the Project Site. Special-status designation is for nesting sites.
Pyrocephalus rubinus (nesting)	vermilion flycatcher	None/CSC/LA County	Breeding habitat includes riparian woodlands, riparian scrub, and freshwater marshes	Low potential to nest in riparian habitats on site. A single individual was observed along the Santa Clara River in 1993.
Riparia riparia (nesting)	bank swallow	None/ST/LA County	Nests in lowland country with soft banks or bluffs; open country and water during migration	Not expected to occur on site. The site is outside its nesting range; the special-status designation is for nesting sites. Suitable nesting habitat does not exist in the Project vicinity and there are no recent nesting records for the area.
Strix occidentalis occidentalis	California spotted owl	BCC/CSC	Nest in oak and oak-conifer habitats	The Project Site is within the species' yearlong range, but species generally requires dense, old growth forest areas for foraging and cover. Woodlands occur on site, but are generally more open. Dense, mature coast live oak woodlands exist within canyons in High Country and Salt Creek that may be suitable habitat for this species.
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE/LA County	Nests in southern willow scrub with dense cover within 1-2 meters of the ground; habitat includes willows, cottonwoods, baccharis, wild blackberry or mesquite on desert areas	Low potential to occur in riparian habitats on site due lack of adequate habitat structure for nesting. Large breeding population is present in Santa Clara River adjacent to site.
Xanthocephalus Xanthocephalus (nesting)	yellow-headed blackbird	None/CSC	Nest in freshwater marsh and forages in annual grassland, native grassland and agriculture.	Moderate potential to forage on site; however, the special-status designation is for nesting colonies and no nesting habitat present on site.
Mammals				
Bassariscus astutus	ringtail	None/FP/LA County	Riparian and shrubland vegetation in proximity to water and rocky areas used for cover	Not expected to occur on site based on a lack of suitable habitat (e.g., hollow trees, logs, snags, abundant rocky areas near water) and close proximity to development and human

Table 9
Special-Status Wildlife Not Observed and Not Expected to Occur on the Entrada South Site

Scientific Name	Common Name	Status Federal/ State/Other	Primary Habitat Associations	Status On Site or Potential To Occur
				activities. Species was surveyed for in Project vicinity in 2004 using cameras, scent/track stations and spotlight surveys. If present in vicinity, likely have been detected during the numerous studies performed near the Santa Clara River and its tributaries.
Choeronycteris mexicana	Mexican long-tongued bat	None/CSC	Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon-juniper woodland. Roosts in caves, mines, and buildings.	Not detected during 2012 surveys on site and in 2004 and 2006 surveys in Project vicinity. Not expected to occur. Project site is outside its range. The closest range (and only known range in California) is in coastal San Diego County, approximately 100 miles southwest. Species requires habitats associated with desert habitats, which do not occur on site.
Euderma maculata	spotted bat	None/CSC/L A County	Foothills, mountains, desert regions of southern California, including arid deserts, grasslands, and mixed conifer forests; roosts in rock crevices and cliffs; feeds over water and along washes.	Not detected during acoustic surveys in 2012. Although site is within this species' yearlong range. This species also was not detected during acoustic in the Project vicinity in 2004 and 2006. There are no cliffs or caves in the vicinity so there is limited suitable roosting habitat on or bordering the Project Site. Only rare to occasional spotted bat sightings have been recorded in the Project vicinity.
Nyctinomops macrotis	big free-tailed bat	None/CSC/L A County	Rocky areas; roosts in caves, holes in trees, buildings, and crevices on cliffs and rocky outcrops; forages over water.	Not detected during acoustic surveys in 2012, Also not detected in the Project vicinity during bat surveys in 2004 and 2006. The closest range is in southwest San Diego County and is rare in California. This species is not expected to occur on site due to the distance from its known range.
Onychomys torridus ramona	southern grasshopper mouse	None/CSC/L A County	Grassland, sparse coastal sage scrub	Low potential to occur on site. Species was not detected in small mammal trapping studies on the Project Site in 2012 or in Project vicinity in 2004 and has not been documented in region since 1930.

Table 9
Special-Status Wildlife Not Observed and Not Expected to Occur on the Entrada South Site

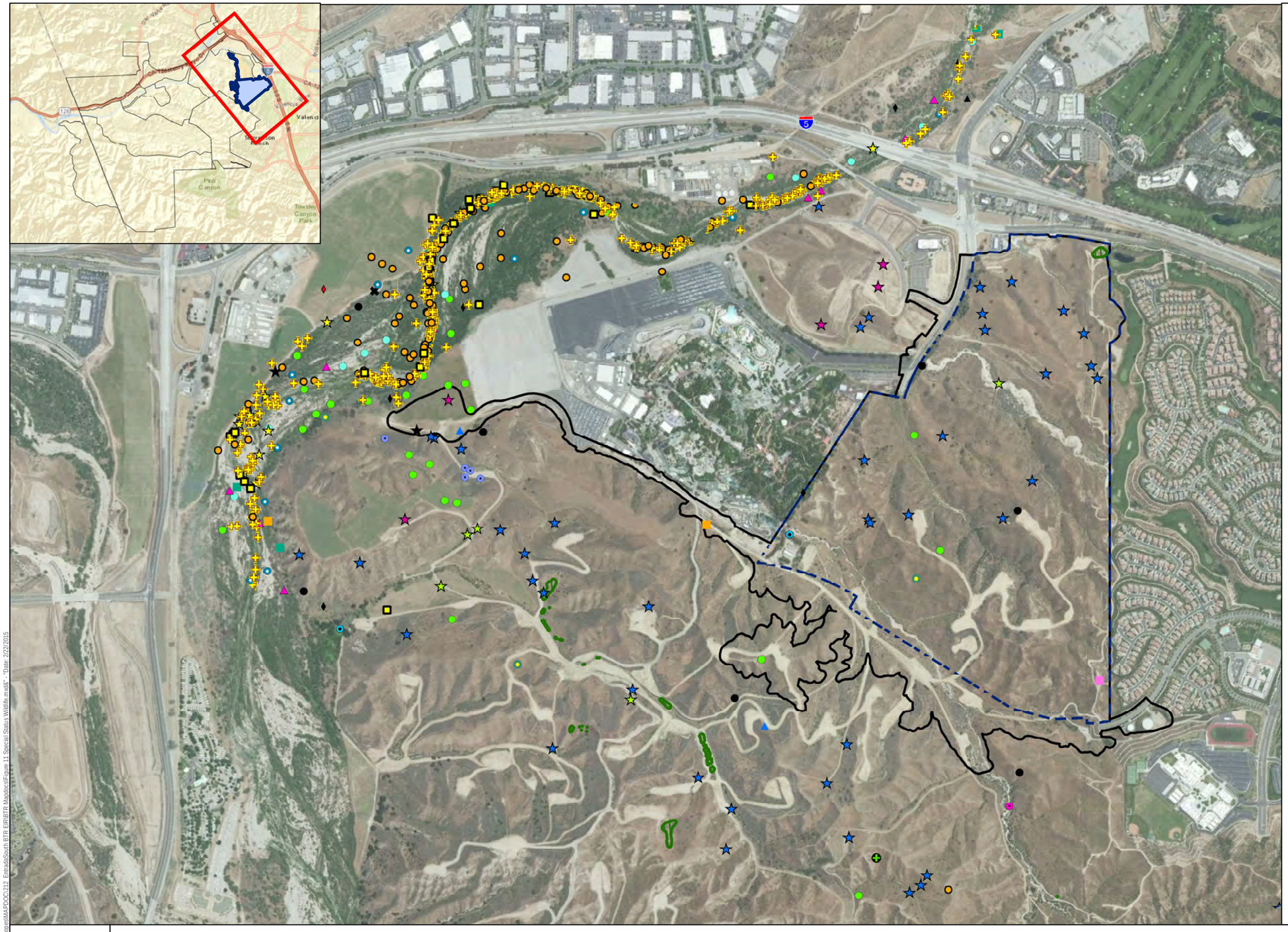
Scientific Name	Common Name	Status Federal/ State/Other	Primary Habitat Associations	Status On Site or Potential To Occur
Perognathus longimembris brevinasus	Los Angeles pocket mouse	None/CSC/L A County	Alluvial scrub, sagebrush, scrub, open chaparral, annual grasslands, riverwash; typically found in friable sandy soils.	Not expected to occur on site. Species was not detected in small mammal trapping studies in Project vicinity in 2004 and site is north of the northern extent of its known geographic range (Burbank and San Fernando).

A variety of special-status wildlife species have been detected on the Project Site and could be affected by the Project. These include the following:

- Special-Status Birds: Cooper's hawk (*Accipiter cooperii*) (WL, LA County), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) (WL, LA County), Bell's sage sparrow (*Amphispiza belli belli*) (BCC, CSC, LA County), oak titmouse (BCC, SA), western burrowing owl (*Athene cunicularia hypugaea*) (BCC, CSC, LA County), Costa's hummingbird (*Calypte costae*) (SA), white-tailed kite (FP, LA County), California horned lark (*Eremophila alpestris actia*) (WL, LA County), American peregrine falcon (*Falco peregrinus anatum*) (BCC, FP, LA County)[6], loggerhead shrike (*Lanius ludovicianus*) (BCC, CSC, LA County), Nuttall's woodpecker (*Picoides nuttallii*) (BCC, SA), Allen's hummingbird (*Selasphorus sasin*) (BCC, SA), yellow warbler (*Setophaga petechia brewsteri*) (BCC, CSC, LA County), black-chinned sparrow (*Spizella atrogularis*) (BCC, SA), Lawrence's goldfinch (*Spinus lawrencei*) (BCC, SA).[7]
- Special-Status Mammals: western mastiff bat (*Eumops perotis californicus*) (CSC, LA County), western red bat (*Lasiurus blossevillii*) (CSC), hoary bat (*Lasiurus cinereus*) (SA), western small-footed myotis (*Myotis ciliolabrum*) (SA, LA County), Yuma myotis (*Myotis yumanensis*) (SA), pocketed free-tailed bat (*Nyctinomops femorosaccus*) (CSC, LA County), mule deer (Regulated), and mountain lion (Regulated).

66 The American peregrine falcon's special-status designation is for nest sites and lethal take of individuals (i.e., it is fully protected in California). It was observed perching on a transmission tower and probably was foraging on site; it is not expected to nest on site.

7 Vaux's swift was also observed on site, but because its special-status designation is for nesting sites, which do not occur on site, it is not further analyzed in this BTR.



SOURCE: ESRI Online Bing Basemap

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FIGURE 11

Special-status Wildlife On Site and Within 0.5 Mile of Entrada South Site

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Three federally listed threatened or endangered wildlife species have a least moderate potential to occur on the Project Site: arroyo toad (*Anaxyrus californicus*) (FE, CSC, LA County), California condor (*Gymnogyps californianus*) (FE, SE, LA County), and coastal California gnatcatcher (FT, CSC, LA County).

As noted in Table 8, the California condor has been observed feeding on cattle carcasses in Potrero Canyon in the recent past (2008, 2009) and it frequently flies over the Project vicinity when moving from nesting areas in the Sespe Wilderness area to the northwest and foraging areas in the San Gabriel Mountains to the southeast. It is possible that condors could land on the Project Site to feed on large animal carcasses (e.g., mule deer). The California gnatcatcher was not detected on site during USFWS protocol surveys in 2012, but a breeding pair was detected nearby on the Mission Village site in June 2012.

Table 8 lists several other special-status wildlife with at least moderate potential to occur on the Project Site. Because these have potential to occur on site, and therefore, to be affected by the proposed Project, potential direct, indirect, and cumulative impacts to these species are analyzed in Section 5.0. Table 8 also includes the federally listed southern steelhead. Although the steelhead has not been documented in the Santa Clara River in the Project vicinity, it occurs in the river and its tributaries downstream below the Dry Gap (Titus et al. 2010; Stoeker and Kelly 2005) and potentially would be affected by Project discharges during storm events when surface waters flow across the Dry Gap.

Table 9 lists special-status species that were not detected on the Project Site and have low or no potential to occur on the site. Table 9 also includes some species that were not observed, but that have high or moderate potential to occur, but the Project Site is not expected to affect the phase of their life cycle that is designated as special status. For example, both sharp-shinned hawk (*Accipiter striatus*) and tricolored blackbird (*Agelaius tricolor*) have high potential to use the site for foraging on occasion, but their special-status designation is for nesting sites. Sharp-shinned hawk does not nest in the Project vicinity, and tricolored blackbirds nest in wetlands that do not occur on the Project Site, but which are present in the Santa Clara River. Therefore, species-specific impacts to these special-status species are not analyzed in this BTR. However, general loss wildlife foraging habitat for these species is analyzed in Section 5.0.

Critical Habitat

The potential occurrence of arroyo toad is in upland agricultural habitat in the extreme northern portion of the Project Site immediately adjacent to the Santa Clara River. The Project Site also has a very small overlap (0.005 acre) with federal designated critical habitat (Unit 6b) for arroyo toad (76 FR 7246–7467).

The northern portion of the Project Site also overlaps with federal designated critical habitat for least Bell's vireo (59 FR 4845–4867). Most of the land cover in critical habitat is agriculture and disturbed land, neither of which is a primary constituent element of vireo critical habitat. Primary constituent elements include riparian vegetation that generally contains both canopy and shrub layers, and includes some associated upland shrub habitats used for foraging that are within about 100 feet of riparian vegetation (Kus and Miner 1989). The Project Site does contain some coastal scrub in critical habitat that is located west of the agricultural area approximately 300 feet from the edge of riparian vegetation along the Santa Clara River (Figure 9). Given its location of at about 300 feet from the edge of riparian vegetation along the river, it does not constitute a primary constituent element of least Bell's vireo critical habitat. Critical habitat has been designated for southern steelhead in the Santa Clara River downstream of the Project area.[8] In addition, as indicated in Table 9, southern steelhead has not been observed, and is not expected to occur, in the reach of the Santa Clara River within the Project Site.

The Entrada South site does not include designated critical habitat for any other special-status species.

4.3.3 Special-Status Vegetation Communities

Special-status vegetation communities include wetlands and riparian communities, as well as those communities that CDFG has identified as a high priority for inventory due to rarity or threat in California and/or considered sensitive by the County of Los Angeles (CDFG 2010). Three vegetation types on the Project Site are considered special status by CDFG and/or Los Angeles County:

- Thickleaf yerba santa scrub is a provisional alliance ranked by CDFG as a G3S3 alliance, which means it is vulnerable globally and statewide. The Project Site contains 0.1 acre of thickleaf yerba santa scrub.
- Valley oak/grass is ranked G3S3 by CDFG and regulated by the County of Los Angeles Oak Tree Ordinance (CLAOTO; codified at Los Angeles County Code Chapter 22.56, Part 16), which prohibits damaging or removing oak trees with trunks that are at least 8 inches in diameter (or that have two trunks totaling at least 12 inches in diameter) as measured 4.5 feet above natural ground (County of Los Angeles 1988). CLAOTO requires that all potential impacts to oak trees regulated by this ordinance be preceded by an application to

[8] The National Oceanic and Atmospheric Administration National Marine Fisheries Service designated critical habitat for southern steelhead in California on September 2, 2005, including in the lower Santa Clara River and portions of its tributaries in Ventura County downstream of the Dry Gap, including Piru Creek below Santa Felicia Dam approximately 6 miles downstream of the project area (70 FR 52488-52627). None of the designated critical habitat for southern steelhead, therefore, is located in the river reaches adjacent to the project.

the County that includes a detailed oak tree report. Mitigation for impacts to oak trees is usually required as a condition of an Oak Tree Permit issued by the County.

- The Project Site contains 5.4 acres of valley oak/grass. In addition, the site contains 104 mapped oaks (LDC 2014), including 64 valley oaks, 35 scrub oaks, 3 coast live oaks, and 2 valley oak-scrub oak hybrids (*Quercus lobata-berberidifolia* hybrid)[9] (Figure 12). Of the 64 valley oaks, 7 qualify as heritage oaks, which is defined by CLAOTO as any oak tree measuring 36 inches or more dbh as measured 4.5 feet above natural ground. Heritage oaks also include any oak less than 36 inches dbh, but having a significant historical or cultural importance to the community; no oaks meeting this criterion were mapped on the Project Site.
- Blue elderberry stands is ranked by CDFG as a G3S3 alliance. The Project Site contains 0.2 acre of blue elderberry stands.

4.3.4 Jurisdictional Waters

In 2012, URS inspected the Entrada South site and delineated waters of the United States (including wetlands) regulated by the Corps, jurisdictional streams regulated by CDFG, and waters of the state regulated by the Los Angeles RWQCB. The results of the delineation are summarized in Table 10 and shown in Figure 13. The waters of the United States are included within the CDFG streambeds. The waters of the United States and the waters of the state are identical on this Project Site. The four jurisdictional areas are described in more detail below.

Table 10
Jurisdictional Acreages on the Entrada South Site

Area	Waters of the United States			CDFG-Jurisdictional Streambeds (acres)
	Non-Wetland Waters (acres)	*Wetland Water (acres)*	*Total Waters of the United States (acres)*	
Magic Mountain Canyon	2.62	—	2.62	4.41
Unnamed Creek-1	0.66	—	0.66	1.68
Unnamed Creek-2	2.74	—	2.74	7.79
Unnamed Creek-3	0.31	0.43	0.74	1.49
Total Jurisdictional Area	**6.33**	**0.43**	**6.77**	**15.37**

Source: URS 2014.

Magic Mountain Canyon, the westernmost of the drainages, is 3,787 feet in length, with an average width of 5–6 feet and an average depth of 2–8 feet (maximum of 63 feet). It has a mostly unvegetated channel bottom consisting of loose and unconsolidated sand to cobble, with a

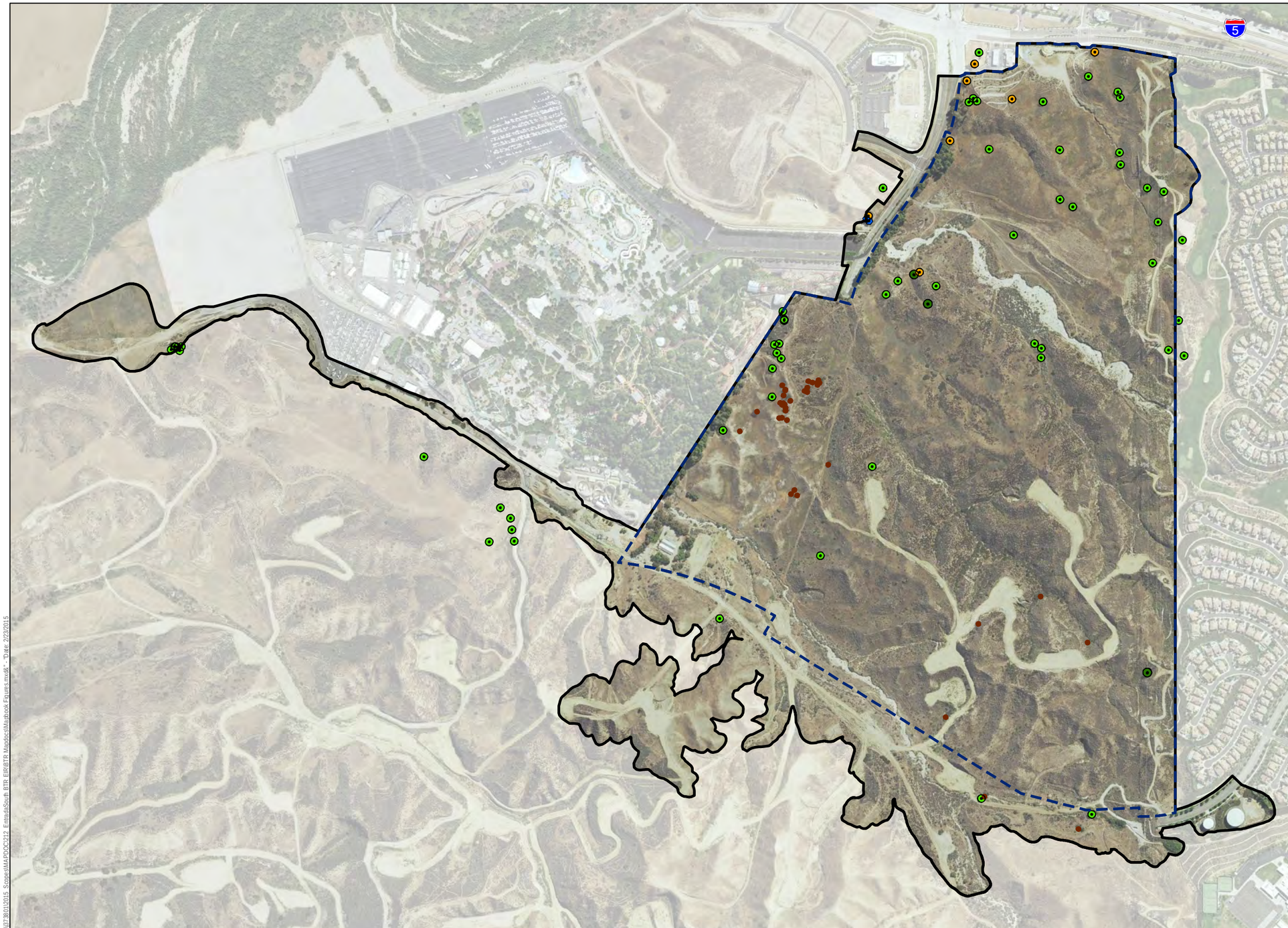
[9] MacDonald oak

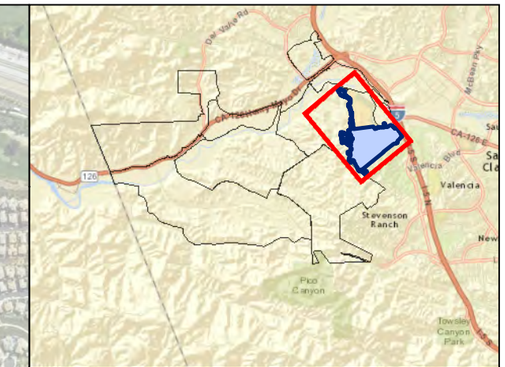
consolidated bank. Hydrologically, it consists primarily of deeply cut banks and is naturally incised. The banks support solitary and clustered riparian trees, including blue elderberry (*Sambucus nigra* ssp. *caerulea*), tree tobacco, scrub oak, and mainland cherry. Two ephemeral drainages converge and continue downstream as one ephemeral channel.

Unnamed Creek-1, which appears to originate from the southern boundary of the Project Site, is 7,265 feet in length, with an average width of 1–3 feet (maximum 10 feet) and an average depth of 0.5–15 feet (maximum > 50 feet). It is an ephemeral creek with several small channels branching off the mainstem within the Project Site. It has a heavily vegetated channel bottom consisting of loose and unconsolidated sand to cobble/gravel, with a consolidated bank. Vegetation in the southern half (downstream) portion of the channel includes big sagebrush, shortpod mustard, and scattered to densely clumped tree tobacco, mainland cherry, and scrub oak. Vegetation in the northern half (upstream) portion of the channel is mostly chamise and scrub oak. Hydrologically, its banks vary from shallow and gradually sloping to vertical and steeply cut. It carries flows north through developed areas and eventually into the Santa Clara River.

Unnamed Creek-2, the largest drainage on the site, is an ephemeral feature 8,395 feet in length, with an average mainstem width of 8–20 feet (minimum of 0.5–3 feet), with smaller side channels averaging 1–3 feet. The mainstem of this ephemeral drainage flows in a south–north direction, with a tributary branch contributing flow from the southwest. The mainstem of this feature originates south of the Project Site within a golf course located immediately south of the Project Site boundary. The outflow structure of the golf course is constructed of riprap and supports hydrophytic vegetation such as cattail (Typha spp.). Average depth of the mainstem is 20 feet, with side channels averaging 0.5–6 feet (maximum of 10 feet). The mainstem is primarily unvegetated, with both vegetated and unvegetated side channels. The mainstem channel consists of loose and unconsolidated sand to cobble with boulders and a consolidated bank. Hydrologically, it mostly has steep cut banks through most of the drainage, with incised, shallow, braided features near the confluence of the mainstem and western branch. The drainage carries flow that eventually reaches the Santa Clara River via an engineered channel.

Unnamed Creek-3, the easternmost of the drainages on site, is an ephemeral feature 2,360 feet in length, with an average width of 2.5 feet (maximum 300 feet in downstream debris basin) and an average depth of 3–10 feet (maximum 15–20 feet). It has a heavily vegetated channel bottom, but with a pooled area that is sparse to unvegetated. Vegetation includes wild oat species, shortpod mustard and scattered valley oak and tree tobacco. Channel soils are loose and unconsolidated sand to cobble, with a consolidated bank. Hydrologically, it mostly has steep cut banks that are incised. The feature conveys flow from the golf course located south of the Project boundary northward through developed areas and eventually to the Santa Clara River. A pooled area and wetland feature is present downstream at the end of the drainage.





Entrada South Project Boundary

Entrada South Tract Map Boundary

Oak Trees

- California live oak - *Quercus agrifolia*
- Valley oak - *Quercus lobata*
- Heritage Valley oak - *Quercus lobata*
- MacDonald oak - *Quercus x macdonaldii*
- Scrub oak - *Quercus berberidifolia*

0 500 1,000 Feet

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AERIAL SOURCE: NAIP 2014; OAKS: Oak Tree Survey for Entrada South Alliance 2013

FIGURE 12

Oak Trees

Biotechnical Report for the Entrada South Site

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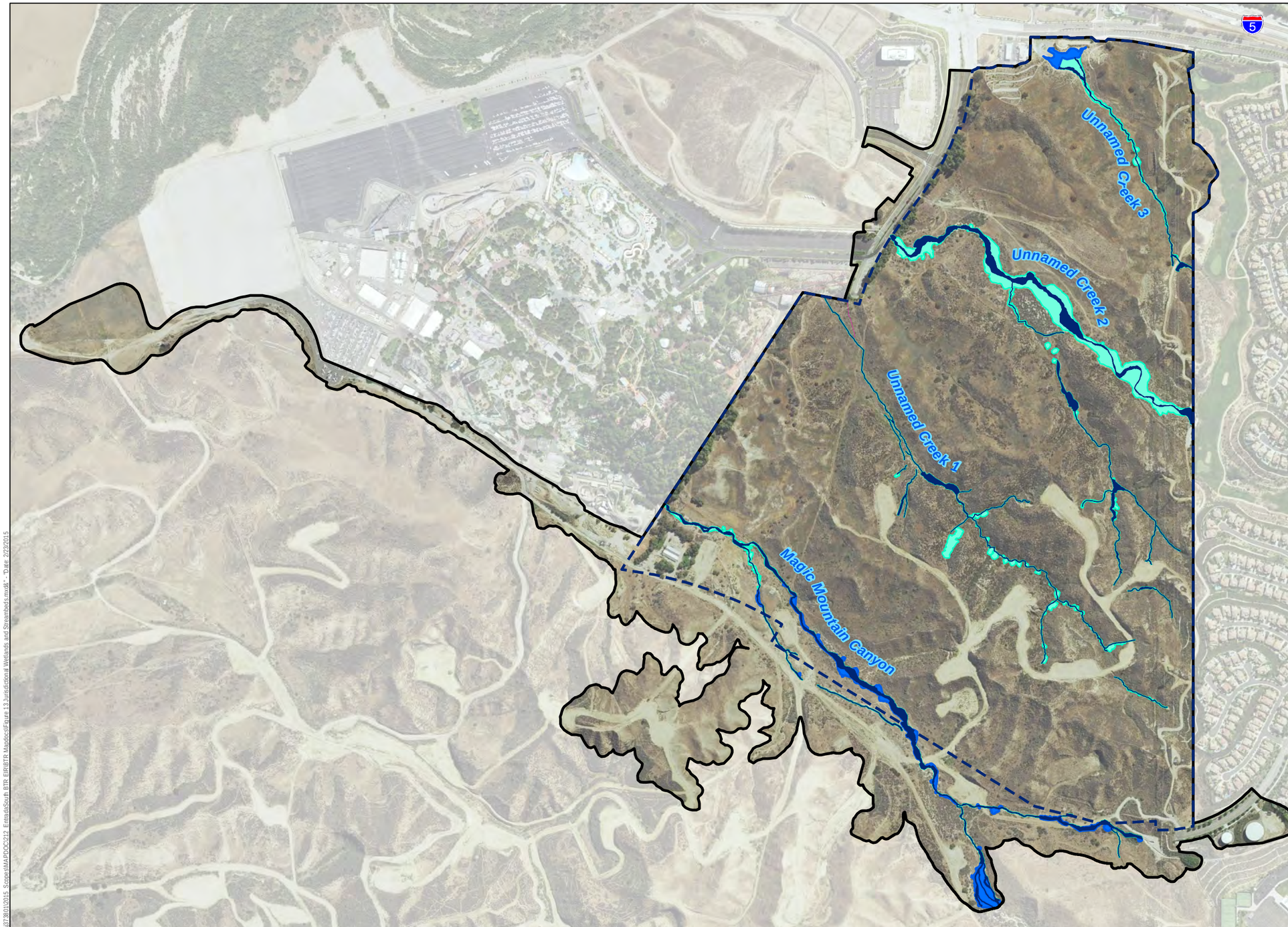

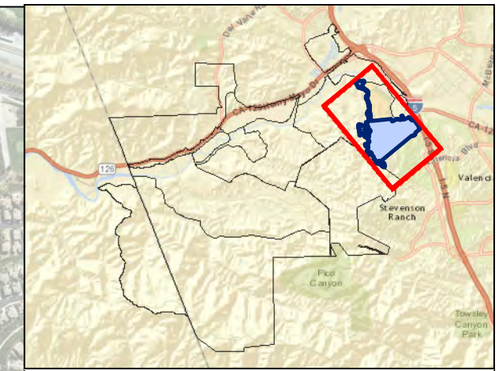

Entrada South Standalone Project Boundary

Entrada South Tract Boundary

Jurisdiction

CDFW Streambed

USACE Wetland Waters of the U.S.

USACE Non-Wetland Waters of the U.S.

Non-Jurisdictional Swale

0 750 1,500 Feet

DUDEK

AERIAL SOURCE: NAIP 2014, JURISDICTION: URS 2014

FIGURE 13

Jurisdictional Wetlands and Streambeds

Biological Technical Report for the Entrada South Site

J:\DUDEK-FILES\GIS\Data\Projects\07280110015_SoryeoMAP\DOC\212_EntradaSouth_BTR_EIR\BTR Maps\Docs\Figure 13 Jurisdictional Wetlands and Streambeds.mxd&* - "Date: 2/23/2015

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4.4 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the migration of animals. Wildlife corridors contribute to population viability by assuring continual exchange of genes between populations, providing access to adjacent habitat areas for foraging and mating, and providing routes for recolonization of habitat after local extirpation or ecological catastrophes (e.g., fires).

Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation. Habitat linkages provide a potential route for gene flow and long-term dispersal of plants and animals. They may also serve as primary habitat for smaller animals, such as reptiles and amphibians. Habitat linkages may be continuous habitat or discrete habitat islands that function as stepping stones for dispersal.

The RMDP/SCP EIS/EIR identified Magic Mountain Canyon as one of several "tributary corridors" that connect undeveloped uplands with the Santa Clara River, which is a critical regional wildlife corridor and habitat linkage (Figure 14). Other off-site tributary corridors west of the Project Site include Lion Canyon, Exxon Canyon, Dead End Canyon, and Middle Canyon. Wildlife in undeveloped lands west of the Project Site currently can move freely throughout Project vicinity, including along Magic Mountain Canyon and these other tributary corridors. The Project Site allows less wildlife movement than do the tributary corridors to the west. This is because the site is surrounded on three sides by existing development, including residential and golf course development to the south; The Old Road, Interstate 5 and the City of Santa Clarita immediately to the east; and the Six Flags Magic Mountain theme park immediately to the north. Note, however, that the Project Site and immediate vicinity were not identified as important for regional wildlife connectivity (Penrod et al. 2006).

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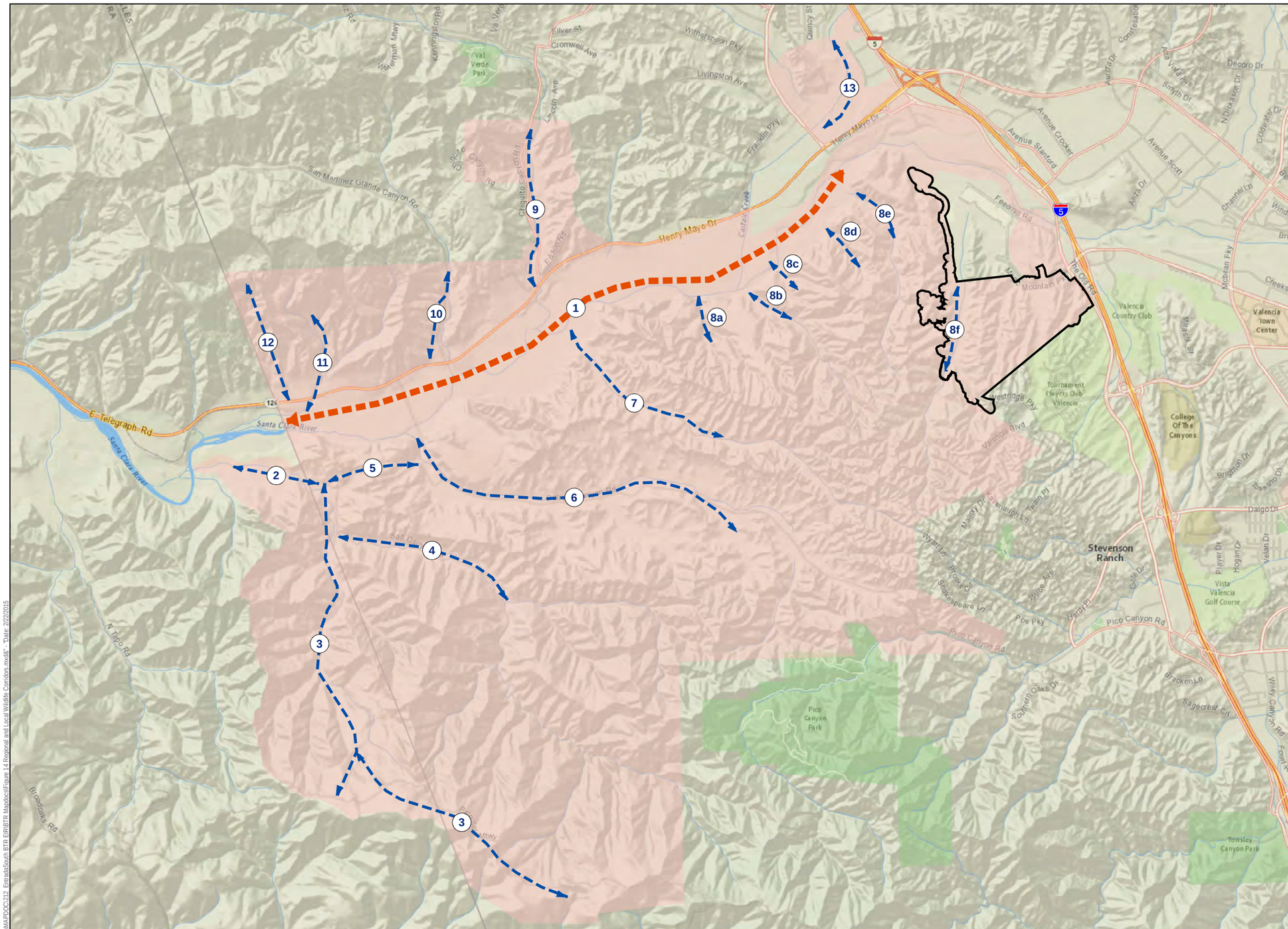

Entrada South Standalone Project Boundary

Newhall Ranch

1 - Santa Clara River Corridor

2 - Salt Creek Confluence

3 - Salt Creek High Country

4 - East Fork Salt Creek

5 - Potrero Canyon Salt Creek

6 - Potrero Canyon

7 - Long Canyon

8a - Humble Canyon

8b - Lion Canyon

8c - Exxon Canyon

8d - Dead End Canyon

8e - Middle Canyon

8f - Magic Mountain Canyon

9 - Chiquito Canyon

10 - San Martinez Grande Canyon

11 - Off-Haul Canyon

12 - Homestead Canyon

13 - Castaic/Hasley Corridor

0 0.75 1.5 Miles

SOURCE: National Geographic Basemap

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FIGURE 14

Regional and Local Wildlife Corridors

Z:\Projects\0738011\2015_Scope\MAP\DOC\212_EntradaSouth BTR EIR\BTR Maps\ecSFigure 14 Regional and Local Wildlife Corridors.mxd8 - Date: 2/2/2015

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5 PROJECT IMPACTS

5.1 Explanation of Findings of Significance

This BTR analyzes the significance of Project impacts to sensitive vegetation communities or riparian habitat, special-status plant species, special-status wildlife species, wildlife corridors and habitat connectivity, and regional resource planning.

Based on Appendix G of the CEQA Guidelines and other relevant criteria, the Los Angeles County Department of Regional Planning has established the following criteria for determining whether the Project would have a potentially significant impact on biological resources:

Threshold D-1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

Threshold D-2: Would the project have a substantial adverse effect on any sensitive natural communities (e.g., riparian habitat, coastal sage scrub, oak woodlands, non-jurisdictional wetlands) identified in local or regional plans, policies, regulations, or by the CDFW or USFWS?

Threshold D-3: Would the project have a substantial adverse effect on federally or state protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, and drainages) or waters of the United States, as defined by Section 404 of the federal Clean Water Act (CWA) or California Fish and Game Code Section 1600 et seq., through direct removal, filling, hydrological interruption, or other means?

Threshold D-4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Threshold D-5: Would the project convert oak woodlands (as defined by the state, oak woodlands are oak stands with greater than 10% canopy cover with oaks at least 5 inches in diameter measured at 4.5 feet above mean natural grade) or otherwise contain oak or other unique native trees (junipers, Joshuas, southern California black walnut, etc.)?

Threshold D-6: Would the project conflict with any local policies or ordinances protecting biological resources, including Wildflower Reserve Areas (L.A. County Code, Title 12, Ch. 12.36), the Los Angeles County Oak Tree Ordinance (L.A. County Code, Title 22, Ch. 22.56, Part 16), the Significant Ecological Areas (SEAs) (L.A. County Code, Title 22, Section 22.56.215), and Sensitive Environmental Resources Areas (SERAs) (L.A. County Code, Title 22, Ch. 22.44, Part 6)?

Threshold D-7: Would the project conflict with the provisions of an adopted state, regional, or local habitat conservation plan?

Threshold D-8: Would the project's grading, fire clearance, or flood-related improvements remove substantial natural habitat areas?

Threshold D-9: Is a drainage course located on the Project Site that is depicted on USGS quad sheets by a dashed blue line or that may contain a bed, channel, or bank of any perennial, intermittent or ephemeral river, stream, or lake?

5.2 Definition of Impacts

This section defines the types of impacts that would occur as are result of Project implementation, including direct permanent impacts, direct temporary impacts, and indirect impacts.

Direct permanent impacts refer to the absolute and permanent physical loss of a biological resource due to Project construction activities, such as clearing and grading. This BTR analyzes direct permanent impacts in four ways: (1) permanent loss of vegetation communities, land covers, and general wildlife and their habitat; (2) permanent loss of or harm to individuals of special-status plant and wildlife species; (3) permanent loss of suitable habitat for special-status species; and (4) permanent loss of wildlife movement and habitat connectivity in the Project area.

Direct temporary impacts refer to a temporary loss of vegetation communities and land covers due to construction of proposed temporary haul roads, new access roads, slope remediation, grade control structures, installation of culverts, and other improvements required for the Project. The main criterion for direct temporary impacts is that impacts would occur for a short period of time and would be reversible. Areas temporarily disturbed by construction activities would be restored and revegetated with a native species mix similar to that which existed prior to disturbance following completion of work in the area such that full biological function can be restored.

Indirect impacts are reasonably foreseeable effects caused by Project implementation on remaining or adjacent biological resources outside the direct construction disturbance zone. Indirect impacts may occur during construction (i.e., short-term construction related indirect impacts) or later in time as a result of the development (i.e., long-term, or operational, indirect

impacts). Indirect impacts may affect areas within the defined Project area but outside the construction disturbance zone, including open space and areas outside the Project area, such as downstream effects. Indirect impacts include short-term effects immediately related to construction activities and long-term or chronic effects related to the human occupation of developed areas (i.e., development-related long-term effects).

For each of the following impact sections, direct and indirect impacts for biological resources are identified and a significance determination is made for each impact. For each significant impact, mitigation measures that would reduce the impact to less than significant are proposed. The full descriptions of the proposed mitigation measures are provided in Section 5.x.

5.3 Impacts to Vegetation Communities and Land Covers

5.3.1 Direct Impacts to Vegetation Communities and Land Covers

Direct permanent and temporary impacts to vegetation communities on the Project Site are summarized in Table 11 and shown in Figure 15. The Project would result in the permanent loss of approximately 435 acres (87%) and temporary direct impacts to approximately 15 acres (3%) of the vegetation communities and other land covers on the Project Site, resulting in total impacts to approximately 450 acres, or 90% of the site. Forty-two percent (181.2 acres) of the total direct permanent impacts and 86% (13.3 acres) of the total direct temporary impacts overlap with the Mission Village Project Site.

All of the natural vegetation types on the site would be permanently impacted, including 62% of the California annual grassland, 89% of the coastal scrubs, 99% of the chaparral, 82% of valley oak/grass, 100% of the blue elderberry stands, and 97% of the other riparian/wetlands.[10] As explained below, these are considered significant impacts requiring mitigation.

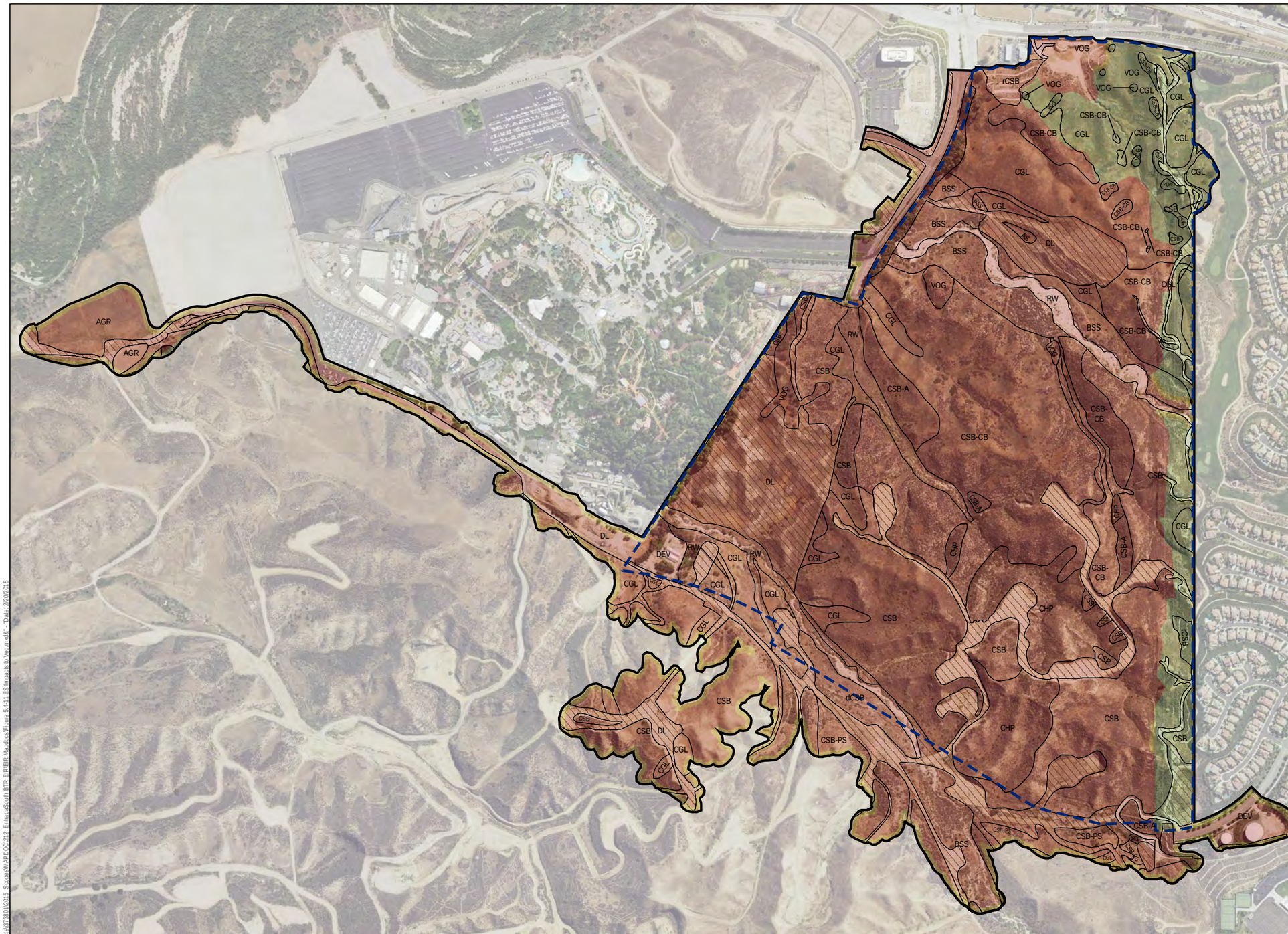
Table 11
Permanent and Temporary Impacts to Vegetation Communities and Land Covers on the Entrada South Site

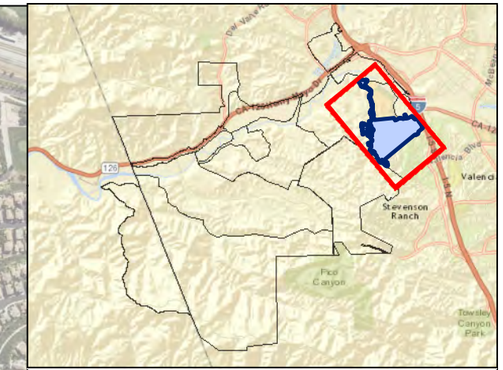
General Physiognomic and Physical Location	General Habitat Type	Floristic Alliance	Association	Total Acreage	Direct Permanent Impacts	Direct Temporary Impacts
Grass and Herb Dominated Communities	Non-native Grassland	California annual grassland	Not mapped to association level	65.8	41.0	0.9
Scrub and Chaparral	Coastal Scrub	*Total Impacts to Coastal Scrubs*		*233.0*	*207.0*	*7.8*
		California sagebrush scrub	Not mapped to association level	123.4	105.1	5.6

[10] Only a subset of wetlands are considered to be jurisdictional. See discussion of jurisdictional areas in Section 5.6.

Table 11
Permanent and Temporary Impacts to Vegetation Communities and Land Covers on the Entrada South Site

General Physiognomic and Physical Location	General Habitat Type	Floristic Alliance	Association	Total Acreage	Direct Permanent Impacts	Direct Temporary Impacts
			California sagebrush–coastal sagebrush	9.9	9.3	0.4
			California sagebrush–purple sage	11.6	10.0	1.6
		Restored California sagebrush scrub	Not mapped to association level	2.9	2.1	0.0
		California sagebrush–California buckwheat scrub	Not mapped to association level	85.3	80.5	0.3
	Undifferentiated Chaparral Scrubs	*Total Impacts to Chaparral Scrubs*		*25.2*	*25.2*	*0.0*
		Not mapped to alliance level	Not mapped to association level	25.1	25.1	0.0
		Thickleaf yerba santa scrub (Provisional Alliance)	Not mapped to association level	0.1	0.1	0.0
Broad Leafed Upland Tree Dominated	Oak Woodland and Forest	Valley oak forest and woodland	Valley oak/grass	5.4	4.4	0.0
Riparian and Bottomland Habitat	Low to High Elevation Riparian Scrub	Blue elderberry stands	Blue elderberry	0.2	0.2	0.0
	Other Riparian/Wetland	*Total Impacts to Other Riparian/Wetland*		*42.7*	*41.4*	*0.5*
		Riverwash	Not mapped to association level	17.6	17.5	0.1
		Alluvial scrub	Not mapped to association level	0.3	0.3	0.0
		Big sagebrush scrub	Not mapped to association level	24.7	23.6	0.3
Man-Made Land Cover Types		*Total Impacts to Man-Made Land Covers*		*129.1*	*115.6*	*6.2*
		Agriculture	N/A	8.0	7.3	0.7
		Developed	N/A	25.0	21.3	3.4
		Disturbed land	N/A	96.1	87.0	2.2
			Grand Total	**501.4**	**434.9**	**15.5**





Entrada South Project Boundary

Entrada South Tract Map Boundary

Impacts

- Permanent
- Temporary
- No Impact

Vegetation

- AGR = Agriculture
- AS = Alluvial scrub
- BES = Blue elderberry stands
- BSS = Big sagebrush scrub
- CGL = California annual grassland
- CHP = Undifferentiated chaparral
- CSB = California sagebrush scrub
- rCSB = Restored California sagebrush scrub
- CSB-A = California sagebrush scrub-Artemisia
- CSB-CB = California sagebrush scrub-California buckwheat
- CSB-PS = California sagebrush scrub-purple sage
- DEV = Developed
- DL = Disturbed land
- EDS = Eriodictyon scrub
- RW = River wash
- VOG = Valley oak/grass

0 750 1,500 Feet

AERIAL SOURCE: ESRI Online Bing Basemap

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FIGURE 15

Entrada South Impacts to Vegetation Communities

Biological Technical Report for the Entrada South Site

I:\DUDEK-FILES\GIS\data\Projects\07300\1\2015_Scope\MAP\DOC\212_EntradaSouth BTR_EIR\EIR Maps\Docx\Figure 5-4-11 ES Impacts to Veg.mxd\&* ;*Date: 2/20/2015

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The vegetation types on the Project Site that are considered special status by CDFG and/or Los Angeles County are thickleaf yerba santa scrub (G3S3), valley/oak grass (G3S3), and blue elderberry stands (G3S3). Included here are impacts to oak trees that are regulated by CLAOTO.

Impact BIO-1 Project construction would result in direct impacts to valley oak/grass.

The proposed Project would result in permanent direct impacts to 4.4 acres of valley oak/grass on site, representing an 82% loss of this vegetation type. The Project would result in temporary direct impacts to less than 0.1 acre of valley oak/grass on site. This is a significant impact, absent mitigation.

Impact BIO-2 Project construction would result in direct impacts to oaks regulated by the CLAOTO.

The Project Site contains 64 valley oaks, 35 scrub oaks, 3 coast live oaks, and 2 valley oak-scrub oak hybrids[11]. The proposed Project would remove 29 valley oaks, 35 scrub oaks, 1 coast live oak, and 2 valley oak-scrub oak hybrids. Of the 67 oak trees to be removed, 3 are heritage oak trees. The Project would encroach on up to 11 other oak trees, including 2 heritage oak trees. This impact would be significant because it would directly affect 67 oaks and result in encroachment of up to 11 oaks regulated by the CLAOTO.

These impacts to valley oak/grass (Impact BIO-1) and individual oaks regulated by CLAOTO (Impact BIO-2) would be reduced to less than significant by the following proposed mitigation measure:

- **ES 5.4-17** (Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation).

Project-related impacts to valley oak/grass[12] and individual oaks regulated by the CLAOTO would result primarily from the conversion of undeveloped land to urban uses. Temporary disturbance to valley oak/grass would also occur from clearing and grading associated with the construction of access roads, grade control structures, installation of culverts and other improvements. The temporary disturbance areas would be restored following construction, and the individual oaks regulated by the CLAOTO would be mitigated according to CLAOTO.

[11] Also referred to as MacDonald oak.

[12] As described in Threshold 5.4-5, oak woodlands as defined by the state are oak stands with greater than 10% canopy cover with oaks at least 5 inches in diameter measured at 4.5 feet above mean natural grade. The valley oak/grass on site is an association of the valley oak woodland floristic alliance; however, the valley oak/grass on site includes primarily valley oaks (*Quercus lobata*) sparsely populated (up to 10% canopy cover) within California annual grassland and so does not meet the state definition of oak woodlands. For purposes of this BTR, the valley/oak grass is being mitigated as oak woodland.

To mitigate the effects of the Project on oak woodlands, Newhall would replace oak trees in or adjacent to existing oak woodlands and savannahs per the Oak Resource Management Plan (ORMP; see Appendix D). In addition, maintenance of the oak woodland restoration sites is required for a period of no less than 5 years total and no less than 2 years after removal of irrigation (if any). During the maintenance period, maintenance measures will be provided to ensure that the oak trees become successfully established and are ultimately able to survive on natural conditions beyond the completion of the maintenance period. While many county and city oak tree protection ordinances focus on individual trees, the functional unit that should be considered for restoration is the oak woodland. Mitigation such as restoration and compensation should focus on oak woodlands rather than a certain number or size of individual trees (Light and Pedroni 2002). Protecting trees only over a certain size results in loss of woodlands as the younger components of the woodland are removed, and structural complexity is lost. The mitigation measure proposed to replace impacted oak tree habitat; restore, enhance, and maintain the communities on site; and create new or expand existing oak woodland communities do consider the community as a whole. This mitigation measure will replace the lost habitat and provide for the long-term preservation of oak communities in the Project area. The ORMP would be implemented per ES 5.4-17 and includes measures to create, enhance, and/or restore 4.5 acres of valley oak/grass within lands owned by the Applicant. This valley oak/grass will be subject to the performance criteria established in the Oak Resource Management Plan. For example, successful completion of each woodland creation or enhancement site must be without active manipulation by irrigation, planting, or re-seeding for a minimum of 3 years; oak trees must be within 5% of the plan target density of surviving, healthy oak trees; and non-native grass cover must not exceed the "target" woodland non-native grass cover. The plan shall be subject to the requirements of CLAOTO and will address impacts to oak resources including oak trees of the sizes regulated under CLAOTO.

Direct Impacts to Vegetation Communities that Would be Less Than Significant

The Project Site contains 0.1 acre of thickleaf yerba santa scrub, almost all of which (0.1 acre) would be permanently impacted and less than 0.1 acre would be temporarily impacted. This community is a G3S3, meaning that it is vulnerable globally and statewide, and could be declining, but is not yet imperiled or critically imperiled. Although 100% of this vegetation type would be directly affected, the impact would be less than significant because only 0.1 acre of this vegetation community would be disturbed. Further, the Project Site is not representative of the typical environmental setting for thickleaf yerba santa scrub where protection of this community would be most needed. The maximum elevation of the Project Site is 1,438 feet amsl, whereas thickleaf yerba santa scrub is described as occurring on typically exposed lower and upper slopes between 825 and 1,730 meters (2,207–5,676 feet), although additional sampling is needed to understand this community (Sawyer et al. 2009). Also, this community has not been mapped

elsewhere in the RMDP/SCP project area, so the 0.1-acre stand on site is not part of a larger occurrence of thickleaf yerba santa scrub in the Project vicinity.

The Project Site contains 0.2 acre of blue elderberry stands. Although 100% of this vegetation type would be permanently directly impacted, this impact would not be significant because only a very small amount of the community (0.2 acre) would be affected. This is a small proportion of the approximately 13 acres of the blue elderberry stands in the RMDP/SCP project area. In addition, this community is a G3S3 and has a widespread range in California. The geographic range of blue elderberry stands includes the southcoast region from southern Ventura County to the U.S.–Mexico border; the western Sierra Nevada foothills from Tehama County south to southern Tulare County; and the Bay Area and Delta region from southern Sonoma County south to Santa Cruz County and inland to Santa Clara, Alameda, Contra Costa, Sacramento and San Joaquin Counties.

Impacts to the other vegetation communities and land covers listed in Table 11 would not be significant because (1) they are not designated as special status by the resource agencies and (2) they are generally widespread in the region and these impacts would not substantially reduce their abundance and/or distribution. However, to the extent impacts to these vegetation communities would result in habitat loss for special-status plant and wildlife species, such losses, if deemed significant, will be mitigated through a variety of measures, including dedication and management of open space supporting these communities. Therefore, even though mitigation is not required to offset the loss of non-sensitive vegetation communities (e.g., coastal scrub), mitigation for significant impacts to an associated special-status species will provide de facto mitigation for these communities.

Based on the foregoing analysis, this BTR finds that the Project has the potential to cause significant direct impacts to vegetation communities, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation finding of the RMDP/SCP EIS/EIR for this impact.

5.3.2 Indirect Impacts to Vegetation Communities and Land Covers

Short-term construction effects to vegetation communities may include fugitive dust; runoff, sedimentation, chemical pollution, and erosion; litter; and accidental clearing, grading, and trampling. Excessive dust from short-term construction can decrease or limit plant survivorship by decreasing photosynthetic output, reducing transpiration, and adversely affecting reproductive success. Construction or other infrastructure upgrades including mass grading can severely or permanently alter the surface hydrology in an area and affect plant communities by reducing access to sheet flow during rain events or increasing the chance of erosion. Operation and

maintenance of construction equipment can increase the chance of petroleum or other chemical spills or leaks (e.g., fuels, lubricants, cleaning solutions) that can enter off-site vegetation. Vegetation can also be crushed through the inadvertent clearing of vegetation located outside the designated Project footprint.

Over the long term, increases in human activity along the open space–urban interface (also referred to as "edge areas") and within open space areas (e.g., use of trails within and adjacent to the Santa Clara River SMA/SEA, High Country SMA/SEA, and Salt Creek area) may also result in the trampling of vegetation and compaction of soils. This can affect the long-term viability of plant communities and degrade wildlife habitat quality. Trampling of vegetation and compaction of soils also interacts with the soil chemistry and can affect soil moisture, water penetration, surface flows, and erosion. Other long-term secondary effects include the following:

- Fertilizers and herbicides may penetrate open space areas through run-off and overspray, adversely affect vegetation communities by killing or weakening native species and/or allowing establishment of non-native species in edge areas.
- Increased urban and stormwater runoff from impervious surfaces such as roads or structures may result in long-term hydrological alterations including increased runoff volume.
- Increased peak flow rates; increased duration of flows; and altered patterns in the tributary drainages on site.
- Invasive plant species that thrive in edge habitats are a well-documented problem along the open space–urban interfaces in southern California. Invasive species can degrade habitat by forming monocultures that displace native communities, and can colonize virtually any area that is subject to some kind of disturbance, such as the banks of stream channels and adjacent upland areas including road shoulders, cleared zones along housing developments, and fire breaks.
- Urbanization also alters wildfire regimes as a result of human activities at the open space–urban interface, such as accidental ignitions from sparks from equipment such as mowers striking rocks, cigarettes, children playing with matches, and intentional ignitions such as arson. While wildfires are most likely to be ignited in edge areas, the actual effect of large wildfires can occur at the much broader landscape level, especially when fires are quickly spread into undeveloped lands by strong winds.

Note that within the general development area, the 15 acres of temporarily impacted areas would be restored to "man-made" open space. These areas would be small polygons and strips of open space that will provide public amenities in the development area. Due to their small size and narrow shapes, however, they will have relatively low long-term value as natural

vegetation communities and habitat for native plants and wildlife. Therefore, these smaller man-made open space areas are not considered mitigation for biological impacts.

The Project's primary indirect effects on natural vegetation would occur outside the development area in open space areas. Specifically, the Project would have indirect effects on (1) the Entrada spineflower preserve in the eastern portion of the Project Site as well as and the Magic Mountain and Airport Mesa spineflower preserves off site and immediately adjacent, (2) natural open space along the southern boundary of the site (the SCE easement which is actively maintained), and (3) some small natural open space areas along the southwestern boundary (Figure 15). Indirect effects to the spineflower preserve are discussed in detail in Section 5.3.2. As described in Section 2.6.2, Surrounding Land Uses, the Project Site is currently bordered by medium-density residential housing and a golf course to the south and southeast, and major commercial land use to the north and east, including the Six Flags Magic Mountain theme park. Ultimately, the Project Site will be bordered by the Mission Village development on the west. Therefore, indirect effects on natural vegetation communities after build-out, will be limited, with the exception of the Entrada spineflower preserve on site, and the Magic Mountain and Airport Mesa spineflower preserves off site and immediately adjacent.. The main concern will be indirect effects to riparian and wetland communities in the Santa Clara River as a result of altered hydrology and runoff. In addition public uses of the open spaces areas could result in substantial indirect effects.

Impact BIO-3 Project construction would result in indirect impacts to vegetation communities.

Most indirect impacts to on-site adjacent vegetation communities would not be substantial. However, indirect impacts to (1) on-site oaks, (2) vegetation on the Magic Mountain, and Airport Mesa spineflower preserves, and (3) riparian/wetland communities in the Santa Clara River SMA/SEA could be significant. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral on site and/or within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site and/or within lands owned by the Applicant);
- **MM ES 5.4-37** (protective fencing around oaks during clearing and grading activities);

- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-9** and **ES 5.4-10** (control invasive exotic plant species);
- **MM ES 5.4-20** (guidelines for restoration and enhancement of degraded and/or damaged spineflower habitat);
- **MM ES 5.4-49** (Integrated Pest Management plan);
- **MM ES 5.4-21** (emergency fire response plan and response strategies for wildfire or mass movement (e.g., landslides, slope sloughing, or other geologic events) within the spineflower preserves);
- **MM ES 5.4-57** and **ES 5.4-58** (control of Argentine ants);
- **MM ES 5.4-63** (temporary fencing and signage around the spineflower preserve(s), open space connections, and buffer areas; permanent fencing and signage along the spineflower preserve boundary);
- **MM ES 5.4-52** (project design features, construction notes, erosion and dust control, and [stormwater pollution prevention plan] SWPPP BMPs to ensure protection of vegetation communities and special-status species);
- **MM ES 5.4-53** (dust control measures);
- **MM ES 5.4-29** and **ES 5.4-54** (review of plant palettes and inspection of container plants for use within 200 feet of native vegetation for pests and disease; restrictions on invasive plants and irrigation);
- **MM ES 5.4-22, ES 5.4-23,** and **ES 5.4-26** (spineflower preserve temporary fencing requirements, construction documents and education of construction workers);
- **MM ES 5.4-24, ES 5.4-25, ES 5.4-27,** and **ES 5.4-28** (control of construction-related dust, erosion, and water quality within spineflower preserve),
- **MM ES 5.4-30, ES 5.4-31, and ES 5.4-32** (restricting access to spineflower preserves through fencing and signage);
- **MM ES 5.4-64** (fire management plan to avoid and minimize impacts to the spineflower);
- **MM ES 5.4-65** (minimization of changes in surface water flows to spineflower preserves);

- **MM ES 5.4-66** and **ES 5.4-67** (restrictions on storm drains within spineflower preserves); and
- **MM ES 5.4-68** (storm drain system requirements for spineflower preserve areas).

In order to reduce short-term and long-term indirect impacts to special-status vegetation communities resulting from Project implementation, the Project Applicant will implement a set of mitigation measures. Many of the proposed mitigation measures address the effects of several impacts. For example, the creation and maintenance of buffer areas can reduce the spread of wildfires, limit herbicide or fertilizer transport to native plant communities, inhibit the spread of exotic species, and attenuate the effects of human trampling on vegetation. Best management practices (BMPs) that reduce off-site sediment transport or nuisance water will also effectively mitigate the effects of both construction and indirect effects including irrigation or fertilizer use. Specific mitigation measures are described below.

Mitigation measures have been designed to limit the amount of particulate matter (dust) that leaves the construction area and include actions such as daily watering of disturbed areas and the use of chemical tackifiers. BMPs will also be employed to reduce the off-site transport of sediment or sediment-laden water during storm events. The applicable mitigation measures to reduce impacts from fugitive dust, runoff, erosion, sedimentation, and chemical pollutants include the previously incorporated measures MM ES 5.4-40 (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); MM ES 5.4-52, MM ES 5.4-25, MM ES 5.4-27, and MM ES 5.4-28 (control of construction-related dust, erosion, and water quality within spineflower preserve); and MM ES 5.4-53 (dust control measures).

The Project Applicant will also develop and construct a storm drain system that emulates the existing hydrology to preserve the integrity of vegetated areas. This will prevent stormwater from collecting in vegetated areas and increasing soil moisture. In some cases increases in soil moisture can alter the vegetation community present at a site where plants have adapted to specific hydrologic conditions. Flood control facilities will be designed pursuant to adopted BMPs and NPDES permitting requirements. The Newhall Ranch Sub-regional Stormwater Mitigation Plan prescribes the post-development stormwater management facilities to treat or detain runoff to ensure compliance with the Basin Plan and other policies such as hydromodification. Further, drainage structures will focus on managing the amount of debris that would enter the drainage system, balancing the amount of sedimentation or erosion that would occur, and maintaining the quality of water in the drainage system at a level consistent with the Clean Water Act and Porter-Cologne Act.

The possibility of herbicides or fertilizers accessing adjacent habitat may occur in a number of ways. Applicators could inadvertently apply the material to the vegetation; the chemicals can be associated with soil that washes off treated sites; or through drift from treated areas to adjacent habitat. To reduce these effects the Project Applicant will ensure that the use of herbicides takes place over short periods of time, and will be applied either by or under the supervision of a licensed professional to ensure that specific safety measures are followed. To reduce the potential for spills, the refueling or refilling of portable equipment shall occur within a contained area and applications will not occur during the wet season. These measures, coupled with the use of buffer areas including detention basins and naturally vegetated areas, will decrease the potential for windblown or surface transported herbicides or fertilizers from reaching adjacent vegetation. The mitigation measures described above for short-term water quality impacts will also reduce the potential effects of changes in hydrology and use of herbicides and fertilizers.

Additional applicable mitigation measures to reduce impacts from changes in hydrology and use of herbicides and fertilizers include MM ES 5.4-33 and MM ES 5.4-34 (restrictions on storm drains within spineflower preserves); MM ES 5.4-49 (Integrated Pest Management plan); MM ES 5.4-24 (project design features, construction notes, erosion and dust control, and SWPPP BMPs to ensure protection of vegetation communities and special-status species); MM ES 5.4-68 (storm drain system requirements for spineflower preserve areas); and MM ES 5.4-65 (minimization of changes in surface water flows to spineflower preserves).

The effects of invasive plants on natural communities are well documented. Invasive plants interfere in ecosystem functions by out-competing and displacing native plants and in some cases by hybridizing with native species (Bossard et al. 2000). Urbanization can adversely affect native vegetation communities by increasing the potential spread of exotics from landscaping or the release of seed packets into adjoining habitat by homeowners.

Measures to reduce indirect effects of the proposed Project include educating homeowners regarding the sensitivity of natural lands, using landscape plant species that are non-invasive or have limited potential, routine weeding of restored habitat, and using buffer areas to separate residential landscaping from natural areas. Invasive insects may also replace native insects responsible for pollinating native plant species. Applicable mitigation measures to address these invasive species impacts include MM ES 5.4-54 (review of plant palettes and inspection of container plants for use within 200 feet of native vegetation for pests and disease; restrictions on invasive plants and irrigation); MM ES 5.4-9 and MM ES 5.4-10 (control invasive exotic plant species); MM ES 5.4-29 (review of plant palettes used within 200 feet of spineflower preserves and inspection of all container plants within 200 feet for disease and pests); and MM ES 5.4-58 and MM ES 5.4-57 (control of Argentine ants).

Short-term impacts resulting from accidental clearing, grading, and trampling will be minimized through the use of clearly identified construction areas and full-time biological monitoring to reduce the potential for equipment to stray into adjacent vegetation. The applicable mitigation measures to reduce impacts from trampling and clearing of vegetation outside of the construction zone include MM ES 5.4-37 (protective fencing around oaks during clearing and grading activities); MM ES 5.4-40 (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); and MM ES 5.4-22, MM ES 5.4-23, and MM ES 5.4-26 (spineflower preserve temporary fencing requirements, construction documents and education of construction workers).

Long-term effects of trampling and littering will be reduced through the preservation of mitigation lands, signage, and fencing. These include MM ES 5.4-61 (preservation of 25.2 acres of undifferentiated chaparral on site and/or within lands owned by the Applicant); MM ES 5.4-62 (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site and/or within lands owned by the Applicant); MM ES 5.4-30, MM ES 5.4-31, and MM ES 5.4-32 (restricting access to spineflower preserves through fencing and signage); MM ES 5.4-20 (guidelines for restoration and enhancement of degraded and/or damaged spineflower habitat); and MM ES 5.4-63 (temporary fencing and signage around the spineflower preserve(s), open space connections, and buffer areas; permanent fencing and signage along the spineflower preserve boundary).

Increased fire frequency or alteration of the fire regime from construction or urbanization can adversely affect special-status vegetation communities. Mitigation measures to address this effect include MM ES 5.4-21 (emergency fire response plan and response strategies for wildfire or mass movement (e.g., landslides, slope sloughing, or other geologic events) within the spineflower preserves) and MM ES 5.4-64 (fire management plan to avoid and minimize impacts to the spineflower).

Based on the foregoing analysis, this BTR finds that the Project has the potential to cause significant indirect impacts to vegetation communities, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation finding of the RMDP/SCP EIS/EIR for this impact.

5.4 Impacts to Special-Status Plant Species

This section analyzes direct and indirect impacts to all observed special-status plants and those species with at least moderate potential to occur (Table 5).

5.4.1 Direct Impacts to Special-Status Plants

Five special-status plants have been documented on the Project Site during studies conducted between 2002 and 2013, including:

- San Fernando Valley spineflower (SE, FC, 1B.1, LA County)
- Mainland cherry (LA County)
- Island mountain-mahogany (4.3, LA County)
- Slender mariposa lily (1B.2, LA County)
- Peirson's morning-glory (4.2, LA County).

In addition, Parish's big sagebrush (LA County) is expected to occur on-site within the big sagebrush vegetation community.

Impact BIO-4 Project construction would result in direct impacts to San Fernando Valley spineflower.

Based on nine surveys of the Project Site conducted between 2002 and 2013, the site supports a cumulative total of 2.10 acres of occupied spineflower habitat on site. Of these 2.10 acres, the Project would permanently affect 1.10 acres (53%). The precise number of individual plants that will be lost cannot be quantified due to the dramatic variability in the number of plants that express themselves aboveground each year (Table 7). The loss of 53% of occupied spineflower habitat is significant because the plant is a narrow endemic species that is endangered in California and is only known from Newhall Ranch and Laskey Mesa. This impact would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space areas within lands owned by the Applicant);
- **MM ES 5.4-33** and **MM ES 5.4-34** (restrictions on storm drains within spineflower preserves);
- **MM ES 5.4-20** (guidelines for restoration and enhancement of degraded and/or damaged spineflower habitat);

- **MM ES 5.4-21** (emergency fire response plan and response strategies for wildfire or mass movement (e.g., landslides, slope sloughing, or other geologic events) within the spineflower preserves);
- **MM ES 5.4-63** (temporary fencing and signage around the spineflower preserve(s), open space connections, and buffer areas; permanent fencing and signage along the spineflower preserve boundary);
- **MM ES 5.4-68** (storm drain system requirements for spineflower preserve areas);
- **MM ES 5.4-18** and MM **ES 5.4-33** (spineflower preserve establishment and management);
- **MM ES 5.4-22**, MM **ES 5.4-23**, and MM **ES 5.4-26** (spineflower preserve temporary fencing requirements and education of construction workers);
- **MM ES 5.4-52**, MM **ES 5.4-27**, and MM **ES 5.4-28** (control of construction-related dust, erosion, and water quality within spineflower preserve, and quarterly monitoring for Argentine ants along the construction–open space interface);
- **MM ES 5.4-25** (pre-construction review of construction plans and specifications);
- **MM ES 5.4-29** (review of plant palettes used within 200 feet of spineflower preserves and inspection of all container plants within 200 feet for disease and pests);
- **MM ES 5.4-30, MM ES 5.4-31, and MM ES 5.4-32** (restricting access to spineflower preserves through fencing and signage);
- **MM ES 5.4-64** (fire management plan to avoid and minimize impacts to the spineflower);
- **MM ES 5.4-65** (minimization of changes in surface water flows to spineflower preserves); and
- **MM ES 5.4-66** (biweekly biological monitoring of grading and fence/utility installation activities; submission of monthly monitoring reports).

Loss of or harm to individual spineflower on construction sites would likely be the result of physical damage or removal caused by machinery used during construction. In addition to the removal of individuals, potential impacts to spineflower include root damage, soil excavation and compaction, grade changes, loss of canopy, and deliberate or accidental wildfire ignition. In order to avoid, minimize, and mitigate these impacts, the Project Applicant will implement several mitigation measures to avoid direct impacts to San Fernando Valley spineflower.

In order to mitigate the direct impacts to spineflower, the Applicant will implement a set of mitigation measures designed to permanently protect and manage a system of spineflower preserves that will maximize the long-term persistence of the San Fernando Valley spineflower within the Project Site. Applicable mitigation measures for the establishment, design, and the long-term management of a system of spineflower preserves include MM ES 5.4-68 (storm drain system requirements for spineflower preserve areas); MM ES 5.4-64 (fire management plan to avoid and minimize impacts to the spineflower); MM ES 5.4-65 (minimization of changes in surface water flows to spineflower preserves); MM ES 5.4-18 and MM ES 5.4-19 (spineflower preserve establishment and management); MM ES 5.4-20 (guidelines for restoration and enhancement of degraded and/or damaged spineflower habitat); MM ES 5.4-21 (emergency fire response plan and response strategies for wildfire or mass movement (e.g., landslides, slope sloughing, or other geologic events) within the spineflower preserves); MM ES 5.4-30, MM ES 5.4-31, and MM ES 5.4-32 (restricting access to spineflower preserves through fencing and signage); and MM ES 5.4-33 and MM ES 5.4-34 (restrictions on storm drains within spineflower preserves). In addition, suitable habitat for San Fernando Valley spineflower will be preserved through MM ES 5.4-61 (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant) and MM ES 5.4-62 (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space areas within lands owned by the Applicant).

Additional mitigation measures for the establishment, design, and the long-term management of a system of spineflower preserves to address direct impacts to San Fernando Valley spineflower include MM ES 5.4-22, MM ES 5.4-23, and MM ES 5.4-26 (spineflower preserve temporary fencing requirements and education of construction workers); MM ES 5.4-52, MM ES 5.4-27, and MM ES 5.4-28 (control of construction-related dust, erosion, and water quality within spineflower preserve, and quarterly monitoring for Argentine ants along the construction–open space interface); MM ES 5.4-25 (pre-construction review of construction plans and specifications); MM ES 5.4-29 (review of plant palettes used within 200 feet of spineflower preserves and inspection of all container plants within 200 feet for disease and pests); and MM ES 5.4-66 (biweekly biological monitoring of grading and fence/utility installation activities; submission of monthly monitoring reports).

These mitigation measures listed here implement the SCP and comply with the ITP. The SCP is a conservation and management plan to permanently protect the San Fernando Valley spineflower through an actively managed system of preserves. An ITP was issued pursuant to Fish and Game Code Section 2081 that permits the take of San Fernando Valley spineflower within the Specific Plan area, Entrada South planning area, and VCC planning area. The

adequacy of the CDFG-approved SCP was confirmed by the Court of Appeals in *Center for Biological Diversity, et al. v. Department of Fish and Wildlife* (2014) 224 Cal.App.4th 1105.

Based on the foregoing analysis, this BTR finds that the Project has the potential to cause significant direct impacts to spineflower, but that such impacts would be reduced to less than significant with application of the mitigation measures proposed herein. This finding is consistent with the significance determination and mitigation finding of the RMDP/SCP EIS/EIR for this impact.

Impact BIO-5 Project construction would result in direct impacts to mainland cherry.

In 2012, 46 mainland cherry plants were identified and mapped on the Entrada South site, all of which would be permanently (45 individuals) or temporarily (1 individual) impacted. The loss of 100% of the mainland cherry plants on site is significant because the County of Los Angeles considers this species sensitive. This impact would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral in the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-1** (development of a conceptual wetlands mitigation plan);
- **MM ES 5.4-16** (preservation of 310.6 acres of coastal scrub on site and within the High Country SMA and Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-17** (Oak Resource Management Plan identifying areas suitable for oak woodland resources (including mainland cherry) enhancement and creation);
- **MM ES 5.4-2** through **MM ES 5.4-14** (wetlands mitigation plan and riparian restoration activities); and
- **MM ES 5.4-59** (replacement of mainland cherry trees or shrubs outside riparian areas).

Individual mainland cherry trees would be lost or harmed by Project-related construction activities. Specifically, Project construction would involve the removal of individual shrubs and could also include root damage, soil excavation and compaction, grade changes, loss of canopy,

deliberate or accidental wildfire ignition, and wounds to trunks. In order to avoid, minimize, and mitigate these impacts, the Project Applicant will implement several mitigation measures to avoid direct impacts to mainland cherry. MM ES 5.4-40 will provide pre-Project information to identify potential impacts to mainland cherry that may need to be addressed prior to initiating Project construction. To reduce potential impacts to mainland cherry individuals from the loss of habitat during construction activities, the Project Applicant will implement MM ES 5.4-40, which provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40 all construction/contractor personnel will complete a Worker Environmental Awareness Program (WEAP) to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on mainland cherry and its habitat.

Impacts to mainland cherry individuals will be further addressed through MM ES 5.4-59, which requires implementation of the ORMP, which has been prepared pursuant to CLAOTO and addresses impacts on mainland cherry trees/shrubs as well as oak trees. Per this mitigation measure, any impacted mainland cherry trees or shrubs outside riparian areas greater than one inch dbh shall be replaced in the ratio of at least 2:1. In addition, the Applicant will mitigate the permanent loss of suitable habitat for mainland cherry by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-61, MM ES 5.4-1, MM ES 5.4-16, and MM ES 5.4-2 through MM ES 5.4-14. Implementation of these mitigation measures will result in protection and management of approximately 335.8 acres of suitable habitat for mainland cherry and will allow mainland cherry to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant. Because mainland cherry is also associated with wetland and riparian habitats, development of a conceptual wetlands mitigation plan and riparian restoration activities on the Project Site will benefit this species and address impacts to its suitable habitat.

Impact BIO-6 Project construction would result in direct impacts to island mountain-mahogany.

Island mountain-mahogany was detected on site in chaparral, but individuals were not mapped. The Project would permanently affect all 25.2 acres of the undifferentiated chaparral scrub that provides habitat for island mountain-mahogany. This impact is significant because it would eliminate 100% of the suitable on-site habitat for island mountain-mahogany, a CRPR 4.3 and County of Los Angeles sensitive species. This impact would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the High Country SMA/SEA within lands owned by the Applicant); and
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities).

Impacts to suitable on-site habitat for island mountain-mahogany could occur during vegetation clearing and construction/grading activities. In order to avoid, minimize, and mitigate these impacts, the Project Applicant will implement several mitigation measures to avoid or minimize direct impacts to island mountain-mahogany. MM ES 5.4-40 will provide pre-Project information to identify potential impacts to island mountain-mahogany that may need to be addressed prior to initiating Project construction. To reduce potential impacts to island mountain-mahogany individuals from the loss of habitat during construction activities, the Project Applicant will implement MM ES 5.4-40, which provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40, all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on island mountain-mahogany and its habitat.

In addition, suitable habitat for island mountain-mahogany will be preserved through MM ES 5.4-61 (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant).

Impact BIO-7 Project construction would result in direct impacts to slender mariposa lily.

Slender mariposa lily was detected on site during surveys conducted in 2003–2005, but not during subsequent surveys. Flowering individuals ranged from 419 in 2004 to 7,780 in 2003. Because counts of flowering individuals only provide a relative estimate of the total population and can vary widely from year to year, this BTR bases its direct impact analysis on the cumulative occupied acreage for the species. A total of 42.8 acres of occupied habitat for slender mariposa lily have been mapped on the Project Site. Of these, the Project would impact 41.0 acres (96%). This impact is significant because it would permanently affect 96% of the occupied on-site habitat for a species that is moderately threatened in California (CRPR 1B.2) and a County of Los Angeles sensitive species. This impact would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space areas within lands owned by the Applicant);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); and
- **MM ES 5.4-35** (implementation of an approved slender mariposa lily mitigation plan).

Project-related construction activities, such as vegetative clearing and grading, could adversely affect individuals and suitable on-site habitat for slender mariposa lily. In order to avoid, minimize, and mitigate these impacts, the Applicant will implement several mitigation measures to avoid or minimize direct impacts to slender mariposa lily. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40, all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on slender mariposa lily and its habitat.

In order to address impacts to habitat for slender mariposa lily, prior to grading disturbance, the Project Applicant will prepare a Slender Mariposa Lily Mitigation and Monitoring Plan (MM ES 5.4-35) and submit to CDFW for review and approval. Upon approval, the plan will be implemented by the Project Applicant or its designee. Habitat replacement/enhancement will be at a 1:1 ratio (acres restored/enhanced to acres impacted) within the High Country SMA/SEA, San Martinez Grande Canyon area, and other open space areas within lands owned by the Applicant. To address impacts to slender mariposa lily individuals, the plan will also specify methods to collect propagules and introduce slender mariposa lily to mitigation sites. Newhall may salvage bulbs from slender mariposa lily plants that occur in areas of disturbance, and then transplant those bulbs in suitable habitat areas outside the impact zone. Alternatively, seeds from slender mariposa lily may be collected from protected occurrences, following CDFW-approved seed collection guidelines (i.e., MOU for rare plant seed collection), and then replanted in new areas.

In addition, the Applicant will preserve suitable habitat for slender mariposa lily through MM ES 5.4-61 (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant) and MM ES 5.4-62 (preservation of 67.7 acres of California annual

grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space areas within lands owned by the Applicant).

Based on the foregoing analysis, this BTR finds that the Project may cause significant direct impacts to slender mariposa lily, but that such impacts can be reduced to less than significant levels, provided the Applicant implements the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation finding of the RMDP/SCP EIS/EIR for this impact.

Impact BIO-8 Project construction would result in direct impacts to Peirson's morning-glory.

Peirson's morning-glory was detected on site from 2002–2005, but not during subsequent surveys. Due to its low sensitivity status, individuals and locations were not mapped, so the impacts are based on loss of suitable on-site habitat, including chaparral, coastal scrub, California annual grassland, and valley oak/grass. Of the 324.1 acres of suitable on-site habitat for Pierson's morning-glory, 273.2 acres (84%) would be permanently impacted and 8.8 acres would be temporarily impacted. This impact would be significant because it would result in the permanent loss of impact 84% of the suitable on-site habitat for a species that has a limited distribution and is moderately threated in California (CRPR 4.2) and County of Los Angeles sensitive species. This impact would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-16** (preservation of 310.6 acres of coastal scrub on site, and within the High Country SMA, Salt Creek area, and other open space areas within lands owned by the Applicant); and
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities).

Impacts to suitable on-site habitat for Peirson's morning-glory could occur during vegetation clearing and construction/grading activities. In order to avoid, minimize, and mitigate these impacts, the Applicant will implement several mitigation measures to avoid or minimize direct impacts to Peirson's morning-glory.

MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40, all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on Peirson's morning-glory and its habitat.

In addition, the Applicant will mitigate the permanent loss of suitable on-site habitat for Peirson's morning glory by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-61, MM ES 5.4-62, and MM ES 5.4-16. Implementation of these mitigation measures will result in protection and management of approximately 403.4 acres of suitable habitat for Peirson's morning-glory and will allow Peirson's morning-glory to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant.

Based on the foregoing analysis, this BTR finds that the Project may cause significant direct impacts to Peirson's morning-glory, but that such impacts can be reduced to less than significant levels, provided the Applicant implements the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation finding of the RMDP/SCP EIS/EIR for this impact.

Impact BIO-9 Project construction would result in direct impacts to habitat for Parish's big sagebrush.

Parish's big sagebrush is expected to occur on site within the big sagebrush vegetation community. Of the 24.7 acres of big sagebrush scrub on site, 23.6 acres (95%) would be permanently impacted and 0.3 acre would be temporarily impacted. This impact would be significant because it would permanently impact 95% of suitable on-site habitat for a County of Los Angeles sensitive species. This impact would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-1** (development of a conceptual wetlands mitigation plan);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); and
- **MM ES 5.4-2** through MM **ES 5.4-14** (wetlands mitigation plan and riparian restoration activities on the Project Site).

Impacts to suitable on-site habitat for Parish's big sagebrush could occur during vegetation clearing and construction/grading activities. In order to avoid, minimize, and mitigate these impacts, the Applicant will implement several mitigation measures to avoid or minimize direct impacts to Parish's big sagebrush.

MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40 all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on Parish's big sagebrush and its habitat.

Permanent loss of suitable on-site habitat for Parish's big sagebrush will be mitigated by measures requiring preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-1 through MM ES 5.4-14. Because Parish's big sagebrush is associated with wetland and riparian habitats, development of a conceptual wetlands mitigation plan and riparian restoration activities on the Project Site would benefit this species and address impacts to its suitable habitat.

Based on the foregoing analysis, this BTR finds that the Project may cause significant direct impacts to Parish's big sagebrush, but that such impacts can be reduced to less than significant levels, provided the Applicant implements the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation finding of the RMDP/SCP EIS/EIR for this impact.

5.4.2 Indirect Impacts to Special-Status Plants

Potential indirect impacts to special-status plants are essentially the same as the indirect impacts for vegetation communities discussed in Section 5.2.2. Potential short-term impacts include fugitive dust; runoff; sedimentation; chemical pollution; erosion; litter; accidental clearing, grading, and trampling; fertilizers and herbicides, invasive plant species, and wildfires. As discussed in Section 5.3.1, most of the known occurrences, occupied habitat for observed plants, and suitable habitat for other special-status plants will be directly impacted, and almost all of the surrounding areas are either already developed or will be developed in the future (i.e., Mission Village). For the most part indirect effects to special-status plants on site and adjacent to the site will be limited. The exception is the potential for indirect impacts on San Fernando Valley spineflower in the Entrada spineflower preserve.

Similar to vegetation communities and plants in general, potential indirect impacts on spineflower in the Entrada preserve include the invasive plant and animal species; vegetation clearing; trampling; changes in hydrology; the introduction of chemical pollutants; and increased

fire frequency (Dudek 2010). Although many of the non-native plants on the Project Site are "naturalized" (e.g., the brome grasses), indirect effects of development, including trampling, urban runoff and wildfire, could change the existing composition of the vegetation in the spineflower preserves. As discussed in the SCP (Dudek 2010), development includes portions of the watershed area of the preserve. Therefore, some storm drain outlets from the proposed development area may be necessary within the preserve to maintain pre-construction hydrologic conditions in the preserve. Not only can altered hydrology directly affect vegetation, increased moisture associated with irrigation and runoff can attract invasive Argentine ants (*Linepithema humile*), which could displace native ants that are known pollinators of spineflower (Jones et al. 2009) and potentially seed dispersers.

Impact BIO-10 Project construction could result in indirect impacts to San Fernando Valley spineflower.

Potential indirect impacts on San Fernando Valley spineflower include invasive plant and animal species (especially Argentine ant); vegetation clearing; trampling; changes in hydrology; introduction of chemical pollutants; and increased fire frequency. These potential indirect impacts would be significant. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-33** and MM **ES 5.4-34** (restrictions on storm drains within spineflower preserves);
- **MM ES 5.4-20** (guidelines for restoration and enhancement of degraded and/or damaged spineflower habitat);
- **MM ES 5.4-21** (emergency fire response plan and response strategies for wildfire or mass movement (e.g., landslides, slope sloughing, or other geologic events) within the spineflower preserves);
- **MM ES 5.4-63** (temporary fencing and signage around the spineflower preserve(s), open space connections, and buffer areas; permanent fencing and signage along the spineflower preserve boundary);
- **MM ES 5.4-68** (storm drain system requirements for spineflower preserve areas);
- **MM ES 5.4-18** and MM **ES 5.4-19** (spineflower preserve establishment and management);
- **MM ES 5.4-22**, **MM ES 5.4-23**, and **MM ES 5.4-26** (spineflower preserve temporary fencing requirements and education of construction workers);

- **MM ES 5.4-52**, **MM ES 5.4-27**, and **MM ES 5.4-28** (control of construction-related dust, erosion, and water quality within spineflower preserve, and quarterly monitoring for Argentine ants along the construction–open space interface);
- **MM ES 5.4-25** (pre-construction review of construction plans and specifications);
- **MM ES 5.4-29** (review of plant palettes used within 200 feet of spineflower preserves and inspection of all container plants within 200 feet for disease and pests);
- **MM ES 5.4-30, MM ES 5.4-31,** and **MM ES 5.4-32** (restricting access to spineflower preserves through fencing and signage);
- **MM ES 5.4-64** (fire management plan to avoid and minimize impacts to the spineflower);
- **MM ES 5.4-65** (minimization of changes in surface water flows to spineflower preserves); and
- **MM ES 5.4-66** (biweekly biological monitoring of grading and fence/utility installation activities; submission of monthly monitoring reports).

In order to avoid and minimize direct indirect impacts to this species during and following construction, the Applicant will implement mitigation measures designed to avoid both temporary and permanent indirect impacts to spineflower.

To reduce short-term construction-related impacts – such as accidental clearing, trampling, and grading; runoff, sedimentation, erosion and chemical and toxic compound pollution, exposure to fugitive dust, hydrological alterations, and water quality impacts – the Applicant will implement MM ES 5.4-22, MM ES 5.4-23, and MM ES 5.4-26 (spineflower preserve temporary fencing requirements and education of construction workers) and MM ES 5.4-25 (pre-construction review of construction plans and specifications).

Short-term indirect impacts associated with accidental clearing, trampling, and grading would be further mitigated by implementation of MM ES 5.4-63 (temporary fencing and signage around the spineflower preserve(s), open space connections, and buffer areas; permanent fencing and signage along the spineflower preserve boundary) and MM ES 5.4-66 (biweekly biological monitoring of grading and fence/utility installation activities; submission of monthly monitoring reports).

The Applicant will further mitigate short-term indirect dust impacts by implementing previously incorporated MM ES 5.4-66 (biweekly biological monitoring of grading and

fence/utility installation activities; submission of monthly monitoring reports) and MM ES 5.4-52, MM ES 5.4-27, and MM ES 5.4-28 (control of construction-related dust, erosion, and water quality within spineflower preserve, and quarterly monitoring for Argentine ants along the construction–open space interface).

The Applicant will mitigate short-term indirect hydrology and water quality impacts to spineflower by implementing MM ES 5.4-65 (minimization of changes in surface water flows to spineflower preserves).

The Applicant will further mitigate impacts from non-native, invasive plant species by implementing MM ES 5.4-21 (emergency fire response plan and response strategies for wildfire or mass movement (e.g., landslides, slope sloughing, or other geologic events) within the spineflower preserves) and MM ES 5.4-29 (review of plant palettes used within 200 feet of spineflower preserves and inspection of all container plants within 200 feet for disease and pests).

Applicable mitigation measures to reduce long-term direct impacts due to increased human activity and trampling and the compaction of soils include MM ES 5.4-63 (temporary fencing and signage around the spineflower preserve(s), open space connections, and buffer areas; permanent fencing and signage along the spineflower preserve boundary) and MM ES 5.4-30 through MM ES 5.4-31 and MM ES 5.4-32 (restricting access to spineflower preserves through fencing and signage).

Applicable mitigation measures to avoid and minimize long-term direct impacts due to hydrological alterations and water quality impacts include MM ES 5.4-68 (storm drain system requirements for spineflower preserve areas), and MM ES 5.4-33 and MM ES 5.4-34 (restrictions on storm drains within spineflower preserves).

Applicable mitigation measures to address long-term direct impacts resulting from increased fire frequency include MM ES 5.4-64 (fire management plan to avoid and minimize impacts to the spineflower) and MM ES 5.4-21 (emergency fire response plan and response strategies for wildfire or mass movement (e.g., landslides, slope sloughing, or other geologic events) within the spineflower preserves).

In order to address both short-term and long-term impacts to this species, the Applicant will implement a set of mitigation measures designed for the establishment, design, and the long-term management of a system of spineflower preserves. Each potential impact mentioned above would be reduced by the implementation of these measures which include previously incorporated measures MM ES 5.4-63 (temporary fencing and signage around the spineflower preserve(s), open space connections, and buffer areas; permanent fencing and signage along the spineflower preserve boundary); MM ES 5.4-68 (storm drain system requirements for

spineflower preserve areas); MM ES 5.4-64 (fire management plan to avoid and minimize impacts to the spineflower); MM ES 5.4-65 (minimization of changes in surface water flows to spineflower preserves; MM ES 5.4-18 and MM ES 5.4-19 (spineflower preserve establishment and management); MM ES 5.4-20 (guidelines for restoration and enhancement of degraded and/or damaged spineflower habitat); MM ES 5.4-21 (emergency fire response plan and response strategies for wildfire or mass movement (e.g., landslides, slope sloughing, or other geologic events) within the spineflower preserves); MM ES 5.4-30, MM ES 5.4-31, and MM ES 5.4-32 (restricting access to spineflower preserves through fencing and signage); and MM ES 5.4-33 and MM ES 5.4-34 (restrictions on storm drains within spineflower preserves).

The proposed Project would result in a number of potential short-term and long-term indirect impacts to the San Fernando Valley spineflower. Implementation of the SCP would result in a system of spineflower preserves that would protect the San Fernando Valley spineflower populations permanently through conservation easements to CDFW. The management and monitoring framework provided by the SCP, which includes the aforementioned mitigation measures, would maintain or increase San Fernando Valley spineflower populations within the preserves (Goal 1 of the SCP).

These mitigation measures listed here are intended to implement the SCP and comply with the ITP. The SCP is a conservation and management plan to permanently protect the San Fernando Valley spineflower through an actively managed system of preserves. An ITP was issued pursuant to Fish and Game Code section 2081 that permits the take of San Fernando Valley spineflower within the Specific Plan area, Entrada South planning area, and VCC planning area.

Based on the foregoing analysis, this BTR finds that the Project may cause significant indirect impacts to spineflower, but that such impacts can be reduced to less than significant levels, provided the Applicant implements the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation finding of the RMDP/SCP EIS/EIR for this impact.

Indirect Impacts to Special-Status Plants That Would Be Less Than Significant

Indirect impacts to mainland cherry, island mountain-mahogany, slender mariposa lily, and Peirson's morning-glory could occur, but would not be substantial because very few individuals are expected to remain in proximity to the Project subsequent to construction and operation, due to the fact that: (1) virtually all individuals of these four species on site would sustain direct impacts and (2) most of the lands adjacent to the Project Site are either already developed or will be developed in the future. For these reasons, potential indirect impacts to mainland cherry, island mountain-mahogany, slender mariposa lily, and Peirson's morning-glory would be less than significant.

5.5 Impacts to Special-Status Wildlife Species

Several special-status wildlife species have been detected on the Project Site or have moderate potential to occur on site based on the presence of suitable habitat and their known occurrence in the Project vicinity (see Table 3). Because both direct and indirect impacts will affect many of the species with similar life histories and behaviors in much the same way, the discussion of impacts is organized by species "guild" as follows:

- Insect: Emigdio blue butterfly
- Fish: arroyo chub, Santa Ana sucker, unarmored threespine stickleback, southern steelhead (indirect impacts only)
- Mollusk: Trask shoulderband
- Reptile – Low Mobility: coast horned lizard, coast patch-nosed snake, coastal whiptail, rosy boa, San Bernardino ringneck snake, silvery legless lizard
- Reptile and Amphibian – Semi-Aquatic: arroyo toad, western pond turtle, western spadefoot
- Bird – Foraging Raptor: American peregrine falcon, California condor, ferruginous hawk, golden eagle, merlin
- Bird – Nesting/Foraging Raptor: Cooper's hawk, western burrowing owl, white-tailed kite, loggerhead shrike (although not technically a "raptor," it shares raptorial life history traits and habitat associations with the raptors on site)
- Bird – Upland Grassland/Agriculture: California horned lark, grasshopper sparrow
- Bird – Upland Scrub and Chaparral: Allen's hummingbird, Bell's sage sparrow, black-chinned sparrow, coastal California gnatcatcher, Costa's hummingbird, rufous hummingbird, southern California rufous-crowned sparrow
- Bird – Upland Woodland: chipping sparrow, Lawrence's goldfinch, Nuttall's woodpecker, oak titmouse, yellow warbler
- Bat – fringed myotis, hoary bat, long-legged myotis, pallid bat, pocketed free-tailed bat, silver-haired bat, Townsend's big-eared bat, western mastiff bat, western long-eared myotis, western red bat, western small-footed bat, Yuma myotis
- Mammal – Low Mobility: San Diego desert woodrat
- Mammal – Moderate Mobility – American badger, San Diego black-tailed jackrabbit
- Mammal – High Mobility: mountain lion, mule deer.

The Project would impact federally designated critical habitat for arroyo toad and least Bell's vireo. These impacts are discussed in Section 5.4.2.

5.5.1 Direct Impacts to Special-Status Wildlife

This BTR determines the significance of direct impacts to special-status wildlife by evaluating Project-related loss of suitable habitat for the species in question. However, in some cases, the Project's construction activities have the potential to cause direct impacts on individuals (e.g., injury, mortality) of a particular species or species guild. Where this occurs, the BTR will also evaluate the individual impacts for significance.

Insect (San Emigdio blue butterfly)

This species was not detected during surveys, but 0.4 acre of four-winged saltbush was mapped in the southernmost portion of the site along the eastern boundary adjacent to The Old Road. This habitat is potentially suitable for San Emigdio blue butterfly. The Project would not directly affect the 0.4 acre of four-winged saltbush on site; thus. no direct impacts to this species are anticipated.

Mollusk (Trask shoulderband)

Impact BIO-11 Project construction would result in direct impacts to suitable on-site habitat for Trask shoulderband and could directly affect individuals during vegetation clearing and grading activities.

The Project Site supports 300.9 acres of suitable on-site habitat for Trask shoulderband, which includes coastal scrub, chaparral, riparian scrub, and other riparian/and wetland communities. The Project would permanently impact 273.7 acres (91%) and temporarily impact 8.3 acres (3%) of suitable on-site habitat for this species. This impact would be significant because it would permanently impact 91% of the suitable on-site habitat on site for a state Special Animal that has a very limited distribution in southern California. This impact would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-1** (development of a conceptual wetlands mitigation plan);
- **MM ES 5.4-16** (preservation of 310.6 acres of coastal scrub on site, and within the High Country SMA, Salt Creek area and other open space areas within lands owned by the Applicant);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); and

- **MM ES 5.4-2** through MM **ES 5.4-14** (wetlands mitigation plan and riparian restoration activities on the Project Site).

If Trask shoulderband snails are present in the Project area, construction activities could result in the loss of individual snails through mechanical disturbance or alteration of habitat. While it is likely that some individual snails, if present, would be subject to mortality during vegetation clearing and/or grading activities, specific mitigation to identify or relocate these species is not warranted or feasible. Shoulderband snails are difficult to detect and occur in limited areas, and field identification to the species and subspecies levels is not possible. In addition, if present, Trask shoulderband snails probably would be sympatric with several other non-special-status shoulderband snail species. However, to reduce potential impacts to individual snails from the loss of habitat during construction activities, the Applicant will implement MM ES 5.4-40, which provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40 all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on Trask shoulderband snails and their habitat.

The Project's construction and grading activities could cause permanent loss and/or temporary impacts to microhabitats, thereby reducing the available habitat for this species. The Applicant will mitigate the permanent loss of suitable on-site habitat for Trask shoulderband snail by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-61 and MM ES 5.4-16. Implementation of these mitigation measures will result in protection and management of approximately 335.8 acres of suitable habitat for Trask shoulderband and will allow Trask shoulderband to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant.

Permanent loss of suitable on-site habitat for the Trask shoulderband snail will be mitigated through habitat preservation, enhancement and restoration, and management. Implementation of MM ES 5.4-61 and MM ES 5.4-16 will result in protection and management of approximately 335.8 acres of suitable habitat for the Trask shoulderband within undifferentiated chaparral and coastal scrub on lands owned by the Applicant. In addition, riparian habitats impacted will be replaced and restored under guidelines described in MM ES 5.4-2 through MM ES 5.4-14, describing the wetlands mitigation plan and riparian restoration activities on the Project Site. Implementation of these measures will permit the Trask shoulderband snail to persist in the Project vicinity.

Based on the foregoing analysis, this BTR finds that the Project could cause significant direct impacts to Trask shoulderband, but that such impacts would be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for this impact.

Reptile – Low Mobility (coast horned lizard, coast patch-nosed snake, coastal whiptail, rosy boa, San Bernardino ringneck snake, silvery legless lizard)

The Reptile – Low Mobility species generally inhabit grassland, coastal scrub, chaparral, valley oak/grass and the drier riparian and other riparian/wetland communities on site totaling 372.3 acres, although some of the species are more likely to occupy certain microhabitats (see Table 8). The Project would permanently impact 319.2 acres (86%) and temporarily impact 9.3 acres (2%) of suitable on-site habitat for the Reptile – Low Mobility species. Impacts to the species included the Reptile – Low Mobility guild are described below. The mitigation measures necessary to reduce these impacts to less than significant are provided at the end of the impact analysis.

Impact BIO-12 Project construction would result in direct impacts to suitable habitat for coast horned lizard and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 319.2 acres and temporary direct impacts to 9.3 acres of suitable on-site habitat for coast horned lizard on site. Individuals are cryptic and slow moving on the surface or are otherwise underground and, therefore, are highly vulnerable to injury and mortality during construction. These impacts would be significant because they would permanently impact 86% and temporarily impact 2% of the suitable habitat on site for an uncommonly occurring CSC and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban and agricultural development throughout its range and individuals could be injured and killed during construction.

Impact BIO-13 Project construction would result in direct impacts to suitable habitat for coast patched-nosed snake and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 319.2 acres and temporary direct impacts to 9.3 acres of suitable on-site habitat for coast patch-nosed snake on site. Individuals are slow moving on the surface or are otherwise underground and, therefore, are highly vulnerable to injury and mortality during construction. These impacts would be significant because they would permanently impact 86% and temporarily impact 2% of the

suitable habitat on site for an uncommonly occurring CSC and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban and agricultural development throughout its range, and individuals could be injured and killed during construction.

Impact BIO-14 Project construction would result in direct impacts to suitable habitat for coastal whiptail and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 319.2 acres and temporary direct impacts to 9.3 acres of suitable on-site habitat for coastal whiptail on site. Although individuals can move quickly over short distances in short bursts, they do not move far, and therefore are highly vulnerable to injury and mortality during construction. These impacts would be significant because they would permanently impact 86% and temporarily impact 2% of the suitable habitat on site for an uncommonly occurring SA and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban and agricultural development throughout its range, and individuals could be injured and killed during construction.

Impact BIO-15 Project construction would result in direct impacts to suitable habitat for rosy boa and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 319.2 acres and temporary direct impacts to 9.3 acres of suitable on-site habitat for rosy boa on site. This slow-moving snake is highly vulnerable to injury and mortality during construction. These impacts would be significant because they would permanently impact 86% and temporarily impact 2% of the suitable habitat on site for an uncommonly occurring SA and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban and agricultural development throughout its range, and individuals could be injured and killed during construction.

Impact BIO-16 Project construction would result in direct impacts to suitable habitat for San Bernardino ringneck snake and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 319.2 acres and temporary direct impacts to 9.3 acres of suitable on-site habitat for San Bernardino ringneck snake on site. Because this snake shows strong site tenacity (i.e., they do not move large distances) and are often inactive during the day under surface objects, it is highly vulnerable to injury and mortality

during construction. These impacts would be significant because they would permanently impact 86% and temporarily impact 2% of the suitable habitat on site for an uncommon SA that has experienced substantial habitat loss and fragmentation from urban and agricultural development throughout its range, and individuals could be injured and killed during construction.

Impact BIO-17 Project construction would result in direct impacts to suitable habitat for silvery legless lizard and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 319.2 acres and temporary direct impacts to 9.3 acres of suitable on-site habitat for silvery legless lizard on site. Because this species remains underground and is difficult to detect, it is highly vulnerable to injury and mortality during construction. These impacts would be significant because they would permanently impact 86% and temporarily impact 2% of the suitable habitat on site for an uncommon CSC and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban and agricultural development throughout its range, and individuals could be injured and killed during construction.

Significant impacts to special-status Reptile – Low Mobility species (Impacts BIO-12 through BIO-17) would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-42** (surveys to capture and relocate special-status reptiles);
- **MM ES 5.4-1** (development of a conceptual wetlands mitigation plan);
- **MM ES 5.4-16** (preservation of 310.6 acres of coastal scrub on site, and within the High Country SMA, Salt Creek area and other open space areas within lands owned by the Applicant);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-17** (Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation);

- **MM ES 5.4-69** (grading and construction activities should begin in disturbed areas and avoid isolating patches of vegetation, allowing animals to escape); and
- **MM ES 5.4-2** through MM **ES 5.4-14** (wetlands mitigation plan and riparian restoration activities on the Project Site).

These reptile species are not very mobile, and usually only move short distances at a time. Large-scale construction and/or grading activities causing permanent and temporary impacts likely would result in injury or mortality of individuals as a result of direct contact with or crushing by construction equipment used for vegetation clearing and grading. In addition, aestivating and hibernating individuals could be injured or killed during construction and/or grading activities conducted during colder months by entombment or direct contact with grading equipment. Activities associated with implementation of the SCP (e.g., fence construction) could also result in impacts to individuals of most of these species if fence construction occurred during colder months when individuals are hibernating. These species are probably capable of escaping potential impacts from fence construction when they are active on the ground surface in the warmer months because ground disturbances would be much more localized.

MM ES 5.4-42 requires surveys to capture and relocate coast horned lizard, silvery legless lizard, coastal western whiptail, rosy boa, San Bernardino ringneck snake, and coast patch-nosed snake individuals 30 days prior to construction activities in suitable habitats. MM ES 5.4-69 will allow reptiles to leave disturbance areas with minimal risk. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40 all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on Reptiles – Low Mobility guild species and their habitat.

In addition, the Applicant will mitigate the permanent loss of suitable habitat for Reptile – Low Mobility species by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-61, MM ES 5.4-62, MM ES 5.4-16, and MM ES 5.4-17. Implementation of these mitigation measures will result in protection and management of approximately 403.5 acres of suitable habitat for Reptile – Low Mobility species and will allow them to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant. In addition, MM ES 5.4-1 requires that riparian habitats impacted will be replaced and restored under guidelines described in MM ES 5.4-2 through MM ES 5.4-14 (wetlands mitigation plan and riparian restoration activities on the

Project Site). Implementation of these measures will permit species in the Reptiles – Low Mobility guild to persist in the Project vicinity.

Based on the foregoing analysis, this BTR finds that the Project may cause significant direct impacts to Reptile – Low Mobility guild species, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for these impacts.

Reptile and Amphibian – Semi-Aquatic (arroyo toad, western pond turtle, western spadefoot)

The Reptile and Amphibian – Semi-Aquatic species on site would be most vulnerable to direct impacts during the upland phases of their life histories, including aestivation and nesting (western pond turtle). If arroyo toad uses the site for aestivation and/or western pond turtle uses the site for aestivation or nesting, the Project's direct effects on these two species is most likely to occur in the agricultural area next to the Santa Clara River. The entire 10.8-acre site would be permanently (9.5 acres) or temporarily (1.3 acres) impacted. These species are unlikely to occur in the upland habitats in the southern portion of the site, which is almost 1 mile from the Santa Clara River, where these species are known to occur.

Impacts to suitable habitat for western spadefoot are not quantified because the species was not detected during focused surveys in 2012 and no breeding sites have been identified on the site. If it is present on site, it would occur in very localized areas and a habitat-based analysis would greatly exaggerate impacts.

Impact BIO-18 Project construction would result in direct impacts to suitable upland aestivation and nesting habitat for western pond turtle and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 9.5 acres and temporary direct impacts to 1.3 acres of suitable aestivation and nesting habitat for western pond turtle on site. Western pond turtles typically dig burrows in this habitat, and therefore are difficult to detect. This makes them highly vulnerable to injury and mortality during construction. Impacts to all 9.8 acres of aestivation and nesting habitat would be adverse, but less than significant because the agriculture on site is marginally suitable habitat for pond turtle, and there is ample aestivation and nesting habitat in the floodplain of the Santa Clara River and elsewhere in uplands adjacent to the river. However, any direct impacts to individuals of this uncommon CSC would be

significant. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-39** (pre-construction surveys for western pond turtle);
- **MM ES 5.4-1** (development of a conceptual wetlands mitigation plan);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); and
- **MM ES 5.4-2** through MM **ES 5.4-14** (wetlands mitigation plan and riparian restoration activities on the Project Site).

Impact BIO-19 Project construction would result in direct impacts to suitable upland aestivation habitat for arroyo toad and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 9.5 acres and temporary direct impacts to 1.3 acres of suitable aestivation habitat for arroyo toad on site. Arroyo toads are usually in burrows in upland habitats, and therefore are difficult to detect. This makes them highly vulnerable to injury and mortality during construction. Impacts to 10.8 acres of aestivation habitat would be adverse, but less than significant because the intensive agriculture on site has low habitat value. Intensive agriculture includes periodic disturbances, including mechanical clearing and disking, that precludes long-term use by arroyo toads. (For this reason, the USFWS excluded intensive agriculture from the revised critical habitat for the arroyo toad in 2011 (76 FR 7250).) Further, there is ample aestivation habitat in the floodplain of the Santa Clara River. However, any direct impacts to individuals of this federally listed endangered, CSC, and County of Los Angeles sensitive species would be significant. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);

- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-15** (pre-construction surveys for arroyo toad);
- **MM ES 5.4-1** (development of a conceptual wetlands mitigation plan);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); and
- **MM ES 5.4-2** through **MM ES 5.4-14** (wetlands mitigation plan and riparian restoration activities on the Project Site).

Impact BIO-20 Project construction could result in direct impacts to habitat for western spadefoot and could directly affect individuals.

Direct impacts to suitable western spadefoot habitat were not quantified because the species has not been detected on site, and its occurrence would be tied to certain microhabitats that support ephemeral ponding. Because any western spadefoots would be in burrows most of the time, and therefore difficult to detect much of the year, they would be highly vulnerable to injury and mortality during construction. Direct impacts to individuals of this CSC and County of Los Angeles sensitive species that has experienced substantial declines due to habitat loss and fragmentation from urban and agricultural development of breeding sites and adjacent aestivation habitat would be significant. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-41** (pre-construction surveys for western spadefoot, and habitat creation if needed); and
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities).

Although the Project Site lacks aquatic habitat suitable for these species, impacts could occur to individual arroyo toads, western pond turtles, and western spadefoots during the upland phases of their life histories. Arroyo toads, if present in the Santa Clara River, may aestivate in the agricultural area near the River. Any individuals in this area would be vulnerable to injury and mortality due to direct contact with construction equipment and entombment in burrows. Aestivating or nesting western pond turtles, and their hatchlings, and eggs, could be directly

affected by construction activities in the same portion of the site. In addition, construction activities could cause western pond turtles to abandon the area, making them vulnerable to vehicle collisions and predation. Aestivating western spadefoots in the disturbance footprint could be directly injured or killed by construction and/or grading activities.

MM ES 5.4-15, MM ES 5.4-39, and MM ES 5.4-41 will provide pre-Project information to identify potential impacts to species in the Reptile and Amphibian – Semi-Aquatic guild that may need to be addressed prior to initiating Project construction (e.g., presence of arroyo toads within nearby portions of the Santa Clara River). Pre-construction surveys will be conducted per MM ES 5.4-15 (for arroyo toad), MM ES 5.4-39 (for western pond turtle), and MM ES 5.4-41 (for western spadefoot). These measures include additional requirements for monitoring in areas of suitable habitat for Reptile and Amphibian – Semi-Aquatic species, worker education, consultation with USFWS to ensure that construction activities take place in locations and at times least likely to impact arroyo toad individuals, installation of fencing to ensure construction vehicles do not stray outside of designated work areas, suspending construction activities if arroyo toads are found within construction areas, relocation of Reptile and Amphibian – Semi-Aquatic species when necessary, and avoidance of western pond-turtle nesting areas. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40 all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on Reptile and Amphibian – Semi-Aquatic species and their habitat.

In addition, the Applicant will mitigate the permanent loss of suitable habitat for Reptile and Amphibian – Semi-Aquatic guild species by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-61 and MM ES 5.4-62. Implementation of these mitigation measures will result in protection and management of approximately 92.9 acres of suitable habitat for Reptile and Amphibian – Semi-Aquatic guild species and will allow these species to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant. In addition, as specified in MM ES 5.4-1, riparian habitats impacted will be replaced and restored under guidelines described in MM ES 5.4-2 through MM ES 5.4-14, describing the wetlands mitigation plan and riparian restoration activities on the Project Site. Implementation of these measures will allow the Reptile and Amphibian – Semi-Aquatic guild species to persist in the Project vicinity. In addition, if western spadefoot is identified on the Project Site, MM ES 5.4-41 provides for creation of western spadefoot habitat at a ratio of 2:1 within lands owned by the Applicant and relocation of western spadefoots to the

new site. The design and location of the created habitat would be approved by CDFW and the relocation site would be monitored for 5 years.

Based on the foregoing analysis, this BTR finds that the Project may cause significant direct impacts to Reptile and Amphibians – Semi-Aquatic guild species, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for these impacts.

Bird – Foraging Raptor (American peregrine falcon, California condor, ferruginous hawk, golden eagle, merlin)

The Bird – Foraging Raptor species could forage virtually anywhere on site where prey are available, although species such as ferruginous hawk and merlin tend to forage in more open habitats such as grasslands and agricultural areas. As a group, all of the natural habitats, agriculture, and disturbed lands on the site provide potential foraging habitat for these species, totaling 476.4 acres. The Project would permanently impact 413.6 acres (87%) and temporarily impact 12.1 acres (3%) of suitable on-site habitat for Bird – Foraging Raptor species.

Individuals of these species are unlikely to be directly killed or injured during construction activities because they use the site only for foraging. During construction, these highly mobile species are likely to avoid the site due to both human activities and a lack of prey once areas are cleared of vegetation and graded. The condor may be at some risk because this species is sometimes attracted to construction sites and is therefore more susceptible to collisions and ingestion of trash and pollutants such as antifreeze and petroleum products. However, these risks are low.

Impact BIO-21 Project construction would result in direct impacts to foraging habitat for California condor and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for California condor on site. The Project Site does not support large mammalian carrion (i.e., dead cattle are absent, and mule deer, while observed, are relatively uncommon on this site) and other prey species that condor require (Corps and CDFG 2010). While 2009 flight data provided to CDFG by the USFWS indicates that the condor frequently flies over the Project area when moving between the Sespe Wilderness area to the northwest and the San Gabriel Mountains to the southeast of the Project area, these flights are generally at high altitudes and are not for the purpose of foraging in the

Project area (Corps and CDFG 2010). The few condors that have landed on Newhall Ranch since 2008 foraged not in Entrada but in Potrero Canyon (located approximately 4 miles west of the Entrada site), where cattle grazing still takes place (Corps and CDFG 2010). Therefore, direct impacts to 425.7 acres of foraging habitat would be adverse, but less than significant because condors are expected to occur rarely on site and the site is a very small part of the condor's foraging range in southern California.

In addition, the Project could affect condor individuals by attracting them to construction sites, where they might collide with construction vehicles or ingest construction debris or trash. However, such impacts are not likely to occur because there is no evidence that condors use the Entrada South site for foraging or any other purpose. Also note that the Project would not result in "take" of condor as that term is defined in Section 86 of the Fish and Game Code.

The data indicate that project impacts on condor would be less than significant. Such impacts would be further reduced with the proposed mitigation measures identified in Section 5. However, such impacts are unlikely given that no condors have been observed flying over or using the Project Site.

Impact BIO-22 Project construction would result in direct impacts to foraging habitat for ferruginous hawk.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for ferruginous hawk on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the suitable foraging habitat on site for an uncommon BCC, SA, and County of Los Angeles sensitive species that has experienced substantial wintering habitat loss from urban development in southern California.

Impact BIO-23 Project construction would result in direct impacts to foraging habitat for golden eagle.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for golden eagle on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the suitable foraging habitat on site for an uncommon BCC, WL, FP, and County of Los Angeles

sensitive species that has experienced substantial foraging habitat loss from urban and agricultural development in California.

Significant impacts to habitat for the Bird – Foraging Raptor guild (Impact BIO-21 through 23) would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-16** (preservation of 310.6 acres of coastal scrub on site, and within the High Country SMA, Salt Creek area and other open space areas within lands owned by the Applicant);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); and
- **MM ES 5.4-17** (Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation).

The Project would result in two types of significant direct impacts to species in the Bird – Foraging Raptors guild: (1) loss of suitable habitat; and (2) potentially direct impacts to condor individuals.

The Applicant will mitigate the permanent loss of suitable habitat for Bird – Foraging Raptor guild species by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-61, MM ES 5.4-62, MM ES 5.4-16, and MM ES 5.4-17. Implementation of these mitigation measures will result in protection and management of approximately 403.5 acres of suitable habitat for Bird – Foraging Raptor guild species and will allow them to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant.

Because these raptors are highly mobile, it is extremely unlikely that construction activities would result in mortality of adults and juveniles foraging within the Project Site. However, construction debris, litter, leaking equipment, or road kill may attract California condors to the Project Site. This could subject condors to strikes by construction vehicles. Condors are curious birds and have been documented in close association with oil pumps and human activity on the Los Padres National Forest. During cleanup activities at trash sites, condors have been observed sitting on guard rails adjacent to the cleanup activities. Adverse effects to

condors have also been documented by the animal's collection of microtrash (i.e., broken glass, paper and plastic waste, small pieces of metal). This waste is often brought back to nest sites where young birds ingest the material. This can lead to mortality of young birds. Ethylene glycol, a component in antifreeze and petroleum products, can also be ingested by condors, which can result in injury or mortality. While there is the potential for injury or mortality to condor individuals from Project activities, this potential is considered to be extremely low due to the generally sporadic occurrence on site. It would be further reduced by MM ES 5.4-40 and elements of MM ES 5.4-24. MM ES 5.4-40 provides for pre-construction educational meetings and requires that all construction/contractor personnel complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. The WEAP includes setting out procedures for minimizing harm to or harassment of wildlife, including condors, during construction and designating a contact person in the event of discovery of dead or injured wildlife. The monitoring biologist will also be present during initial clearing and grading when the chance of collision between construction equipment and condors would be greatest. MM ES 5.4-24 also includes measures/restrictions incorporated into the SWPPP that will further reduce the risk of impacts to the condor during construction, including checking and maintaining vehicles to prevent leakage of materials (e.g., toxic antifreeze and petroleum products); removal of excess materials and debris from work areas when construction operations are completed; and installation of fully covered trash receptacles to contain food, food scraps, food wrappers, beverage containers, and other miscellaneous trash that could attract condors to a work site. By appropriately educating construction personnel, providing biological monitoring, and preventing spills of toxic materials and the availability of microtrash, impacts to condors during construction would be highly unlikely.

Based on the foregoing analysis, this BTR finds that the Project may cause significant direct impacts to Bird – Foraging Raptors guild species, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for these impacts.

Impacts to Foraging Raptors That Would Be Less Than Significant

American peregrine falcon: This species was observed in 2012 perched on a transmission tower along the southern boundary of the site. While peregrine falcon may occasionally forage on site, its special-status designation is for nest sites, which are not present on site. Also, while peregrine falcon is fully protected, injury or mortality related to Project implementation is highly unlikely. No substantial adverse direct or indirect impacts to this species are anticipated, therefore impacts to this species would be less than significant.

Merlin: This species was not observed on the Project Site, but has been observed on different occasions hunting over agricultural fields along the Santa Clara River. Foraging habitat on site would only be used by wintering and migrant individuals during the winter months. Wintering and migrating merlins are not restricted to any one migration route or wintering habitat area and use a variety of habitats throughout the state. They are somewhat nomadic during the non-breeding period in the southern portion of the state. In addition, approximately 3,181 acres of foraging habitat would remain in the Santa Clara River SMA/SEA, High Country SMA/SEA, and Salt Creek area. For these reasons, the loss of foraging habitat on site would not have a substantial adverse effect on this species and direct and indirect impacts would be less than significant.

Bird – Nesting/Foraging Raptor (Cooper's hawk, western burrowing owl, white-tailed kite, loggerhead shrike)

The Bird – Nesting/Foraging Raptor species are expected to use habitats on the Project Site differently. Cooper's hawk and white-tailed kite may nest on site in valley oak/grass, which totals 5.4 acres on site. The Project would permanently impact 4.4 acres (81%) of valley/oak grass. Cooper's hawk also may forage in the coastal scrub, thickleaf yerba santa scrub, and blue elderberry stands on site, totaling 233.3 acres on site. The Project would permanently impact 207.3 acres (89%) and temporarily impact 7.9 acres (3%) of foraging habitat for Cooper's hawk. White-tailed kites forage over a broader range of habitats. Potential foraging habitats for white-tailed kite include grassland, coastal scrub, valley oak/grass, riparian/wetland, agriculture, and disturbed lands that total 433.0 acres on site. The Project would permanently impact 370.4 acres (86%) and temporarily impact 11.9 acres (3%) of foraging habitat for white-tailed kite. The western burrowing owl may nest and forage in California annual grassland, valley oak/grass, agriculture, riverwash, and disturbed California sagebrush scrub, totaling 101.6 acres on site. The Project would permanently impact 75.0 acres (74%) and temporarily impact 1.7 acres (2%) of nesting and foraging habitat for burrowing owl. The loggerhead shrike may nest and/or forage in almost all land covers on site except developed, totaling 476.4 acres on site. The Project would permanently impact 413.6 acres (87%) and temporarily impact 12.1 acres (3%) of foraging habitat for loggerhead shrike.

Individual adults of these species are unlikely to be directly killed or injured during construction activities because they are highly mobile and would likely leave the area during construction. However, nesting activities could be disrupted if construction occurs during the breeding season as a result of nest abandonment or reduced reproductive success. Nests, eggs, and young could be directly affected by vegetation clearing and grading. All of these impacts can be reduced to less than significant levels through appropriate and feasible mitigation measures. Such measures are identified and discussed following the impact analysis for each of the seven special-status Nesting/Foraging Raptor species.

Impact BIO-24 Project construction would result in direct impacts to nesting and foraging habitat for Cooper's hawk and could directly affect individuals, including their nests, eggs and young.

The proposed Project would result in permanent direct impacts to 4.4 acres of suitable nesting habitat for Cooper's hawk on site. The proposed Project would also result in permanent direct impacts to 207.3 acres and temporary direct impacts to 7.9 acres of suitable foraging habitat for Cooper's hawk on site. Although a relatively small amount of nesting habitat would be affected, these impacts would be significant because they would permanently impact 89% and temporarily impact 3% of the suitable foraging habitat on site for a WL and County of Los Angeles sensitive species. Any direct impacts to individuals, nests, eggs, or young, including nest abandonment, as a result of construction activities would also be significant.

Impact BIO-25 Project construction would result in direct impacts to nesting and foraging habitat for western burrowing owl and could directly affect individuals, including their nests, eggs and young.

The proposed Project would result in permanent direct impacts to 75.0 acres and temporary direct impacts to 1.7 acres of suitable nesting and foraging habitat for western burrowing owl on site. These impacts would be significant because they would permanently impact 74% and temporarily impact 2% of the suitable foraging nesting and foraging habitat on site for a BCC, CSC, and County of Los Angeles sensitive species. Any direct impacts to individuals, nests, eggs, or young, including nest abandonment, as a result of construction activities would also be significant.

Impact BIO-26 Project construction would result in direct impacts to nesting and foraging habitat for white-tailed kite and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 4.4 acres of suitable nesting habitat for white-tailed kite on site. The proposed Project would also result in permanent direct impacts to 370.4 acres and temporary direct impacts to 11.9 acres of suitable foraging habitat for white-tailed kite on site. Although a relatively small amount of nesting habitat would be affected, these impacts would be significant because they would permanently impact 86% and temporarily impact 3% of the suitable foraging habitat on site for an FP and County of Los Angeles sensitive species. Any direct impacts to

individuals, nests, eggs, or young, including nest abandonment, as a result of construction activities would also be significant.

Impact BIO-27 Project construction would result in direct impacts to nesting and foraging habitat for loggerhead shrike and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable nesting and foraging habitat for loggerhead shrike on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the suitable nesting and foraging habitat on site for an uncommon BCC, CSC and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban development in California. Any direct impacts to individuals, nests, eggs, or young, including nest abandonment, as a result of construction activities would also be significant.

Significant direct impacts to Bird – Nesting/Foraging Raptor (Impacts BIO-24 through BIO-27) would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-43** (pre-construction surveys for nesting native bird species and construction setbacks for active nests);
- **MM ES 5.4-44** (pre-construction surveys for western burrowing owl);
- **MM ES 5.4-16** (preservation of 310.6 acres of coastal scrub on site, and within the High Country SMA, Salt Creek area, and other open space areas within lands owned by the Applicant);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-17** (Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation); and
- **MM ES 5.4-69** (grading and construction activities should begin in disturbed areas and avoid isolating patches of vegetation, allowing animals to escape).

The Project would result in two types of significant direct impacts to species in the Bird – Nesting/Foraging Raptors guild: (1) impacts to individuals and (2) loss of suitable habitat.

While adults of these species are highly mobile and likely able to escape direct injury or mortality from relatively slow-moving construction equipment, impacts to individuals could occur if active nests are disturbed during vegetation clearing and construction/grading activities, including destruction of nests and loss of eggs and/or fledglings. Construction activities may also cause abandonment of nests due to human activity and noise. To avoid, minimize, and mitigate these impacts to nesting/foraging raptors, the Project Applicant will implement several mitigation measures.

The Project Applicant will conduct pre-construction surveys for active nest sites will be conducted per MM ES 5.4-43 and MM ES 5.4-44 (for western burrowing owl) and work within 500 feet of any active nest will be postponed until young have fledged. For non-breeding birds, MM ES 5.4-69 will allow birds to leave disturbance areas with minimal risk. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40 all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on Bird – Nesting/Foraging Raptor guild species and their habitat.

In addition, the Applicant will mitigate the permanent loss of suitable habitat for Bird – Nesting/Foraging Raptor guild species by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-61, MM ES 5.4-62, MM ES 5.4-16, and MM ES 5.4-17. Implementation of these mitigation measures will result in protection and management of approximately 403.5 acres of suitable habitat for Bird – Nesting/Foraging Raptor guild species and will allow them to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant.

Based on the foregoing analysis, this BTR finds that the Project could cause direct impacts to Bird – Nesting/Foraging Raptor guild species, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for these impacts.

Bird – Upland Grassland/Agriculture (California horned lark, grasshopper sparrow)

The Bird – Upland Grassland/Agriculture species may nest and forage in California annual grassland, valley oak/grass and agriculture, totaling 79.2 acres on site. The Project would permanently impact 52.7 acres (67%) and temporarily impact 1.6 acres (2%) of habitat for these species.

Individual adults of these species are unlikely to be directly killed or injured during construction activities because they are highly mobile and would likely leave the area during construction. However, nesting activities by California horned lark and grasshopper sparrow could be disrupted if construction occurs during the breeding season as a result of nest abandonment or reduced reproductive success. Nests, eggs, and young could be directly affected by vegetation clearing and grading.

Impact BIO-28 Project construction would result in direct impacts to nesting and foraging habitat for California horned lark and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 52.7 acres and temporary direct impacts to 1.6 acres of suitable nesting and foraging habitat for California horned lark on site. The loss of nesting and foraging habitat would be less than significant because it would not substantially reduce the available habitat for this species in the Project vicinity (e.g., almost 1,000 acres of suitable habitat preserved in the Santa Clara River and High Country SMA/SEAs and the Salt Creek area). Any direct impacts to individuals, nests, eggs, or young, including nest abandonment, of this WL and County of Los Angeles sensitive species as a result of construction activities would be significant.

Impact BIO-29 Project construction would result in direct impacts to nesting and foraging habitat for grasshopper sparrow and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 52.7 acres and temporary direct impacts to 1.6 acres of suitable nesting and foraging habitat for grasshopper sparrow on site. The loss of nesting and foraging habitat would be less than significant because it would not substantially reduce the available habitat for this species in the Project vicinity (e.g., almost 660 acres of grassland habitat preserved in the Santa Clara River and High Country SMA/SEAs and the Salt Creek area). Any direct impacts to

individuals, nests, eggs, or young, including nest abandonment, of this CSC as a result of construction activities would be significant.

Significant direct impacts to Bird – Upland Grassland/Agriculture (Impacts BIO-28 and BIO-29) would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-43** (pre-construction surveys for nesting native bird species and construction setbacks for active nests);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); and
- **MM ES 5.4-69** (grading and construction activities should begin in disturbed areas and avoid isolating patches of vegetation, allowing animals to escape).

The Project would result in only one type of significant direct impact to species in the Bird – Upland Grassland/Agriculture guild: impacts to individuals.

Pre-construction surveys for active nest sites will be conducted per MM ES 5.4-43 and work within 300 feet of any active nest will be postponed until young have fledged. For non-breeding birds, MM ES 5.4-69 will allow birds to leave disturbance areas with minimal risk. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40 all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on Bird – Upland Grassland/Agriculture guild species and their habitat.

Based on the foregoing analysis, this BTR finds that the Project could cause significant direct impacts to Bird – Upland Grassland/Agriculture guild species, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for these impacts.

Bird – Upland Scrub and Chaparral (Allen's hummingbird, Bell's sage sparrow, black-chinned sparrow, coastal California gnatcatcher, Costa's hummingbird, rufous hummingbird, southern California rufous-crowned sparrow)

The Bird – Upland Scrub and Chaparral species (except the migratory rufous hummingbird) may nest in coastal scrub, chaparral, and alluvial scrub, totaling 258.6 acres on site. The Project would permanently impact 232.6 acres (90%) and temporarily impact 7.9 acres (3%) of habitat for these species.

Individual adults of these species are unlikely to be directly killed or injured during construction activities because they are highly mobile and would likely leave the area during construction. However, nesting activities by these species (except the migrant rufous hummingbird) could be disrupted if construction occurs during the breeding season as a result of nest abandonment or reduced reproductive success. Nests, eggs, and young could be directly affected by vegetation clearing and grading.

Impact BIO-30 Project construction would result in direct impacts to nesting and foraging habitat for Allen's hummingbird and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 232.6 acres and temporary direct impacts to 7.9 acres of suitable nesting and foraging habitat for Allen's hummingbird on site. The loss of nesting and foraging habitat would be less than significant because it would not substantially reduce the available habitat for this species in the Project vicinity, and this species is still wide-ranging and uses a variety of habitats. However, any direct impacts to individuals, nests, eggs, or young, including nest abandonment, of this BCC and SA species as a result of construction activities would be significant.

Impact BIO-31 Project construction would result in direct impacts to nesting and foraging habitat for Bell's sage sparrow and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 232.6 acres and temporary direct impacts to 7.9 acres of suitable nesting and foraging habitat for Bell's sage sparrow on site. These impacts would be significant because they would permanently impact 90% and temporarily impact 3% of the suitable nesting and foraging habitat on site for an uncommon BCC, WL, and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban development in southern California. Any direct impacts to individuals, nests, eggs, or young, including nest abandonment, as a result of construction activities would also be significant.

Impact BIO-32 Project construction would result in direct impacts to nesting and foraging habitat for coastal California gnatcatcher and could directly affect individuals, including nests, eggs and young. The gnatcatcher is a federally listed threatened species, a California Species of Concern (CSC), and a County of Los Angeles sensitive species.

The proposed Project would result in permanent direct impacts to 232.6 acres and temporary direct impacts to 7.9 acres of suitable nesting and foraging habitat for coastal California gnatcatcher on site. These impacts would be significant because they would permanently disturb 90% and temporarily disturb 3% of the suitable nesting and foraging habitat on site for this species, which has experienced substantial habitat loss and fragmentation from urban development in southern California. Any direct impacts to individuals, nests, eggs, or young, including nest abandonment, as a result of construction activities would also be significant.

Impact BIO-33 Project construction would result in direct impacts to nesting and foraging habitat for Costa's hummingbird and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 232.6 acres and temporary direct impacts to 7.9 acres of suitable nesting and foraging habitat for Costa's hummingbird on site. The loss of nesting and foraging habitat would be less than significant because it would not substantially reduce the available habitat for this species in the Project vicinity, and this species is still wide-ranging and uses a variety of habitats. However, any direct impacts to individuals, nests, eggs, or young, including nest abandonment, of this SA species as a result of construction activities would be significant.

Impact BIO-34 Project construction would result in direct impacts to nesting and foraging habitat for southern California rufous-crowned sparrow and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 232.6 acres and temporary direct impacts to 7.9 acres of suitable nesting and foraging habitat for southern California rufous-crowned sparrow on site. These impacts would be significant because they would permanently impact 90% and temporarily impact 3% of the suitable nesting and foraging habitat on site for a WL and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban development in southern California. Any direct impacts to individuals, nests, eggs, or young, including nest abandonment, as a result of construction activities would also be significant.

Significant direct impacts to Bird – Upland Scrub and Chaparral (Impacts BIO-30 through BIO-34) would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-43** (pre-construction surveys for nesting native bird species and construction setbacks for active nests);
- **MM ES 5.4-16** (preservation of 310.6 acres of coastal scrub on site, and within the High Country SMA, Salt Creek area, and other open space areas within lands owned by the Applicant);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-17** (Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation); and
- **MM ES 5.4-69** (grading and construction activities should begin in disturbed areas and avoid isolating patches of vegetation, allowing animals to escape).

The Project would result in two types of significant direct impacts to species in the Bird – Upland Scrub and Chaparral guild: (1) impacts to individuals and (2) loss of suitable habitat.

While adults of these species are highly mobile and likely able to escape direct injury or mortality from relatively slow-moving construction equipment, impacts to individuals could occur if active nests are disturbed during vegetation clearing and construction/grading activities, including destruction of nests and loss of eggs and/or fledglings. Construction activities may also cause abandonment of nests due to human activity and noise. The Project Applicant will implement several mitigation measures to avoid, minimize, and mitigate direct impacts to nesting birds.

Pre-construction surveys for active nest sites will be conducted per MM ES 5.4-43 and work within 300 feet of any active nest will be postponed until young have fledged. MM ES 5.4-43 also specifies that focused protocol presence/absence surveys for coastal California gnatcatchers be conducted in suitable habitat within 500 feet of access or construction-related disturbance areas. It further specifies establishment of a 500-foot disturbance-free buffer demarcated by fencing or flagging for gnatcatcher territories or nests and monitoring of activities in suitable gnatcatcher habitat by a full-time qualified biologist. For non-breeding birds, MM ES 5.4-69 will allow birds to leave disturbance areas with minimal risk. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40 all construction/ contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation

measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on Bird – Upland Scrub and Chaparral guild species and their habitat.

In addition, the Applicant will mitigate the permanent loss of suitable habitat for Bird – Upland Scrub and Chaparral guild species by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-16 and MM ES 5.4-17. Implementation of these mitigation measures will result in protection and management of approximately 335.8 acres of suitable habitat for Bird – Upland Scrub and Chaparral guild species and will allow these species to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant.

Based on the foregoing analysis, this BTR finds that the Project could cause significant direct impacts to Bird – Upland Scrub and Chaparral guild species, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for these impacts.

Impacts to Bird – Upland Scrub and Chaparral Species That Would Be Less Than Significant

Rufous hummingbird: This species is still a wide-ranging species and is a fairly uncommon transitory migrant in the Project vicinity. The infrequent observations of migrating individuals on site suggest that it is not dependent on the Project vicinity for migration. Furthermore, this species uses a variety of scrub, chaparral, riparian, and woodland habitats and at least 5,350 acres of suitable habitat in the Santa Clara River SMA/SEA, High Country SMA/SEA, and Salt Creek area would remain as protected open space after build-out of the area. For these reasons, the loss of foraging habitat on site used by migrants would not have a substantial adverse effect on this species, and direct and indirect impacts would be less than significant.

Black-chinned sparrow: This species was observed on site during 2012 surveys. However, based on a general lack of observations of this species in the Project vicinity over numerous years, it is expected to occur only rarely as a migrant. Furthermore, during migration black-chinned sparrows use coastal scrub and chaparral habitats throughout the state and are not restricted to any one migration route or winter habitat area. For these reasons, the loss of habitat on site would not have a substantial adverse effect on individuals migrating through the area. Furthermore, pre-construction surveys will be required for nesting birds to comply with the federal Migratory Bird Treaty Act and California Fish and Game Code Section 3503, so in the unlikely event that the species nested on site, no nests, eggs, nestlings, and/or fledglings would be lost as a direct result of construction activities. For these reasons, the foraging habitat on site

used by migrants would not have a substantial adverse effect on this species and direct and indirect impacts would be less than significant.

Bird – Upland Woodland (chipping sparrow, Lawrence's goldfinch, Nuttall's woodpecker, oak titmouse, yellow warbler)

The Bird – Upland Woodland species may nest and forage in the valley oak/grass, totaling 5.4 acres on site. The Project would permanently impact 4.4 acres (81%) of habitat for these species.

Individual adults of these species are unlikely to be directly killed or injured during construction activities because they are highly mobile and would likely leave the area during construction. However, nesting activities could be disrupted if construction occurs during the breeding season as a result of nest abandonment or reduced reproductive success. Nests, eggs, and young could be directly affected by vegetation clearing and grading.

Impact BIO-35 Project construction would result in direct impacts to nesting and foraging habitat for chipping sparrow and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 4.4 acres of suitable nesting and foraging habitat for chipping sparrow on site. The loss of nesting and foraging habitat would be less than significant because a small amount of habitat would be affected, it would not substantially reduce the available habitat for this species in the Project vicinity, and this species is still wide-ranging and common. However, any direct impacts to individuals, nests, eggs, or young, including nest abandonment, of this SA species as a result of construction activities would be significant.

Impact BIO-36 Project construction would result in direct impacts to nesting and foraging habitat for Lawrence's goldfinch and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 4.4 acres of suitable nesting and foraging habitat for Lawrence's goldfinch on site. The loss of nesting and foraging habitat would be less than significant because a small amount of habitat would be affected, it would not substantially reduce the available habitat for this species in the Project vicinity, and this species is still wide-ranging and common. However, any direct impacts to individuals, nests, eggs, or young, including nest abandonment, of this BCC and SA species as a result of construction activities would be significant.

Impact BIO-37 Project construction would result in direct impacts to nesting and foraging habitat for Nuttall's woodpecker and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 4.4 acres of suitable nesting and foraging habitat for Nuttall's woodpecker on site. The loss of nesting and foraging habitat would be less than significant because a small amount of habitat would be affected, it would not substantially reduce the available habitat for this species in the Project vicinity, and this species is still wide-ranging and common. However, any direct impacts to individuals, nests, eggs, or young, including nest abandonment, of this BCC and SA species as a result of construction activities would be significant.

Impact BIO-38 Project construction would result in direct impacts to nesting and foraging habitat for oak titmouse and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 4.4 acres of suitable nesting and foraging habitat for oak titmouse on site. The loss of nesting and foraging habitat would be less than significant because a small amount of habitat would be affected, it would not substantially reduce the available habitat for this species in the Project vicinity, and this species is still wide-ranging and common. However, any direct impacts to individuals, nests, eggs, or young, including nest abandonment, of this BCC and SA species as a result of construction activities would be significant.

Impact BIO-39 Project construction would result in direct impacts to nesting and foraging habitat for yellow warbler and could directly affect individuals, including nests, eggs and young.

The proposed Project would result in permanent direct impacts to 4.4 acres of suitable nesting and foraging habitat for yellow warbler on site. The loss of nesting and foraging habitat would be less than significant because a small amount of habitat would be affected, it would not substantially reduce the available habitat for this species in the Project vicinity, and this species is still wide-ranging and common. Although the valley oak/grass on site is not highly suitable for nesting, any direct impacts to individuals, nests, eggs, or young, including nest abandonment, of this BCC, CSC and Los Angeles County species as a result of construction activities would be significant.

Significant direct impacts to Bird – Upland Woodland (Impact BIO-35 through 39) would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-43** (pre-construction surveys for nesting native bird species and construction setbacks for active nests);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); and
- **MM ES 5.4-69** (grading and construction activities should begin in disturbed areas and avoid isolating patches of vegetation, allowing animals to escape).

The Project would result in only one type of significant direct impact to species in the Bird – Upland Woodland guild: impacts to individuals.

While adults of these species are highly mobile and likely able to escape direct injury or mortality from relatively slow-moving construction equipment, impacts to individuals could occur if active nests are disturbed during vegetation clearing and construction/grading activities, including destruction of nests and loss of eggs and/or fledglings. Construction activities may also cause abandonment of nests due to human activity and noise. The Applicant will implement several mitigation measures to avoid, minimize, and mitigate direct impacts to nesting birds.

Pre-construction surveys for active nest sites will be conducted per MM ES 5.4-43 and work within 300 feet of any active nest will be postponed until young have fledged. For non-breeding birds, MM ES 5.4-69 will allow birds to leave disturbance areas with minimal risk. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40 all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on Bird – Upland Woodland guild species and their habitat.

Based on the foregoing analysis, this BTR finds that the Project could cause significant impacts on to individuals in the Bird – Upland Woodland guild, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for this impact.

Bat (fringed myotis, hoary bat, long-legged myotis, pallid bat, pocketed free-tailed bat, silver-haired bat, Townsend's big-eared bat, western long-eared myotis, western mastiff bat, western red bat, western small-footed bat, Yuma myotis)

The bats, with the exception of Yuma myotis, may forage in virtually all of the non-developed land covers on site where there is insect prey. Potential foraging habitat totals 476.4 acres on site. The Project would permanently impact 413.6 acres (87%) and temporarily impact 12.1 acres (3%) of foraging habitat for these species. Yuma myotis usually forages in areas associated with water. Potential foraging habitat for Yuma myotis on site probably is mostly limited to the riparian/wetland habitats on site, totaling 42.7 acres on site. The Project would permanently impact 41.4 acres (96%) and temporarily impact 0.5 acre (1%) of foraging habitat for Yuma myotis. Pallid bat, western red bat, hoary bat, fringed myotis, and Yuma myotis also may roost in the valley oaks on sites. The Project would permanently impact 4.4 acres (81%) of valley oak/grass that provides potential roosting habitat for pallid bat, western red bat, hoary bat, silver-haired bat, fringed myotis, and Yuma myotis.

Because the pallid bat, western red bat, hoary bat, fringed myotis, long-legged myotis, and Yuma myotis may roost on site, roosting activities could be disrupted, especially during the breeding season for pallid bat, fringed myotis, long-legged myotis, and Yuma myotis if maternity roosts were established on site; however, the potential for maternity roosts likely is low because these three species tend to establish maternity roosts in cliffs, crevices, and buildings. Western red bat and hoary bat, which are migratory species, are not expected to breed on site.

Individual adults of these species foraging on site are unlikely to be directly killed or injured during construction activities because they are highly mobile and only active at night. However, individuals could be killed or harmed if active roost sites were removed, either causing direct mortality or more likely causing abandonment during the day.

Below, this BTR discusses the Project's potential impacts to each of the bat species that may reside in or use the Project area. After this discussion, the BTR identifies mitigation measures which, if implemented, would reduce such impacts to less than significant levels.

Impact BIO-40 Project construction would result in direct impacts to foraging and roosting habitat for fringed myotis and could directly affect individuals at roost sites.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for fringed myotis on site. The proposed Project would also result in permanent direct impacts to 4.4 acres a of suitable roosting habitat on site. These impacts

would be significant because they would permanently impact 87% and temporarily impact 3% of the foraging habitat on site for an SA that has experienced substantial habitat loss and fragmentation and disturbance of roost sites from urban development in southern California. Any direct impacts to individuals, including young, at roost sites, as a result of construction activities would also be significant.

Impact BIO-41 Project construction would result in direct impacts to foraging and roosting habitat for hoary bat and could directly affect individuals at roost sites.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for hoary bat on site. The proposed Project would also result in permanent direct impacts to 4.4 acres of suitable roosting habitat on site. This loss of foraging habitat would be less than significant because this species is the most widespread bat species in North America, it does not breed on site (it may occur on site during the winter or during migration), and the Project would not substantially reduce the available habitat for this species in the Project vicinity during wintering or migration. However, any direct impacts to individuals at roost sites as a result of construction activities would be significant.

Impact BIO-42 Project construction would result in direct impacts to foraging and roosting habitat for long-legged myotis and could directly affect individuals at roost sites.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for long-legged myotis on site. The proposed Project would also result in permanent direct impacts to 4.4 acres of suitable roosting habitat on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the foraging habitat on site for an SA and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban development in southern California. Any direct impacts to individuals, including young, at roost sites, as a result of construction activities would also be significant.

Impact BIO-43 Project construction would result in direct impacts to foraging and roosting habitat for pallid bat and could directly affect individuals at roost sites.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for pallid bat on site. The proposed Project would also result in permanent

direct impacts to 4.4 acres and temporary direct impacts to 0.5 acre of suitable roosting habitat on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the foraging habitat on site for a CSC and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban development in southern California. Any direct impacts to individuals, including young, at roost sites, as a result of construction activities would also be significant.

Impact BIO-44 Project construction would result in direct impacts to foraging and roosting habitat for silver-haired bat and could directly affect individuals at roost sites.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for western red bat on site. The proposed Project would also result in permanent direct impacts to 4.4 acres a of suitable roosting habitat on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the foraging habitat on site for an SA that has experienced habitat loss in southern California. Any direct impacts to individuals at roost sites, as a result of construction activities, would also be significant.

Impact BIO-45 Project construction would result in direct impacts to foraging and roosting habitat for western long-eared myotis and could affect individuals at roost sites.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for western long-eared myotis on site. The proposed Project would also result in permanent direct impacts to 4.4 acres of suitable roosting habitat on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the foraging habitat on site for an SA and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban development in southern California. Any direct impacts to individuals, including young, at roost sites, as a result of construction activities would also be significant.

Impact BIO-46 Project construction would result in direct impacts to foraging and roosting habitat for western red bat and could directly affect individuals at roost sites.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for western red bat on site. The proposed Project would also result in permanent direct impacts to 4.4 acres a of suitable roosting habitat on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the foraging habitat on site for a CSC sensitive species that has experienced substantial wintering and migration habitat loss in southern California (i.e., extensive riparian zones). Any direct impacts to individuals at roost sites, as a result of construction activities, would also be significant.

Impact BIO-47 Project construction would result in direct impacts to foraging and roosting habitat for Yuma myotis and could directly affect individuals at roost sites.

The proposed Project would result in permanent direct impacts to 41.4 acres and temporary direct impacts to 0.5 acre of suitable foraging habitat for Yuma myotis on site. The proposed Project would also result in permanent direct impacts to 4.4 acres of suitable roosting habitat on site. These impacts would not be significant because they would permanently impact a relatively small amount of habitat for the species and substantial foraging and roosting habitat of much higher quality for the species would remain in Santa Clara River. However, any direct impacts to individuals, including young, at roost sites, as a result of construction activities would be significant.

Impact BIO-48 Project construction would result in direct impacts to foraging habitat for pocketed free-tailed bat.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for pocketed free-tailed bat on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the suitable foraging habitat on site for a CSC and County of Los Angeles sensitive species that is rare in southern California.

Impact BIO-49 Project construction would result in direct impacts to foraging habitat for Townsend's big-eared bat.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for Townsend's big-eared bat on site. These impacts would be

significant because they would permanently impact 87% and temporarily impact 3% of the suitable foraging habitat on site for a state-candidate threatened, CSC, and County of Los Angeles sensitive species that is declining in southern California.

Impact BIO-50 Project construction would result in direct impacts to foraging habitat for western mastiff bat.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for western mastiff bat on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the suitable foraging habitat on site for a CSC and County of Los Angeles sensitive species that is rare in southern California.

Impact BIO-51 Project construction would result in direct impacts to foraging habitat for western small-footed myotis.

The proposed Project would result in permanent direct impacts to 413.6 acres and temporary direct impacts to 12.1 acres of suitable foraging habitat for western small-footed myotis on site. These impacts would be significant because they would permanently impact 87% and temporarily impact 3% of the suitable foraging habitat on site for a SA and County of Los Angeles sensitive species.

Significant direct impacts to bats (Impact BIO-40 through 51) would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-47** (pre-construction surveys for active roosts of special-status bats),
- **MM ES 5.4-51** (day roost site replacement);
- **MM ES 5.4-1** (development of a conceptual wetlands mitigation plan);

- **MM ES 5.4-16** (preservation of 310.6 acres of coastal scrub on site, and within the High Country SMA, Salt Creek area, and other open space areas within lands owned by the Applicant);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-17** (Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation); and
- **MM ES 5.4-2** through **ES 5.4-14** (wetlands mitigation plan and riparian restoration activities on the Project Site).

The Project would result in two types of significant direct impacts to bats: (1) impacts to individuals and (2) loss of suitable habitat.

Although direct impacts to foraging adult bats are unlikely, as they are highly mobile and active only at night, roosts of the pallid bat, western red bat, hoary bat, fringed myotis, long-legged myotis, and Yuma myotis could potentially be disrupted. Pallid bat, fringed myotis, long-legged myotis, and Yuma myotis could potentially establish maternity roosts on site; however, the likelihood is low, as these species typically establish maternity roost in cliffs, crevices, and buildings. In addition, to mitigate any impacts to individual of species in the Bat guild, the Project Applicant will implement several mitigation measures.

Pre-construction surveys for active bat roosts will be conducted per MM ES 5.4-47 and, if an active maternity roost is found, all work within 300 feet of the roost will be postponed until the roost is vacated and juveniles have fledged. In addition, MM ES 5.4-51 calls for the replacement of day roosts found during pre-construction surveys conducted per MM ES 5.4-47. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40, all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on species in the Bat guild and their habitat.

In addition, the Applicant will mitigate the permanent loss of suitable foraging habitat for bats by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-61, MM ES 5.4-62, MM ES 5.4-16, and MM ES 5.4-17. Implementation of these mitigation measures will result in protection and management of approximately 403.5 acres of suitable foraging habitat for bats and will allow bats to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant. In

addition, MM ES 5.4-1 requires that riparian habitats impacted will be replaced and restored under guidelines described in MM ES 5.4-2 through MM ES 5.4-14 (wetlands mitigation plan and riparian restoration activities on the Project Site). Implementation of these measures will permit Bat guild species to persist in the Project vicinity.

The RMDP/SCP EIS/EIR determined that impacts to individual Townsend's big-eared bats, western mastiff bats, and western small-footed myotis would be significant, absent mitigation. This finding, however, pertained to suitable roosting sites, which are lacking in the Entrada South Project area. Therefore, this BTR's finding that Entrada South will not have significant impacts on roosting habitats is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for these impacts. In addition, the RMDP/SCP EIS/EIR did not address several bat species discussed above (hoary bat, silver-haired bat, western long-eared myotis) due to a lack of documented occurrence records in the Project area at the time. However, the significance finding and the determination that significant direct impacts to these species would be reduced to less than significant with application of the mitigation measures proposed for the Entrada South Project is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for impacts to bat species in general.

Based on the foregoing analysis, this BTR finds that the Entrada South Project could cause significant direct impacts to bat species, but that such impacts can be mitigated to less than significant provided the mitigation measures recommended herein are implemented.

Mammal – Low Mobility (San Diego desert woodrat)

Impact BIO-52 Project construction would result in direct impacts to suitable habitat for San Diego desert woodrat and could directly affect individuals.

The San Diego desert woodrat may inhabit coastal scrub, chaparral, alluvial scrub, and big sagebrush scrub, totaling 283.3 acres on site. The proposed Project would result in permanent direct impacts to 256.2 acres (90%) and temporary direct impacts to 8.2 acres (3%) of suitable habitat for San Diego desert woodrat on site. These impacts would be significant because they would permanently impact 90% and temporarily impact 3% of the suitable habitat on site for a CSC and County of Los Angeles sensitive species that has experienced substantial habitat loss and fragmentation from urban and agricultural development in southern California. San Diego desert woodrats could also be killed or injured during vegetation clearing and grading. Individuals may escape direct impacts but unless they were able to move into adjacent habitat, their chance of survival upon being flushed from a midden would be low. Therefor both adults and young dependent on the nest

would be highly vulnerable to injury and mortality during construction. Direct impacts to individuals would be significant absent mitigation. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-45** (pre-construction surveys and relocation of San Diego desert woodrat);
- **MM ES 5.4-16** (preservation of 310.6 acres of coastal scrub on site, and within the High Country SMA, Salt Creek area, and other open space areas within lands owned by the Applicant);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities); and
- **MM ES 5.4-69** (grading and construction activities should begin in disturbed areas and avoid isolating patches of vegetation, allowing animals to escape).

The Project would result in two types of significant direct impacts to species in the Mammal – Low Mobility guild (the San Diego desert woodrat): (1) impacts to individuals and (2) loss of suitable habitat.

Because San Diego desert woodrats are not highly mobile, the proposed Project would result in injury and mortality of individuals occupying suitable habitat during construction and/or grading activities. These impacts would occur as a result of direct contact with construction equipment or entombment during vegetation clearing and grading. Animals flushed from dens during construction would likely be disoriented and may be unable to find safe refuge, resulting in increased exposure to predation and vehicle collisions. To avoid, minimize, and mitigate these impacts, the Applicant will implement several mitigation measures to avoid direct impacts to individual San Diego desert woodrat (Impact BIO-52).

Pre-construction surveys for active San Diego woodrat nest sites will be conducted per MM ES 5.4-45 and will postpone work in the vicinity of any active nest. Woodrats located within the disturbance zone during the non-breeding season will be relocated to a suitable location outside the disturbance zone. MM ES 5.4-69 will allow individual San Diego woodrats to leave disturbance areas with minimal risk. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and

grading activities. Under MM ES 5.4-40, all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on San Diego desert woodrats and their habitat.

In addition, the Applicant will mitigate the permanent loss of suitable habitat for San Diego desert woodrat by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include MM ES 5.4-61 and MM ES 5.4-16. Implementation of these mitigation measures will result in protection and management of approximately 335.8 acres of suitable habitat for San Diego desert woodrat and will allow this species to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant.

Based on the foregoing analysis, this BTR finds that the Project could cause significant direct impacts to San Diego desert woodrat, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for this impact.

Mammal – Moderate Mobility (American badger, San Diego black-tailed jackrabbit)

American badger and San Diego black-tailed jackrabbit may occur in California annual grassland, valley oak/grass, coastal scrub, alluvial scrub, riverwash, big sagebrush scrub, agriculture, and disturbed lands, totaling 451.0 acres on site. The Project would permanently impact 388.2 acres (86%) and temporarily impact 12.1 acres (3%) of habitat for American badger and San Diego black-tailed jackrabbit on site.

Individual adults of these species are unlikely to be directly killed or injured during construction activities because they are fairly mobile and should be able to escape from construction areas. The greatest potential for direct impacts to badgers would be mortality of young in a natal den and potentially the mother, which fiercely defends the natal den. Similarly, construction activities could result in destruction of jackrabbit natal sites (dens, burrows, and depressions), and mortality of young, which are not well coordinated for the first 2 or 3 days after birth and are dependent on the nest. Abandonment of the natal den by the mother could also result in the mortality of young.

Impact BIO-53 Project construction would result in direct impacts to suitable habitat for San Diego black-tailed jackrabbit and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 388.2 acres and temporary direct impacts to 12.1 acres of suitable habitat for San Diego

black-tailed jackrabbit on site. These impacts would be significant because they would permanently impact 86% and temporarily impact 3% of the suitable habitat on site for a CSC and County of Los Angeles sensitive species that is very uncommon in the Project vicinity and that has experienced substantial habitat loss and fragmentation from urban and agricultural development in southern California. While adults are highly mobile and can usually escape human disturbances, young dependent on the nest would be highly vulnerable to injury and mortality during construction. Direct impacts to individuals would be significant absent mitigation.

Impact BIO-54 Project construction would result in direct impacts to suitable habitat for American badger and could directly affect individuals.

The proposed Project would result in permanent direct impacts to 388.2 acres and temporary direct impacts to 12.1 acres of suitable habitat for American badger on site. These impacts would be significant because they would permanently impact 86% and temporarily impact 3% of the suitable habitat on site for a CSC that is uncommon in the Project vicinity and that has experienced substantial habitat loss and fragmentation from urban and agricultural development in southern California. While adults are highly mobile and can usually escape human disturbances, young in natal dens and females defending natal dens would be highly vulnerable to injury and mortality during construction. Direct impacts to individuals would be significant absent mitigation.

Significant direct impacts to Mammal – Moderate Mobility (Impacts BIO-53 and BIO-54) would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-45** (pre-construction surveys and relocation of San Diego black-tailed jackrabbit);
- **MM ES 5.4-16** (preservation of 310.6 acres of coastal scrub on site, and within the High Country SMA, Salt Creek area, and other open space areas within lands owned by the Applicant);

- **MM ES 5.4-36** (pre-construction surveys and American badger natal den avoidance);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-17** (Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation); and
- **MM ES 5.4-69** (grading and construction activities should begin in disturbed areas and avoid isolating patches of vegetation, allowing animals to escape).

The Project would result in two types of significant direct impacts to species in the Mammal – Moderate Mobility guild: (1) impacts to individuals and (2) loss of suitable habitat.

Adult of species in the Mammal – Moderate Mobility guild can move relatively far distances in a short period of time and probably could escape from construction and/or grading activities. However, construction activities could result in destruction of San Diego black-tailed jackrabbit natal sites (dens, burrows, and depressions), and mortality of young, which are not well coordinated for the first two or three days after birth and are dependent on the nest. Construction activities could also result in mortality of American badger young in a natal den and potentially the mother, which fiercely defends the natal den. To avoid, minimize, and mitigate these impacts, the Project Applicant will implement several mitigation measures to avoid direct impacts to individuals of Mammal – Moderate Mobility guild species.

Pre-construction surveys for San Diego black-tailed jackrabbits will be conducted per MM ES 5.4-45 and work within 200 feet of any den, depression, nest, or burrow occupied by a San Diego jackrabbit pup will be postponed until the young leave the site. Adult jackrabbits will be flushed from areas to be disturbed prior to construction. Pre-construction surveys for American badger will be conducted per MM ES 5.4-36, and construction within 200 feet of any active maternity den during the pup-rearing season (February 15 through July 1) will be postponed until the maternity den is vacated. A 50-foot avoidance area will be established around occupied non-maternity dens. MM ES 5.4-69 will allow individuals of Mammal – Moderate Mobility guild species to leave disturbance areas with minimal risk. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40, all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on Mammal – Moderate Mobility guild species and their habitat.

In addition, the Applicant will mitigate the permanent loss of suitable habitat for San Diego black-tailed jackrabbit and American badger by implementing measures that require preservation, enhancement and restoration, and management. These mitigation measures include

MM ES 5.4-61, MM ES 5.4-62, MM ES 5.4-16, and MM ES 5.4-17. Implementation of these mitigation measures will result in protection and management of approximately 403.5 acres of suitable habitat for San Diego black-tailed jackrabbit and American badger and will allow these species to persist in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant.

Based on the foregoing analysis, this BTR finds that the Project could cause significant direct impacts to Mammal – Moderate Mobility guild species, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for this impact.

Mammal – High Mobility (mountain lion, mule deer)

Mountain lion and mule deer may occur in coastal scrub, chaparral, and valley oak/grass, and riparian/wetland, totaling 306.3 acres on site. The Project would permanently impact 278.1 acres (91%) and temporarily impact 8.3 acres (3%) of habitat for mountain lion and mule deer.

Individual adults of these species are unlikely to be directly killed or injured during construction activities because they are highly mobile and would likely leave construction areas. Young mountain lions are also unlikely to be directly killed or injured. Mountain lions typically den in more rocky areas with caves or cavities suitable for dens that are more likely found in the upland habitats of the High Country SMA/SEA than the habitats found on the Project Site. Therefore, it is unlikely that construction activities would result in injury or mortality of very young mountain lions still confined to natal dens. No significant impacts to mountain lion individuals are expected during construction.

Mule deer has been observed on the Project Site and is common in the Project vicinity. While considered special status for this BTR because it is a regulated species in California, it is still widespread and relatively common throughout its range in California and is not particularly vulnerable to habitat loss. With protection of habitat in the Santa Clara River SMA/SEA, High Country SMA/SEA, and Salt Creek, after build-out of the area mule deer are expected to remain common in the region. For these reasons, the loss of habitat on site and potential indirect impacts would not have a substantial adverse effect on this species, and these direct impacts would be less than significant.

Sign of mountain lion was observed on the Project Site and the site may be part of a resident individual's range or may support transient individuals on occasion. While considered special status for this BTR because it is a regulated species in California, it is still widespread and relatively common throughout its range in California and is not particularly

vulnerable to habitat loss outside urbanizing areas of the state. With protection of habitat in Santa Clara River SMA/SEA, High Country SMA/SEA, and Salt Creek, after build-out of the area mountain lions are expected to remain relatively common in the region. For these reasons, the loss of habitat on site would not have a substantial adverse effect on this species, and direct impacts would be less than significant.

5.5.2 Direct Impacts to Critical Habitat

Arroyo Toad Critical Habitat

The Project Site has a very small overlap (0.005 acre) with the 1,003 acres of federally designated critical habitat in Unit 6b in the Project vicinity and the 98,366 total acres of critical habitat in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego Counties (76 FR 7246–7467). This small overlap area is mapped as disturbed land and would be temporarily impacted. Impact BIO-19 already identifies potential impacts to arroyo toads that may be aestivating in the uplands adjacent to the Santa Clara River as significant. However, temporary impacts to 0.005 acre of disturbed land within arroyo toad critical habitat would be less than significant because the disturbed land is not a primary constituent element of critical habitat for the species and would be a very small temporary impact.

Least Bell's Vireo Critical Habitat

The Project would directly affect 6.1 acres of federally designated critical habitat for least Bell's vireo (59 FR 4845–4867). This impact consists of (1) the permanent loss of 4.2 acres and temporary disturbance of 0.3 acre of critical habitat mapped as "agriculture," (2) the permanent loss of 1.0 acre and temporary disturbance of 0.2 acre of critical habitat mapped as "disturbed lands," and (3) the permanent loss of 0.2 acre and temporary disturbance of 0.2 acre of critical habitat mapped as "coastal scrub." As to the impacts to agricultural land and disturbed land, neither of these land cover types provides primary constituent elements of vireo critical habitat, which USFWS defines as riparian vegetation that generally contains both canopy and shrub layers, and includes some associated upland shrub habitats for foraging that are within about 100 feet of riparian vegetation (Kus and Miner 1989). With respect to impacts to the coastal scrub habitat, the affected area is located west of the agricultural area, approximately 300 feet from the edge of riparian vegetation along the Santa Clara River. If the impacted coastal scrub were within 100 feet of riparian vegetation in the River, it would likely qualify as a primarily constituent element of the critical habitat because it could be used as foraging habitat by vireos (Kus and Miner 1989). Given that it is located about 300 feet from the edge of riparian vegetation along the River, it likely would not be used for foraging and therefore does not constitute a primary constituent element of least Bell's vireo critical habitat. For these reasons, impacts to least Bell's vireo critical habitat would be less than significant.

5.5.3 Indirect Impacts to Special-Status Wildlife

Indirect impacts to special-status wildlife species may include both habitat degradation and effects on individuals. Habitat degradation may occur in the same manner as discussed in Section 5.2.2 for vegetation communities. Short-term construction effects to wildlife habitat may include fugitive dust; runoff, sedimentation, chemical pollution, and erosion; litter; and accidental clearing, grading, and trampling (see discussion in Section 5.2.2). Over the long term, increases in human activity along the open space–urban interface (also referred to as "edge areas") may also result in the trampling of vegetation and compaction of soils (see discussion in Section 5.2.2). This can affect the long-term viability of plant communities and degrade wildlife habitat quality.

Specific indirect impacts on special-status wildlife may occur during construction activities and over the long term as a result of development. However, it should be noted that over the long term, indirect impacts on wildlife are expected to be limited along the open space–urban interface because most of the Project Site is bordered by existing and future development, and there will be a relatively small amount of interface (or "edge") between development and open space.

Short-term construction-related indirect impacts to wildlife generally include noise, vibration, lighting, increased human activity, hydrologic and water quality (e.g., chemical pollution, increased turbidity, excessive sedimentation, flow interruptions, and changes in water temperature), and trash and garbage, which can attract predators such as American crows, common ravens, and coyotes, and mesopredators such as northern raccoons and striped skunks.

Long-term development-related indirect impacts to wildlife generally include noise, lighting, increased predation or harassment by pet, stray, and feral cats and dogs as well as other mesopredators, invasion by exotic wildlife species (e.g., Argentine ants), pesticide use, altered fire regimes, and increased road kill.

Table 12 summarizes potential indirect impacts on the special-status wildlife guilds. Table 12 includes an Aquatic/Riparian guild for special-status wildlife species not expected to occur on the Project Site, but which are known from the Santa Clara River, and therefore could be indirectly affected by the Project. Indirect effects to the wildlife guilds are discussed in more detail following Table 12.

Table 12 shows that noise, vibration, and lighting can affect a large range of species. For example, noise can cause western spadefoots to emerge prematurely from burrows because vibration can mimic rainfall (Dimmitt and Ruibal 1980), which is a trigger for breeding activity. Construction noise and vibration may disturb bird and bat breeding activities, potentially

resulting in nest or roost abandonment or reduced productivity. Noise can raise the level of stress hormones, interfering with sleep and other activities. Chronic vehicle noise can also affect birds by masking calls, affecting behaviors such as mate attraction and territory defense. Mammals may generally avoid noisy areas due to increased stress and associated human activities. Vibration may also directly disturb terrestrial species that occupy burrows, dens, and depressions, or cause collapse of burrow systems and dens of fossorial (burrowing) species in areas with highly friable soils.

Lighting related to construction and over the long term can have well-documented indirect effects on wildlife (Longcore and Rich 2004), including disorientation; avoidance of areas; disturbances of nighttime rest and sleep periods of diurnal birds; simulated increased day length, affecting reproductive cycles by triggering premature reproductive activity; and increased risk of predation.

Increased human activity during construction and over the long term may also affect most of the guilds. Increased human activity during construction areas could affect essential behavioral activities and physiology of wildlife, including disturbing rest or sleep periods, annoying them and causing them to abandon nests or den sites, as well as disrupting their normal biological rhythms and raising the level of stress hormones. Abandonment (even temporary) of active nests or dens increases the risk to eggs, nestlings, fledglings, and other dependent young. Flushing animals from nests, dens, and other refuges also increases their risk of injury or mortality from collisions with construction equipment and other vehicles, as well as predation. Human presence may also alter the spatial behavior of animals, causing them to avoid certain parts of their home range, which may prevent them from using critical resources such as water.

Altered hydrology and water quality could affect species guilds associated with riparian/wetland habitats, including the Reptile and Amphibian – Semi-Aquatic guild and the Aquatic/Riparian guild (i.e., special-status fish and birds in the Santa Clara River). Indirect impacts include changes in flow rates and patterns in streams and rivers, dewatering that may affect adjacent and downstream aquatic, wetland, and riparian vegetation communities, and water temperature changes that could affect habitat suitability. For the bats, altered hydrology and water quality could affect the prey base. However, the River and Tributaries Drainage Analysis prepared by PACE (2010) found that there would be no significant impacts to water flows, velocities, depth, sedimentation, or floodplain and channel conditions downstream of the Project area over the long term as a result of the proposed Project associated with the RMDP, which included the Entrada South Project in the analysis. These hydrologic effects were also found to be insufficient to alter the amount, location, and nature of aquatic and riparian habitats within the Project area and downstream into Ventura County. The PACE study determined that the river would retain sufficient width to allow natural fluvial processes to continue. For this reason, and altered hydrology resulting from the Project is expected to be minor.

Potential water quality effects on fish and wildlife include chemical and toxic compound pollution (fuel, oil, lubricants, paints, release agents, and other construction materials), erosion, increased turbidity, and excessive sedimentation.

Pet, stray, and feral animals and mesopredators may affect almost all of the wildlife guilds through increased predation and by outcompeting smaller native species (e.g., woodrats) for available resources (Crooks and Soulé 1999). The increase in mesopredators in fragmented habitats is often considered an edge effect, but because some of these species can penetrate long distances into natural habitats in the absence of top predators such as coyotes and bobcats, they can also have landscape-level effects. Also, domestic cats and dogs may be vectors for diseases that affect native wildlife, such as feline immunodeficiency virus, feline leukemia virus, feline infectious peritonitis, feline and canine distemper, panleukopenia, and rabies (Foley 1996; Florida Fish and Wildlife Conservation Commission 2003).

Table 12

Potential Indirect Effects on Special-Status Wildlife Guilds

Wildlife Guild	Noise & Vibration	Lighting	Increased Human Activity	Altered Hydrology and Water Quality	Pet, Stray, Feral Animals and Mesopredators	Fugitive Dust	Pesticides	Altered Fire Regime	Vehicle Collisions	Exotic Wildlife	Trash and Garbage	Disease
Insect						x	x	x	x			
Mollusk			x		x		x	x	x	x		
Reptile - Low Mobility	x	x	x		x		x	x	x	x		
Reptile and Amphibian – Semi- Aquatic[1]	x	x	x	x	x		x	x	x	x		x
Bird – Foraging Raptor	x		x		x		x	x	x			
Bird – Nesting/Foraging Raptor	x	x	x	x	x		x	x	x	x	x	
Bird – Upland Grassland/Agriculture	x	x	x		x		x	x	x	x	x	
Bird – Upland Scrub and Chaparral	x	x	x		x		x	x	x	x	x	
Bird – Upland Woodland	x	x	x	x	x		x	x	x	x	x	
Bat	x (roosts)	x	x (roosts)	x	x (roosts)		x	x				
Mammal – Low Mobility	x	x	x		x		x	x	x			
Mammal – Moderate Mobility	x	x	x		x		x	x	x			
Mammal – High Mobility	x	x	x		x			x	x			
Aquatic/Riparian[2]				x		x	x	x		x	x	

1 The Reptile and Amphibian – Semi-Aquatic guild includes species known from or potentially occurring in the Santa Clara River but not expected to occur on the Project Site, including two-striped gartersnake (*Thamnophis hammondii*) and California red-legged frog (*Rana draytonii*).

2 The Aquatic/Riparian guild includes fish species known from the Santa Clara River, including Santa Ana sucker (*Catostomus santaanae*), unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni),* arroyo chub (*Gila orcuttii*), and southern steelhead (*Oncorhynchus mykiss irideus*) and riparian bird species, including tricolored blackbird (*Agelaius tricolor*), western yellow-billed cuckoo , southwestern willow flycatcher, yellow-breasted chat (*Icteria virens*), summer tanager (*Piranga rubra*), vermilion flycatcher (*Pyrocephalus rubinus*), and least Bell's vireo.

Pesticides (including herbicides and rodenticides) may affect almost all of the wildlife guilds indirectly by degrading habitat quality, by being directly toxic to species, by being indirectly toxic through prey vectors, or by reducing prey abundance. These substances may penetrate the open space–urban interface through urban runoff from residential and commercial landscape areas and golf courses, overspray, wind, direct applications in interface areas, soil penetration, and wildlife vectors. Rodenticides, in particular, affect wildlife in various ways. Rodenticides are directly toxic to rodents, but may also indirectly affect rodent predators, such as hawks and owls, coyotes, snakes, etc., either through loss or contamination of prey. Eradication of rodents also can affect habitat quality for other species, such as burrowing owls that use ground squirrel burrows and many species of reptiles, amphibians, and insects that use rodent burrows as refugia and aestivation and hibernation habitat.

Altered natural wildfire regimes, in terms of the frequency and intensity of fires, but also in regard to the strategic and tactical approaches to preventing and fighting wildfires, have their primary effect on habitat quality, but can also cause direct mortality of wildlife. All of the wildlife guilds could be affected by altered wildfire regimes, including the Aquatic/Riparian guild as a result of water quality impacts. Frequent fires can drastically affect plant and animal communities through increases or decreases in the natural fire interval to which these communities have adapted. Longer than natural fire intervals can result in excessive buildup of fuel loads, so that when fires do occur, they are catastrophic. Altered wildfire regimes, and particularly increased incidence of fires in urbanizing areas, often occur from human activities at the open space–urban interface, including accidental ignitions from sparks from equipment (e.g., mowers striking rocks), cigarettes, children playing with matches, etc., as well as intentional ignitions.

Vehicle collisions with wildlife are likely to increase after the Project is implemented, particularly in areas that were frequently used by wildlife before roads were constructed or improved and other development was built. Almost all of the species guild are vulnerable to increased traffic collision.

Invasive wildlife may affect several of the species guilds. Development attracts or can provide suitable habitat for several common native wildlife such as common ravens, American crows, rock pigeons, northern raccoons, and striped skunks, and non-native species such as Argentine ants, Virginia opossums, rats (*Rattus* spp.), house mice (*Mus musculus*), and feral cats and dogs. Humans may also release non-native species into the wild, such as red-eared slider turtles (*Trachemys scripta elegans*). These species may thrive in disturbed or otherwise marginal habitats and can harm native species through predation, competition, and displacement. At particular risk from invasive wildlife are the native reptiles and amphibians and native nesting birds.

Trash and other garbage associated with construction activities and long-term development can degrade vegetation communities and wildlife habitat, and can attract nuisance and pest species

that affect several of the wildlife guilds. Trash and debris include discarded construction-related materials, such as packaging materials and plastic sheeting, which may be dispersed into natural areas by wind or along creeks and streams. Trash generated by construction personnel, such as food packaging and cigarette butts, also can be dispersed by wind and water into natural areas. Pest and predatory species, such as American crows, common ravens, coyotes, striped skunks, and northern raccoons may be attracted to discarded food. Increased human activity over the long term is also expected to increase the amount of trash and garbage in open space areas.

As indicated above, long-term indirect effects along the urban-open space interface are expected to be limited because most of the Project is bordered by existing development and future development. Long-term indirect edge effects from noise, vibration, lighting, and pesticides (except for impacts on water quality) therefore are expected to be minor. However, indirect impacts that can occur over a larger landscape could be more substantial, including increased human activity, pet, stray, and feral animals and mesopredators, altered fire regime, vehicle collisions, exotic wildlife, trash and garbage, and disease. Also, effects on species in the Santa Clara River could occur, including from water quality impacts and exotic wildlife.

Impact BIO-55 Project implementation could result in indirect impacts to individuals and suitable habitat for the Insect guild (San Emigdio blue butterfly).

In addition to general indirect effects on the host plant on site (four-winged saltbush) (e.g., dust, trampling, non-native species), the San Emigdio blue butterfly is likely most vulnerable to pesticides that could kill individuals and wildfire that could eliminate host plants and kill individuals, including adults and larvae. Adult butterflies also would be at risk of vehicle collisions. Because suitable habitat occupies such a small area of the Project Site and a population, if present, would be small and relatively isolated, these indirect impacts would be significant. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-49** (Integrated Pest Management Plan);
- **MM ES 5.4-53** (dust control measures);
- **MM ES 5.4-70** (fuel modification zone consistent with County ordinances);
- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction); and

- **MM ES 5.4-50** (flagging of San Emigdio blue butterfly habitat prior to construction).

Impact BIO-56 Project implementation could result in indirect impacts to individuals and suitable habitat for the Mollusk guild (Trask shoulderband).

In addition to general indirect effects on the habitat for Trask shoulderband, the species is likely most vulnerable to pesticides that could kill individuals and wildfire that could eliminate habitat and kill individuals. This species may also be vulnerable to increased human activity; exotic invasive wildlife, including Argentine ants and introduced non-native snails such as decollate snails; and pet, stray, and feral animals. If this species occurs on the site, it likely is present in small numbers. Nonetheless, these indirect impacts would be significant. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-72** (installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-56** (monitoring and control of invasive, non-native aquatic wildlife species for up to 5 years);
- **MM ES 5.4-9** and **MM ES 5.4-10** (control invasive exotic plant species);
- **MM ES 5.4-49** and MM **ES 5.4-48** (develop an integrated pest management plan that addresses pesticide use and control of pet, stray, and feral cats and dogs in or near open space areas);
- **MM ES 5.4-58** (quarterly monitoring and control measures for Argentine ants for up to 5 years);
- **MM ES 5.4-24** (project design features, construction notes, erosion and dust control, and SWPPP BMPs to ensure protection of vegetation communities and special-status species);

- **MM ES 5.4-54** (review of plant palettes and inspection of container plants for use within 200 feet of native vegetation for pests and disease; restrictions on invasive plants and irrigation);
- **MM ES 5.4-70** (fuel modification zone consistent with County ordinances); and
- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction).

Impact BIO-57 Project implementation could result in indirect impacts to individuals and suitable habitat for the Reptile – Low Mobility guild (coast horned lizard, coast patch-nosed snake, coastal whiptail, rosy boa, San Bernardino ringneck snake, silvery legless lizard).

Species in this guild generally are vulnerable to short-term construction-related indirect impacts, including noise and vibration, lighting, and increased human activity. These species are also generally vulnerable to long-term indirect effects including noise, lighting, increased human activity, pet, stray, and feral animals and mesopredators, pesticides, altered fire regime, vehicle collisions, and exotic wildlife (especially Argentine ant). However, because the Project Site will be almost entirely bordered by development after build-out, indirect impacts that tend to occur along open space-urban interfaces will be relatively minor, including noise, vibration, lighting, pesticides, and exotic wildlife (primarily Argentine ant). Nonetheless, indirect impacts that can extend into open space at the broader landscape level, including increased human activity, pet, stray and feral animals and mesopredators, altered fire regime, and vehicle collisions, could have a significant indirect impact on the species in this guild. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-72** (installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks);

- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-56** (monitoring and control of invasive, non-native aquatic wildlife species for up to 5 years);
- **MM ES 5.4-49** and **MM ES 5.4-48** (develop an integrated pest management plan that addresses pesticide use and control of pet, stray, and feral cats and dogs in or near open space areas);
- **MM ES 5.4-58** (quarterly monitoring and control measures for Argentine ants for up to 5 years);
- **MM ES 5.4-54** (review of plant palettes and inspection of container plants for use within 200 feet of native vegetation for pests and disease; restrictions on invasive plants and irrigation);
- **MM ES 5.4-60** (downcast lighting design along the boundaries of natural areas);
- **MM ES 5.4-70** (fuel modification zone consistent with County ordinances); and
- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction).

Impact BIO-58 Project implementation could result in indirect impacts to individuals and suitable habitat for the Reptile and Amphibian – Semi-Aquatic guild (arroyo toad, California red-legged frog, western pond turtle, two-striped gartersnake, western spadefoot).

To evaluate indirect impacts, the California red-legged frog and two-striped gartersnake are included because both species have the potential to occur in the Santa Clara River. Species in this guild generally are vulnerable to short-term construction-related indirect impacts, including noise and vibration, lighting, increased human activity, and altered hydrology and water quality. These species are also generally vulnerable to long-term indirect effects including noise; lighting; increased human activity; altered hydrology and water quality; pet, stray, and feral animals and mesopredators; pesticides; altered fire regime; vehicle collisions; exotic wildlife (especially Argentine ant); trash and garbage; and disease (e.g., viruses and Chytridiomycosis cause by the chytrid fungus). For most of the species, short-term construction impacts related to noise and vibration and increased human activity could

occur from disturbances adjacent to the Santa Clara River. For western spadefoot, noise and vibration could affect breeding populations, if present, in the main area of the Project well south of the river. Short-term impacts to hydrology and water quality in the Santa Clara River could occur during construction on the entire site. However, the PACE (2010) study concluded that the Project would not substantially affect the long-term hydrology of the Santa Clara River. Construction-related indirect impacts on the species in this guild would be short term but potentially significant.

There would minor, if any, long-term indirect effects of lighting and noise on these species present in the Santa Clara River. However, indirect impacts that can extend into open space at the broader landscape level, including reduced water quality (including pesticide runoff); increased human activity; pet, stray, and feral animals and mesopredators; altered fire regime; vehicle collisions; and trash and garbage could have a significant indirect impact on the species in this guild.

These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-38** (prevention of mud and pollutants from entering streams and storm flows);
- **MM ES 5.4-72** (installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-56** (monitoring and control of invasive, non-native aquatic wildlife species for up to 5 years);
- **MM ES 5.4-49** and **MM ES 5.4-48** (develop an integrated pest management plan that addresses pesticide use and control of pet, stray, and feral cats and dogs in or near open space areas);

- **MM ES 5.4-58** (quarterly monitoring and control measures for Argentine ants for up to 5 years);
- **MM ES 5.4-54** (review of plant palettes and inspection of container plants for use within 200 feet of native vegetation for pests and disease; restrictions on invasive plants and irrigation);
- **MM ES 5.4-60** (downcast lighting design along the boundaries of natural areas);
- **MM ES 5.4-70** (fuel modification zone consistent with County ordinances); and
- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction).

Impact BIO-59 Project implementation could result in indirect impacts to individuals and suitable habitat for the Bird – Foraging Raptor guild (California condor, ferruginous hawk, golden eagle). (Note that American peregrine falcon and merlin are not included; see Section 6.3.3.)

Species in this guild generally are vulnerable to short-term construction-related indirect impacts, including noise and increased human activity. Long-term indirect effects generally include increased human activity in open space areas, pesticides (particularly rodenticides) that could cause secondary poisoning and reduce prey abundance, and potential harassment and predation by pet, stray, and feral cats and dogs. These short-term and long-term indirect impacts may deter species in this guild from foraging in open spaces in close proximity to urban development. Altered fire regimes may degrade foraging habitat quality by altering vegetation communities and reducing prey (although in some cases foraging habitat quality could be increased). Increased traffic would increase the chance of vehicle collisions. These indirect impacts could have a significant impact on the species in this guild. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);

- **MM ES 5.4-72** (installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-49** (develop an integrated pest management plan that addresses pesticide use);
- **MM ES 5.4-48** (control of pet, stray, and feral cats and dogs in or near open space areas);
- **MM ES 5.4-57** (County Fire Protection District requirements; submittal of fuel modification plan prior to development); and
- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction).

Impact BIO-60 Project implementation could result in indirect impacts to individuals and suitable habitat for the Bird – Nesting/Foraging Raptor guild (Cooper's hawk, western burrowing owl, white-tailed kite, loggerhead shrike) and the Bird – Upland Woodland guild (chipping sparrow, Lawrence's goldfinch, Nuttall's woodpecker, oak titmouse, yellow warbler).

Species in these guilds generally are vulnerable to short-term construction-related indirect impacts, including noise and vibration, lighting, and increased human activity. Long-term indirect effects generally include noise; lighting; increased human activity in open space areas; altered hydrology; pesticides (particularly rodenticides) that could cause secondary poisoning and reduce prey abundance; and potential harassment and predation by pet, stray, and feral cats and dogs, and exotic wildlife (e.g., Argentine ant which may attack young). These short-term and long-term indirect may deter species in these guilds from nesting and foraging in open spaces in close proximity to urban development. Altered fire regimes may degrade nesting and foraging habitat quality by altering vegetation communities and removing or degrading potential nest sites and reducing prey (although in some cases foraging habitat quality could be increased). Altered hydrology (e.g., infiltration, run-off patterns) could degrade potential upland nest trees for Cooper's hawk and white-tailed kite and the species in the Bird – Upland Woodland guild. Increased traffic would increase the chance of vehicle collisions. Trash and garbage could attract

urban-related predators such as common ravens and American crows. These indirect impacts could have a significant impact on the species in these guilds. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-38** (prevention of mud and pollutants from entering streams and storm flows);
- **MM ES 5.4-43** (pre-construction surveys for nesting native bird species and construction setbacks for active nests);
- **MM ES 5.4-44** (pre-construction surveys for western burrowing owl and setbacks if necessary);
- **MM ES 5.4-72** (installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-56** (monitoring and control of invasive, non-native aquatic wildlife species for up to 5 years);
- **MM ES 5.4-49** and **MM ES 5.4-48** (develop an integrated pest management plan that addresses pesticide use and control of pet, stray, and feral cats and dogs in or near open space areas);
- **MM ES 5.4-58** (quarterly monitoring and control measures for Argentine ants for up to 5 years);
- **MM ES 5.4-54** (review of plant palettes and inspection of container plants for use within 200 feet of native vegetation for pests and disease; restrictions on invasive plants and irrigation);
- **MM ES 5.4-60** (downcast lighting design along the boundaries of natural areas);
- **MM ES 5.4-70** (fuel modification zone consistent with County ordinances); and

- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction).

Impact BIO-61 Project implementation could result in indirect impacts to individuals and suitable habitat for the Bird – Upland Grassland/Agriculture guild (California horned lark, grasshopper sparrow) and the Bird – Upland Scrub and Chaparral guild (Allen's hummingbird, Bell's sage sparrow, coastal California gnatcatcher, Costa's hummingbird, southern California rufous-crowned sparrow). (Note that black-chinned sparrow and rufous hummingbird are not included; see Section 6.3.3.)

Species in these guilds generally are vulnerable to short-term construction-related indirect impacts, including noise and vibration, lighting, and increased human activity. Long-term indirect effects generally include noise; lighting; increased human activity in open space areas; pesticides that could cause secondary poisoning and reduce prey abundance; potential harassment and predation by pet, stray, and feral cats and dogs, and exotic wildlife (e.g., Argentine ants which may attack nestlings and brown-headed cowbirds that may parasitize nests); and trash and garbage. These short-term and long-term indirect may deter species in this guild from nesting and foraging in open spaces in close proximity to urban development. Altered fire regimes may degrade nesting and foraging habitat quality by altering vegetation. Increased traffic would increase the chance of vehicle collisions. Trash and garbage could attract urban-related predators such as common ravens and American crows. These indirect impacts could have a significant impact on the species in these guilds. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-43** (pre-construction surveys for nesting native bird species and construction setbacks for active nests);
- **MM ES 5.4-72** (installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-49** (develop an Integrated Pest Management plan that addresses pesticide use);

- **MM ES 5.4-48** (control of pet, stray, and feral cats and dogs in or near open space areas);
- **MM ES 5.4-58** (quarterly monitoring and control measures for Argentine ants for up to 5 years);
- **MM ES 5.4-54** (review of plant palettes and inspection of container plants for use within 200 feet of native vegetation for pests and disease; restrictions on invasive plants and irrigation);
- **MM ES 5.4-60** (downcast lighting design along the boundaries of natural areas);
- **MM ES 5.4-70** (fuel modification zone consistent with County ordinances); and
- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction).

Impact BIO-62 Project implementation could result in indirect impacts to individuals and suitable habitat for the Bat guild (fringed myotis, hoary bat, long-legged myotis, pallid bat, pocketed free-tailed bat, silver-haired bat, Townsend's big-eared bat, western mastiff bat, western long-eared myotis, western red bat, western small-footed bat, Yuma myotis).

Species in this guild that may roost on the Project Site generally are vulnerable to short-term construction-related indirect impacts, including noise and vibration, lighting, and increased human activity. Long-term indirect effects generally include noise, lighting, increased human activity in open space areas, altered hydrology, pesticides that could cause secondary poisoning and reduce prey abundance, and potential harassment and predation by pet, stray, and feral cats and dogs. Species roosting in the Project vicinity (e.g., in the Santa Clara River) would be most vulnerable to these impacts. These short-term and long-term indirect may deter species in this guild from roosting or foraging in open spaces in close proximity to urban development. Altered fire regimes may degrade roosting and foraging habitat quality by altering vegetation and removing or degrading roost sites. Altered hydrology could affect prey availability and degrade trees that serve as roost sites. These indirect impacts could have a significant impact on the species in this guild. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-38** (prevention of mud and pollutants from entering streams and storm flows);
- **MM ES 5.4-47** (pre-construction surveys for active roosts of special-status bats);
- **MM ES 5.4-72** (installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-49** (develop an Integrated Pest Management plan that addresses pesticide use);
- **MM ES 5.4-48** (control of pet, stray, and feral cats and dogs in or near open space areas);
- **MM ES 5.4-54** (review of plant palettes and inspection of container plants for use within 200 feet of native vegetation for pests and disease; restrictions on invasive plants and irrigation);
- **MM ES 5.4-60** (downcast lighting design along the boundaries of natural areas);
- **MM ES 5.4-70** (fuel modification zone consistent with County ordinances); and
- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction).

Impact BIO-63 Project implementation could result in indirect impacts to individuals and suitable habitat for the Mammal – Low Mobility guild (San Diego desert woodrat) and the Mammal – Moderate Mobility guild (American badger, San Diego black-tailed jackrabbit).

Species in this guild generally are vulnerable to short-term construction-related indirect impacts, including noise and vibration, lighting, and increased

human activity. Long-term indirect effects generally include noise, lighting, increased human activity in open space areas, pesticides that could cause secondary poisoning and reduce prey abundance, and potential harassment and predation by pet, stray, and feral cats and dogs. These short-term and long-term indirect impacts may deter species in this guild from using open spaces in close proximity to urban development. Altered fire regimes may degrade habitat quality by altering vegetation composition and structure. Increased traffic may increase the chance of vehicle collisions. These indirect impacts could have a significant impact on the species in this guild. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-36** (pre-construction surveys for American badger and setbacks from occupied dens);
- **MM ES 5.4-72** (installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-49** (develop an Integrated Pest Management plan that addresses pesticide use);
- **MM ES 5.4-48** (control of pet, stray, and feral cats and dogs in or near open space areas);
- **MM ES 5.4-54** (review of plant palettes and inspection of container plants for use within 200 feet of native vegetation for pests and disease; restrictions on invasive plants and irrigation);
- **MM ES 5.4-60** (downcast lighting design along the boundaries of natural areas);
- **MM ES 5.4-70** (fuel modification zone consistent with County ordinances); and
- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction).

Impact BIO-64 Project implementation could result in indirect impacts to individuals and suitable habitat for the Mammal – High Mobility guild (mountain lion). (Note that mule deer is not included; see Section 6.3.3.)

Mountain lions may be vulnerable to short-term construction-related indirect impacts, including noise and vibration, lighting, and increased human activity. Long-term indirect effects generally include noise, lighting, increased human activity in open space areas, and potential harassment, and predation by pet, stray, and feral dogs. These short-term and long-term indirect impacts may deter this species from using open space in close proximity to urban development. Altered fire regimes may degrade habitat quality by altering vegetation composition and structure. Increased traffic may increase the chance of vehicle collisions. These indirect impacts could have a significant impact on the mountain lion. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-61** (preservation of 25.2 acres of undifferentiated chaparral within the Salt Creek area within lands owned by the Applicant);
- **MM ES 5.4-62** (preservation of 67.7 acres of California annual grassland, agriculture, and/or disturbed land on site, within the High Country SMA/SEA and other open space within lands owned by the Applicant);
- **MM ES 5.4-46** (pre-construction surveys for mountain lion natal dens within 2,000 feet of Project disturbance boundaries);
- **MM ES 5.4-72** (installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-48** (control of pet, stray, and feral dogs in or near open space areas);
- **MM ES 5.4-60** (downcast lighting design along the boundaries of natural areas);
- **MM ES 5.4-70** (fuel modification zone consistent with County ordinances); and

- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction).

Impact BIO-65 Project implementation could result in indirect impacts to individuals and suitable habitat for the Aquatic/Riparian guild (fish, riparian birds) (Note that southern steelhead is not included; see Indirect Impacts to Other Special-Status Species That Would Be Less Than Significant below).

Several special-status fish and riparian birds occur off site in the Santa Clara River. These species could be indirectly affected in the short term during construction and in the long term by development. Altered hydrology and water quality are the main potential indirect impacts during construction. Altered hydrology and water quality (including pesticide runoff), altered fire regime (which may directly remove riparian and wetland vegetation), exotic wildlife (e.g., brown-headed cowbird), and trash and garbage from recreation activities are potential long-term indirect impacts. Altered hydrology and vegetation could also affect water temperature and water chemistry, which may affect habitat suitability for the fish. These indirect impacts could have a significant impact on this guild. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-38** (prevention of mud and pollutants from entering streams and storm flows);
- **MM ES 5.4-43** (pre-construction surveys for nesting native bird species and construction setbacks for active nests);
- **MM ES 5.4-72** (installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-49** and **MM ES 5.4-48** (develop an integrated pest management plan that addresses pesticide use and control of pet, stray, and feral cats and dogs in or near open space areas);
- **MM ES 5.4-53** (dust control measures);
- **MM ES 5.4-70** (fuel modification zone consistent with County ordinances);
- **MM ES 5.4-71** (wildfire fuel modification plan requirements during construction); and

- **MM ES 5.4-55** (cowbird monitoring and trapping program).

The Project would result in two types of indirect impacts to special-status wildlife species in the Insect, Mollusk, Reptile – Low Mobility, Reptile and Amphibian – Semi-Aquatic, Bird – Foraging Raptor, Bird – Nesting/Foraging Raptor, Bird – Upland Grassland/Agriculture, Bird – Upland Woodland, Bat, Mammal – Low Mobility, Mammal – Moderate Mobility, Mammal – High Mobility, and Aquatic/Riparian guilds: (1) short-term construction-related impacts and (2) long-term, development-related indirect impacts.

As discussed above, short-term construction-related indirect impacts include noise and vibration, lighting, increased human activity, hydrologic and water quality, and trash and garbage that attracts predators and mesopredators. These impacts may potentially affect all guilds occurring in the Project area. Fugitive dust may affect habitat for Insect (San Emigdio blue butterfly) and for the Aquatic/Riparian guild (particularly fish).

Various measures requiring pre-construction surveys for special-status species will provide pre-Project information to identify potential indirect impacts to various species. All San Emigdio blue butterfly habitat will be flagged prior to construction per MM BIO-67, and the boundaries of the habitat will be identified to construction personnel to prevent the inadvertent construction related loss of quail brush or other host plants associated with the habitat. Pre-construction surveys for active bird nests will be conducted per MM ES 5.4-43 and work within up to 500 feet of any active nest will be postponed until young have fledged; ES 5.4-43 will provide protection from construction-related indirect impacts to species in the Bird – Nesting/Foraging Raptor, Bird – Upland Grassland/Agriculture, Bird – Upland Scrub and Chaparral, Bird – Upland Woodland, and Aquatic/Riparian guilds. MM ES 5.4-44 provides similar protection specifically for western burrowing owls. For Bat guild species, pre-construction surveys for active roosts will be conducted per MM ES 5.4-47 and, if an active maternity roost is found, all work within 300 feet of the roost will be postponed until the roost is vacated and juveniles have fledged. Pre-construction surveys for American badger will be conducted per MM ES 5.4-36, and construction within 200 feet of any maternity den will be postponed during the pup-rearing season (February 15 through July 1) until the den is vacated. A 50-foot avoidance area will be established around other occupied non-maternity dens. For mountain lions, pre-construction surveys per MM ES 5.4-46 will be conducted in all areas within 2,000 feet of disturbance activities for natal dens 30 days prior to construction activities. If any mountain lion natal dens are found, a qualified biologist will determine an appropriate setback, and no construction will take place within the designated setback until the cubs have been successfully reared and the cats have left the area.

Several other measures will provide mitigation for specific short-term indirect impacts. MM ES 5.4-40 provides for pre-construction educational meetings, construction-limit staking, and

biological monitoring during vegetation clearing and grading activities. Under MM ES 5.4-40 all construction/contractor personnel will complete a WEAP to ensure compliance with environmental/permit regulations and mitigation measures. Construction-limits staking and biological monitoring will prevent inadvertent impacts on species of all guilds and their habitat. MM ES 5.4-24 requires that construction plans shall include necessary design features and construction notes to ensure protection of vegetation communities and special-status plant and aquatic wildlife species adjacent to construction. In addition to erosion control and dust control, the Project SWPPP shall include BMPs to minimize indirect impacts. These requirements will ensure protection of adjacent habitats and wildlife species during construction. MM ES 5.4-53 requires implementation and maintenance of dust control measures to prevent dust from impacting vegetation communities and special-status plant and aquatic wildlife species. Where determined necessary by a qualified biologist, a screening fence will be installed to protect special-status species locations. MM ES 5.4-38 ensures that water containing mud, silt, or other pollutants from construction activities will not be allowed to enter a flowing stream or be placed in locations that may be subject to normal storm flows during periods when storm flows can reasonably be expected to occur. Finally, MM ES 5.4-71 requires several fire prevention measures during the construction period, including a fire watch during welding operations; spark arresters on all equipment or vehicles operating in a high fire hazard area; designated smoking and non-smoking areas; and water availability pursuant to the County Fire Department requirements.

Long-term development-related indirect impacts to special-status wildlife, as discussed above, include noise, lighting, increased predation or harassment by pet, stray, and feral cats and dogs as well as other mesopredators, invasion by exotic wildlife species, pesticide use, altered fire regimes, and increased road kill. The Applicant will implement measures that require preservation, enhancement and restoration, and management. MM ES 5.4-61 and MM ES 5.4-62 will result in protection and management of California annual grassland, agriculture, and disturbed land on lands owned by the Applicant. Management of this area will, in part, mitigate long-term indirect impacts to species in the Reptile – Low Mobility, Reptile and Amphibian – Semi-Aquatic, Bird – Nesting/Foraging Raptor, Bat, Mammal – Low Mobility, Mammal – Moderate Mobility, Mammal – High Mobility, and Aquatic/Riparian guilds in the Project vicinity, on site within Entrada South, and within the High Country SMA/SEA, Salt Creek area, and other open space within lands owned by the Applicant. In addition, other measures will mitigate specific indirect impacts to wildlife species. MM ES 5.4-60 will ensure that all lighting along the perimeter of natural areas will be downcast luminaries with light patterns directed away from natural areas. MM ES 5.4-49 requires implementation of the Integrated Pest Management Plan that will ensure that pesticide and rodenticide use application methods avoid and minimize adverse effects on the natural environment. Trash and garbage will be controlled in areas adjacent to development through implementation of MM ES 5.4-72, which requires

installation of waste and recycling receptacles that discourage wildlife foraging in common areas/parks. MM ES 5.4-70 will ensure that the wildfire fuel modification plan will be consistent with the County fuel modification ordinance requirements and will include tree pruning, removal of dead plant material, and weed and grass cutting.

Several other mitigation measures will result in control of exotic wildlife and plant species and thus benefit wildlife species that persist in open space adjacent to development. These include MM ES 5.4-56 (monitoring and control of invasive, non-native aquatic wildlife species for up to 5 years), MM ES 5.4-9 and MM ES 5.4-10 (control invasive exotic plant species), MM ES 5.4-48 (control of pet, stray, and feral cats and dogs in or near open space areas), MM ES 5.4-58 (quarterly monitoring and control measures for Argentine ants for up to 5 years), MM ES 5.4-54 (review of plant palettes and inspection of container plants for use within 200 feet of native vegetation for pests and disease; restrictions on invasive plants and irrigation), and MM ES 5.4-55 (cowbird monitoring and trapping program).

Based on the foregoing analysis, this BTR finds that the Project could cause significant indirect impacts to wildlife guilds, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for this impact.

Indirect Impacts to Other Special-Status Species That Would Be Less Than Significant – Southern Steelhead

Indirect impacts to southern steelhead would be less than significant. This section summarizes potential indirect impacts to southern steelhead. The full analysis is provided in Appendix E to this BTR. As described in Section 4.2.4, southern steelhead are not expected to occur in the Project area. There is no historical record of steelhead use of the Santa Clara River or tributaries upstream of Piru Creek and the "Dry Gap" (discussed below); however, southern steelhead is known to occur in the lower Santa Clara River and some tributaries (Titus et al. 2010; Stoeker and Kelly 2005). Adult steelhead have been observed in the lower Santa Clara River and a subset of Ventura County tributaries in February, March, and early April (Corps and CDFG 2010). Downstream migration of juveniles usually occurs between March and June (Shapovalov and Taft 1954). In southern California, steelhead typically migrate to the ocean as 1- or 2-year olds (Corps and CDFG 2010). Out-migrating steelhead in the Santa Clara River have been observed from January through early June, but the majority of steelhead smolt emigrate during the period from March through early May, and the timing of migration strongly depends on stream flows (ENTRIX 2000).

A recognized, natural barrier to fish migration within the Santa Clara River, referred to as the "Dry Gap," exists downstream of the Entrada South Project and upstream of the Piru Creek confluence. The Dry Gap is an ephemeral reach of the river that consists of an area downstream of the Los Angeles County/Ventura County line where surface flows in the river are lost to the Piru groundwater basin, eliminating the possibility of upstream fish migration. However, surface runoff during major storm events, which would include future discharges from the Entrada South Project, provides temporary surface water connections that through the Dry Gapperiodically allow flows to directly reach downstream occupied southern steelhead habitat. Therefore, there is a potential for constituents of the runoff to affect downstream aquatic habitat occupied by the steelhead.

Short-term construction-related effects include hydrologic and water quality effects, such as sedimentation and increased turbidity, temperature changes, and pollutants (e.g., petroleum products). It is unlikely that these short-term impacts could affect southern steelhead in the Santa Clara River in downstream populations. Most construction on the Project Site is not within the Santa Clara River stream area, even in heavy flow conditions, and in any event is likely to occur during periods when the surface flow is underground in the Dry Gap. During storm flows, sedimentation and turbidity effects likely would be a minor contribution to temporary high-volume flows. In addition, the recommended mitigation measures to protect water quality during construction, including MM ES 5.4-38 (prevention of mud and pollutants from entering streams and storm flows), would further reduce any downstream effects related to sedimentation, increased turbidity, and temperature changes.

Potential long-term indirect impacts from the Project that could indirectly affect downstream habitat for southern steelhead include physical changes in the river and increased discharges that could alter base flows; timing and duration of flood flows; biochemistry; condition and composition of the substrate and aquatic and riparian vegetation (including exotic species); and water temperatures, as well as increased pollutants from irrigation runoff and increased runoff from roadways.

With regard to physical changes, the River and Tributaries Drainage Analysis (PACE 2010) found that there would be no significant impacts to water flows, velocities, depth, sedimentation, or floodplain and channel conditions downstream of the RMDP Project area over the long term as a result of the proposed RMDP improvements. Therefore, channel morphology and substrate composition conditions downstream that support steelhead migration in Ventura County will not be affected. These hydrologic effects were also found to be insufficient to alter the amount, location, and nature of aquatic and riparian habitats within the RMDP area and downstream into Ventura County. The PACE (2010) study determined that the river would still retain sufficient width to allow natural fluvial processes to continue. As a

result, the mosaic of habitats in downstream portions of the river that support the southern steelhead would not be substantially affected.

As indicated in Section 4.2.4, southern steelhead are not expected to occur in the Project area because (1) the Project site does not support suitable spawning substrate and cool water temperatures required for spawning and (2) the Project is upstream from the "Dry Gap," an area in which the Santa Clara River, except in very high flow periods, does not flow on the surface, eliminating the possibility of fish migration upstream through the area. However, southern steelhead are known to occur in the lower Santa Clara River and a subset of Ventura County tributaries. An increase in the in-stream dissolved copper concentration in the Santa Clara River where and when steelhead smolts (juveniles) are present may have a deleterious effect on the smolts. A National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum (NOAA Memo) states that salmonid behavior, specifically predator avoidance, can be disrupted at concentrations of dissolved copper that are at or slightly above ambient background concentrations (i.e., those levels existing prior to Project development). Because southern steelhead are not expected to occur in the Project area, impacts associated with in-stream dissolved copper concentration in the Santa Clara River are addressed in Section 7.0, Cumulative Impacts.

Taking these factors into account, the Project's discharges are not expected to significantly impact juvenile steelhead downstream of the Project.

5.6 Impacts to Jurisdictional Waters

Impact BIO-66 Project implementation would result in direct impacts to waters (including wetlands) regulated by the Corps, jurisdictional streams regulated by CDFW, and waters of the state regulated by the Los Angeles RWQCB.

The jurisdictional waters present on the site are shown in Table 10. The Project would not directly impact the Santa Clara River itself. Impacts would occur within Magic Mountain Canyon and within three additional unnamed creeks that run roughly north–south through the site east of Magic Mountain Canyon. Impacts to jurisdictional waters (including wetlands) would be as follows:

- Permanent direct impacts to 6.55 acres and temporary direct impacts to 0.01 acre of waters of the United States and waters of the State (out of 6.77 acres) including:
  - Permanent impacts to 6.12 acres of non-wetland waters
  - Temporary impacts to 0.01 acre of non-wetlands waters

  - Permanent impacts to 0.43 acre of wetland waters; and
- Permanent direct impacts to 14.77 acres and temporary direct impacts to 0.04 acre of CDFW-jurisdictional streambeds (out of 15.37 acres). The CDFW-jurisdictional streambeds are inclusive of the waters of the United States and waters of the State.

These impacts to federal and state jurisdictional waters (and wetlands) would be significant. These impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-38** (prevention of mud and pollutants from entering streams and storm flows);
- **MM ES 5.4-1** (development of a conceptual wetlands mitigation plan);
- **MM ES 5.4-2** through **MM ES 5.4-14** (wetlands mitigation plan and riparian restoration activities on the Project Site); and
- **MM ES 5.4-67** (marking and inspection of grading perimeters; avoiding inadvertent impacts to riparian resources in the Santa Clara River SMA/SEA).

The primary mechanism for mitigating the permanent loss of jurisdictional waters (including wetlands) is implementing mitigation measures designed to replace the habitat functions and services/values of jurisdictional waters (including wetlands) that were lost through construction and the dedication and maintenance of existing natural lands in the Santa Clara River SMA/SEA. These mitigation measures would off-set the direct removal of riparian vegetation communities in the Project area.

Mitigation measures have been designed to limit the amount of particulate matter (dust) that leaves the construction area control dust and include actions such as daily watering of disturbed areas and the use of chemical tackifiers. The Applicant will use BMPs to reduce the off-site transport of sediment or sediment-laden water during storm events, including per MM ES 5.4-38 (prevention of mud and pollutants from entering streams and storm flows).

In order to reduce direct impacts to this vegetation community due to the removal of vegetation, the Project Applicant will implement a set of mitigation measures designed to restore the functions and services/values provided by riparian vegetation communities lost as a result of development. These impacts would be reduced through the implementation of MM ES 5.4-1 (development of a conceptual wetlands mitigation plan) and MM ES 5.4-2 through MM ES 5.4-14 (wetlands mitigation plan and riparian restoration activities on the Project Site). The permanent removal of existing habitats in Corps and/or CDFW-jurisdictional areas shall be

replaced by creating habitats of similar functions and values/services (see MM ES 5.4-4) on the Project Site or within lands owned by the Applicant, or as allowed under MM ES 5.4-10.

The Applicant will also provide buffers around waters and wetlands to minimize disturbance. Qualified biologist will monitor the construction perimeter to limit the potential for the contractor to disturb vegetation outside the proposed construction footprint. To further reduce the impacts of the Project from accidental clearing or trampling of vegetation the Project Applicant will implement MM ES 5.4-67 (marking and inspection of grading perimeters; avoiding inadvertent impacts to riparian resources in the Santa Clara River SMA/SEA).

Based on the foregoing analysis, this BTR finds that the Project could cause significant direct impacts to waters (including wetlands) regulated by the Corps, jurisdictional streams regulated by CDFW, and waters of the state regulated by the Los Angeles RWQCB, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein.

Impact BIO-67 Project implementation could result in indirect impacts to waters (including wetlands) regulated by the Corps, jurisdictional streams regulated by CDFW, and waters of the state regulated by the Los Angeles RWQCB.

The proposed Project could indirectly impact jurisdictional areas as through altered hydrology and water quality (including pesticide runoff), invasive plant species, altered fire regime (which may directly remove riparian and wetland vegetation), and increased trash and debris. This impact could be significant. These potential impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-38** (prevention of mud and pollutants from entering streams and storm flows);
- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-9** and MM **ES 5.4-10** (control invasive exotic plant species);
- **MM ES 5.4-49** (Integrated Pest Management Plan);
- **MM ES 5.4-24** (project design features, construction notes, erosion and dust control, and SWPPP BMPs to ensure protection of vegetation communities and special-status species); and

- **MM ES 5.4-67** (marking and inspection of grading perimeters; avoiding inadvertent impacts to riparian resources in the Santa Clara River SMA/SEA).

In order to reduce short-term and long-term indirect impacts to riparian plant communities resulting from the implementation of the Project, the Project Applicant will implement a set of mitigation measures designed to reduce or minimize the effects of the Project on these resources.

Mitigation measures have been designed to limit the amount of particulate matter (dust) that leaves the construction area control dust and include actions such as daily watering of disturbed areas and the use of chemical tackifiers. BMPs would also be employed to reduce the off-site transport of sediment or sediment-laden water during storm events. The applicable mitigation measures to reduce impacts from fugitive dust, runoff, erosion, sedimentation, and chemical pollutants include MM ES 5.4-67 (marking and inspection of grading perimeters; avoiding inadvertent impacts to riparian resources in the Santa Clara River SMA/SEA), MM ES 5.4-38 (prevention of mud and pollutants from entering streams and storm flows), MM ES 5.4-40 (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities), and MM ES 5.4-24 (project design features, construction notes, erosion and dust control, and SWPPP BMPs to ensure protection of vegetation communities and special-status species).

The effects of invasive plants on natural communities are well documented. Invasive plants interfere in ecosystem functions by out-competing and displacing native plants and in some cases by hybridizing with native species (Bossard et al. 2000). Urbanization can adversely affect native vegetation communities by increasing the potential spread of exotics from landscaping or the release of seed packets into adjoining habitat by homeowners. Mitigation measures to address these impacts include MM ES 5.4-9 and MM ES 5.4-10 (control invasive exotic plant species) and MM ES 5.4-49 (Integrated Pest Management Plan).

Short-term impacts resulting from accidental clearing, grading, and trampling would be minimized through the use of clearly identified construction areas and full-time biological monitoring to reduce the potential for equipment to stray into adjacent vegetation. The applicable mitigation measures to reduce impacts from trampling and clearing of vegetation outside of the construction zone include MM ES 5.4-40 (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities), MM ES 5.4-24 (project design features, construction notes, erosion and dust control, and SWPPP BMPs to ensure protection of vegetation communities and special-status species), and MM ES 5.4-67 (marking and inspection of grading perimeters; avoiding inadvertent impacts to riparian resources in the Santa Clara River SMA/SEA).

Based on the foregoing analysis, this BTR finds that the project could cause significant indirect impacts to waters (including wetlands) regulated by the Corps, jurisdictional streams regulated by CDFW, and waters of the state regulated by the Los Angeles RWQCB, but that such impacts can be reduced to less than significant with application of the mitigation measures recommended herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for this impact.

5.7 Impacts to Wildlife Corridors and Habitat Connectivity

As described in Section 4.4 of this BTR, the RMDP/SCP EIS/EIR identified Magic Mountain Canyon as one of several "tributary corridors" that connect undeveloped uplands with the Santa Clara River, which is a critical regional wildlife corridor and habitat linkage (Figure 11). However, the Project Site generally has limited value as habitat linkage or wildlife corridor because of existing development on three sides of the site, including residential and golf course development to the south, The Old Road, Interstate 5 and the City of Santa Clarita immediately to the east, and the Six Flags Magic Mountain theme park immediately to the north. Residential development is also planned and approved for the Mission Village Project on the west side of Entrada South, resulting in a constrained wildlife corridor that will have limited future value.

Loss of this north–south wildlife corridor between the Santa Susanna Mountains and the Santa Clara River will not substantially affect regional wildlife movement. The SCMLP (Penrod et al. 2006) did not identify the Project Site and immediate vicinity as important for regional wildlife connectivity (Penrod et al. 2006). As shown in Figure 6, the nearest conceptual regional linkage to the west encompasses the High Country SMA/SEA and the Salt Creek area within the Newhall Ranch Specific Plan area, which connects to the Santa Clara River.

In addition, while the vast majority of the site will be developed, there will be some connectivity between the site and nearby open space areas. Specifically, the approximately 175-foot-wide utility easement corridor easement along the southern boundary of the Project Site will provide a habitat connection between the spineflower preserve to the planned Legacy Village open space area, ultimately connecting to the Newhall Ranch open space areas and the Santa Clara River corridor. Species that are somewhat "urban-tolerant" may continue to use this linkage (e.g., coyote).

Finally, the proposed Project will not disrupt connectivity between "Important Habitat Areas" that are depicted in the SCLMP, but which are not included in the regional linkage design; i.e., Important Habitat Areas would not be isolated by the proposed Project. As shown on Figure 6, South Coast Wildlands Open Space Connectivity and Linkage, there is an Important Habitat Area south of the Project Site. However, this Important Habitat Area now supports the existing Westridge residential development and golf course and not longer serves as wildlife habitat.

For these reasons, the impact of the Project wildlife corridors and linkages would not be substantial and therefore would be less than significant.

5.8 Impacts to Regional Resource Planning

Four regional resource planning efforts or projects were discussed in Section 1.1:

- Newhall Ranch Specific Plan Program EIR (March 1999), with Revised Additional Analysis (May 2003)
- RMDP/SCP EIS/EIR
- NRMP
- Santa Clarita Valley Area Plan OVOV.

In addition, there are two private planning efforts that are relevant to the Project:

- SCMLP (Penrod et al. 2006)
- Save Open Space and Agricultural Resources (SOAR).

The most relevant planning efforts or projects are the Newhall Ranch Specific Plan EIR and RMDP/SCP EIS/EIR and OVOV

The Specific Plan EIR and RMDP/SCP EIS/EIR address development projects located on Newhall lands immediately west of the Entrada South Project Site. The RMDP/SCP included the Entrada South Project, as well as the VCC Project, in the SCP component of the plan. All three planning efforts – the Specific Plan, the RMDP/SCP, and the Entrada South Project – are interrelated and coordinated. The RMDP/SCP incorporates the Specific Plan EIR because they have essentially the same planning area boundary. The Entrada South Project incorporates the RMDP/SCP because they share the SCP planning area boundary. The RMDP/SCP included the Entrada planning area as an "indirect effect" (i.e., assumed permanent impacts to biological resources resulting from the RMDP/SCP) and therefore provided an analysis of the biological effects of the Entrada South Project in the larger context of the RMDP/SCP. The RMDP/SCP also identified mitigation measures that apply to impacts on the Entrada South Project Site.

For these reasons, the Entrada South Project, as analyzed in this BTR, is consistent with the RMDP/SCP and would not affect implementation of the RMDP/SCP. Likewise, the RMDP/SCP was developed and analyzed in the context of and coordination with the Newhall Ranch Specific Plan; therefore, the Entrada South Project is consistent with the Specific Plan and would not affect implementation of the Specific Plan. The Entrada South Project would not have significant impacts on RMDP/SCP and Specific Plan.

According to OVOV, the land use policy for the Entrada South Project Site is H-5 residential (0–5 dwelling units per acre (du/ac)) for the majority of the site and CM (General Commercial) for the northwestern portion of the site adjacent to Six Flags Magic Mountain theme park (County of Los Angeles 2012). Likewise, zoning for the site is R-1 (single-family residence) for the majority of the site and C-R (commercial recreation) for the northwestern portion of the site. The proposed residential and commercial uses for the Project Site therefore are consistent with OVOV, and the Entrada South Project would not have significant impacts with respect to OVOV goals and policies.

Both the SCMLP (Penrod et al. 2006) and SOAR are non-governmental planning initiatives. The SCMLP identified conceptual regional wildlife connections to help focus regional planning efforts. As discussed in Section 5.5, the Project would not directly affect any regional corridors identified by Penrod et al. (2006). SOAR is a non-profit organization which seeks to maintain agricultural, open space, and rural lands within Ventura County and surrounding regions. Development activities within the SOAR boundaries are limited by county ordinance. Although SOAR provides a regional context that was incorporated into the SCMLP, it would not be affected by the Entrada South Project. The Entrada South Project would not have significant impacts on SCMLP or SOAR planning efforts.

The NRMP was approved in 1998 (Corps and CDFG 1998) and includes the reach of the Santa Clara River south of the Project Site downstream to the confluence with Castaic Creek, where it overlaps with the RMDP. The purpose of the NRMP is to protect resources in the Santa Clara River. No direct impacts to the NRMP would be occur, but potential indirect effects that could occur include hydrological and water quality impacts. As described in Section 5.4.2, PACE (2010) concluded that there would be no significant impacts to water flows, velocities, depth, sedimentation, or floodplain and channel conditions downstream of the Project area over the long term as a result of the proposed associated with the RMDP. With regard to water quality, runoff from the site may have adverse effects in the NRMP area.

Impact BIO-68 Project implementation could result in adverse impacts to water quality in the Santa Clara River protected under the NRMP.

The proposed Project could impair water quality in the Santa Clara River as a result of increased stormwater and urban runoff. This impact could be significant. These potential impacts would be reduced to less than significant by the following proposed mitigation measures:

- **MM ES 5.4-38** (prevention of mud and pollutants from entering streams and storm flows);

- **MM ES 5.4-40** (pre-construction educational meetings, construction-limit staking, and biological monitoring during vegetation clearing and grading activities);
- **MM ES 5.4-49** (Integrated Pest Management plan);
- **MM ES 5.4-24** (project design features, construction notes, erosion and dust control, and SWPPP BMPs to ensure protection of vegetation communities and special-status species); and
- **MM ES 5.4-67** (marking and inspection of grading perimeters; avoiding inadvertent impacts to riparian resources in the Santa Clara River SMA/SEA).

The proposed Project could result in both short-term and long-term indirect impacts to water quality in the NRMP portion of the Santa Clara River**.** The Project Applicant will implement a set of mitigation measures designed to reduce or minimize the potential indirect effects of the Project on NRMP.

During construction, MM ES 5.4-38 (prevention of mud and pollutants from entering streams and storm flows and MM ES 5.4-24 (project design features, construction notes, erosion and dust control, and SWPPP BMPs to ensure protection of vegetation communities and special-status species) will be implemented to prevent degradation of water quality in the Santa Clara River. BMPs will be employed to reduce the off-site transport of sediment or sediment-laden water during storm events. In addition, MM ES 5.4-40 (pre-construction educational meetings, WEAP requirements, construction-limit staking, and biological monitoring during vegetation clearing and grading activities) and MM ES 5.4-67 (marking and inspection of grading perimeters; avoiding inadvertent impacts to riparian resources in the Santa Clara River SMA/SEA) will reduce the chance of fugitive dust, runoff, erosion, sedimentation, and chemical pollutants entering the River.

Over the long term, MM ES 5.4-49 (Integrated Pest Management Plan) will reduce the chance of pesticides entering the Santa Clara River by requiring use and application methods that avoid and minimize adverse environmental effects.

Based on the foregoing analysis, this BTR finds that the Project could cause significant direct impacts to the NRMP portion of the Santa Clara River, but that such impacts would be reduced to less than significant with application of the mitigation measures proposed herein. This finding is consistent with the significance determination and mitigation findings of the RMDP/SCP EIS/EIR for this impact.

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6 PROJECT MITIGATION MEASURES

In 2010, CDFG[13] adopted the mitigation measures set forth below to minimize impacts to biological resources in connection with its adoption of the Newhall Ranch RMDP/SCP EIS/EIR. The County has reviewed those mitigation measures and will be adopting them separately as County mitigation measures specific to the Entrada South Project (the mitigation measures from the RMDP/SCP EIS/EIR that have been determined not to be applicable to the Entrada South Project are provided in Appendix F to this BTR). This gives the County the option to implement these mitigation measures in concert with or independently of the RMDP/SCP. Both the Entrada South (ES) numbering and the RMDP/SCP numbering are provided in this section; however, for ease of reference, only the Entrada South numbering (e.g., MM ES 5.4-1) will be used in cross-references in the text of this BTR. Additionally, where appropriate, cross-references to Project-specific (ES) mitigation measures have been added within the text of the mitigation measures below. The italicized text provided in the parentheticals below summarizes the applicability to the Project of each RMDP/SCP EIS/EIR mitigation measure.

MM ES 5.4-1/RMDP/SCP BIO-1: Mitigation Measures SP-4.6-1 through SP-4.6-16[14] specify requirements for riparian mitigation conducted in the High Country SMA, Salt Creek area, and Open Area. The RMDP includes requirements for mitigation of both riparian and upland habitats (such as riparian adjacent big sagebrush scrub), and incorporates these Mitigation Measures (SP-4.6-1 through SP-4.6-16). A Comprehensive Mitigation Implementation Plan (CMIP) has been developed by Newhall Land that provides an outline of mitigation to offset impacts described in the RMDP. The CMIP demonstrates the feasibility of creating the required mitigation acreage from RMDP project impacts (see MM ES 5.4-2/RMDP/SCP BIO-2). However, the CMIP does not identify mitigation actions specifically for impacts to waters of the United States. But since these waters are a subset of CDFG jurisdiction, the necessary Corps mitigation requirements would be met or exceeded.[15]

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[13] In 2013, the California Department of Fish and Game (CDFG) became the California Department of Fish and Wildlife (CDFW). However, because the RMDP/SCP mitigation measures were approved prior to the Department's name change, the Department will be referred to as "CDFG." The new, Entrada South-specific mitigation measures will refer to the Department as "CDFW" when references are to guidance after January 1, 2013.

[14] SP-4.6 mitigation measures were previously adopted by the Newhall Ranch Specific Plan Program EIR (1999, 2003) and the EIS/EIR for the RMDP/SCP (2010).

[15] For detailed information concerning the Corps compensatory mitigation program for impacts to waters of the United States, please reference Appendix 11.0 of the Section 404(b)1 Alternatives Analysis, included in Appendix F1.0 of the Final EIS/EIR.

Detailed riparian/wetland mitigation plans, in accordance with the CMIP, shall be submitted to, and are subject to the approval of, the Corps and CDFG as part of the subnotification letters for individual projects. Individual project submittals shall include applicable CMIP elements, complying with the requirements outlined below. The detailed wetlands mitigation plan shall specify, at a minimum, the following: (1) the location of mitigation sites; (2) site preparation, including grading, soils preparation, irrigation installation, (2a) the quantity (seed or nursery stock) and species of plants to be planted (all species to be native to region); (3) detailed procedures for creating additional vegetation communities; (4) methods for the removal of non-native plants; (5) a schedule and action plan to maintain and monitor the enhancement/restoration area; (6) a list of criteria by which to measure success of the mitigation sites (e.g., percent cover and richness of native species, percent survivorship, establishment of self-sustaining native of plantings, maximum allowable percent of non-native species); (7) measures to exclude unauthorized entry into the creation/enhancement areas; and (8) contingency measures in the event that mitigation efforts are not successful. The detailed wetlands mitigation plans shall also classify the biological value (as "high," "moderate," or "low") of the vegetation communities to be disturbed as defined in these conditions, or may be based on an agency-approved method (e.g., Hybrid Assessment of Riparian Communities (HARC)). The biological value shall be used to determine mitigation replacement ratios required under MM ES 5.4-2/RMDP/SCP BIO-2 and MM ES 5.4-10/RMDP/SCP BIO-10. The detailed wetlands mitigation plans shall provide for the 3:1 replacement of any southern California black walnut to be removed from the riparian corridor for individual projects. The plan shall be subject to the approval of CDFG and the Corps and approved prior to the impact to riparian resources. MM ES 5.4-4/RMDP/SCP BIO-4 describes that the functions and values will be assessed for the riparian areas that will be removed, and MM ES 5.4-2/RMDP/SCP BIO-2 and MM ES 5.4-10/RMDP/SCP BIO-10 describe the replacement ratios for the habitats that will be impacted. (*This measure applies to Entrada South with the following exceptions and/or changes: Subnotifications apply only to those portions of Entrada South covered in the RMDP and its associated permits. For those portions of Entrada South that were not covered in the RMDP, the Applicant shall obtain separate jurisdictional impact permits. Once such permits are obtained, the Applicant may use the permits, subnotification letters, or a combination of both to provide compliance with this measure.*)

MM ES 5.4-2/RMDP/SCP BIO-2: The permanent removal of existing habitats in Corps and/or CDFG jurisdictional areas in the Santa Clara River and tributaries shall be

replaced by creating habitats of similar functions and values/services (see MM ES 5.4-4/RMDP/SCP BIO-4 and MM SW-3 of Section 4.6 of the Final EIS/EIR) on the Project Site, or as allowed under MM ES 5.4-10/RMDP/SCP BIO-10.

a. Permanent impacts to Corps jurisdiction (which is a subset of CDFG jurisdiction) are to be mitigated by initiating mitigation site creation and/or restoration in advance of impacts, to replace the combined loss of acreage, functions, and services at a minimum 1:1 ratio. Initiation of a Corps mitigation site is defined as: (1) completion of site preparation; (2) installation of temporary irrigation; and (3) seeding and/or planting of the mitigation site. For detailed information, please refer to the Mitigation Plan for Impacts to Waters of the United States included in the Draft 404(b)(1) Alternatives Analysis in Appendix F1.0 of the Final EIS/EIR. The Potrero Canyon CAM creation and restoration site and the Mayo Crossing restoration site (i.e., an existing agricultural field) are considered the initial sites to be implemented prior to Corps jurisdictional impacts by development, thereby establishing upfront mitigation credits. As individual Project components are proposed for construction, consistent with the construction notification, quantities of mitigation acreage required to offset permanent impact acreages shall be calculated and compared to pre-mitigation area credits remaining. A project would not proceed unless adequate mitigation capacity is demonstrated. Temporary impact areas shall be mitigated in place in a manner that restores impacted functions and services as described in the mitigation plan noted above. If upfront compensatory mitigation cannot be achieved, a Corps-approved method would be utilized to determine the additional compensatory mitigation to offset the temporal loss of functions and services not included in the 1:1 mitigation ratio for permanent impacts.

   These measures satisfy the Corps mitigation requirements for impacts to Corps jurisdictional areas. However, impacts to jurisdictional areas (which include all areas subject to Corps and/or CDFG jurisdiction) are also subject to all of the mitigation requirements for impacts to CDFG jurisdiction, including MM ES 5.4-2b/RMDP/SCP BIO-2b.

b. For permanent and temporary impacts to CDFG jurisdiction, consistent with the subnotification, quantities of mitigation acreage required shall be calculated in accordance with the criteria below:

   - If suitable mitigation sites have met success criteria (MM ES 5.4-6/RMDP/SCP BIO-6) prior to disturbance at the impact site, the

mitigation sites shall replace the permanently impacted habitats in kind at a 1:1 ratio.

- If a suitable mitigation site has not met success criteria prior to disturbance of the impact site, habitat shall be replaced in kind (tributary for tributary impacts, river for river impacts) according to the replacement ratios specified in Table 13. These ratios provide compensatory mitigation for temporal losses of riparian function by considering the existing functional condition of the resources to be impacted, as well as time required for different vegetation types to become established and mature.
- If a suitable mitigation site has not been initiated within two years following disturbance of the impact site, but is initiated within five years following such disturbance, the permanently impacted habitats shall be replaced in kind at a replacement ratio equal to the ratio required by Table 13 plus 0.5:1. (For example, if mitigation for impacts to high-quality mulefat scrub were initiated three years after disturbance, the required replacement ratio would be 2.5:1.)
- If a suitable mitigation site has not been initiated within five years following disturbance of the impact site, the permanently impacted habitats shall be replaced in kind at a replacement ratio equal to the ratio required by Table 13 plus 1:1. (For example, if mitigation for impacts to high-quality mulefat scrub were initiated six years after disturbance, the required replacement ratio would be 3:1.)
- Where temporary impacts to CDFG-jurisdictional areas are proposed, the mitigation acreage required shall be determined based upon the duration of the proposed construction disturbance and the type of vegetation to be impacted. As individual Project components are proposed for construction, consistent with the subnotification process, the quantities of mitigation acreage required for temporary impacts to CDFG jurisdictional areas shall be calculated according to the following criteria:
    - If suitable mitigation sites have met success criteria prior to temporary disturbance at the impact site, the mitigation sites shall replace the temporarily impacted habitats in kind at a 1:1 ratio regardless of the duration of the temporary disturbance.
    - If the duration of temporary disturbance is less than two years, and no suitable mitigation sites have met success criteria prior to the disturbance, temporarily impacted habitats shall be replaced in kind at a 1:1 ratio, except for southern cottonwood/willow riparian forest and

oak woodland habitats, which shall be replaced in kind at a ratio of 1:1 if low quality, 1.5:1 if medium quality, and 2:1 if high quality.

- If the duration of temporary disturbance is between two and five years, and no suitable mitigation sites have met success criteria prior to the disturbance, temporarily impacted habitats shall be replaced in kind at a 1.5:1 ratio, except for southern cottonwood/willow riparian forest and oak woodland habitats, which shall be replaced in kind at a ratio of 1:1 if low quality, 1.5:1 if medium quality, and 2:1 if high quality.
- If the duration of temporary disturbance exceeds five years, and no suitable mitigation sites have met success criteria prior to the disturbance, temporarily impacted habitats shall be replaced in kind at a 2:1 ratio, except for southern cottonwood/willow riparian forest and oak woodland habitats, which shall be replaced in kind at a ratio of 1:1 if low quality, 1.5:1 if medium quality, and 2:1 if high quality.

In lieu of the habitat replacement described above and subject to CDFG approval, removal of invasive, exotic plant species from existing CDFG jurisdictional areas, followed by restoration/revegetation, may also be used to offset impacts. If this method is employed, mitigation shall be credited at an acreage equivalent to the percentage of exotic vegetation present at the restoration site. For example, if a 10-acre jurisdictional area is occupied by 10% exotic species, restoration shall be credited for one acre of impact. If appropriate, as authorized by CDFG, reduced percentage credits may be applied for invasive removal with passive restoration (weeding and documentation of natural recruitment only).

Table 13
CDFG Jurisdictional Permanent Impacts Mitigation Ratios

Ratios Listed by Vegetation Types & Quality				
		(Mit. Ratio)	*(Mit. Ratio)*	*(Mit. Ratio)*
Southern Cottonwood–Willow Riparian Forrest	SCWRF	4:1	3:1	2:1
Southern Willow Scrub	SWS	3:1	2.5:1	2:1
Oak Woodland (Coast Live, Valley)	CLOW / VOW	3:1	2.5:1	2:1
Big Sagebrush Scrub	BSS	2.5:1	2:1	1.5:1
Mexican Elderberry Scrub	MES	2.5:1	2:1	1.5:1
Cismontane Alkaline Marsh	CAM	2.5:1	2:1	1.5:1
Coastal and Valley Fresh Water Marsh	CFWM	2:1	1.5:1	1:1
Mulefat Scrub	MFS	2:1	1.5:1	1.25:1

Table 13
CDFG Jurisdictional Permanent Impacts Mitigation Ratios

Ratios Listed by Vegetation Types & Quality				
		(Mit. Ratio)	*(Mit. Ratio)*	*(Mit. Ratio)*
Arrowweed Scrub	AWS	2:1	1.5:1	1:1
California Sagebrush Scrub, and CSB-Dominated Habitats	CSB, CSB-A, -BS, -CB, -CHP, and -PS	2:1	1.5:1	1:1
Herbaceous Wetland	HW	1.5:1	1.25:1	1:1
River Wash, Emergent Veg.	RW	1.5:1	1.25:1	1:1
Chaparral, Chamise Chaparral	CHP, CC	1.5:1	1.25:1	1:1
Coyote Brush Scrub	CYS	1.5:1	1.25:1	1:1
Eriodictyon Scrub	EDS	1.5:1	1.25:1	1:1
California Grass Lands	CGL	1:1	1:1	1:1
Agricultural / Disturbed / Developed	AGR / DL / DEV	1:1	1:1	1:1

Notes:

* HIGH reach value indicates a portion of the Santa Clara River or main tributary that scored above 0.79 Total Score using the HARC methods described in Section 4.2, Geomorphology and Riparian Resources, of of the RMDP/SCP EIS/EIR.

** MEDIUM reach value indicates a portion of the Santa Clara River or main tributary that scored between 0.4 and 0.79 Total Score using the HARC methodsy described in Section 4.2 of the RMDP/SCP EIS/EIR.

*** LOW reach value indicates a portion of the Santa Clara River or main tributary that scored below 0.4 Total Score using the HARC methods described in Section 4.2 of the RMDP/SCP EIS/EIR.

(*This measure applies to Entrada South with the following exceptions and/or changes: Subnotifications apply only to those portions of Entrada South covered in the RMDP and its associated permits. For those portions of Entrada South that were not covered in the RMDP, the Applicant shall obtain separate jurisdictional impact permits. Once such permits are obtained, the Applicant may use the permits, subnotification letters, or a combination of both to provide compliance with this measure.*)

MM ES 5.4-3/RMDP/SCP BIO-3: Creation of new vegetation communities and restoration of impacted vegetation communities shall occur at suitable sites in or adjacent to jurisdictional areas or in areas where bank stabilization would occur. Locations where the excavation of uplands for bank protection/stabilization results in creation of new, unvegetated creek bed or other disturbance shall receive the highest level of priority for vegetation community restoration. Restoration sites may occur at locations outside the riverbed where there are appropriate hydrologic conditions to create a self-sustaining riparian vegetation community and where upland and riparian vegetation community values are absent or very low. All sites shall contain suitable hydrological conditions and surrounding land uses to ensure a self-sustaining functioning riparian vegetation community. Candidate restoration sites shall be described

in the annual mitigation status report (see MM ES 5.4-12/RMDP/SCP BIO-12). Sites will be approved when the detailed wetlands mitigation plans are submitted to the Corps and CDFG as part of the subnotification letters submitted for individual projects. Status of the sites will be addressed through agency review of the annual mitigation status report and mitigation accounting form agency review. Each mitigation plan will include acreages, maps and site-specific descriptions of the proposed revegetation site, including analysis of soils, hydrologic suitability, and present and future adjacent land uses. (*This measure applies to Entrada South with the following exceptions and/or changes: Subnotifications apply only to those portions of Entrada South covered in the RMDP and its associated permits. For those portions of Entrada South that were not covered in the RMDP, the Applicant shall obtain separate jurisdictional impact permits. Once such permits are obtained, the Applicant may use the permits, subnotification letters, or a combination of both to provide compliance with this measure.*)

MM ES 5.4-4/RMDP/SCP BIO-4: Replacement vegetation communities shall be designed to replace the functions and values of the vegetation communities being removed. The replacement vegetation communities shall have similar dominant trees and understory shrubs and herbs (excluding exotic species) to those of the affected vegetation communities (see Table 14 for example of recommended plant species for the River Corridor SMA and tributaries). In addition, the replacement vegetation communities shall be designed to replicate the density and structure of the affected vegetation communities once the replacement vegetation communities have met the mitigation success criteria.

Table 14
Potential Plant Species for Vegetation Community Restoration in the River Corridor SMA and Tributaries

Trees	
red willow	*Salix laevigata*
arroyo willow	*Salix lasiolepis*
Fremont cottonwood	*Populus fremontii*
black cottonwood	*Populus balsamifera* ssp. *trichocarpa*
western sycamore	*Platanus racemosa*
Shrubs	
mulefat	*Baccharis salicifolia*
sandbar willow	*Salix exigua*
arrow weed	*Pluchea sericea*

Table 14
Potential Plant Species for Vegetation Community Restoration in the River Corridor SMA and Tributaries

Herbs	
mugwort	*Artemisia douglasiana*
western ragweed	*Ambrosia psilostachya*
cattail	*Typha latifolia*
bulrush	*Scirpus americanus*
prairie bulrush	*Scirpus maritimus*

Note: This is a recommended list. Other species may be found suitable based on site conditions and state and federal permits.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-5/RMDP/SCP BIO-5: Average plant spacing shall be determined based on an analysis of vegetation communities to be replaced. The applicant shall develop plant spacing specifications for all riparian vegetation communities to be restored. Plant spacing specifications shall be reviewed and approved by the Corps and CDFG when restoration plans are submitted to the agencies as part of the subnotification letters submitted to the Corps and CDFG for individual projects or as part of the annual mitigation status report and mitigation accounting form. (*This mitigation measure applies to Entrada South, with the following exceptions and/or changes: Subnotifications apply only to those portions of Entrada South covered in the RMDP and its associated permits. For those portions of Entrada South that were not covered in the RMDP, the Applicant shall obtain separate jurisdictional impact permits. Once such permits are obtained, the Applicant may use the permits, subnotification letters, or a combination of both to provide compliance with this measure.*)

MM ES 5.4-6/RMDP/SCP BIO-6: The revegetation site will be considered "complete" upon meeting all of the following success criteria. In a subnotification letter, the applicant may request modification of success criteria on a project by project basis. Acceptance of such request will be at the discretion of CDFG and the Corps.

1. Regardless of the date of initial planting, any restoration site must have been without active manipulation by irrigation, planting, or seeding for a minimum of three years prior to Agency consideration of successful completion.
2. The percent cover and species richness of native vegetation shall be evaluated based on local reference sites established by CDFG and the Corps for the plant communities in the impacted areas.

3. Native shrubs and trees shall have at least 80% survivorship after two years beyond the beginning of the success evaluation start date. This may include natural recruitment.
4. Non-native species cover will be no more than 5% absolute cover through the term of the restoration.
5. Giant reed (*Arundo donax*), tamarisk (*Tamarix ramosissima*), perennial pepperweed (*Lepidium latifolium*), tree of heaven (*Ailanthus altissimus*), pampas grass (*Cortaderia selloana*) and any species listed on the California State Agricultural list, or Cal-IPC list of noxious weeds will not be present on the revegetation site as of the date of completion approval.
6. Using the HARC assessment methodology, the compensatory mitigation site shall meet or exceed the baseline functional scores of the impact area in Corps' jurisdictional waters, as described in the Conceptual Mitigation Plan[16] for Waters of the United States.

(*This mitigation measure applies to Entrada South with the following exceptions and/or changes: Subnotifications apply only to those portions of Entrada South covered in the RMDP and its associated permits. For those portions of Entrada South that were not covered in the RMDP, the Applicant shall obtain separate jurisdictional impact permits. Once such permits are obtained, the Applicant may use the permits, subnotification letters, or a combination of both to provide compliance with this measure. In addition, the HARC assessment may be replaced by another Corps-approved method.*)

MM ES 5.4-7/RMDP/SCP BIO-7: If at any time prior to Agency approval of the restoration area, the site is subject to an act of God (flood, fires, or drought) the applicant shall be responsible for replanting the damaged area. The site will be subject to the same success criteria provided for in MM ES 5.4-6/RMDP/SCP BIO-6. Should a second act of God occur prior to Agency approval of the restoration area, the applicant shall coordinate with the Agencies and develop an alternative restoration strategy(ies) to meet success requirements. This may include restoration elsewhere in the River Corridor or tributaries. (*This mitigation measure applies to Entrada South without change.*)

[16] For detailed information concerning the Corps compensatory mitigation program for impacts to waters of the United States, please reference Appendix 11.0 of the Section 404(b)1 Alternatives Analysis, included in Appendix F1.0 of the Final EIS/EIR.

MM ES 5.4-8/RMDP/SCP BIO-8: Temporary irrigation shall be installed as necessary for plant establishment. Irrigation shall continue as needed until the restoration site becomes self sustaining regarding survivorship and growth. Irrigation shall be terminated in the fall to provide the least stress to plants. (*This mitigation measure applies to Entrada South without change.*)

MM ES 5.4-9/RMDP/SCP BIO-9: In areas where invasive exotic plant species control is authorized by CDFG in lieu of other riparian habitat mitigation (MM ES 5.4-2/RMDP/SCP BIO-2), removal areas shall be kept free of exotic plant species for five years after initial treatment. In areas where extensive exotic removal occurs, revegetation with native plants or natural recruitment shall be documented. (*This mitigation measure applies to Entrada South without change.*)

MM ES 5.4-10/RMDP/SCP BIO-10: The exotics control program may utilize methods and procedures in accordance with the provisions in the Upper Santa Clara River Watershed Arundo/Tamarisk Removal Plan Final Environmental Impact Report, dated February 2006, or the applicant may propose alternative methods and procedures for Corps and CDFG review and approval. Exotic plant species control will be credited at an acreage equivalent to the percentage of exotic vegetation at the restoration site. By example: a 10-acre site occupied by 10% exotic species will be credited for one acre of mitigation. The exotic weed control location will be documented on the annual mitigation status report and mitigation accounting form. If "in-lieu fees" are paid, it will be documented on the annual mitigation status report and mitigation accounting form, along with a reporting of the status of exotic vegetation treatment. (*This mitigation measure applies to Entrada South without change.*)

MM ES 5.4-11/RMDP/SCP BIO-11: To provide an accurate and reliable accounting system for mitigation, the applicant utilizing the RMDP shall file a mitigation accounting form annually with the Corps and CDFG by April 1. This form shall document the amount of vegetation planted during the past year, any "in-lieu fees" paid for exotic invasive plant species control, the status of all mitigation credits to date, and any credits subtracted by projects implemented during the past year. The applicant, utilizing the RMDP, shall keep detailed records and provide a mitigation accounting form to the Corps and CDFG annually for review for the life of the permit, or until all credits have been used up for individual projects, and success criteria have been met. The Corps and CDFG shall provide concurrence within 60 days, including written verification for all restoration and weed removal sites that meet the specified performance criteria. Adequate proof of delivery of applicable reports would be required as well as subsequent notice to

the Agencies requesting surety release. (*This mitigation measure applies to Entrada South without change. The mitigation accounting form only applies to that portion of Entrada South that was included in the Corps' and CDFW's RMDP permits.*)

MM ES 5.4-12/RMDP-SCP BIO-12: An annual monitoring report shall be submitted to the Corps and CDFG by April 1 of each year until satisfaction of success criteria identified in MM ES 5.4-6/RMDP/SCP BIO-6, and consistent with the requirements of MM ES 5.4-12/RMDP/SCP BIO-12. This report shall include any required plans for plant spacing, locations of candidate restoration and weed control sites or proposed "in-lieu fees," restoration methods, and vegetation community restoration performance standards. For active vegetation community creation sites, the report shall include the survival, percent cover, and height of planted species; the number by species of plants replaced; an overview of the revegetation effort and its success in meeting performance criteria; the method used to assess these parameters; and photographs. For active exotics control sites, the report shall include an assessment of weed control; a description of the relative cover of native vegetation, bare areas, and exotic vegetation; an accounting of colonization by native plants; and photographs. The report shall also include the mitigation account form (see MM ES 5.4-11/RMDP/SCP BIO-11), which outlines account information related to species palnted or exotics control and mitigation credit remaining. The annual mitigation and monitoring report shall document the current functional capacity of the compensatory mitigation site using the HARC assessment methodology, as well as documenting the baseline functional scores of the impact site in jurisdictional waters of the United States. (*This mitigation measure applies to Entrada South with the following exceptions and/or changes: The functional capacity of the compensatory mitgiation site may use a different method other than the HARC assessment methodology, subject to the approval of CDFW and Los Angeles County. The mitigation accounting form only applies to that portion of Entrada South that was included in the Corps' and CDFW's RMDP permits*.)

MM ES 5.4-13/RMDP/SCP BIO-15: All native riparian trees with a three-inch diameter at breast height (dbh) or greater in temporary construction areas shall be replaced using one- or five-gallon container plants, containered trees, or pole cuttings in the temporary construction areas in the winter following the construction disturbance. The mitigation ratios for temporary impacts to vegetation communities are described in MM ES 5.4-2/RMDP/SCP BIO-2. The growth and survival of the replacement trees shall meet the performance standards specified

in MM ES 5.4-6/RMDP/SCP BIO-6. In addition, the growth and survival of the planted trees shall be monitored until they meet the self sustaining success criteria in accordance with the methods and reporting procedures specified in MM ES 5.4-6/RMDP/SCP BIO-6, MM ES 5.4-11/RMDP/SCP BIO-11, and MM ES 5.4-12/RMDP/SCP BIO-12. (*This mitigation measures applies to Entrada South without change.*)

MM ES 5.4-14/RMDP/SCP BIO-16: Vegetation communities temporarily impacted by the proposed Project shall be revegetated as described in MM ES 5.4-2/RMDP/SCP BIO-2. Large trunks of removed trees may also remain on site to provide habitat for invertebrates, reptiles, and small mammals or may be anchored on the Project site for erosion control. To facilitate restoration, mulch, or native topsoil (the top six- to 12-inch-deep layer containing organic material), may be salvaged from the work area prior to construction. Following construction, salvaged topsoil shall be returned to the work area and placed in the restoration site. Within one year, the Project biologist will evaluate the progress of restoration activities in the temporary impact areas to determine if natural recruitment has been sufficient for the site to reach performance goals. In the event that native plant recruitment is determined by the Project biologist to be inadequate for successful habitat establishment, the site shall be revegetated in accordance with the methods designed for permanent impacts (i.e., seeding, container plants, and/or a temporary irrigation system may be recommended). This will help ensure the success of mitigation areas. The Applicant shall restore the temporary construction area per the success criteria and ratios described in MM ES 5.4-1/RMDP/SCP BIO-1, MM ES 5.4-2/RMDP/SCP BIO-2, and MM ES 5.4-6/ RMDP/SCP BIO-6. Annual monitoring reports on the status of the recovery or temporarily impacted areas shall be submitted to the Corps and CDFG as part of the annual mitigation status report (MM ES 5.4-11/RMDP/SCP BIO-11 and MM ES 5.4-12/RMDP/SCP BIO-12). (*This mitigation measure applies to Entrada South without change.*)

MM ES 5.4-15/RMDP/SCP BIO-17: Focused surveys for arroyo toad shall be conducted. Prior to initiating construction for the installation of bridges, storm drain outlets, utility lines, bank protection, trails, and/or other construction activities, all construction sites and access roads within the riverbed as well as all riverbed areas within 1,000 feet of construction sites and access roads shall be surveyed at the appropriate season for arroyo toad. The applicant shall contract with a qualified biologist to conduct focused surveys for arroyo toad. If detected in or adjacent to the Project area, no work will be authorized within 500 feet of occupied habitat

until the applicant provides concurrence from the USFWS to CDFG and the Corps. The applicant shall implement measures required by the USFWS Biological Opinion that either supplement or supercede these measures. If arroyo toads are determined to be present, the applicant shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and CDFG:

1. The applicant shall retain a qualified biologist with demonstrated expertise with arroyo toads to monitor all construction activities in potential arroyo toad habitat and assist the applicant in the implementation of the monitoring program. This person will be approved by the USFWS prior to the onset of ground-disturbing activities. This biologist will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within habitat that supports populations of arroyo toad.
2. Prior to the onset of construction activities, the applicant shall provide all personnel who will be present on work areas within or adjacent to the Project area the following information:
   a. A detailed description of the arroyo toad, including color photographs;
   b. The protection the arroyo toad receives under the Endangered Species Act and possible legal action that may be incurred for violation of the Act;
   c. The protective measures being implemented to conserve the arroyo toad and other species during construction activities associated with the proposed Project; and
   d. A point of contact if arroyo toads are observed.
3. All trash that may attract predators of the arroyo toad will be removed from work sites or completely secured at the end of each work day.
4. Prior to the onset of any construction activities, the applicant shall meet on site with staff from the USFWS and the authorized biologist. The applicant shall provide information on the general location of construction activities within habitat of the arroyo toad and the actions taken to reduce impacts to this species. Because arroyo toads may occur in various locations during different seasons of the year, the applicant, USFWS, and authorized biologists will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on arroyo toads. The goal of this effort is to reduce the level of mortality of arroyo toads during construction. The parties realize that, if arroyo toads are present, complete prevention of all

mortality is likely not possible because some arroyo toads may occur anywhere within suitable habitat during any given season; the detection of every individual over large areas is impossible because of the small size, fossorial habits, and cryptic coloration of the arroyo toad.

5. Where construction can occur in habitat where arroyo toads are widely distributed, work areas will be fenced in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. The authorized biologist will assist in determining the boundaries of the area to be fenced in consultation with the USFWS/CDFG. All workers will be advised that equipment and vehicles must remain within the fenced work areas.
6. The authorized biologist will direct the installation of the fence and conduct a minimum of three nocturnal surveys to move any arroyo toads from within the fenced area to suitable habitat outside of the fence. If arroyo toads are observed on the final survey or during subsequent checks, the authorized biologist will conduct additional nocturnal surveys if he or she determines that they are necessary in concurrence with the USFWS/CDFG.
7. Fencing to exclude arroyo toads will be at least 24 inches in height.
8. The type of fencing must be approved by the authorized biologist and the USFWS/CDFG.
9. Construction activities that may occur immediately adjacent to breeding pools or other areas where large numbers of arroyo toads may congregate will be conducted during times of the year (fall/winter) when individuals have dispersed from these areas. The authorized biologist will assist the applicant in scheduling its work activities accordingly.
10. If arroyo toads are found within an area that has been fenced to exclude arroyo toads, activities will cease until the authorized biologist moves the arroyo toads.
11. If arroyo toads are found in a construction area where fencing was deemed unnecessary, work will cease until the authorized biologist moves the arroyo toads. The authorized biologist in consultation with USFWS/CDFG will then determine whether additional surveys or fencing are needed. Work may resume while this determination is being made, if deemed appropriate by the authorized biologist and USFWS.
12. Any arroyo toads found during clearance surveys or otherwise removed from work areas will be placed in nearby suitable, undisturbed habitat. The authorized biologist will determine the best location for their release, based on

the condition of the vegetation, soil, and other habitat features and the proximity to human activities. Clearance surveys shall occur on a daily basis in the work area.

13. The authorized biologist will have the authority to stop all activities until appropriate corrective measures have been completed.
14. Staging areas for all construction activities will be located on previously disturbed upland areas designated for this purpose. All staging areas will be fenced within potential toad habitat.
15. To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force (DAPTF 2009) will be followed at all times.
16. Drift fence/pitfall trap surveys will be implemented in toad sensitive areas prior to construction in an effort to reduce potential mortality to this species. Prior to any construction activities in the Project area, silt fence shall be installed completely around the proposed work area and a qualified biologist should conduct a preconstruction/clearance survey of the work area for arroyo toads. Any toads found in the work area should be relocated to suitable habitat. The silt fence shall be maintained for the duration of the work activity.
17. The applicant shall restrict work to daylight hours, except during an emergency, in order to avoid nighttime activities when arroyo toads may be present on the access road. Traffic speed should be maintained at 15 mph or less in the work area.

(*This entire mitigation measure, including its subparts, applies to Entrada South, with the following exceptions and/or changes: The USFWS Biological Opinion for the RMDP applies only to a portion of Entrada South.*)

MM ES 5.4-16/RMDP/SCP BIO-20: Approximately 1,900 acres of coastal scrub shall be preserved on The Project Site. The preservation of this vegetation type shall occur on site within the High Country SMA, the Salt Creek area, and the River Corridor SMA within the Specific Plan site. Irrevocable offers of dedication will be provided to CDFG for identified impact offsets in accordance with the Plan (MM ES 5.4-1/RMDP/SCP BIO-1) using a "rough step" land dedication approach. Some of this habitat is recovering from wildfire and the expectation is that it will recover without active intervention. The functional values of any burned dedicated land areas shall be evaluated annually until such time that conditions

are commensurate with the quality of the impacted habitat being mitigated. In the event that the functional value of this burned habitat has not recovered within five years of the dedication due to invasive species, to fire ecology, erosion, drought, or unforeseen events, then adaptive management pursuant to MM RMDP/SCP BIO-21 will be implemented for coastal scrub restoration. (*This mitigation measure applies to Entrada South, with the following exceptions and/or changes: The Project Site refers to the Newhall Ranch Specific Plan area. Approximately 310.6 acres of coastal scrub shall be preserved on lands identified in the CMIP to offset impacts associated with Entrada South; these 310.6 acres initially may be preserved in a stand-alone dedication or as part of the greater 1,900-acre dedication. This measure ensures that preserved areas will be part of a greater managed preserve system of numerous natural vegetation communities meant to support both common and special-status wildlife species. These areas support the same types of habitat that would be lost through construction and would be further enhanced through management and monitoring activities. This mitigation measure requiring dedication of 1,900 acres is to be implemented one time only by the first Newhall Ranch RMDP/SCP-related project (which may include Entrada South) for which grading permits are issued. See Appendix A, the CMIP*.)

MM ES 5.4-17/RMDP/SCP BIO-22:

a. Newhall Land shall prepare an Oak Resource Management Plan, to be submitted for approval to CDFG and County of Los Angeles, and implemented upon approval. The Plan shall identify areas suitable for oak woodland enhancement and creation. The Plan shall distinguish between oaks to be planted in compliance with CLAOTO (MM ES 5.4-17b/RMDP/SCP BIO-22b) and the additional measures required by this EIS/EIR (MM ES 5.4-2/RMDP/SCP BIO-2 for woodlands in jurisdictional streambeds and MM ES 5.4-17c/RMDP/SCP BIO-22c and MM ES 5.4-17d/RMDP/SCP BIO-22d for upland areas).

   The Oak Resource Management Plan shall include measures to create or enhance woodlands as follows (1) locations and acreages of mitigation sites where woodland creation or enhancement will occur; (2) a description of proposed cover and number of native trees, shrubs, and grasses per acre to be established. This description shall be based on comparable intact woodlands in the area of impact or elsewhere within the RMDP planning area, consistent with conditions of the proposed mitigation site; (3) site preparation measures to include (as appropriate) topsoil treatment, soil decompaction, erosion control, weed grow/kill cycle, or as otherwise

approved by the agencies; (4) methods for the removal of non-native plants (e.g., mowing, weeding, raking, herbicide application, or burning); (5) a plant palette listing all species, including sizes, planting densities, or seeding rates, to be based on target vegetation; (6) the source of all plant propagules (e.g., seed, potted nursery stock) and the quantity and species of seed or potted stock of all plants to be introduced or planted into the mitigation areas; (7) temporary irrigation, protection from herbivores, fertilizer, weeding, *etc.*; (8) a schedule and action plan to maintain and monitor the enhancement/restoration areas to include, at minimum, qualitative annual monitoring for revegetation success and site degradation due to erosion, trespass, or animal damage for a period no less than five years total and no less than two years after removal of irrigation (if any); (9) where sites are near trails or other access points, measures such as fencing, signage, or security patrols to exclude unauthorized entry into the mitigation areas shall be implemented as needed; (10) tree protection standards to be implemented for individual trees or woodlands adjacent to development activity; (11) success criteria as stated in MM ES 5.4-17b/RMDP/SCP BIO-22b and MM ES 5.4-17d/RMDP/SCP BIO-22d; and (12) contingency measures, such as replanting, erosion control, irrigation system repair, or understory re-seeding, to be implemented if habitat improvement/restoration efforts do not meet the success criteria stated in the plan.

b. To meet the minimum mitigation criteria set forth in CLAOTO, Newhall Land will replace impacted oaks (measuring eight inches in diameter, or greater, or with a combined diameter of 12 inches for multi-stem oaks) at a ratio of 2:1. Additionally, oaks meeting the criteria for classification as a Heritage Tree (defined by CLAOTO as "any oak tree measuring 36 inches or more in diameter") will be replaced at a ratio of 10:1.

   Whether they are planted in dedicated open space areas or developed areas, replacement oak trees planted in conformance with CLAOTO shall adhere to the following standards:

   1. Replacement oak trees shall be exclusively indigenous species, shall be at least a 15-gallon size specimen, and measure at least one inch in diameter one foot above the base, unless otherwise approved by the County Forester.

2. Replacement trees shall be properly cared for and maintained for a period of two years and replaced by Newhall Land if mortality occurs within that period.
3. Replacement planting shall be conducted in phases as impacts occur. Alternatively, Newhall Land may choose to plant replacement trees in open space areas prior to realization of Project-related impacts (pre-mitigation). Any pre-mitigation shall adhere to the standards outlined herein.
4. Following completion of the two-year maintenance period, the County Forester shall provide final authorization that CLAOTO standards have been met.

c. In addition to the CLAOTO requirements (MM ES 5.4-17b/RMDP/SCP BIO-22b), this EIS/EIR requires replacement of oak trees at the ratios in the table below for trees lost or impacted in uplands. These trees are in addition to the CLAOTO requirement described above. These additional trees may also be incorporated into woodland habitat enhancement or creation, as described above.

Additional replacement ratios are provided in Table 15.

Table 15
Additional MM ES 5.4-17c/RMDP/SCP BIO-22c
Oak Tree Replacement Ratios

Trunk Diameter*	Mitigation Ratio
8 – 35	0.5:1
36 +	2.5:1

* Trunk diameter measured at 4.5 feet above mean natural grade. Mitigation required for single-stem oaks with a minimum 8-inch diameter and multi-stem oaks with a combined diameter of 12 inches.

d. Newhall will mitigate lost oak woodlands occurring on upland sites (i.e., outside CDFG/Corps jurisdictional stream channels) by creating or enhancing oak woodlands in the Salt Creek area and High Country SMA. At minimum, Newhall Land will mitigate woodland habitat at a 1:1 ratio through creation of new oak woodlands. As an alternative, Newhall Land may choose to enhance, improve, and manage existing degraded woodland areas at a minimum 2:1 ratio for lost woodland acreage.

For woodland enhancement or replacement, dominant species (coast live oak or valley oak) and planting densities will be based on mitigation site suitability. All plant propagules, including acorns or tree cuttings and all seed

or potted nursery stock of oaks or other species, shall be collected within a five-mile radius and within 1,000 feet elevation of the restoration site.

The woodland creation or enhancement sites shall be monitored for oak tree survival and vigor and other habitat values, including species diversity and wildlife use. The replacement or enhancement sites will be considered "complete" upon meeting all of the following success criteria, or as otherwise approved by CDFG. Any replacement oak trees planted in woodlands for conformance with CLAOTO will also be subject to CLAOTO performance criteria (MM ES 5.4-17b/RMDP/SCP BIO-22b).

General performance standards for woodland creation or enhancement sites include the following:

1. Regardless of the date of initial woodland creation or enhancement, each site must have been without active manipulation by irrigation, planting, or re-seeding for a minimum of three years prior to evaluation for successful completion.
2. The percent cover and species richness of restored or enhanced native vegetation shall be evaluated based on target vegetation described in the woodland creation or enhancement plan.
3. Densities (numbers/acre) of surviving, healthy oak trees shall be within 5% of the plan target density. Cover and species richness of other native shrubs shall reach 50% of the cover and species richness described for the "target" woodland. Optimal woodland densities and acorn planting quantities, by oak woodland type, are presented in Table 16.

Table 16
Optimal Woodland Densities and Acorn Planting Quantities, by Oak Woodland Type

Woodland Type	Average Existing Woodland Density (trees per acre)	Target Density for Newhall Land (trees per acre)
Coast live oak woodland	22	50
Mixed oak woodland	19	40
Valley oak woodland	16	25

4. Non-native grass cover shall not exceed the "target" woodland non-native grass cover, and other non-native species shall not exceed 10% cover at any time. Any species listed on the California State Agricultural list

(CDFA 2009) or Cal-IPC invasive plant inventory (Cal-IPC 2006, 2007) will not be present on the revegetation site at the time that project success is determined.

(*This mitigation measure applies to Entrada South, with the following exceptions and/or changes: The Oak Resource Management Plan includes measures to create, enhance, and/or restore 4.5 acres of valley oak/grass within lands owned by the Applicant, consistent with this measure. The plan is subject to the requirements of CLAOTO and addresses impacts to oak resources including oak trees of the sizes regulated under the County Oak Tree Ordinance, Southern California black walnut trees, and mainland cherry trees/shrubs. Species listed in the most recent versions of the California State Agricultural List and Cal-IPC list shall not be present on the revegetation site at the time that mitigation success is determined. References to the EIS/EIR above refer to the Newhall Ranch RMDP/SCP EIS/EIR.*)

MM ES 5.4-18/RMDP/SCP BIO-23: A final Spineflower Conservation Plan (SCP) shall be adopted and implemented after approval by CDFG, including the permanent dedication of preserves (see draft in Appendix 1.0). The proposed spineflower preserve areas shall be offered to CDFG as a permanent conservation easement within one year after issuance of the requested 2081 Permit to ensure long-term protection. The conservation easement shall be to CDFG and contain appropriate funding and restrictions to help ensure that the spineflower preserve lands are protected in perpetuity. (*This mitigation measure applies to Entrada South and shall be implemented on site. The appendix cited above refers to Appendix 1.0 of the RMDP/SCP EIS/EIR, which included a Draft SCP*.)

MM ES 5.4-19/RMDP/SCP BIO-24: The spineflower preserves shall be managed by Newhall Land and their preserve manager(s) and/or natural lands management organization(s) (NLMO). Newhall Land shall submit a statement of qualifications for their proposed preserve manager(s)/NLMO(s) for approval by CDFG. Newhall Land will fund in full all implementation of spineflower preserve management as described in the SCP and all mitigation measures listed in this document. (*This mitigation measure applies to Entrada South without change*).

MM ES 5.4-20/RMDP/SCP BIO-25: Disturbed portions (i.e., agricultural lands, disturbed lands, and developed lands) of the spineflower preserves, including buffers, will be restored through revegetation with native plant communities. In summary, areas that have greater than 30% relative cover by weeds will be restored to have relative cover comparable to that of existing occupied spineflower habitat.

Habitat restoration and enhancement plans (including restoration plans) for areas within the preserves shall be prepared at the direction of the preserve manager by a qualified biologist and submitted to the County and CDFG for approval prior to implementation. In addition, Cal-IPC List A and B plants that are present within the spineflower preserve will be controlled. Restoration and enhancement efforts within the spineflower preserve areas shall be in conformance with the Spineflower Conservtion Plan. (*This mitigation measure applies to the spineflower preserve located on the Entrada South site and shall be implemented accordingly.*)

MM ES 5.4-21/RMDP/SCP BIO-26: In the event that a spineflower preserve, or buffer, or a portion of a spineflower preserve, or buffer burns in a wildfire or suffers from mass movements (e.g., landslides, slope sloughing, or other geologic events), the spineflower preserve manager and Newhall Land shall promptly review the site and determine what action, if any, should be taken. The primary anticipated post-fire spineflower preserve management activity involves monitoring the site and controlling annual weeds that may invade burned areas following a fire event, especially when such weeds (that were not previously present or not present in similar densities) exceed the 30% maximum threshold (see MM ES 5.4-20/RMDP/SCP BIO-25). If fire-control lines or other forms of bulldozer damage occur in the spineflower preserves, these areas will be repaired and revegetated to pre-burn conditions or better. An emergency fire response plan will be prepared (in accordance with MM ES 5.4-64 (MM SP-4.6-72)) prior to the establishment of the spineflower preserves and approved by CDFG and Los Angeles County Fire Department. The preserve manager will contact the LACFD at least once every five years to review the plan and consult with them on implementation of the plan.

The same methods will be applied to mass-movement, landslide, or slope-sloughing types of events. This measure shall be implemented in conformance with the Spineflower Conservation Plan.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-22/RMDP/SCP BIO-27: Spineflower preserve temporary fencing shall be shown on construction plans and installed prior to initiating construction clearing and grubbing activities within 500 feet of spineflower preserves, including the buffers. The spineflower preserve manager or a qualified biologist shall monitor fence installation. Clearing for fence installation shall be minimized to what is necessary to install the fence and, where possible, shall leave the roots of native

plants in place to allow regrowth. As necessary, native vegetation will be restored and weed management will be performed following fence installation to ensure temporarily cleared native plant areas do not become weed dominated after installation. General Project clearing and grubbing within 500 feet of the fence may commence upon verification by the spineflower preserve manager or the qualified biologist that protective fencing is in place and is adequate. Appropriate BMPs shall be installed at the edge of development manufactured slopes when the spineflower preserve is within 500 feet and down-slope of proposed development. (*This measure applies to Entrada South without change.*)

MM ES 5.4-23/RMDP/SCP BIO-28: Construction documents shall indicate that the grading contractor is responsible for protecting spineflower preserves during construction work. The construction documents shall indicate that the contractor is responsible for informing all employees and subcontractors of the environmentally sensitive areas and the proper conduct of work when working near (e.g., within 500 feet) of these areas. The construction documents shall require a pre-construction meeting to perform an "environmental education session" with the grading contractor/contractor's employees, subcontractors, and equipment operators prior to commencing construction work within 500 feet of the spineflower preserves. The environmental education session shall be conducted by the spineflower preserve manager or a qualified biologist and focus on informing workers of the location and sensitivity of the spineflower and the requirements for protecting it. The construction documents shall indicate that the grading contractor shall be responsible for mitigating any impacts to spineflower preserves due to the negligence of the grading contractor/contractor's employees, subcontractors, or equipment operators. If accidental trespass into a spineflower preserve occurs during construction, the violation shall be documented by the preserve manager and immediately reported to CDFG. Follow-up action will be taken in accordance with the Section 2081 of the Fish and Game Code, Incidental Take Permit issued by CDFG. (*This measure applies to Entrada South without change.*)

MM ES 5.4-24/RMDP/SCP BIO-29: Construction plans shall include necessary design features and construction notes to demonstrate consistency of development in the vicinity of spineflower preserves with the Spineflower Conservation Plan (SCP). In addition to applicable erosion control plans and performance under SCAQMD Rule 403d dust control (SCAQMD 2005), the Project stormwater pollution prevention plan (SWPPP) shall include minimum BMPs. Together, the implementation of these requirements shall ensure that spineflower preserve populations are protected during construction. At a minimum, the following measures/restrictions shall be incorporated into the

SWPPP and noted on construction plans, where appropriate, to avoid impacting spineflower preserves during construction:

- Avoid planting or seeding invasive species in development areas during construction phases;
- Do not use erosion control devices that may contain weeds, such as hay bales, etc., within 200 feet of spineflower preserves or anywhere upstream of spineflower preserves;
- Do not windrow or stockpile soil within 200 feet of spineflower preserve boundaries or anywhere upstream of spineflower preserves;
- Do not locate staging areas, maintenance, or concrete washout areas within 500 feet (unless otherwise authorized by CDFG, and no closer than 200 feet in any instance), where adjacent to or anywhere upstream of spineflower preserves;
- Do not store toxic compounds, including fuel, oil, lubricants, paints, release agents, or any other construction materials that could damage spineflower habitat if spilled near spineflower preserve areas, or anywhere upstream of spineflower preserves, or along spineflower preserve boundaries;
- Provide location and details for any fencing for temporary and permanent access control along preserve boundaries (per MM ES 5.4-26/RMDP/SCP BIO-31 for temporary fencing and MM ES 5.4-31/RMDP/SCP BIO-36 for permanent fencing);
- Provide location and details for any dust control fencing along preserve boundaries (per MM ES 5.4-27/RMDP/SCP BIO-32); and
- Provide location and details for any stormwater run-on controls/BMPs coming from development area to spineflower preserve (per MM ES 5.4-33/RMDP/SCP BIO-38 and MM ES 5.4-34/RMDP/SCP BIO-39).

(*This measure applies to Entrada South without change.*)

MM ES 5.4-25/RMDP/SCP BIO-30: The spineflower preserve manager or qualified biologist shall review construction plans and specifications, SWPPP, and, where appropriate, erosion control plans and implementation of SCAQMD Rule 403d dust control measures (SCAQMD 2005) prior to construction within 500 feet of spineflower preserves for compliance with the Spineflower Conservation Plan and associated permits and Project-related environmental documents. A copy of the

SWPPP and associated monitoring reports will be provided to CDFG. (*This measure applies to Entrada South without change.*)

MM ES 5.4-26/RMDP/SCP BIO-31: Spineflower preserves shall be protected prior to clearing and during construction with temporary construction fencing as described in MM ES 5.4-22/RMDP/SCP BIO-27. Openings shall be included in the fence when located within wildlife corridors and vegetation community connectivity areas to allow for the safe passage of wildlife. The spineflower preserve manager or a qualified biologist shall indicate the location and width of each of these openings. The fencing shall be three-strand non-barbed wire fence or bright orange U.V. stabilized polyethylene construction "snow" fencing, attached to metal T-posts that extend at least four feet above grade or equivalent. Protective fencing shall be maintained in good condition until completion of Project construction. Where construction activities occur within 500 feet of a spineflower preserve, the spineflower preserve manager or qualified biologist shall review fencing weekly during construction monitoring visits and note any fencing that is in need of repair. Repairs shall be completed within three working days of notification by the spineflower preserve manager or qualified biologist. (*This measure applies to Entrada South without change.*)

MM ES 5.4-27/RMDP/SCP BIO-32: Development areas shall have dust control measures implemented and maintained to prevent dust from impacting vegetation within the spineflower preserve areas. Dust control shall be implemented during construction in compliance with SCAQMD Rule 403d (SCAQMD 2005). Where construction activities occur within 100 feet of a spineflower location, chemical dust suppression shall not be utilized. Where determined necessary by the spineflower preserve manager or qualified biologist, a screening fence (i.e., a six-foot high chain link fence with green fabric up to a height of five feet) shall be installed to protect spineflower locations. (*This measure applies to Entrada South without change.*)

MM ES 5.4-28/RMDP/SCP BIO-33: The spineflower preserve manager or qualified biologist shall perform weekly construction monitoring for all construction activities within 500 feet of spineflower preserve areas. The spineflower preserve manager's or qualified biologist's construction monitoring tasks shall include reviewing and approving protective fencing, dust control measures, and erosion control devices before construction work begins; conducting a contractor education session at the preconstruction meeting; reviewing the site weekly (minimum) during construction to ensure the fencing, dust control, and BMP measures are in place and functioning correctly and that work is not directly or indirectly impacting

spineflower plants; and quarterly monitoring shall be initiated for Argentine ants along the construction–open space interface at sentinel locations where invasions could occur (e.g., where moist microhabitats that attract Argentine ants may be created). A qualified biologist shall determine the monitoring locations. Ant pitfall traps will be placed in these sentinel locations and operated on a quarterly basis to detect invasion by Argentine ants. If Argentine ants are detected during monitoring, direct control measures will be implemented immediately to help prevent the invasion from worsening. These direct controls may include but are not limited to nest/mound insecticide treatment, or available natural control methods being developed. A general reconnaissance of the infested area would also be conducted to identify and correct the possible source of the invasion, such as uncontrolled urban runoff, leaking pipes, or collected water. Each site visit shall be followed up with a summary monitoring report sent electronically to Newhall Land indicating the status of the site. Monthly monitoring reports, as needed, shall be submitted to CDFG and the County of Los Angeles. Monitoring reports shall include remedial recommendations and issue resolution discussions when necessary. (*This measure applies to Entrada South without change.*)

MM ES 5.4-29/RMDP/SCP BIO-34: Plant palettes proposed for use on landscaped slopes, street medians, park sites, and other public landscaped and FMZ areas within 200 feet of a spineflower preserve shall be reviewed and approved within 30 days by the spineflower preserve manager or qualified biologist and CDFG to ensure that the proposed landscape plants will not naturalize and require maintenance or cause vegetation community degradation in the spineflower preserve and buffer areas. Container plants to be installed within public areas within 200 feet of the spineflower preserves shall be inspected by the spineflower preserve manager or qualified biologist for the presence of disease, weeds, and pests, including Argentine ants. Plants with pests, weeds, or diseases shall be rejected. In addition, for public areas within 200 feet of spineflower preserves, landscape plants shall not be on the Cal-IPC California Invasive Plant Inventory (most recent version) or on the list of Invasive Ornamental Plants listed in Appendix B of the SCP. The current Cal-IPC list can be obtained from the Cal-IPC web site (http://www.cal-ipc.org/ip/inventory/index.php). (*This measure applies to Entrada South without change, except that the current Cal-IPC website is www.cal-ipc.org/ip/inventory/.*)

MM ES 5.4-30/RMDP/SCP BIO-35: All portions of the spineflower preserves shall be closed, with the exception of pre-identified existing dirt roads and utility easements. The pre-identified existing dirt roads and utility easement access roads shall function as access routes for the spineflower preserve manager, spineflower preserve

maintenance personnel, utility personnel, and emergency services vehicles only (e.g., police, fire, and medical). No other vehicle or foot traffic, including nature or recreational trails, will be permitted in the preserve, including the buffer. The dirt roads shall be gated and locked at the outside edges of the buffer zone. Signs discouraging unauthorized access shall be posted. The only persons or entities issued gate keys shall be the spineflower preserve managers and their employees, easement holding utility companies, emergency services, Newhall Land, and CDFG. (*This measure applies to Entrada South without change.*)

MM ES 5.4-31/RMDP/SCP BIO-36: Fencing shall be installed along the outside edge of the spineflower preserve and buffer areas adjacent to proposed developments, parks, golf courses, or other "active land uses" to prevent unauthorized access. Specific areas that are adequately protected by steep terrain (1.5:1 or steeper) and/or dense vegetation may not require fencing but would require signage. The determination of the need for fencing in these areas shall be subject to the approval of the spineflower preserve manager or qualified biologist. If monitoring determines that slope and/or vegetation is not effective at deterring unauthorized access, additional fencing may be required by the spineflower preserve manager or qualified biologist. Fencing is not required in areas bordered by large parcels of conserved natural open space areas or the Santa Clara River riparian corridor, as installing fencing in these areas would be unnecessary and damaging to existing vegetation and wildlife corridors.

Fencing must extend a minimum of four feet above grade and include wood-doweled split rail fencing, exterior grade heavy-duty vinyl three-railed fencing, three-strand non-barbed wire, or similar. Fencing installed adjacent to native vegetation communities and natural open space areas will allow for the passage of animals.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-32/RMDP/SCP BIO-37: Outdoor all-weather signs measuring approximately 12 by 16 inches shall be posted on all spineflower preserve access gates and along spineflower preserve fencing at approximately 800 feet on center, except adjacent to road crossings, where signs will be posted. The placement will take topography into account, emphasizing placement on ridgelines where signs will be visible to emergency fire personnel and others. Signs shall state in English and Spanish that the area is a biological preserve that hosts a state-listed endangered and federal candidate plant species and that trespassing is prohibited (in accordance MM ES 5.4-63 (MM SP-4.6-68)). Signs shall indicate that fuel

modification and management work is not allowed within the spineflower preserve (including buffer areas). The signage shall state that people who do not abide by these rules or who damage the protected species will be subject to prosecution, including fines and/or imprisonment. All signage shall include emergency contact information and shall be reviewed and approved by the spineflower preserve manager or qualified biologist. (*This measure applies to Entrada South without change.*)

MM ES 5.4-33/RMDP/SCP BIO-38: Storm drain outfalls from proposed development areas shall only be installed uphill from spineflower preserve areas where necessary to retain pre-construction hydrological conditions within the spineflower preserves, sustain existing riparian and wetland vegetation communities, and/or allow for the restoration of currently disturbed areas to native riparian/alluvial vegetation communities. When located in a spineflower preserve area, storm drains must meet the following criteria:

- Storm drains must not impact spineflower either directly or indirectly, and
- Under no circumstances shall storm drains daylight onto steeply sloped areas or other areas that would cause erosion.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-34/RMDP/SCP BIO-39: Any surface water entering a spineflower preserve area from development areas during construction is required to pass through BMP measures, which will be described in the SWPPP. Storm drain outlets must contain hydrologic controls (e.g., adequate energy dissipaters) to prevent downstream erosion and stream channel down-cutting. Additionally, storm drain outlets must be designed based on pre- and post-construction hydrological studies (in accordance with MM ES 5.4-68 (MM SP-4.6-69)). Storm drains and permanent structural BMPs shall be designed by a licensed civil engineer. Requirements of MM ES 5.4-24/RMDP/SCP BIO-29 and MM ES 5.4-33/RMDP/SCP BIO-38, where applicable, shall be incorporated into the facility design and shall be subject to approval by the spineflower manager or qualified biologist. Long-term maintenance of storm drain BMPs will be the responsibility of the designated maintenance entity. (*This measure applies to Entrada South without change.*)

MM ES 5.4-35/RMDP/SCP BIO-40: The Draft RMDP Slender Mariposa Lily Mitigation and Monitoring Plan (Dudek 2007c) shall be revised and submitted to CDFG for review and approval prior to ground disturbance to occupied habitat. Upon

approval, the plan will be implemented by the applicant or its designee. The revised plan will demonstrate the feasibility of enhancing or restoring slender mariposa lily habitat in selected areas to be managed as natural open space (i.e., the Salt Creek area or High Country SMA, spineflower preserves, or River Corridor SMA) without conflicting with other resource management objectives. Habitat replacement/enhancement will be at a 1:1 ratio (acres restored/enhanced to acres impacted).

The revised plan will describe habitat improvement/restoration measures to be completed prior to introducing slender mariposa lily. Habitat improvement/ restoration will be based on native occupied slender mariposa lily habitat. The revised plan will specify: (1) the location of mitigation sites (may be selected from among 559 acres of suitable mitigation land in the High Country SMA and Salt Creek area identified in the Draft Newhall Ranch Mitigation Feasibility Study (Dudek 2007a); (2) a description of "target" vegetation (native shrubland or grassland) to include estimated cover and abundance of native shrubs and grasses in occupied slender mariposa lily habitat on Newhall Ranch land (either at sites to be destroyed by construction or at sites to be preserved); (3) site preparation measures to include topsoil treatment, soil decompaction, erosion control, temporary irrigation systems, or other measures as appropriate; (4) methods for the removal of non-native plants (e.g., mowing, weeding, raking, herbicide application, or burning); (5) the source of all plant propagules (seed, potted nursery stock, *etc.*), the quantity and species of seed or potted stock of all plants to be introduced or planted into the restoration/enhancement areas; (6) a schedule and action plan to maintain and monitor the enhancement/restoration areas, to include at minimum, qualitative annual monitoring for revegetation success and site degradation due to erosion, trespass, or animal damage for a period no less than two years; (7) as needed where sites are near trails or other access points, measures such as fencing, signage, or security patrols to exclude unauthorized entry into the restoration/enhancement areas; and (8) contingency measures such as replanting, weed control, or erosion control to be implemented if habitat improvement/restoration efforts are not successful.

Habitat restoration/enhancement will be judged successful when (1) percent cover and species richness of native species reach 50% of their cover and species richness at undisturbed occupied slender mariposa lily habitat at reference sites; and (2) the replacement vegetation has persisted at least one summer without irrigation. At that point slender mariposa lily propagules (seed or bulbs) will be introduced onto the site.

The revised plan will specify methods to collect propagules and introduce slender mariposa lily into these mitigation sites. Introductions will use source material (seeds or bulbs) from no more than 1.0 mile distant, similar slope exposures, and no more than 500 feet elevational difference from the mitigation site, unless otherwise approved by CDFG. Bulbs may be salvaged and transplanted from slender mariposa lily occurrences to be lost; alternately, seed may be collected from protected occurrences, following CDFG-approved seed collection guidelines (i.e., MOU for rare plant seed collection). No bulbs will be translocated into areas within 300 feet of proposed or existing development. Newhall Land or its designee will monitor the reintroduction sites for no fewer than five additional years to estimate slender mariposa lily survivorship (for bulbs) or seedling establishment (for seeded sites).

Annual monitoring reports will be prepared and submitted to CDFG and will be made available to the public to guide future mitigation planning for slender mariposa lily. Monitoring reports will describe all restoration/enhancement measures taken in the preceding year; describe success and completion of those efforts and other pertinent site conditions (erosion, trespass, animal damage) in qualitative terms; and describe mariposa lily survival or establishment in quantitative terms.

A minimum of 133 acres of slender mariposa lily cumulative occupied area will be conserved and managed in the RMDP and SCP Project boundaries. Of these 133 acres, approximately 103 acres of slender mariposa lily cumulative occupied area will be conserved and managed in the RMDP and SCP Project boundary in the High Country SMA and Salt Creek area, and two acres occur within the River Corridor SMA and/or proposed spineflower preserves. Additional cumulative occupied area will be conserved and managed in the San Martinez Grande Canyon area at a 1:1 ratio (acres conserved and managed to acres impacted) based on impacts to cumulative occupied area, as a means to ensure regional biodiversity of the species.

(*This measure applies to Entrada South, with the following exceptions and/or changes: To mitigate Entrada South impacts to slender mariposa lily, up to 28 acres of slender mariposa lily cumulative occupied area will be conserved and managed in the San Martinez Grande Canyon area, and an additional two (2) acres of slender mariposa lily cumulative occupied area will be conserved and managed within the Entrada South Project Site boundaries.*)

MM ES 5.4-36/RMDP/SCP BIO-41: Thirty days prior to construction activities in grassland, scrub, chaparral, oak woodland, riverbank, and agriculture habitats, or other suitable habitat a qualified biologist shall conduct a survey within the proposed construction disturbance zone and within 200 feet of the disturbance zone for American badger.

If American badgers are present, occupied habitat shall be flagged and ground-disturbing activities avoided within 50 feet of the occupied den. Maternity dens shall be avoided during the pup-rearing season (February 15 through July 1) and a minimum 200 foot buffer established. This buffer may be reduced based on the location of the den upon consultation with CDFG. Maternity dens shall be flagged for avoidance, identified on construction maps, and a qualified biologist shall be present during construction. If avoidance of a non-maternity den is not feasible, badgers shall be relocated either by trapping or by slowly excavating the burrow (either by hand or mechanized equipment under the direct supervision of the biologist, removing no more that four inches at a time) before or after the rearing season (February 15 through July 1). Any relocation of badgers shall occur only after consultation with CDFG. A written report documenting the badger removal shall be provided to CDFG within 30 days of relocation.

Collection and relocation of animals shall only occur with the proper scientific collection and handling permits.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-37/RMDP/SCP BIO-42: All oaks that will not be removed that are regulated under CLAOTO with driplines within 50 feet of land clearing (including brush clearing) or areas to be graded shall be enclosed in a temporary fenced zone for the duration of the clearing or grading activities. Fencing shall extend to the root protection zone (i.e., the area at least 15 feet from the trunk or five feet beyond the drip line, whichever distance is greater). No parking or storage of equipment, solvents, or chemicals that could adversely affect the trees shall be allowed within 25 feet of the trunk at any time. Removal of the fence shall occur only after the Project arborist or qualified biologist confirms the health of preserved trees. (*This measure applies to Entrada South without change.*)

MM ES 5.4-38/RMDP/SCP BIO-49: Water containing mud, silt, or other pollutants from construction activities shall not be allowed to enter a flowing stream or be placed in locations that may be subject to normal storm flows during periods when storm

flows can reasonably be expected to occur. (*This measure applies to Entrada South without change.*)

MM ES 5.4-39/RMDP/SCP BIO-50: Prior to initiating construction for the installation of bridges, storm drain outlets, utility lines, bank protection, trails, and/or other construction activities, all construction sites and access roads within the riverbed as well as all riverbed areas within 500 feet of construction sites and access roads shall be surveyed at the appropriate season for southwestern pond turtle. Focused surveys shall consist of a minimum of four daytime surveys, to be completed between April 1 and June 1. The survey schedule may be adjusted in consultation with CDFG to reflect the existing weather or stream conditions. The applicant shall develop a Plan to address the relocation of southwestern pond turtle. The Plan shall include but not be limited to the timing and location of the surveys that would be conducted for this species; identify the locations where more intensive efforts should be conducted; identify the habitat and conditions in the proposed relocation site(s); the methods that would be utilized for trapping and relocating individuals; and provide for the documentation/recordation of the numbers of animals relocated. The Plan shall be submitted to CDFG for approval 60 days prior to any ground-disturbing activities within potentially occupied habitat.

If southwestern pond turtles are detected in or adjacent to the Project, nesting surveys shall be conducted. Focused surveys for evidence of southwestern pond turtle nesting shall be conducted in, or adjacent to, the Project when suitable nesting habitat exists within 1,300 feet of occupied habitat in an area where Project-related ground disturbance will occur (e.g., development, ground disturbance). If both of those conditions are met, a qualified biologist shall conduct focused, systematic surveys for southwestern pond turtle nesting sites. The survey area shall include all suitable nesting habitat within 1,300 feet of occupied habitat in which Project-related ground disturbance will occur. This area may be adjusted based on the existing topographical features on a case-by-case basis with the approval of CDFG. Surveys will entail searching for evidence of pond turtle nesting, including remnant eggshell fragments, which may be found on the ground following nest depredation.

If a southwestern pond turtle nesting area would be adversely impacted by construction activities, the applicant shall avoid the nesting area. If avoidance of the nesting area is determined to be infeasible, the authorized biologist shall coordinate with CDFG to identify if it is possible to relocate the pond turtles. Eggs or hatchlings shall not be moved without written authorization from CDFG.

The qualified biologist shall be present during all activities immediately adjacent to or within habitat that supports populations of southwestern pond turtle. Clearance surveys for pond turtles shall be conducted within 500 feet of potential habitat by the authorized biologist prior to the initiation of construction each day. The resume of the proposed biologist will be provided to CDFG for approval prior to conducting the surveys.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-40/RMDP/SCP BIO-52: Prior to grading and construction activities, a qualified biologist shall be retained to conduct a Worker Environmental Awareness Program (WEAP) for all construction/contractor personnel. A list of construction personnel who have completed training prior to the start of construction shall be maintained on site and this list shall be updated as required when new personnel start work. No construction worker may work in the field for more than five days without participating in the WEAP. Night work and use of lights on equipment shall not be allowed unless CDFG approves of the night work and use of lights. Lighting shall not be used where threatened or endangered species occur. Lights shall be directed from natural areas and remain 200 feet away from natural areas unless otherwise approved by CDFG. The qualified biologist shall provide ongoing guidance to construction personnel and contractors to ensure compliance with environmental/permit regulations and mitigation measures. The qualified biologist shall perform the following:

- Provide training materials and briefings to all personnel working on site. The material shall include but not be limited to the identification and status of plant and wildlife species, significant natural plant community habitats (e.g., riparian), fire protection measures, and review of mitigation requirements.
- A discussion of the federal and state Endangered Species Acts, Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, other state or federal permit requirements and the legal consequences of non-compliance with these acts;
- Attend the pre-construction meeting to ensure that timing/location of construction activities do not conflict with other mitigation requirements (e.g., seasonal surveys for nesting birds, pre-construction surveys, or relocation efforts);
- Conduct meetings with the contractor and other key construction personnel describing the importance of restricting work to designated areas. Maps

showing the location of special-status wildlife or populations of rare plants, exclusion areas, or other construction limitations (e.g., limitations on nighttime work) will be provided to the environmental monitors and construction crews prior to ground disturbance. This applies to preconstruction activities, such as site surveying and staking, natural resources surveying or reconnaissance, establishment of water quality BMPs, and geotechnical or hydrological investigations;

- Discuss procedures for minimizing harm to or harassment of wildlife encountered during construction and provide a contact person in the event of the discovery of dead or injured wildlife;
- Review/designate the construction area in the field with the contractor in accordance with the final grading plan;
- Ensure that haul roads, access roads, and on-site staging and storage areas are sited within grading areas to minimize degradation of vegetation communities adjacent to these areas (if activities outside these limits are necessary, they shall be evaluated by the biologist to ensure that no special-status species habitats will be affected);
- Conduct a field review of the staking (to be set by the surveyor) designating the limits of all construction activity;
- Flag or temporarily fence any construction activity areas immediately adjacent to riparian areas;
- Ensure and document that required pre-construction surveys and/or relocation efforts have been implemented;
- To reduce the potential for the spread of exotic invasive invertebrates (e.g. New Zealand mud snails) and weeds (including weed seeds) during Project clearing and construction, all heavy equipment proposed for use on the Project site shall be verified cleaned (including wheels, tracks, undercarriages, and bumpers, as applicable) before delivery to the Project site. Equipment must be documented as exotic invasive invertebrate (e.g. mud snail) and weed free upon delivery to the Project site initial staging area, including: (1) vegetation clearing equipment (skid steer loaders, loaders, dozers, backhoes, excavators, chippers, grinders, and any hauling equipment, such as off-road haul trucks, flat bed, or other vehicles); (2) earth-moving equipment (scrapers, dozers, excavators, loaders, motor-graders, compactors, backhoes, off-road water trucks, and off-road haul trucks); and (3) all Project-associated vehicles (including personal vehicles) that, upon inspection by the monitoring

biologist, are deemed to present a risk for spreading exotic invasive invertebrates (e.g. mud snails) or weeds. Equipment shall be cleaned at existing construction yards or at a wash station. The biological monitor shall document that all construction equipment (as described above) has been cleaned prior to working within the Project work site. Any equipment/vehicles determined to not be free of exotic invasive invertebrates (e.g. mud snails) and weeds shall immediately be sent back to the originating construction yard for washing, or wash station where rinse water is collected and disposed of in either a sanitary sewer or other legal point of disposal. Equipment/vehicles moved from the site must be inspected, and re-washed as necessary, prior to re-engaging in construction activities in the Project work area. A written daily log shall be kept for all vehicle/equipment washing that states the date, time, location, type of equipment washed, methods used, and location of work;

- Be present during initial vegetation clearing and grading; and
- Submit to CDFG an immediate report (within 72 hours) of any conflicts or errors resulting in impacts to special-status biological resources.

(*This measure applies to Entrada South without change*.)

MM ES 5.4-41/RMDP/SCP BIO-53: Prior to the issuance of a grading permit for ground disturbance, construction, or site preparation activities, the applicant shall retain the services of a qualified biologist to conduct pre-construction surveys for western spadefoot toad within all portions of the Project site containing suitable breeding habitat. Surveys shall be conducted during a time of year when the species could be detected (e.g., the presence of rain pools). If western spadefoot toad is identified on the Project site, the following measures will be implemented.

1. Under the direct supervision of the qualified biologist, western spadefoot toad habitat shall be created within suitable natural sites on the Specific Plan site outside the proposed development envelope. The amount of occupied breeding habitat to be impacted by the Project shall be replaced at a 2:1 ratio. The actual relocation site design and location shall be approved by CDFG. The location shall be in suitable habitat as far away as feasible from any of the homes and roads to be built. The relocation ponds shall be designed such that they only support standing water for several weeks following seasonal rains in order that aquatic predators (e.g., fish, bullfrogs, and crayfish) cannot become established. Terrestrial habitat surrounding the proposed relocation site shall be as similar in type, aspect, and density to the location of the existing ponds as feasible. No site preparation or construction activities shall be permitted in

the vicinity of the currently occupied ponds until the design and construction of the pool habitat in preserved areas of the site has been completed and all western spadefoot toad adults, tadpoles, and egg masses detected are moved to the created pool habitat.

2. Based on appropriate rainfall and temperatures, generally between the months of February and April, the biologist shall conduct pre-construction surveys in all appropriate vegetation communities within the development envelope. Surveys will include evaluation of all previously documented occupied areas and a reconnaissance-level survey of the remaining natural areas of the site. All western spadefoot adults, tadpoles, and egg masses encountered shall be collected and released in the identified/created relocation ponds described above.
3. The qualified biologist shall monitor the relocation site for five years, involving annual monitoring during and immediately following peak breeding season such that surveys can be conducted for adults as well as for egg masses and larval and post-larval toads. Further, survey data will be provided to CDFG by the monitoring biologist following each monitoring period and a written report summarizing the monitoring results will be provided to CDFG at the end of the monitoring effort. Success criteria for the monitoring program shall include verifiable evidence of toad reproduction at the relocation site.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-42/RMDP/SCP BIO-54: Prior to construction the applicant shall develop a relocation plan for coast horned lizard, silvery legless lizard, coastal western whiptail, rosy boa, San Bernardino ringneck snake, and coast patch-nosed snake. The Plan shall include but not be limited to the timing and location of the surveys that would be conducted for each species; identify the locations where more intensive efforts should be conducted; identify the habitat and conditions in the proposed relocation site(s); the methods that would be utilized for trapping and relocating the individual species; and provide for the documentation/recordation of the species and number of the animals relocated. The Plan shall be submitted to CDFG for approval 60 days prior to any ground disturbing activities within potentially occupied habitat.

The Plan shall include the specific survey and relocation efforts that would occur for construction activities that occur both during the activity period of the special status species (generally March to November) and for periods when the species may be present in the work area but difficult to detect due to weather conditions

(generally December through February). Thirty days prior to construction activities in coastal scrub, chaparral, oak woodland, riparian habitats, or other areas supporting these species qualified biologists shall conduct surveys to capture and relocate individual coast horned lizard, silvery legless lizard, coastal western whiptail, rosy boa, San Bernardino ringneck snake, and coast patch-nosed snake in order to avoid or minimize take of these special-status species. The plan shall require a minimum of three (3) surveys conducted during the time of year/day when each species is most likely to be observed. Individuals shall be relocated to nearby undisturbed areas with suitable habitat. If construction is scheduled to occur during the low activity period (generally December through February) the surveys shall be conducted prior to this period if possible and exclusion fencing shall be placed to limit the potential for re-colonization of the site prior to construction. The qualified biologist will be present during ground-disturbing activities immediately adjacent to or within habitat that supports populations of these species. Clearance surveys for special-status reptiles shall be conducted by a qualified biologist prior to the initiation of construction each day.

Results of the surveys and relocation efforts shall be provided to CDFG in the annual mitigation status report. Collection and relocation of animals shall only occur with the proper scientific collection and handling permits.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-43/RMDP/SCP BIO-56: Within 30 days of ground-disturbing activities associated with construction or grading that would occur during the nesting/breeding season of native bird species potentially nesting on the site (typically March through August in the Project region, or as determined by a qualified biologist), the applicant shall have weekly surveys conducted by a qualified biologist to determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the disturbance zone or within 300 feet (500 feet for raptors) of the disturbance zone. Pre-construction surveys shall include nighttime surveys to identify active rookery sites. The surveys shall continue on a weekly basis, with the last survey being conducted no more than seven days prior to initiation of disturbance work. If ground-disturbing activities are delayed, then additional pre-disturbance surveys shall be conducted such that no more than seven days will have elapsed between the survey and ground-disturbing activities.

If active nests are found, clearing and construction within 300 feet of the nest (500 feet for raptors) shall be postponed or halted, at the discretion of the biologist in

consultation with CDFG, until the nest is vacated and juveniles have fledged, as determined by the biologist, and there is no evidence of a second attempt at nesting. In the event that golden eagles establish an active nest in the River Corridor SMA, the buffers will be established in consultation with CDFG. Potential golden eagle nesting will be reported to CDFG within 24 hours. Limits of construction to avoid an active nest shall be established in the field with flagging, fencing, or other appropriate barriers and construction personnel shall be instructed on the sensitivity of nest areas. The biologist shall serve as a construction monitor during those periods when construction activities will occur near active nest areas to ensure that no inadvertent impacts to these nests occur. Results of the surveys shall be provided to CDFG in the annual mitigation status report.

For listed riparian songbirds (least Bell's vireo, southwestern willow flycatcher, yellow-billed cuckoo) USFWS protocol surveys shall be conducted. If active nests are found, clearing and construction within 300 feet of the nest shall be postponed or halted, at the discretion of the biologist in consultation with CDFG and USFWS, until the nest is vacated and juveniles have fledged, as determined by the biologist, and there is no evidence of a second attempt at nesting. If no active nests are observed, construction may proceed. If active nests are found, work may proceed provided that construction activity is located at least 300 feet from active nests (or as authorized through the context of the Biological Opinion and 2081b Incidental Take Permit). This buffer may be adjusted provided noise levels do not exceed 60 dBA hourly Leq at the edge of the nest site as determined by a qualified biologist in coordination with a qualified acoustician.

If the noise meets or exceeds the 60 dBA Leq threshold, or if the biologist determines that the construction activities are disturbing nesting activities, the biologist shall have the authority to halt the construction and shall devise methods to reduce the noise and/or disturbance in the vicinity. This may include methods such as, but not limited to, turning off vehicle engines and other equipment whenever possible to reduce noise, installing a protective noise barrier between the nest site and the construction activities, and working in other areas until the young have fledged. If noise levels still exceed 60 dBA Leq hourly at the edge of nesting territories and/or a no-construction buffer cannot be maintained, construction shall be deferred in that area until the nestlings have fledged. All active nests shall be monitored on a weekly basis until the nestlings fledge. The qualified biologist shall be responsible for documenting the results of the surveys and the ongoing monitoring and for reporting these results to CDFG and USFWS.

For coastal California gnatcatcher, the applicant shall conduct USFWS protocol surveys in suitable habitat within the Project area and all areas within 500 feet of access or construction-related disturbance areas. Suitable habitats, according to the protocol, include "coastal sage scrub, alluvial fan, chaparral, or intermixed or adjacent areas of grassland and riparian habitats." A permitted biologist shall perform these surveys according to the USFWS' (1997a) Coastal California Gnatcatcher Presence/Absence Survey Guidelines. If a territory or nest is confirmed, the USFWS and CDFG shall be notified immediately. If present, a 500-foot disturbance-free buffer shall be established and demarcated by fencing or flagging. No Project activities may occur in these areas unless otherwise authorized by USFWS and CDFG. Construction activities in suitable gnatcatcher habitat will be monitored by a full-time qualified biologist. The monitoring shall be of a sufficient intensity to ensure that the biologist could detect the presence of a bird in the construction area.

(*This measure applies to Entrada South with the following exceptions and/or changes: Entrada South does not provide habitat for birds that build or sustain rookeries; therefore, nighttime surveys for active rookeries are not required*.)

MM ES 5.4-44/RMDP/SCP BIO-57: Thirty days prior to construction activities, a qualified biologist shall conduct CDFG protocol surveys to determine whether the western burrowing owl is present at the site. The surveys shall consist of three site visits and shall be conducted in areas dominated by field crops, disturbed habitat, grasslands, and along levee locations, or if such habitats occur within 500 feet of a construction zone. If located, occupied burrows shall not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by CDFG verifies through non-invasive methods that either the birds have not begun egg-laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. If the burrowing owl is detected but nesting is not occurring, construction work can proceed after any owls have been evacuated from the site using CDFG-approved burrow closure procedures and after alternative nest sites have been provided in accordance with the CDFG Staff Report on Burrowing Owl Mitigation (10-17-95).

Unless otherwise authorized by CDFG, a 500-foot buffer, within which no activity will be permissible, will be maintained between Project activities and nesting burrowing owls during the nesting season. This protected area will remain in effect until August 31 or at CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently.

Results of the surveys and relocation efforts shall be provided to CDFG in the annual mitigation status report.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-45/RMDP/SCP BIO-58: Thirty days prior to construction activities in grassland, scrub, chaparral, oak woodland, riverbank, and agriculture habitats, or other suitable habitat a qualified biologist shall conduct a survey within the proposed construction disturbance zone and within 200 feet of the disturbance zone for San Diego black-tailed jackrabbit and San Diego desert woodrat.

If San Diego black-tailed jackrabbits are present, non-breeding rabbits shall be flushed from areas to be disturbed. Dens, depressions, nests, or burrows occupied by pups shall be flagged and ground-disturbing activities avoided within a minimum of 200 feet during the pup-rearing season (February 15 through July 1). This buffer may be reduced based on the location of the den upon consultation with CDFG. Occupied maternity dens, depressions, nests, or burrows shall be flagged for avoidance, and a biological monitor shall be present during construction. If unattended young are discovered, they shall be relocated to suitable habitat by a qualified biologist. The applicant shall document all San Diego black-tailed jackrabbit identified, avoided, or moved and provide a written report to CDFG within 72 hours. Collection and relocation of animals shall only occur with the proper scientific collection and handling permits.

If active San Diego desert woodrat nests (stick houses) are identified within the disturbance zone or within 100 feet of the disturbance zone, a fence shall be erected around the nest site adequate to provide the woodrat sufficient foraging habitat at the discretion of the qualified biologist in consultation with CDFG. Clearing and construction within the fenced area will be postponed or halted until young have left the nest. The biologist shall serve as a construction monitor during those periods when disturbance activities will occur near active nest areas to ensure that no inadvertent impacts to these nests will occur. If avoidance is not possible, the applicant will take the following sequential steps: (1) all understory vegetation will be cleared in the area immediately surrounding active nests followed by a period of one night without further disturbance to allow woodrats to vacate the nest, (2) each occupied nest will then be disturbed by a qualified wildlife biologist until all woodrats leave the nest and seek refuge off site, and (3) the nest sticks shall be removed from the Project site and piled at the base of a nearby hardwood tree (preferably a coast live oak or California walnut). Relocated nests shall not be spaced closer than 100 feet apart, unless a qualified

wildlife biologist has determined that a specific habitat can support a higher density of nests. The applicant shall document all woodrat nests moved and provide a written report to CDFG.

All woodrat relocation shall be conducted by a qualified biologist in possession of a scientific collecting permit.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-46/RMDP/SCP BIO-60: Thirty days prior to construction activities, a qualified biologist shall conduct a pre-construction survey for mountain lion natal dens. The survey area shall include the construction footprint and the area within 2,000 feet of the Project disturbance boundaries. Should an active natal den be located, the applicant shall cease work within 2000 feet and inform CDFG with 24 hours. No construction activities shall occur in the 2000 foot buffer until a qualified biologist in consultation with CDFG establishes an appropriate setback from the den that would not adversely affect the successful rearing of the cubs. No construction activities or human intrusion shall occur within the established setback until the cubs have been successfully reared or the cats have left the area. (*This measure applies to Entrada South without change.*)

MM ES 5.4-47/RMDP/SCP BIO-61: No earlier than 30 days prior to the commencement of construction activities, a pre-construction survey shall be conducted by a qualified biologist to determine if active roosts of bats are present on or within 300 feet of the Project disturbance boundaries. Should an active maternity roost be identified (in California, the breeding season of native bat species is generally from April 1 through August 31), the roost shall not be disturbed and construction within 300 feet shall be postponed or halted, until the roost is vacated and juveniles have fledged. Surveys shall include rocky outcrops, caves, structures, and large trees (particularly trees 12 inches in diameter or greater at 4.5 feet above grade with loose bark or other cavities). Trees and rocky outcrops shall be surveyed by a qualified bat biologist (i.e., a biologist holding a CDFG collection permit and a Memorandum of Understanding with CDFG allowing the biologist to handle bats). If active maternity roosts or hibernacula are found, the rock outcrop or tree occupied by the roost shall be avoided (i.e., not removed) by the Project. If avoidance of the maternity roost must occur, the bat biologist shall survey (through the use of radio telemetry or other CDFG approved methods) for nearby alternative maternity colony sites. If the bat biologist determines in consultation with and with the approval of CDFG that there are alternative roost sites used by the maternity colony and young are not present then no further action is required.

If a maternity roost will be impacted by the Project, and no alternative maternity roosts are in use near the site, substitute roosting habitat for the maternity colony shall be provided on, or in close proximity to, the Project site no less than three months prior to the eviction of the colony. Large concrete walls (e.g., on bridges) on south or southwestern slopes that are retrofitted with slots and cavities are an example of structures that may provide alternative potential roosting habitat appropriate for maternity colonies. Alternative roost sites must be of comparable size and proximal in location to the impacted colony. CDFG shall also be notified of any hibernacula or active nurseries within the construction zone.

If non-breeding bat hibernacula are found in trees scheduled to be removed or in crevices in rock outcrops within the grading footprint, the individuals shall be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the bat biologist (e.g., installation of one-way doors). In situations requiring one-way doors, a minimum of one week shall pass after doors are installed and temperatures should be sufficiently warm for bats to exit the roost because bats do not typically leave their roost daily during winter months in southern coastal California. This action should allow all bats to leave during the course of one week. Roosts that need to be removed in situations where the use of one-way doors is not necessary in the judgment of the qualified bat biologist in consultation with CDFG shall first be disturbed by various means at the direction of the bat biologist at dusk to allow bats to escape during the darker hours, and the roost tree shall be removed or the grading shall occur the next day (i.e., there shall be no less or more than one night between initial disturbance and the grading or tree removal). These actions should allow bats to leave during nighttime hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight.

If an active maternity roost is located on the Project site, and alternative roosting habitat is available, the demolition of the roost site must commence before maternity colonies form (i.e., prior to March 1) or after young are flying (i.e., after July 31) using the exclusion techniques described above.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-48/RMDP/SCP BIO-63: Each tract map Home Owners' Association shall supply educational information to future residents regarding pets, wildlife, and open space areas. The material shall discuss the presence of native animals (e.g., coyote, bobcat, and mountain lion), indicate that those native animals could prey

on pets, indicate that no actions shall be taken against native animals should they prey on pets allowed outdoors, and indicate that pets must be leashed while using the designated trail system and/or in any areas within or adjacent to open space. Control of stray and feral cats and dogs will be conducted in open space areas on an as-needed basis by the NLMO(s) or the Newhall Ranch *joint powers authority* (JPA) managing the River Corridor SMA, High Country SMA, or Salt Creek area or by the HOAs managing the Open Areas. Feral cats and dogs may be trapped and deposited with the local Society for the Prevention of Cruelty to Animals or the Los Angeles County Department of Animal Control. (*This measure applies to Entrada South without change.*)

MM ES 5.4-49/RMDP/SCP BIO-64: An integrated pest management (IPM) plan that addresses the use of pesticides (including rodenticides and insecticides) on site will be prepared prior to the issuance of building permits for the initial tract map. The IPM will implement appropriate Best Management Practices to avoid and minimize adverse effects on the natural environment, including vegetation communities, special-status species, species without special status, and associated habitats, including prey and food resources (e.g., insects, small mammals, seeds). Potential management practices include cultural (e.g., planting pest-free stock plants), mechanical (e.g., weeding, trapping), and biological controls (e.g., natural predators or competitors of pest species, insect growth regulators, natural pheromones, or biopesticides), and the judicious use of chemical controls, as appropriate (e.g., targeted spraying versus broadcast applications). The IPM will establish management thresholds (i.e., not all incidences of a pest require management); prescribe monitoring to determine when management thresholds have been exceeded; and identify the most appropriate and efficient control method that avoids and minimizes risks to natural resources. Preparation of the CC&Rs for each tract map shall include language that prohibits the use of anticoagulant rodenticides in the Project site. (*This measure applies to Entrada South without change.*)

MM ES 5.4-50/RMDP/SCP BIO-67: Prior to any construction activities occurring within 200 feet of any occupied San Emigdio blue butterfly habitat in Potrero Canyon or other areas, the boundaries of preserved areas of the habitat shall be clearly marked with flagging. The flagging would serve to identify the boundaries of the habitat to construction personnel and to prevent the inadvertent construction-related loss of quail brush or other host plants associated with the habitat. Construction personnel working in the area shall be informed that the removal of or damage to any flagged

quail brush or other host plants located outside the disturbance footprint is prohibited. (*This measure applies to Entrada South without change.*)

MM ES 5.4-51/RMDP/SCP BIO-68: Any common or special-status species bat day roost sites found by a qualified biologist during pre-construction surveys conducted per MM ES 5.4-47/RMDP/SCP BIO-61, to be directly (within project disturbance footprint) or indirectly (within 300 feet of project disturbance footprint) impacted are to be mitigated with creation of artificial roost sites. The Project applicant shall establish (an) alternative roost site(s) within suitable preserved open space located at an adequate distance from sources of human disturbance. (*This measure applies to Entrada South without change.*)

MM ES 5.4-52/RMDP/SCP BIO-70: Construction plans shall include necessary design features and construction notes to ensure protection of vegetation communities and special-status plant and aquatic wildlife species adjacent to construction. In addition to applicable erosion control plans and performance under SCAQMD Rule 403d dust control (SCAQMD 2005), the Project stormwater pollution prevention plan (SWPPP) shall include the following minimum BMPs. Together, the implementation of these requirements shall ensure protection of adjacent habitats and wildlife species during construction. At a minimum, the following measures/restrictions shall be incorporated into the SWPPP, and noted on construction plans where appropriate, to avoid impacting special-status species during construction:

- Avoid planting or seeding invasive species in development areas within 200 feet of native vegetation communities.
- Provide location and details for any dust control fencing along Project boundaries (MM ES 5.4-53/RMDP/SCP BIO-71).
- Vehicles shall not be driven or equipment operated in areas of ponded or flowing water, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in the 404 Permit or 1603 Agreement.
- Silt settling basins installed during the construction process shall be located away from areas of ponded or flowing water to prevent discolored, silt-bearing water from reaching areas of ponded or flowing water during normal flow regimes.
- If a stream channel has been altered during the construction and/or maintenance operations, its low flow channel shall be returned as nearly as

practical to pre-Project topographic conditions without creating a possible future bank erosion problem or a flat, wide channel or sluice-like area. The gradient of the streambed shall be returned to pre-Project grade, to the extent practical, unless it represents a wetland restoration area.

- Temporary structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.
- Staging/storage areas for construction equipment and materials shall be located outside of the ordinary high water mark.
- Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily, to prevent leaks of materials that could be deleterious to aquatic life if introduced to water.
- Stationary equipment such as motors, pumps, generators, and welders which may be located within the riverbed construction zone shall be positioned over drip pans. No fuel storage tanks shall be allowed in the riverbed.
- No debris, bark, slash sawdust, rubbish, cement or concrete or washing thereof, oil, petroleum products, or other organic material from any construction, or associated activity of whatever nature, shall be allowed to enter into, or be placed where it may be washed by rainfall or runoff into, watercourses included in the permit. When construction operations are completed, any excess materials or debris shall be removed from the work area.
- No equipment maintenance shall be done within or near any stream where petroleum products or other pollutants from the equipment may enter these areas with stream flow.
- The operator shall install and use fully covered trash receptacles to contain all food, food scraps, food wrappers, beverage containers, and other miscellaneous trash.
- The operator shall not permit pets on or adjacent to the construction site.
- No guns or other weapons are allowed on the construction site during construction, with the exception of the security personnel and only for security functions. No hunting shall be authorized/permitted during construction.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-53/RMDP/SCP BIO-71: Development areas shall have dust control measures implemented and maintained to prevent dust from impacting vegetation

communities and special-status plant and aquatic wildlife species. Dust control shall comply with SCAQMD Rule 403d (SCAQMD 2005). Where construction activities occur within 100 feet of known special-status plant species locations, chemical dust suppression shall not be utilized. Where determined necessary by a qualified biologist, a screening fence (i.e., a six-foot-high chain link fence with green fabric up to a height of five feet) shall be installed to protect special-status species locations. See MM ES 5.4-27/RMDP/SCP BIO-32 for dust control requirements related to spineflower preserves. (*This measure applies to Entrada South without change.*)

MM ES 5.4-54/RMDP/SCP BIO-72: Plant palettes proposed for use on landscaped slopes, street medians, park sites, and other public landscaped and FMZ areas within 200 feet of native vegetation communities shall be reviewed by a qualified restoration specialist to ensure that the proposed landscape plants will not naturalize and require maintenance or cause vegetation community degradation in the open space areas (River Corridor SMA, High Country SMA, Salt Creek area, and natural portions of the Open Area). Container plants to be installed within public areas within 200 feet of the open space areas shall be inspected by a qualified restoration specialist for the presence of disease, weeds, and pests, including Argentine ants. Plants with pests, weeds, or diseases shall be rejected. In addition, landscape plants within 200 feet of native vegetation communities shall not be on the Cal-IPC California Invasive Plant Inventory (most recent version) or on the list of Invasive Ornamental Plants listed in Appendix B of the SCP. The current Cal-IPC list can be obtained from the Cal-IPC web site (http://www.cal-ipc.org/ip/inventory/index.php). Landscape plans will include a plant palette composed of native or non-native, non-invasive species that do not require high irrigation rates. Except as required for fuel modification, irrigation of perimeter landscaping shall be limited to temporary irrigation (i.e., until plants become established). (*This measure applies to Entrada South without change, except that the current Cal-IPC website is http://www.cal-ipc.org/ip/inventory/.*)

MM ES-5.4-55/RMDP/SCP BIO-78: A cowbird trapping program shall be implemented once vegetation clearing begins and maintained throughout the construction, maintenance, and monitoring period of the riparian restoration sites. A minimum of five traps shall be utilized, with at least one trap adjacent to the project site and one or two traps located at feeding areas or other CDFG-approved location. The trapping contractor may consult with CDFG to request modification of the trap location(s). CDFG must approve any relocation of the traps. Traps will be maintained beginning each year on April 1 and concluding on/or about

November 1 (may conclude earlier, depending upon weather conditions and results of capture). The trapping contractor may also consult CDFG on a modified, CDFG-approved trapping schedule modification. The applicant shall follow CDFG and USFWS protocol. In the event that trapping is terminated after the first few years, subsequent phases of the RMDP development will require initiation of trapping surveys to determine whether re-establishment of the trapping program is necessary.

(*This measure applies to Entrada South, with the following exceptions and/or changes: one trap will be utilized within or adjacent to the Entrada South Project Site, at a location approved by CDFW.*)

MM ES 5.4-56/RMDP/SCP BIO-80: The Project applicant will retain a qualified biologist to develop an Exotic Wildlife Species Control Plan and implement a control program for bullfrog, African clawed frog, and crayfish. The program will require the control of these species during construction within the River corridor and modified tributaries (bridges, diversions, bank stabilization, drop structures). The Plan shall include a description of the species targeted for eradication, the methods of harvest that will be employed, the disposal methods, and the measures that would be employed to avoid impacts to sensitive wildlife (e.g., stickleback, arroyo toad, nesting birds) during removal activities (i.e., timing, avoidance of specific areas). Annual monitoring shall occur for the first five years after construction of Project facilities. After five years, bi-annual monitoring shall occur in perpetuity to determine if additional control is necessary. The Project applicant will fund an endowment, approved by CDFG, for monitoring in perpetuity. Monitoring will be conducted within sentinel locations along the River Corridor SMA and where the Project provides potential habitat for these species (e.g., future ponds and water features). Control shall be conducted within Project facilities where monitoring results indicate that exotic species have colonized an area. (*This measure applies to Entrada South without change.*)

MM ES 5.4-57/RMDP/SCP BIO-85: To preclude the invasion of Argentine ants into the spineflower preserves and their associated buffers, controls will be implemented using an integrated pest management (IPM) approach in accordance with the approved SCP. The controls include the following.

1. Providing “dry zones” between urban development and spineflower populations, where typical soil moistures are maintained at levels below about 10% soil saturation, which will deter the establishment of nesting colonies of

ants; and providing dry zone buffers of sufficient width to reduce the potential for Argentine ant activity within core habitat areas.

2. Where feasible, and/or appropriate, dry areas such as parking lots and roadways shall be built next to preserve boundaries. These will be designed to slope away from the preserve to avoid runoff entering the preserve.
3. Pedestrian pathways placed next to preserves shall consist of decomposed granite or other gravel to minimize the holding of moisture, thereby preventing establishment of suitable habitat for Argentine ant colonies.
4. Ensuring that landscape container plants installed within 200 feet of spineflower preserves are ant free prior to installation, to reduce the chance of colonies establishing in areas close to the preserves.
5. Maintaining natural hydrological conditions in the spineflower preserves, including the buffers, through project design features for roadways, French drains, irrigation systems, underground utilities, drainage pipes and fencing, storm drains, and any other BMP measures that apply to surface water entering the preserve areas.
6. Using drought-resistant plants in FMZs and minimizing irrigation to the extent feasible.

(*This measure applies to Entrada South without change.*)

MM ES 5.4-58/RMDP/SCP BIO-87: Upon initiating landscaping within a development area, quarterly monitoring shall be initiated for Argentine ants along the urban–open space interface at sentinel locations where invasions could occur (e.g., where moist microhabitats that attract Argentine ants may be created). A qualified biologist shall determine the monitoring locations. Ant pitfall traps will be placed in these sentinel locations and operated on a quarterly basis to detect invasion by Argentine ants. If Argentine ants are detected during monitoring, direct control measures will be implemented immediately to help prevent the invasion from worsening. These direct controls may include but are not limited to nest/mound insecticide treatment, or available natural control methods being developed. A general reconnaissance of the infested area would also be conducted to identify and correct the possible source of the invasion, such as uncontrolled urban runoff, leaking pipes, or collected water. Monitoring and control of Argentine ants would occur in perpetuity. The Project applicant will fund an endowment, approved by CDFG, for monitoring in perpetuity. (*This measure applies to Entrada South without change.*)

MM ES 5.4-59/RMDP/SCP BIO-88: Any southern California black walnut and mainland cherry trees or shrubs outside riparian areas greater than one inch dbh shall be replaced in the ratio of at least 2:1. Multi-trunk trees/shrub dbh shall be calculated based on combined trunk dbh. Mitigation shall be deemed complete when each replacement tree attains at least one inch in diameter one foot above the base. (*This measure applies to Entrada South, with the following exceptions and/or changes: The mitigation measure will be implemented on Entrada South for mainland cherry trees or shrubs outside riparian areas greater than one inch dbh. However, because there are no southern California black walnuts on the Entrada South Project Site, that portion of the measure shall not apply.*)

MM ES 5.4-60: All lighting along the perimeter of natural areas shall be downcast luminaries with light patterns directed away from natural areas.

MM ES 5.4-61: Approximately 25.2 acres of undifferentiated chaparral shall be preserved in one or more areas identified in the CMIP to offset impacts associated with Entrada South. This measure ensures that preserved areas will be part of a greater managed preserved system of numerous natural vegetation communities meant to support both common and special-status wildlife species. These areas support the same types of habitat that would be lost through construction and would be further enhanced through management and monitoring activities. See Appendix A, CMIP.

MM ES 5.4-62: Approximately 67.7 acres of California annual grassland, agriculture, and/or disturbed land shall be preserved on site, and within the High Country SMA/SEA and other open space within lands owned by the Applicant to offset impacts associated with Entrada South. This measure ensures that preserved areas will be part of a greater managed preserve system of numerous natural vegetation communities meant to support both common and special-status wildlife species. These areas support the same types of habitat that would be lost through construction and would be further enhanced through management and monitoring activities. See Appendix A, the CMIP.

MM ES 5.4-63: Following the final phase of construction adjacent to the Entrada South spineflower preserve, the Project Applicant, or its designee, shall install and maintain permanent fencing along the subdivision tract bordering the preserve(s), consistent with the SCP. Permanent signage shall be installed on the fencing along the preservation boundary to indicate that the fenced area is a biological preserve, which contains protected species and habitat, that access is restricted,

and that trespassing and fuel modification are prohibited within the area. The permanent fencing shall be designed to allow wildlife movement.

The plans and specifications for the permanent fencing and signage shall be approved by the County in consultation with CDFW prior to construction adjacent to the Entrada South spineflower preserve.

MM ES 5.4-64: A Fire Management Plan shall be developed to avoid and minimize direct and indirect impacts to the spineflower, and to protect and manage the Entrada South spineflower preserve and buffers, consistent with the SCP.

The Fire Management Plan shall be completed by the Project Applicant, or its designee, in conjunction with approval of any subdivisiona final tract map adjacent to athe spineflower preserve. The final Fire Management Plan shall be approved by the County of Los Angeles Fire Department through the processing of a subdivision or subdivision maps.

MM ES 5.4-65: During subdivision map processing, the Project Applicant, or its designee, shall design and implement Project-specific design measures to minimize changes in surface water flows to the Entrada South spineflower preserve(s), and avoid and minimize indirect impacts to the spineflower, consistent with the SCP. Prior to issuance of a grading permit for a subdivision map, the Project Applicant, or its designee, shall submit for approval to the County plans and specifications that ensure implementation of the following design measures:

1. During construction activities, drainage ditches, piping or other approaches will be put in place to convey excess storm water and other surface water flows due to changes from natural drainage, away from the Entrada South spineflower preserve and associated natural open space;
2. Final grading and drainage design will be developed that does not change the current surface and subsurface hydrological conditions within the preserve(s);
3. French drains will be installed along the edge of any roadways and fill slopes that drain toward the preserve(s);
4. Roadways will be constructed with slopes that convey water flows within the roadway easements and away from the preserve(s);
5. Where manufactured slopes drain toward the preserve(s), a temporary irrigation system would be installed to the satisfaction of the County in order to establish the vegetation on the slope area(s). This system shall continue only until the slope vegetation is established and self-sustaining;

6. Underground utilities will not be located within or through the preserve(s). Drainage pipes installed within the preserve(s) away from spineflower populations to convey surface or subsurface water away from the populations will be aligned to avoid the preserve(s) to the maximum extent practicable, and fencing or other structural type barriers that will be installed to reduce intrusion of people or domestic animals into the preserve(s) shall incorporate footing designs that minimize moisture collection.

MM ES 5.4-66: A preserve manager (or Project biologist) knowledgeable, experienced botanist/biologist, subject to approval by the County in consultation with CDFW, shall be required to monitor the grading and fence/utility installation activities that involve earth movement adjacent to the spineflower preserve(s) to avoid the incidental take through direct impacts of conserved plant species, and to avoid disturbance of the preserve(s), consistent with the requirements of the SCP. The biological monitor will conduct biweekly inspections of the Project Site during such grading activities to ensure that these mitigation measures are implemented and adhered to.

Monthly monitoring reports, as needed, shall be submitted to the County verifying compliance with these mitigation measures. The biological monitor will have authority to immediately stop any such grading activity that is not in compliance with these mitigation measures, and to take reasonable steps to avoid the take of, and minimize the disturbance to, spineflower populations within the preserve(s).

MM ES 5.4-67: The following guidelines shall be followed during any grading activities that take place adjacent to the Santa Clara River SMA/SEA:

Grading perimeters shall be clearly marked and inspected by the Project biologist prior to grading occurring immediately adjacent to the Santa Clara River SMA/SEA.

The Project biologist shall work with the grading contractor to avoid inadvertent impacts to riparian and wetland resources in the River Corridor.

MM ES 5.4-68: Indirect impacts resulting from changes to hydrology (i.e., increased water runoff from surrounding development) at the interface between Entrada South spineflower preserve and planned development within the Project Site shall be avoided or mitigated to below a level of significance, consistent with the SCP.

Achievement of this standard will be met through the documented demonstration by the Project Applicant, or its designee, that the storm drain system achieves pre-

development hydrological conditions for the Entrada South spineflower preserve(s). To document such a condition, the Project Applicant, or its designee, shall prepare a study of the pre- and post-development hydrology, in conjunction with subdivision maps adjacent to spineflower preserve(s). The study shall be used in the design and engineering of a storm drain system that achieves pre-development hydrological conditions. The study must conclude that proposed grade changes in development areas beyond the buffers will maintain pre-development hydrologic conditions within the preserve(s). The study shall be approved by the Director of the County Department of Public Works, and the resulting conditions confirmed in consultation with CDFW.

The storm drain system for subdivision maps adjacent to any spineflower preserves must be approved by the County prior to the initiation of any grading activities.

MM ES 5.4-69: In order to reduce impacts to biological resources from grading and construction activities, all related activities will be conducted to facilitate the escape of animals to natural areas. Construction and grading activities shall avoid stranding animals in isolated patches of vegetation or in trenches by providing escape routes and/or trench covering. Such escape routes shall be confirmed as adequate by a qualified biologist prior to grading or other such construction activities.

MM ES 5.4-70: The wildfire fuel modification plan shall depict a fuel modification zone the size of which shall be consistent with the County fuel modification ordinance requirements. Within the zone, tree pruning, removal of dead plant material and weed and grass cutting shall take place as required by the fuel modification ordinance.

MM ES 5.4-71: The wildfire fuel modification plan shall include the following construction period requirements: (a) a fire watch during welding operations; (b) spark arresters on all equipment or vehicles operating in a high fire hazard area; (c) designated smoking and non-smoking areas; and (d) water availability pursuant to the County Fire Department requirements.

MM ES 5.4-72: Waste and recycling receptacles that discourage foraging by wildlife species adapted to urban environments shall be installed in common areas and parks throughout the Entrada South site.

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7 CUMULATIVE IMPACTS

7.1 Summary

Habitat Availability and Quality: Development of Newhall Land projects within the study area would reduce available habitat area; however, the remaining habitat area would generally be located in sizable contiguous parcels. Some vegetation would be disproportionately impacted as discussed below, but the health of remaining suitable vegetation in undeveloped areas would not be substantially impacted. Concentrating development and allowing for large undeveloped open space habitat areas would minimize edge effects on habitat quality.

Watershed Availability and Quality: Development would not be expected to substantially alter flow quantities within watershed tributaries, as standard low-impact development (LID) measures would ensure that infiltration remains adequate to minimize runoff from impermeable surfaces. Proposed development in the study area would also not substantially alter flows through diversions from the Santa Clara River or its tributaries. By minimizing changes in runoff quantities and increases in contaminant levels, Newhall Land development would also make a less than substantial contribution to cumulative effects on water quality and temperature. Other development in the study area that could affect water availability and quality would be subject to similar requirements for construction BMPs and LID design measures.

Special-Status Species: Several special-status species that have been recorded in the study area are restricted to the east of Newhall Land property in the Coastal/Mojave Transition area and higher elevations of the San Gabriel Mountains. Watershed functions for these up-watershed species would not be affected by Newhall Land development. Permanent loss of suitable habitat will be mitigated by measures requiring preservation, enhancement and restoration, and management in the Santa Clara River SMA/SEA, the High Country SMA/SEA, and the Salt Creek area. This will result in a large, permanent open space system that will provide suitable habitat to support these species, and would minimize cumulative impacts to special-status species.

Habitat Connectivity: The two main corridors and linkages identified by the SCMLP —the east–west Santa Clara River corridor and the north–south Santa Monica–Sierra Madre connection—would not be disrupted in the context of their relationship to Newhall Land property and the study area (Penrod et al. 2006). The Santa Clara River corridor will be preserved within Newhall Land property, including upland transition zones between the river and development, and will be managed to preserve its function as a regionally significant wildlife corridor and habitat linkage. The north–south linkages that were identified by the SCMLP for mountain lion, mule deer, and American badger are generally west of Newhall Land property and will not be substantially affected (directly or indirectly) by Newhall Land development, which is located well to the east. In addition, open space protected within the High Country SMA/SEA located in the Specific Plan area and the Salt Creek area in Ventura County will substantially contribute to completion of the north–south linkage. Maintaining

these major habitat linkages would allow for continued wildlife movement even with the cumulative effects of development within the study area.

7.2 Analysis of Newhall's Cumulative Impacts on Biological Resources

The Upper Santa Clara River Watershed (USCRW) Study (Appendix G) provides a detailed assessment of the cumulative impacts to biological resources from Newhall Land development. The USCRW Study examines the biological resources and ecological functions and processes within the U.S. Geological Survey (USGS) hydrologic unit code (HUC)[17] 10, watersheds Numbers 2 through 5 (hereafter referred to as "watersheds" or "study area").[18] These four watersheds, as well as five others that are not part of the study area,[19] comprise the 1,037,092-acre HUC 8 Santa Clara Sub-Basin, shown on Figure 16. The four watersheds that are analyzed in this study consist of 425,507 acres – roughly 41% of the HUC 8 Santa Clara Sub-Basin, as shown on Figure 17. While the vast majority of the USCRW study area is composed of natural lands, some parts of the Santa Clara River Valley and adjacent foothills have been converted to agriculture and residential, commercial, and industrial urban uses; substantial future development is planned for the study area as well.

7.2.1 Scientific and Regulatory Justification for Watershed Study Area

Each of the four HUC 10 watersheds in the study area is well-defined and supports a variety of plants, animals, and natural communities and other man-made land covers (e.g., agriculture, development). They do, however, drain to a common point, the Santa Clara River. These four watersheds were selected because, when compared to the downstream watersheds, they are more likely to be developed and sustain effects from the Newhall Land projects. As explained further in Section 7.2.1.2, project-specific and cumulative impacts to downstream watersheds are expected to be minimal due to (a) the higher flows in the mainstem Santa Clara River in these locations, and (b) the large amount of land designated for non-developed uses in downstream watersheds. The USCRW study area is also consistent with the conservation area delineated in the Santa Clara River Upper Watershed Conservation Plan produced by The Nature Conservancy (TNC), except that the USCRW Study excludes HUC 10 Watershed 19 (Lower Piru Creek), which was included in the TNC study (TNC 2006). The HUC 10 Watershed 19 is excluded from the USCRW Study because it is downstream of Newhall Land property, as shown on Figure 17.

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[17] Hydrologic unit codes (HUC) are a way to classify divisions of watersheds—the largest and most inclusive category, HUC 2, covers large areas of the United States like the Great Basin or the Pacific Northwest. The most exclusive HUC classification is HUC 12, the subwatershed. The HUCs investigated in this study are all HUC 10 watersheds.

[18] Watershed 2 is known as "Headwaters Santa Clara River." Watershed 3 is known as "Bouquet Canyon." Watershed 4 is known as "Castaic Creek." Watershed 5 is known as "Upper Santa Clara River."

[19] HUC 10 watersheds within the Santa Clara Sub-Basin that are not part of the study area are Upper Piru Creek (6), Sespe Creek (18), Lower Piru Creek (19), Middle Santa Clara River (20), and Lower Santa Clara River (21).

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FIGURE 16

Regional Watershed Map

Biological Technical Report for the Entrada South Site

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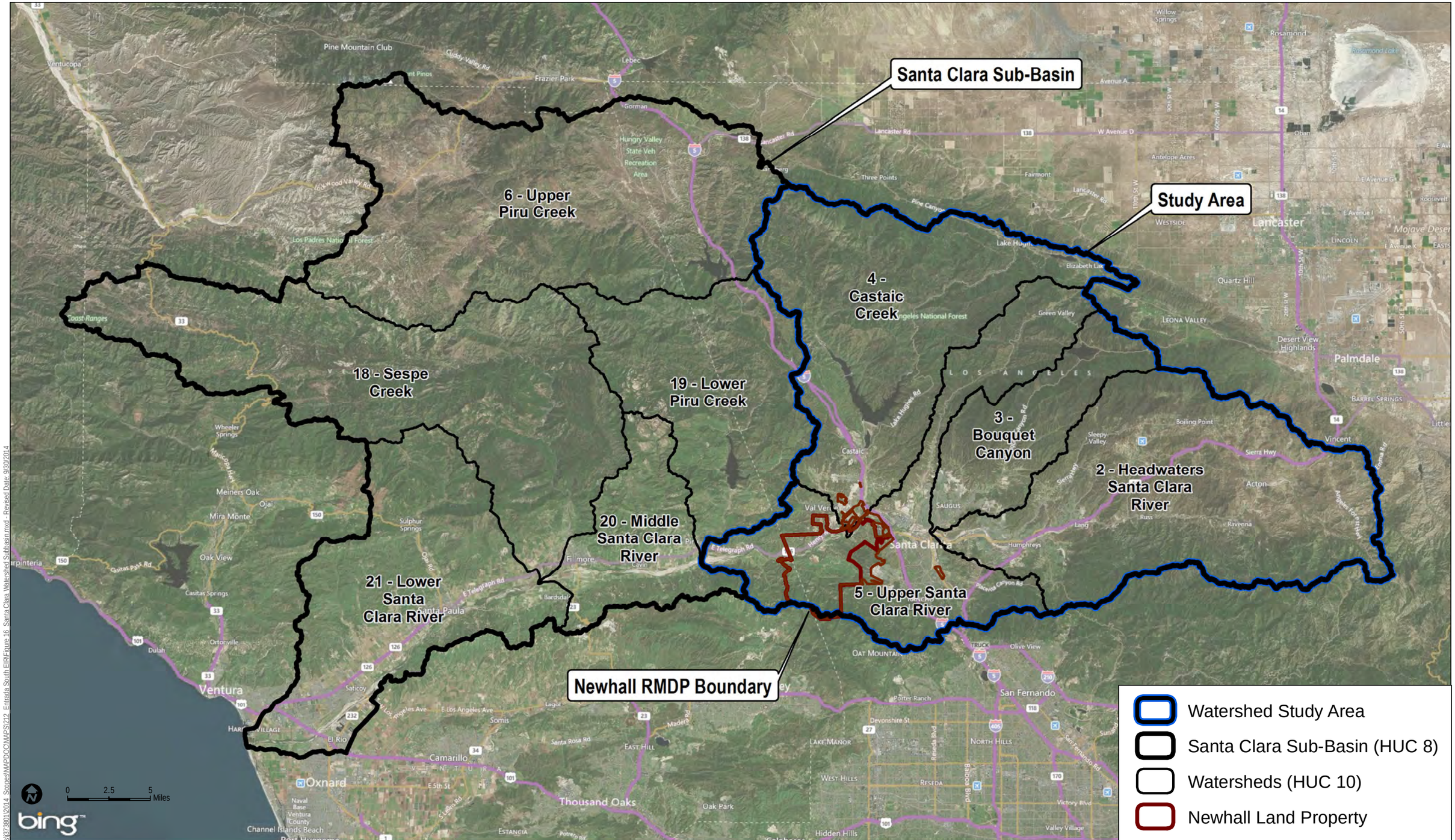

U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
AERIAL: Bing Hybrid

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FIGURE 17
Watersheds within Santa Clara Watershed Sub-Basin

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7.2.1.1 Use of a Watershed-Scale Study Area

The use of a watershed-scale study area to identify project-specific and cumulative effects on biological resources is endorsed by federal agencies such as the Bureau of Land Management, the U.S. Forest Service, the USFWS, and the U.S. Environmental Protection Agency (BLM 2001; Reid 1993; USFWS 2008; EPA 2014).

Watershed-Scale Studies Assist Water Quality Analyses. Resource management agencies consider watersheds an appropriate spatial unit for assessing human-generated impacts on the quality and quantity of water at specific points in particular water bodies, such as the Santa Clara River. Because they integrate the surface and subsurface flow of water upgradient from the point at which measurements are made, watershed studies allow one to make drainage basin-specific accountings of point and nonpoint source pollutants, whose transport is associated with the movement of water. Where watersheds are relevant and can be defined, they have long been recognized as a convenient and appropriate boundary for studying the relationship between water quality and natural and anthropogenic (caused by or related to human use) phenomena, as well as for providing a spatial unit for reference areas within ecoregions at all scales.

Resource management agencies also recognize the utility of restricting the cumulative effects study area to watersheds or subwatersheds that are relevant to project effects. Per the California Manual for Watershed Assessment: "if you wish to study the effect of local land-use changes, you may wish to assess several small watersheds where these changes will have a more noticeable impact on the local stream (simply because they occupy a greater proportion of the watershed area)."

Watershed-Scale Studies Are Consistent with Regional Planning Efforts. Examining cumulative impacts at a watershed or comparable scale (e.g., a set of HUC 10 watersheds as in the USCRW Study) is consistent with large regional planning efforts that have included the study area, including Newhall Land projects. For example, One Valley One Vision (OVOV) is a joint effort between the County of Los Angeles ("County"), the City of Santa Clarita ("City"), and Santa Clara River Valley ("Valley") residents and businesses to create a single vision for the future growth of the Valley and the preservation of natural resources (http://planning.lacounty.gov/ovov). The planning area for OVOV, all of which is within the USCRW study area is on a watershed scale and includes the City and its four communities: Canyon Country, Newhall, Saugus, and Valencia, as well as the County communities of Stevenson Ranch, Castaic, Val Verde, Agua Dulce, and the future Newhall Ranch. The OVOV effort has resulted in a revised General Plan for the City and a new Santa Clarita Valley Area Plan incorporated by the County as a component of the County General Plan.

The Santa Clarita Valley Area Plan is another example of a planning effort conducted on a watershed scale. It accounts for several existing specific plans in the area, including Newhall Ranch, Northlake (3,623 residential units on 1,330 acres near Castaic), Canyon Park (4,763 multiple-family units and 637 single-family units on 308 acres), Porta Bella (1,244 single-family units, 1,667 multiple-family units, and 96 acres of commercial/office on 989 acres of the Whittaker Bermite site), Downtown Newhall, and Valencia.

Watershed-Scale Studies Are Appropriate for Assessing Cumulative Biological Resource Impacts. Resource agencies often develop conservation plans or effects analyses for biological resources at the watershed scale. Many mobile wildlife species and birds move across large areas within a watershed or sub-basin. At the watershed scale, individual species are typically grouped into "guilds" based on their habitat needs or life history. The species within a guild are subject to similar effects from water quality, habitat loss or degradation, loss of habitat connectivity, and other watershed-scale impacts. In short, watershed-scale analyses allow the biologist, the land planner, the agency decision-maker, and the public to see how certain impacts affect the larger network of ecological functions in a given area. It provides a macro perspective that one cannot typically achieve through a micro- or project-specific analysis.

7.2.1.2 Selection of the Study Area Watersheds

Planned development on Newhall Land property would not directly affect the majority of the HUC 10 Santa Clara Sub-Basin. There are nine watersheds within the Santa Clara Sub-Basin, of which five would not contain proposed Newhall Land development: Upper Piru Creek, Sespe Creek, Middle Santa Clara River, Lower Santa Clara River, and Lower Piru Creek, as shown on Figure 17. These five watersheds have a combined total of 612,396 acres, which is 59% of the Santa Clara Sub-Basin.

The Middle Santa Clara River and Lower Santa Clara River watersheds are directly downgradient from the four HUC 10 watersheds in the USCRW study area directly affected by Newhall Land development; see Figure 17. The remaining three watersheds outside the study area (Upper Piru Creek (6), Sespe Creek (18), and Lower Piru Creek (19)) drain to the Middle Santa Clara River and Lower Santa Clara River watersheds, shown on Figure 17. Although the two downgradient watersheds (Middle Santa Clara River and Lower Santa Clara River) may sustain localized temporary increases in turbidity or long-term incremental increases in runoff from impermeable surfaces located in the upstream watersheds, the impacts would be minimal given the high water volumes carried by the downgradient watersheds. For example, Castaic Creek, which drains 37 square miles within Watershed 4, (Castaic Creek), has an average winter flow of 3.5 cubic feet per second, while typical winter flows in the lower mainstem Santa Clara River are approximately 3,500 cubic feet per second. In addition, a "Dry Gap" exists downstream of the Los Angeles County/Ventura County that is an ephemeral reach of the Santa

Clara River where surface flows in the river are lost to the Piru groundwater basin during dry periods. Surface runoff breaches the Dry Gap during major storm events and provides temporary surface water connections that periodically allow flows to directly reach downstream areas.

The study area excludes all but a fraction of an acre of the Ventura County portion of the Santa Clara Sub-Basin. Development in rural and agricultural areas of Ventura County is essentially under a moratorium as a result of several "Save Open Space and Agricultural Resources" (SOAR) ordinances and initiatives. The Ventura County SOAR ordinance, extended through 2020, requires County-wide voter approval of any change to the County General Plan involving the "Agricultural," "Open Space," or "Rural" land use map designations, or any change to a General Plan goal or policy related to those land use designations. The City of Ventura has two measures: (1) its original SOAR measure, which requires voter approval of any change to the General Plan involving the "Agriculture" designation and has been extended through 2030, and (2) the Hillside Voter Participation Act, which requires voter approval of any urban development within the Hillside Voter Participation Act line. SOAR ordinances have also been adopted for the cities of Camarillo, Fillmore, Moorpark, Oxnard, Santa Paula, Simi Valley, and Thousand Oaks.

Ultimately, watersheds 2 through 5 of HUC 10 were selected as the study area for the USCRW Study based on the following factors:

- The location of significant ecological areas
- Reasonably accurate information for the location and extent of proposed development activities
- The existence and nature of sensitive downstream water-related natural features, uses, conditions or hazards
- Ranges of special-status and other key species using the watershed, linkages between populations, and wildlife movement patterns
- Available watershed plans specifying watersheds for study.

7.2.1.3 Key Landscape-Level Ecological Functions of the USCRW

At the watershed level, several ecological functions are susceptible to disruption. These include the following:

- Habitat availability – determined by presence of appropriate vegetation, appropriate geological type and/or soil type, elevation of habitat, and the slopes
- Habitat quality – determined by size of the habitat area, quantity and health of suitable vegetation, quantity and quality of water, and proximity to development

- Habitat connectivity – determined by the presence and appropriate size of movement corridors between habitat areas
- Water availability and quality – determined by flow quantities and durations, maintenance of hydrological connectivity, erosion and sediment loads, and contaminant levels.

7.3 Ecological Functions of the USCRW

7.3.1 Existing Habitat Types

Existing habitat types within the USCRW are generally described by the dominant vegetation (refer to Table 1 in Appendix G for detailed acreages for each vegetation type). The vegetation groupings used below differ from those used in the project-level analysis (Section 5.3) due to differences in the source data available for the cumulative study area:

- Riparian – California Central Valley riparian woodland and shrubland, Mediterranean California foothill and lower montane riparian woodland, North American warm desert riparian woodland and shrubland. Includes sensitive cottonwood–willow riparian forest.
    - Important to riparian-dependent bird species (e.g., least Bell's vireo, southwestern willow flycatcher), semi-aquatic reptiles (e.g., western pond turtle (*Actinemys marmorata*), two-striped gartersnake (*Thamnophis hammondii*)), and amphibians (e.g., arroyo toad).
- Grasslands – California Central Valley and southern coastal grassland, California mesic serpentine grassland.
    - Important to range of wildflowers, special-status plants (e.g., California Orcutt grass (*Orcuttia californica*), spreading navarretia (*Navarretia fossalis*)), and grassland-dependent bird species (e.g., California horned lark, grasshopper sparrow, and several foraging raptors).
- Scrub – Various desert scrubs, inter-mountain basins big sagebrush shrubland, southern California coastal scrub, Mediterranean California southern coastal dune.
    - Important to special-status plants (e.g., San Fernando Valley spineflower, slender-horned spineflower (*Dodecahema leptoceras*)), scrub-dependent bird species (e.g., southern California rufous-crowned sparrow, coastal California gnatcatcher), and scrub-dependent reptiles (Blainville's horned lizard (*Phrynosoma blainvillii*) and coastal whiptail).
- Woodlands – Various oak woodlands and savannah, California lower montane blue oak–foothill pine woodland savannah, Central and southern California mixed

evergreen woodland, Mediterranean California mixed evergreen forest, Great Basin pinyon–juniper woodland.

  - Important to woodland-dependent bird species (e.g., Cooper's hawk and oak titmouse).

- Coniferous Forest – California montane Jeffrey pine–(Ponderosa pine) woodland, Mediterranean California dry-mesic mixed conifer forest and woodland, California coastal redwood forest.
  - Important to forest-dependent bird species (nesting California condor and California spotted owl (*Strix occidentalis occidentalis*)).
- Chaparrals – California mesic chaparral, Mediterranean California mesic serpentine woodland and chaparral, Southern California dry-mesic chaparral, Sonora–Mojave semi-desert chaparral, California montane woodland and chaparral.
  - Important to chaparral plants (e.g., island mountain-mahogany, Ross' pitcher sage (*Lepechinia rossii*)), chaparral-dependent bird species (Bell's sage sparrow (*Artemisiospiza belli belli*)), and chaparral-dependent reptiles (e.g., rosy boa (*Lichanura trivirgata*)).
- Wetland and Aquatic – Temperate Pacific freshwater emergent marsh, temperate Pacific freshwater mudflat, open water (fresh).
  - Important to aquatic-dependent species (unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), Santa Ana sucker, arroyo chub, western pond turtle, two-striped gartersnake, and arroyo toad).

7.3.2 Existing Habitat Quality

Habitat quality for each of the above communities was assessed in the Santa Clara River Upper Watershed Conservation Plan prepared by TNC (2006).[20] TNC identified key ecological attributes relative to habitat quality, which are consistent with those identified for this study: (1) size of the habitat; (2) condition of the habitat (e.g., the vegetation composition, structure, and biotic interactions within the habitat); and (3) landscape context (e.g., availability of ecological processes that allow the community to function, availability of movement corridors). **Table 17**, Existing Habitat Quality in the USCRW, summarizes the habitat quality TNC identified for each habitat type. While individual attributes for the habitats ranged from "very good" to "poor," the overall current condition of all habitats is "fair."

[20] The TNC 2006 plan included the Lower Piru Creek watershed, which was excluded from the USCRW Study.

Table 17
Existing Habitat Quality in the USCRW

Habitat Type	Ecological Attribute			Overall Quality
	Size	*Condition*	*Landscape Context*	
Riparian	Fair	Good	Fair	Fair
Grasslands	Poor	Fair	Fair	Fair
Scrubs	Fair	Good	Poor	Fair
Woodlands	Fair	Fair	Good	Fair
Coniferous Forest	Very Good	Good	Poor	Fair
Chaparrals	Very Good	Good	Poor	Fair
Aquatic Communities	Fair	Good	Fair	Fair

Source: TNC 2006.
Notes:
Very Good = the habitat is naturally functioning and requires little human intervention.
Good = the habitat is functioning within its range of acceptable variation; it may require some human intervention.
Fair = the habitat lies outside its range of acceptable variation and requires human intervention. If unchecked, the habitat will be vulnerable to serious degradation.
Poor = allowing the habitat to remain in this condition for an extended period will make restoration or preventing species extirpation practically impossible

The preparers of the Upper Santa Clara Watershed Conservation Plan weighted the rankings shown in Table 17 according to the sensitivity of each habitat type. As a result, some of the attribute rankings assigned by TNC are counterintuitive at first inspection. For example, 93% of chaparral is in open space but is assigned a landscape context of "poor," while 54% of grassland is in open space but is assigned a landscape context of "fair." To arrive at this conclusion, the preparers assumed that ecological processes necessary for proper function of grassland habitat types were much less sensitive to disruption than those depended on by chaparral, and were particularly concerned with the potential for major wildland fire effects (which is a product of "landscape context") on chaparral communities.

7.3.3 Existing Habitat Connectivity

Habitat connectivity is of critical importance to the persistence of wide-ranging terrestrial vertebrates of the study area, including mountain lion, mule deer, and American badger (*Taxidea taxus*). The Santa Clara River corridor within the study area, as well as the river corridor downstream of the study area, is identified as an important regional habitat linkage and wildlife corridor in *Missing Linkages: Restoring Connectivity to the California Landscape* (Penrod 2000) and the SCMLP (Penrod et al. 2006).[21]

[21] The SCMLP is produced by South Coast Wildlands, a non-profit organization that brings together various agencies, scientists, and consultants to address conservation issues in the South Coast Ecoregion.

Within the study area as a whole, the SCMLP identifies 15 priority linkages in the South Coast Ecoregion (Penrod et al. 2006). Two of these linkages compose the north–south Santa Monica–Sierra Madre connection, of which the eastern linkage crosses a portion of Newhall Land property at its western boundary on the Ventura/Los Angeles County line. The eastern linkage also intersects the western portion of the Upper Santa Clara River watershed west of the Newhall Land Resource Management and Development Plan (RMDP) boundary. The SCMLP identified preferred travel routes for mountain lion, mule deer, and American badger (referred to as Least Cost Corridors [LCCs]), as well as a route that best met the habitat linkage needs of all three species (referred to as the Least Cost Union [LCU]).

Figures 10 through 13 in Appendix G overlay the results of the SCMLP on the study area. The easternmost branch of the LCU area for mule deer, mountain lion, and American badger is located along the Ventura County / Los Angeles County boundary and overlaps with the High Country SMA/SEA and Salt Creek area south of SR-126 within the Upper Santa Clara River watershed. North of SR-126, the LCU is located almost entirely in Ventura County in proximity to Newhall Land property and extends into Hoiser Canyon, upper San Martinez Grande Canyon, and the Piru Creek watershed outside the study area.

Another linkage identified by the SCMLP and added to the modeled LCU is between the San Gabriel Mountains and the Santa Susana Mountains to the west. Compared to the modeled SCMLP linkages, the San Gabriel-Santa Susana linkage remains relatively intact; however, major barriers to exchange in the San Fernando Pass include I-5 and SR 14, both of which are large multi-lane freeways with no engineered wildlife crossings. SCMLP did not conduct a permeability analysis for this linkage, but land has been protected in the Gateway Ranch, Gates/King, and Elsmore Ranch properties to aid in connecting the Santa Clarita Woodlands on the west to the Angeles National Forest on the east.

7.3.4 Existing Water Quality and Availability

While portions of the upper Santa Clara River have perennial flows, most are dry in the absence of storms (TNC 2006). Perennial flows in the Santa Clara River occur west of the Bouquet Creek confluence, largely due to discharges from the Valencia and Saugus wastewater reclamation plants. The dry segment near the confluence of Bouquet Canyon is essential to the genetic isolation of the unarmored threespine stickleback in the upper watershed, keeping it from interbreeding with its related subspecies, the partially armored threespine stickleback, found downstream. Tributaries within the study area generally flow only in winter and during storms.

Although water quality in the Santa Clara River is generally regarded as good, issues with chloride have been noted in the upper watershed (CBI 2005, as cited in TNC 2006). Elevated chloride concentrations that have been detected coming from Valencia and Saugus wastewater reclamation

plants are due to domestic use of water softeners. Concentrations of total suspended solids in the Santa Clara River are sometimes very high due to the highly erodible, easily transportable, sandy alluvial soils and sediments, and average concentrations are much higher for larger storms than for smaller storms (Corps and CDFG 2010). During wet weather sampling of water from the Santa Clara River, some samples exhibited copper and zinc concentrations in excess of the CTR acute criteria, but the *average* concentrations for copper and zinc were below the CTR acute criteria. Lead concentrations were consistently below acute criteria. Fecal coliform and total coliform levels at in the Santa Clara River consistently measure at high levels; the River is impaired for bacteria in wet weather flows at the Project location (Geosyntec 2014).

7.3.5 Special-Status Species and Sensitive Vegetation Types in the Study Area

Special-status species that have been documented in the study area based on CNDDB records are presented in Table 18, CNDDB Element Occurrences for Special-Status Species in the Study Area. This study uses the CNDDB because site-specific surveys—such as those conducted on Newhall Land properties—have not been performed throughout the entire study area. The CNDDB, while coarse, nevertheless allows one to draw general conclusions regarding cumulative, watershed-wide impacts to special-status species and sensitive vegetation types.

Given the size of the study area, plants with similar habitat requirements and wildlife species with similar life histories and behaviors are assigned to one of 18 species guilds. Species that fall within each guild are expected to be similarly affected by direct and indirect impacts in the study area, as they rely on the same type of habitat (e.g., riparian) or rely on the same ecosystem function (e.g., water quality, movement corridors).

Table 18
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Plants				
San Fernando Valley spineflower *Chorizanthe parryi* var. *fernandina*	SE/FC/ 1B.1/ LA County	Castaic Creek = 18 Upper Santa Clara River = 119	Coastal scrub, sandy soils	Plant – Chaparral/ Scrub
Slender-horned spineflower *Dodecahema leptoceras*	FE/SE/ 1B.1/LA County	Headwaters Santa Clara River = 48 Upper Santa Clara River = 376	Alluvial scrub on sandy substrate	Plant – Alluvial Scrub
Parry's spineflower *Chorizanthe parryi* var. *parryi*	1B.1	Bouquet Canyon = 4	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland/sandy or rocky, openings	Plant – Chaparral/ Scrub

Table 18
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Slender mariposa-lily *Calochortus clavatus* var. *gracilis*	1B.2/LA County	Headwaters Santa Clara River = 37 Bouquet Canyon =38 Castaic Creek = 103 Upper Santa Clara River = 460	Chaparral and coastal scrub	Plant – Chaparral/ Scrub
Late-flowered mariposa-lily *Calochortus fimbriatus*	1B.3	Upper Santa Clara River = 5	Chaparral, cismontane and riparian woodland	Plant - Generalist
Plummer's mariposa-lily *Calochortus plummerae*	4.2/LA County	Headwaters Santa Clara River = 23 Upper Santa Clara River = 15	Chaparral, coastal scrub, cismontane woodland, grasslands on rocky granitic substrate	Plant – Chaparral/ Scrub
Newhall sunflower *Helianthus inexpectatus*	1B.1	Upper Santa Clara River = 2	Marshes and swamps, riparian woodland/ freshwater, seep	Plant – Wetland
Davidson's bush-mallow *Malacothamnus davidsonii*	1B.2/LA County	Upper Santa Clara River = 2	Chaparral, coastal scrub, riparian woodland/ deciduous scrub/	Plant – Chaparral/ Scrub
California Orcutt grass *Orcuttia californica*	FE/SE/1B.1	Headwaters Santa Clara River = 39 Bouquet Canyon =15 Upper Santa Clara River = 376	Vernal pools	Plant – Vernal Pool
Chaparral ragwort *Senecio aphanactis*	2B.2/LA County	Headwaters Santa Clara River = 2 Bouquet Canyon = 1 Upper Santa Clara River = 14	Chaparral, coastal scrub, cismontane woodland on alkaline substrate	Plant – Chaparral/ Scrub
Greata's aster *Symphyotrichum greatae*	1B.3	Headwaters Santa Clara River = 3 Castaic Creek = 8	Broadleafed upland forest, chaparral, cismontane woodland, lower montane and coniferous forest, riparian woodland/mesic	Plant – Forest and Woodland
Island mountain-mahogany *Cercocarpus betuloides* var. *blancheae*	4.3/LA County	Observed within the Homestead South, Mission Village, and Entrada South Project areas in 2012.	Chaparral, closed-cone coniferous forest	Plant – Chaparral/Scrub
Mason's neststraw *Stylocline masonii*	1B.1	Headwaters Santa Clara River = 1	Dry, open sandy places, within shadscale/ chenopod scrub and pinyon–juniper woodland communities; 100–400 meters amsl	Plant – Chaparral/Scrub
Mt. Gleason paintbrush *Castilleja gleasoni*	1B.2	Headwaters Santa Clara River = 7 Castaic Creek = 2	Coniferous forest above 5,000 feet amsl, granitic soils	Plant – Forest and Woodland

Table 18
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Nevin's barberry *Berberis nevinii*	FE/SE/1B.1/LA County	Upper Santa Clara River = 21	Chaparral, coastal scrub, riparian scrub, cismontane woodland on sandy or gravelly substrate	Plant – Chaparral/ Scrub
Ojai navarretia *Navarretia ojaiensis*	1B.1	Upper Santa Clara River = 5	Chaparral (openings), coastal scrub (openings), valley and foothill grassland	Plant - Grassland
Piute Mountains navarretia *Navarretia setiloba*	1B.1	Headwaters Santa Clara River = 3 Bouquet Canyon = 4	Cismontane woodland, pinyon and juniper woodland, valley and foothill grassland/ clay or gravelly loam	Plant – Woodland/ Grassland
Southern California black walnut *Juglans californica*	4.2/LA County	Incidentally observed in RMDP/SCP area in 2002–2005, and mapped in 2012–2013	Chaparral, cismontane woodland, coastal scrub, alluvial scrub	Plant – Chaparral/ Scrub
Spreading navarretia *Navarretia fossalis*	FT/1B.1	Bouquet Canyon = 8	Chenopod scrub, marshes and swamps (assorted shallow freshwater), playas, vernal pools	Plant – Wetland
Peirson's morning-glory *Calystegia peirsonii*	4.2/LA County	Headwaters Santa Clara River = 2 Bouquet Canyon =13 Castaic Creek = 44 Upper Santa Clara River = 16	Chaparral, coastal scrub, cismontane woodland, grassland	Plant – Generalist
Ross' pitcher sage *Lepechinia rossii*	1B.2	Castaic Creek = 2 Upper Santa Clara River = 1	Chaparral/ perennial shrub	Plant – Chaparral/ Scrub
Round-leaved filaree *California macrophylla*	1B.1/ LA County	Castaic Creek = 10	Cismontane woodland and grasslands on clay substrate	Plant – Woodland/ Grassland
San Gabriel bedstraw *Galium grande*	1B.2	Castaic Creek = 3	Broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest	Plant – Forest and Woodland
San Gabriel linanthus *Linanthus concinnus*	1B.2	Headwaters Santa Clara River = 1	Lower montane coniferous forest, upper montane coniferous forest, rocky soils.	Plant – Forest and Woodland
San Gabriel manzanita *Arctostaphylos gabrielensis*	1B.2	Headwaters Santa Clara River = 13	Shrubland/chaparral, rocky outcrops	Plant – Chaparral/ Scrub

Table 18
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Short-joint beavertail *Opuntia basilaris* var. *brachyclada*	1B.2/ LA County	Headwaters Santa Clara River = 42 Bouquet Canyon = 7 Castaic Creek = 2 Upper Santa Clara River = 5	Chaparral, Joshua tree woodland, Mojavean desert scrub	Plant – Chaparral/ Scrub
Fish				
Unarmored threespine stickleback *Gasterosteus aculeatus williamsoni*	FE/SE,FP/LA County	Headwaters Santa Clara River = 54 Bouquet Canyon = 8 Castaic Creek = 5 Upper Santa Clara River = 175	Slow-moving and backwater areas	Fish
Santa Ana sucker *Catostomus santaanae*	FT (only for its natural historical range which excludes the Santa Clara River)/CSC/LA County	Headwaters Santa Clara River = 63 Castaic Creek = 9 Upper Santa Clara River = 125	Small, shallow, cool, clear streams; substrates are generally coarse gravel, rubble and boulder	Fish
Arroyo chub *Gila orcuttii*	None/CSC/LA County	Headwaters Santa Clara River = 7 Castaic Creek = 2 Upper Santa Clara River = 114	Warm, fluctuating streams with slow-moving, or backwater sections of warm to cool streams; substrates of sand or mud	Fish
Reptiles				
Rosy boa *Charina trivirgata*	SA/LA County	Headwaters Santa Clara River = 2 Upper Santa Clara River = 3	Desert and chaparral habitats with rocky soils in coastal canyons and hillsides, desert canyons, washes and mountains	Reptile – Low Mobility
Coastal whiptail *Aspidoscelis tigris stejnegeri*	SA/LA County	Headwaters Santa Clara River = 2 Bouquet Canyon = 9 Castaic Creek = 23 Upper Santa Clara River = 16	Open areas in semiarid grasslands, scrublands, and woodlands	Reptile – Low Mobility
Silvery legless lizard *Anniella pulchra pulchra*	CSC/LA County	Headwaters Santa Clara River = 2 Bouquet Canyon = 4	Stabilized dunes, beaches, dry washes, chaparral, scrubs, pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils	Reptile – Low Mobility

Table 18
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Western pond turtle *Actinemys marmorata*	CSC	Headwaters Santa Clara River = 2 Castaic Creek = 7 Upper Santa Clara River = 90	Slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter	Reptile and Amphibian – Semi-Aquatic
Two-striped gartersnake *Thamnophis hammondii*	CSC/LA County	Headwaters Santa Clara River = 5 Bouquet Canyon = 1 Castaic Creek = 10 Upper Santa Clara River = 31	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Reptile and Amphibian – Semi-Aquatic
Blainville's horned lizard *Phrynosoma blainvillii*	CSC/LA County	Headwaters Santa Clara River = 50 Bouquet Canyon = 1 Castaic Creek = 10 Upper Santa Clara River = 36	Exposed gravelly-sandy soils with minimal shrubs, riparian woodland clearings, dry chamise chaparral, and annual grasslands with scattered seepweed or saltbush	Reptile – Low Mobility
Amphibians				
Western spadefoot *Spea hammondi*	CSC/LA County	Headwaters Santa Clara River = 13 Bouquet Canyon = 5 Castaic Creek = 5 Upper Santa Clara River = 12	Open areas in lowland grasslands, chaparral and pine–oak woodlands; requires temporary rain pools that last approximately 3 weeks	Reptile and Amphibian – Semi-Aquatic
Arroyo toad *Anaxyrus californicus*	FE/CSC/LA County	Headwaters Santa Clara River = 10 Castaic Creek = 10 Upper Santa Clara River = 14	Stream channels for breeding (typically 3rd order); adjacent stream terraces and uplands for foraging and wintering	Reptile and Amphibian – Semi-Aquatic
California red-legged frog *Rana draytonii*	FT/CSC/LA County	Headwaters Santa Clara River = 8 Upper Santa Clara River = 19	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	Reptile and Amphibian – Semi-Aquatic
Birds				
Bald eagle *Haliaeetus leucocephalus*	BCC, BAGEPA, FD/SE, FP/LA County (nesting and wintering)	Castaic Creek = 1	Seacoasts, rivers, swamps, large lakes; winters at large bodies of water in lowlands and mountains	Bird – Nesting/ Foraging Raptor

Table 18
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Burrowing owl *Athene cunicularia*	BCC/CSC/LA County (burrow sites and some wintering sites)	Headwaters Santa Clara River = 1 Bouquet Canyon = 0 Castaic Creek = 13 Upper Santa Clara River = 2	Grasslands, open scrub, and agriculture, particularly with ground squirrel burrows	Bird – Nesting/ Foraging Raptor
Cooper's hawk *Accipiter cooperii*	WL/LA County (nesting)	Upper Santa Clara River = 46	Dense stands of live oak, riparian woodlands, or other woodland habitats near water	Bird – Nesting/ Foraging Raptor
Golden eagle *Aquila chrysaetos*	BCC/BAGEPA/ FP/WL/ LA County (nesting and wintering)	Headwaters Santa Clara River = 4	Open country, especially hilly and mountainous regions; grassland, coastal sage scrub, chaparral, oak savannas, open coniferous forest	Bird – Nesting/ Foraging Raptor
Loggerhead shrike *Lanius ludovicianus*	BCC/CSC/LA County (nesting)	Bouquet Canyon = 2 Castaic Creek = 10 Upper Santa Clara River = 3	Grasslands, open shrublands with scattered shrubs, trees, fences, or other perches, riparian, and woodlands	Bird – Nesting/ Foraging Raptor
Prairie falcon *Falco mexicanus*	BCC/WL/LA County (nesting)	Headwaters Santa Clara River = 195 Castaic Creek = 112	Grassland, savannas, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs	Bird – Nesting/ Foraging Raptor
Swainson's hawk *Buteo swainsoni*	BCC/ST/LA County (nesting)	Upper Santa Clara River = 5	Open grassland, shrublands, croplands	Bird – Nesting/ Foraging Raptor
White-tailed kite *Elanus leucurus*	FP/LA County (nesting)	Upper Santa Clara River = 4	Herbaceous and open stages of most habitats, common in cismontane; nests near top of dense oak, willow, or other tree stand; nests near open foraging area	Bird – Nesting/ Foraging Raptor
California condor *Gymnogyps californianus*	FE/SE, FP/LA County	Castaic Creek = 24	Forages over wide areas of open rangelands, roosts on cliffs and in large trees and snags	Bird – Foraging Raptor
Least Bell's vireo *Vireo bellii pusillus*	FE/CE/LA County (nesting)	Bouquet Canyon = 2 Castaic Creek = 11 Upper Santa Clara River = 142	Riparian vegetation with extensive willows below 2,000 feet amsl	Bird – Riparian
Southwestern willow flycatcher *Empidonax traillii extimus*	FE/SE/LA County (nesting)	Headwaters Santa Clara River = 7	Riparian woodlands along streams and rivers with mature, dense stands of willows or alders; may nest in thickets dominated by tamarisk	Bird – Riparian

Table 18
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FC (western DPS),BCC/SE/ LA County (nesting)	Upper Santa Clara River = 43	Dense, wide riparian woodlands and forest with well-developed understories	Bird – Riparian
Yellow-breasted chat *Icteria virens*	CSC/LA County	Upper Santa Clara River = 43	Dense, relatively wide riparian woodlands and thickets of willows, vine tangles and dense brush	Bird – Riparian
Yellow warbler *Setophaga (Dendroica) petechia brewsteri*	BCC/CSC/LA County	Upper Santa Clara River = 43	Riparian thickets and woodlands	Bird – Riparian
Bell's sage sparrow *Artemisiospiza (Amphispiza) belli belli*	BCC/WL/LA County	Headwaters Santa Clara River = 21 Bouquet Canyon = 6 Castaic Creek = 22 Upper Santa Clara River = 5	Coastal scrub and chaparral	Bird –Scrub and Chaparral
Coastal California gnatcatcher *Polioptila californica californica*	FT/CSC/LA County	Headwaters Santa Clara River = 9 Bouquet Canyon = 1 Upper Santa Clara River = 2	Various sage scrub communities, often dominated by California sage and buckwheat; generally avoids nesting in areas with a slope of greater than 40%, and typically less than 820 feet amsl	Bird –Scrub and Chaparral
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	WL/LA County	Headwaters Santa Clara River = 22 Bouquet Canyon = 2	Coastal scrub and chaparral	Bird – Scrub and Chaparral
California horned lark *Eremophila alpestris actia*	WL/LA County	Castaic Creek = 22 Upper Santa Clara River = 5	Grasslands, disturbed areas, agriculture fields, and beach areas	Bird – Upland Grassland/Agriculture
Grasshopper sparrow *Ammodramus savannarum*	CSC (nesting)	Castaic Creek = 6	Dense, dry or well-drained annual and native grasslands with mix of grasses and forbs; may occur in fallow agricultural fields, especially those periodically planted in oats and barley	Bird – Upland Grassland/Agriculture
Mammals				
American badger *Taxidea taxus*	CSC	Castaic Creek = 1	Grasslands, agriculture, drier open stages of shrub, forest, and herbaceous habitats with friable soils	Mammal – Moderate Mobility

Table 18
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	CSC/LA County	Castaic Creek = 2	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, rangelands	Mammal – Moderate Mobility
San Diego desert woodrat *Neotoma lepida intermedia*	CSC/LA County	Upper Santa Clara River = 1	Open chaparral, coastal scrub, cactus patches and the understory of tree thickets	Mammal – Low Mobility
Pallid bat *Antrozous pallidus*	CSC/LA County	Headwaters Santa Clara River = 14 Castaic Creek = 5	Arid habitats, including grasslands, shrublands, woodlands and forests; for roosting, prefers rocky outcrops, cliffs and crevices with access to open habitats for foraging	Mammal – Bat
Spotted bat *Euderma maculata*	CSC/LA County	Castaic Creek = 18 Upper Santa Clara River = 1	Foothills, mountains, desert regions of southern California, including arid deserts, grasslands, and mixed conifer forests; roosts in rock crevices and cliffs; feeds over water and along washes	Mammal – Bat
Townsend's big-eared bat *Corynorhinus townsendii*	CESA Candidate Threatened, CSC/LA County	Headwaters Santa Clara River = 31 Castaic Creek = 3	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, also man-made structures and tunnels	Mammal – Bat
Western mastiff bat *Eumops perotis californicus*	CSC/LA County	Upper Santa Clara River = 12	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees and tunnels	Mammal – Bat

Source: CDFW 2014c.

Sensitive Vegetation Communities

In addition to the special-status species in the CNDDB listed in **Table 18**, the California Department of Fish and Wildlife designates sensitive vegetation communities. The following sensitive vegetation communities occur within the study area:

- California Walnut Woodland – 37 recorded occurrences, all in Headwaters Santa Clara River watershed
- Mainland Cherry Forest – 5 recorded occurrences, all in Castaic Creek watershed
- Riversidean Alluvial Fan Sage Scrub – 2 recorded occurrences in Bouquet Canyon watershed, 5 in Castaic Creek watershed, 17 in Headwaters Santa Clara River watershed
- Southern California Threespine Stickleback Stream – 2 recorded occurrences in Castaic Creek watershed, 50 in Headwaters Santa Clara River watershed, 147 in Upper Santa Clara River watershed
- Southern Coast Live Oak Riparian Forest – 28 recorded occurrences in Bouquet Canyon watershed, 15 in Castaic Creek watershed, 15 in Headwaters Santa Clara River watershed, 24 in Upper Santa Clara River watershed
- Southern Cottonwood Willow Riparian Forest – 5 recorded occurrences in Bouquet Canyon watershed, 63 in Castaic Creek watershed, 56 in Headwaters Santa Clara River watershed, 84 in Upper Santa Clara River watershed
- Southern Mixed Riparian Forest – 3 recorded occurrences in Castaic Creek watershed
- Southern Riparian Forest – 1 recorded occurrence in Castaic Creek watershed
- Southern Riparian Scrub – 24 recorded occurrences in Bouquet Canyon watershed, 3 in Castaic Creek watershed, 88 in Headwaters Santa Clara River watershed, 9 in Upper Santa Clara watershed
- Southern Sycamore Alder Riparian Woodland – 7 recorded occurrences in Bouquet Canyon watershed, 33 in Castaic Creek watershed, 38 in Headwaters Santa Clara River watershed, 26 in Upper Santa Clara watershed
- Southern Willow Scrub – 4 recorded occurrences in Bouquet Canyon watershed, 9 in Castaic Creek watershed, 6 in Headwaters Santa Clara River watershed, 17 in Upper Santa Clara watershed
- Valley Oak Woodland – 15 recorded occurrences all in Upper Santa Clara River watershed.

7.4 Cumulative Impacts on Ecological Functions of the USCRW

Impact CBIO-1. Development of Newhall Land property and other planned and approved projects in the study area would affect habitat availability by directly converting existing vegetation communities to development.

Development of Newhall Land property and other planned and approved projects in the study area would affect habitat availability by directly converting existing vegetation communities to development. The specific vegetation communities with the greatest area of conversion on Newhall Land property would be as follows:

- Central Valley and southern coastal grassland communities, with 2,117 of 3,919 acres developed (54%).
- Southern California coastal scrub, with 1,456 of 3,914 acres developed (37%).
- Southern California dry-mesic chaparral, with 679 of 2,584 acres developed (26%).

Overall, Newhall Land's contribution to loss of habitat from planned and approved projects within the study area would be as follows:

- Chaparral – 711 acres of Newhall Land property impacted, out of 6,034 acres impacted by planned and approved projects in study area
- Scrubs – 1,463 acres of Newhall Land property impacted, out of 9,971 acres impacted by planned and approved projects in study area
- Riparian – 35 acres of Newhall Land property impacted, out of 440 acres impacted by planned and approved projects in study area
- Wetland and Aquatic – 40 acres of Newhall Land property impacted, out of 651 acres impacted by planned and approved projects in study area
- Woodland – 593 acres Newhall Land property impacted, out of 5,876 acres impacted by planned and approved projects in study area
- Coniferous Forest – 0.09 acre of Newhall Land property impacted, out of 19 acres impacted by planned and approved projects in study area
- Grasslands – 2,117 acres of Newhall Land property impacted, out of 8,708 acres impacted by planned and approved projects in study area
- Other Natural Land Covers – 0.01 acre of Newhall Land property impacted, out of 137 acres impacted by planned and approved projects in study area.

Although some vegetation communities proportionally would be more heavily impacted than others (e.g., coastal scrubs and grasslands), the majority of the general vegetation types in the study area would be preserved. Exceptions are generally limited to more narrowly distributed desert scrubs such as Sonora–Mojave mixed salt desert scrub, for which about 90% of the 442 acres mapped for this community is classified for development in the study area. Mojave mid-elevation mixed desert scrub is another community that would be substantially impacted out of proportion with other vegetation communities in the watersheds; 53% of this community would be impacted in the study area under current classifications. Part of the difficulty with the desert scrubs is that they tend to occur at lower elevations and on gentler slopes where more development is planned. However, the desert scrubs generally also provide habitat for a number of special-status wildlife and plant species. As a result, development affecting this vegetation type will require additional avoidance, minimization, and mitigation.

About 50% of grasslands, which also tend to occur on level, developable lands, would be impacted under current classifications. Chaparrals, which tend to occur in more rugged and/or higher-elevation terrain, would experience relatively few impacts overall, at 8.8% of the general community, as shown in Table 23, CNDDB Element Occurrences for Special-Status Species on Newhall Land Property. However, some chaparral types, such as Sonora–Mojave semi-desert chaparral, that cover smaller areas (779 mapped within the study area) could be impacted to a greater extent, with about 29% classified for development. Riparian and wetland impacts would occur to about 53% of the mapped area but, as resources subject to state and federal "no net loss" policies, this level of impact would be reduced through required mitigation. Similar to chaparrals, woodlands and forests would have relatively few impacts, at 22% overall and ranging from a less than 1% impact to Mediterranean California dry-mesic mixed conifer and woodland to a 43% impact to southern California oak woodland and savanna. However, oak woodlands are protected under CLAOTO and will require additional avoidance, minimization, and mitigation.

With the implementation of required avoidance and minimization measures for affected vegetation communities, cumulative impacts to habitat availability from Newhall Land development would not be cumulatively considerable.

Impact CBIO-2. Development of Newhall Land property and other planned and approved projects in the study area would reduce available habitat, but the habitat quality of remaining lands would not be significantly affected.

Development of Newhall Land projects within the study area would reduce available habitat area; however, the remaining habitat area would generally be located in sizable contiguous parcels. Some vegetation would be disproportionately impacted, as discussed above, but the health of remaining suitable vegetation in undeveloped areas would not be substantially impacted (Corps and CDFG 2010). Large preserves designated within Newhall Land

property such as Santa Clara River SMA/SEA, High Country SMA/SEA, Salt Creek area, and others will ensure that high-quality habitat remains intact and protected from the effects of development and human encroachment. Development would not be expected to substantially alter flow quantities and patterns (e.g., peak flows) within watershed tributaries, as standard LID measures would ensure that infiltration remains adequate to minimize runoff from impermeable surfaces. By concentrating development and allowing for large undeveloped open space habitat areas, potential edge effects on habitat quality would be reduced compared to more scattered development.

Newhall Land property occurs at lower elevations along the southern edge of the study area adjacent to the Santa Clara River, and development is planned for areas contiguous with existing urban development at these lower elevations. Strictly from a hydrologic and geomorphic perspective, siting development at lower elevations and on gentler slopes in the watersheds and protecting headwaters is preferred because natural drainage and sediment transport patterns are more likely to be retained when the headwaters and upper portions of the watersheds in more rugged terrain are protected. Issues in the lower portions of the watersheds are more related to maintaining riparian ecosystem integrity, including riparian corridors and their buffers, floodplain connections, and habitats of riparian/wetland species. However, many of the special-status species known from the study area occur in more typically developed areas (i.e., at lower elevations and on gentler slopes), which is why their habitats have been so severely impacted in southern California.

With the implementation of required avoidance and minimization measures for affected vegetation communities and proposed establishment of large preserves, impacts to habitat quality from Newhall Land development would not be cumulatively considerable.

Impact CBIO-3. Development of Newhall Land property and other planned and approved projects in the study area would not significantly affect habitat connectivity within the study area.

The RMDP/SCP EIS/EIR addressed preservation along the Santa Clara River corridor (Corps and CDFG 2010). Within and beyond the Newhall Land boundary, the river corridor is a regionally significant riparian and wetland resource, in part because it functions as a wildlife corridor and habitat linkage, as well as “live-in” and breeding habitat for a number of federally and/or state-listed species, such as least Bell’s vireo, southwestern willow flycatcher, arroyo toad, and unarmored threespine stickleback. From its origin in the San Gabriel Mountains, the river corridor extends approximately 80 miles to the west, where it empties into the Pacific Ocean. It is an important migration corridor and, possibly, a genetic dispersion corridor for wildlife and plant species, including species restricted to aquatic and riparian habitats as well as larger, more mobile terrestrial species. The river corridor also constitutes a portion of the Santa

Clara River SMA/SEA, which is wide enough to accommodate flood events while retaining nearly all of the existing riparian vegetation along the river corridor. To control human activities that could adversely affect the River's ability to function as a wildlife corridor and habitat linkage, the RMDP/SCP also provides for "transition" areas between the Santa Clara River SMA/SEA and development, restricts recreational uses of the river, and provides for long-term management of the Santa Clara River SMA/SEA.

Based on the SCMLP results, Newhall Land development will not directly impact the least-cost union (LCU) area for habitat connectivity (Penrod et al. 2006).[22] South of the Santa Clara River, the closest planned development on Newhall Land property in relation to the LCU area is about 3,500 feet to the east. This distance will provide the LCU with an adequate buffer from indirect development effects. North of the Santa Clara River, the distance between the development edge and the eastern boundary of the LCU is about 800 feet. However, the width of the LCU itself in this area is about 10,000 feet (1.9 miles), so indirect impacts in this portion of the LCU would be minor and would not significantly affect the function of the corridor in this area. The LCU is wide enough to absorb some indirect effects north of the Santa Clara River without compromising the function of the corridor.

The least-cost corridor (LCC) for the mountain lion is confined to the eastern branch of the LCU, and the highest-permeability area (i.e., lowest cost, or green zone of map) is in Ventura County west of the Newhall Land RMDP boundary. The portion of the LCC within the RMDP boundary is rated as less permeable.

The LCC for the mule deer comprises the western and eastern branches of the LCU. The western branch has the highest permeability, and the eastern branch, which includes the High Country SMA/SEA and Salt Creek area, has lower permeability.

The American badger's main linkage branch is located generally to the west and does not overlap with Newhall Land property; it intersects only the far western portion of the Upper Santa Clara River watershed.

[22] A "Landscape Permeability Analysis" modeling effort was conducted by Penrod et al. (2006) to estimate the relative cost for species to move between large core habitat areas based on how the species is affected by habitat characteristics such as slope, elevation, vegetation, and road density. Based on the model results, the least-cost corridor (LCC) was identified as the area modeled to include the top 1% of the LCC function for each of the three species. The LCC output was combined to generate the least-cost union (LCU), which is defined by the SCMLP as "the zone within which all three modeled species would encounter the least energy expenditure (i.e., preferred travel route) and most favorable habitat as they move between targeted protected areas" (Penrod et al. 2006, p. 12).

Overall, approved and planned development on Newhall Land property will have a relatively minor effect on the regional wildlife movement corridors identified by the SCMLP that intersect the study area because development would occur well east of the most important corridors.

In addition, the proposed Project will not disrupt connectivity between Important Habitat Areas that are depicted in the SCLMP, but which are not included in the regional linkage design; i.e., Important Habitat Areas would not be isolated by the proposed Project. As shown on Figure 6, South Coast Wildlands Open Space Connectivity and Linkage, there is an Important Habitat Area south of the Project Site. However, this Important Habitat Area now supports the existing Westridge residential development and golf course and not longer serves as wildlife habitat.

For these reasons, impacts to habitat connectivity from Newhall Land development would not be cumulatively considerable.

Impact CBIO-4. Development of Newhall Land property and other planned and approved projects in the study area would not significantly affect the ecological function of study area watersheds through degradation of water availability or quality.

As is the case with approved and planned development in the study area, development of Newhall Land property could indirectly impact water quality and availability by (1) changing flow rates and patterns in streams and rivers, and/or (2) discharging pollutants into streams and rivers. These changes could affect habitat suitability of adjacent and downstream aquatic, wetland, and riparian vegetation communities. These impacts of Newhall Land projects would be reduced through the implementation of construction BMPs and LID design measures.

In 2010, PACE prepared a River and Tributaries Drainage Analysis that analyzed the effects of Newhall Land projects on the hydrology of the Santa Clara River and the aquatic species that live there, including the federally listed southern California steelhead. There is no steelhead habitat—and therefore no steelhead—in the Project's reach of the river, and the Dry Gap located downstream of the Project Site functions as a natural barrier to fish migration. The Dry Gap also prevents Project-related stormwater from reaching steelhead habitat. During large storm events, however, the River may breach the Dry Gap and establish temporary surface connectivity with the downstream reaches, which include steelhead habitat. Although this is a fairly rare occurrence, the potential for pollution-related impacts exists and therefore requires evaluation.

The constituent of greatest concern is dissolved copper, because some studies have shown that salmonids (which include steelhead) can sustain sublethal effects, such as loss of olfactory acuity, when exposed to dissolved copper at fairly low concentrations (Hecht et al. 2007). A number of important environmental variables, however, affect the extent to which the dissolved copper in the water is actually bioavailable to the fish. These include (i) the amount of free, or

uncombined, copper in the water body; (ii) the amount of dissolved organic carbon (DOC) in the water body; and (iii) the hardness of the water.

For CEQA purposes, the Project's potential effects on southern steelhead located downstream of the Dry Gap can be assessed in three different but related ways. The first involves a "project-to-existing conditions" analysis, where the dissolved copper concentration in the stormwater leaving the Project Site in its *future developed condition* is compared to the dissolved copper concentration in the stormwater leaving the site in its *current, undeveloped condition*. If the former is less than the latter, there is by definition, no significant impact. The second involves a "project-to-receiving water" analysis, where the Project's dissolved copper concentration is compared to that in the existing receiving water – here, the Santa Clara River. Again, if the former number is lower than the latter number, there is no significant impact. The third method of assessment compares the Project's dissolved copper concentration against biological thresholds that correspond to adverse effects in fish. For example, under the California Toxics Rule (CTR), which the U.S. Environmental Protection Agency promulgated for the express purpose of protecting aquatic life in California's rivers, streams, and lakes, dissolved copper concentrations in excess of 25 micrograms per liter (µg/L) are considered acutely toxic. Note, however, that project-related dissolved copper concentrations that exceed biological thresholds are not considered significant if they are (i) below the dissolved copper concentration in the existing stormwater runoff or (ii) below the dissolved copper concentration in existing receiving water.

1. Project Stormwater v. Existing Site Stormwater (Dissolved Copper Concentration)

According to water quality analyses performed by Geosyntec, the Project is predicted to discharge stormwater containing dissolved copper at a concentration of 7.1 µg/L on average. Geosyntec also predicted that stormwater leaving the site in its current, undeveloped condition contains dissolved copper at a concentration of 6.2 µg/L on average**.** Based on these analysis results, the Project may increase the dissolved copper concentration leaving the Project site and, therefore, has the potential to affect steelhead downstream. This holds true, however, only if the Project's dissolved copper concentration exceeds that in the receiving water.

2. Project Stormwater v. Existing Receiving Water (Dissolved Copper Concentration)

The water quality data compiled by Geosyntec indicates that during wet weather conditions—i.e., those conditions that might cause the Santa River to breach the Dry Gap and establish connectivity between the upper and lower reaches of the River—the dissolved copper concentration in Santa Clara River Reach 5, which is the receiving water for the Project's storm runoff, averages 8.6 µg/L. In other words, by the time the River passes by the Project Site, it contains dissolved copper at a concentration of 8.6 µg/L (wet weather average).

As stated above, the Project's stormwater is expected to contain dissolved copper at a concentration of 7.1 on average, about 17% less than the receiving water. Because the concentration of dissolved copper leaving the Project Site will be lower than the concentration of dissolved copper in the receiving water (i.e., the Santa Clara River), the Project will reduce, albeit slightly, the overall dissolved copper concentration in the River. This reduction, however, will be virtually non-detectable because the Project's stormwater comprises such a small fraction of the volume of water in the River. Based on these data, the Project would not increase the ambient dissolved copper concentration in the receiving water. Thus, the Project would not have a significant impact on steelhead downstream.

3. Project Stormwater v. Biological Thresholds (Dissolved Copper Concentration)

Based on the "project-to-receiving water" analysis, the Project's stormwater will not increase dissolved copper concentrations in the Santa Clara River during those conditions when the Dry Gap is breached. Therefore, from a CEQA perspective, there is no need to carry the impact analysis further. To provide additional context, however, it is helpful to evaluate the Project's dissolved copper concentrations against biological thresholds for steelhead and/or similar fish. The only formally established biological thresholds that address water quality impacts on fish are those found in the CTR. As mentioned above, the CTR sets the "acute" impact threshold for dissolved copper at 25 µg/L. The Project's average dissolved copper concentration, at 7.1 µg/L, falls well below this threshold.

Some studies, however, have shown that salmonids show degraded olfactory sensibility and other sublethal impacts when exposed to dissolved copper concentrations as low as 5.1 µg/L. Specifically, a NOAA Technical Memorandum (Hecht et al. 2007) states that salmonid behavior, specifically predator avoidance, can be disrupted at concentrations of dissolved copper that are at or slightly above ambient background concentrations (i.e., those levels existing prior to Project development).[23] The NOAA Memo's findings, however, were based on experiments that did not use river water or reflect conditions typically found in river water. For this and other reasons discussed below, the NOAA Memo's findings cannot be applied to this Project or its potential impacts on southern steelhead.

In the NOAA Memo, a benchmark concentration approach was used to estimate the thresholds for dissolved copper's sublethal effects on juvenile salmon. The benchmark concentrations were derived from experiments using dechlorinated, soft municipal water, which is very low in DOC; DOC reduces the bioavailability of dissolved copper in surface waters and, hence, blocks its toxic effects on smolts. Significantly, the NOAA Memo stresses the importance of evaluating

[23] Southern steelhead is taxonomically a salmonid.

site-specific water quality parameters such as DOC levels and water hardness to determine their potential to impede olfactory toxicity. In that regard, sampling has shown that, unlike the water used in the laboratory experiments relied on in the NOAA Memo, the Santa Clara River has a DOC concentration that is sufficient to either limit or completely protect the olfactory response of juvenile steelhead from the effect of dissolved copper at the concentration predicted in the Project's discharges.

The benchmark concentrations in the NOAA Memo were derived from experiments using a single freshwater source (dechlorinated, soft municipal water) unlikely to contain any alternative ligands to complex with the added copper, resulting in effectively 100% bioavailability of the copper species present. The NOAA Memo acknowledged, however, that hardness, alkalinity, and DOC are known to alter the bioavailability of dissolved copper in surface waters.

A more recent study conducted with juvenile Chinook salmon (*Oncorhynchus tshawytscha*) showed that increasing DOC linearly decreased copper-induced olfactory inhibition.[24] In this study, at DOC concentrations of 5 mg/L, median concentrations of total copper found to inhibit olfactory function by half (the IC_{50}) were determined to be 30 µg/L for acute (4-day) exposures and 21.5 µg/L for sub-chronic (14-day) exposures.

A study conducted by McIntyre et al. (2008), which is referenced in the NOAA Memo, similarly found that olfactory capacity with exposure to dissolved copper concentrations of 20 µg/L was completely protected at DOC levels equal to or greater than 6.0 mg/L.

Since publication of the NOAA Memo, scientists have developed an olfactory-based model, termed the olfactory Biotic Ligand Model, which considers the influence of DOC, hardness, and receiving water cations and anions on the bioavailability of metals and other toxins. DeForest et al. (2011) applied a salmon olfactory based Biotic Ligand Model to the ranges of DOC, harness, and cations/anions in 133 streams in the western United States, including California. In that study, DOC concentrations ranged between 0.6 and 12.2 mg/L for the 31 streams they examined in California, with a hardness range for these same streams of 20 mg/L to 523 mg/L as $CaCO_3$. For the California streams evaluated, the combination of DOC with hardness was found to protect salmon from adverse olfactory effects at dissolved copper concentrations ranging from 7 µg/L to 211 µg/L.[25]

[24] Data directly comparing Chinook to steelhead salmon sensitivity to copper are limited, though at least one study showed comparable LC_{50} values for these species during the smolt stage (Chapman 1978).

[25] One other fact bears mentioning: In January 2012, NOAA and NMFS adopted a Recovery Plan for the Southern California Distinct Population Segment of the southern steelhead, which covers the steelhead in the Santa Clara River and watershed. Although the Recovery Plan includes a special "threats analysis" and cites more than 900 technical studies and scientific articles, it does not rely on or reference the 2007 NOAA Memo. In December

Geosyntec applied a similar Biotic Ligand Model to water collected from the Santa Clara River at Reaches 3 and 5 to determine what effects, if any, the Project's dissolved copper may have on southern steelhead.

Although sampling data for DOC in the Santa Clara River are limited, two samples collected in Santa Clara River Reach 5 in February 2014 had DOC concentrations of 29 mg/L and 24 mg/L. In addition, there are 10 years of sampling data for Total Organic Carbon (TOC) in the Santa Clara River at two locations: (1) the Los Angeles County Santa Clara River mass emission station (S29) located upstream of the Project at The Old Road and (2) the Ventura County Santa Clara River mass emission station (ME-SCR) located at the United Water Conservation District's Freeman Diversion Dam east of Saticoy, downstream from the Project. The U.S. Environmental Protection Agency estimates the DOC:TOC ratio to be 89.87:100 for streams in California. Using this estimate, DOC levels in Santa Clara River Reach 5 (at mass emission station S29) ranged from 1.7 to 30.3 mg/L between 2003 and 2014 (average 9.7 mg/L), as shown in Table 19, Estimated DOC in Santa Clara River Reach 5 in Wet Weather (2003–2014), and ranged between 1.5 and 87 mg/L (average 10.5 mg/L) in Santa Clara River Reach 3 (at mass emission station ME-SCR) between 2003 and 2013, as shown in Table 20, Estimated DOC in Santa Clara River Reach 3 in Wet Weather (2003–2013).

Table 19
Estimated DOC in Santa Clara River Reach 5 in Wet Weather (2003–2014)

Statistic	DOC (µg/L)
Average	9.7
Median	6.9
Maximum	30.3
Minimum	1.7
Standard Deviation	7.0
Coefficient of Variation	72%

Table 20
Estimated DOC in Santa Clara River Reach 3 in Wet Weather (2003–2013)

Statistic	DOC (µg/L)
Average	10.5

2013, NOAA and NMFS also adopted a Recovery Plan for the South-Central Distinct Population Segment of the southern steelhead. This Recovery Plan also did not rely on or reference the 2007 NOAA Memo.

Table 20
Estimated DOC in Santa Clara River Reach 3 in Wet Weather (2003–2013)

Statistic	DOC (µg/L)
Median	5.6
Maximum	87.0
Minimum	1.5
Standard Deviation	16.2
Coefficient of Variation	154%

With the estimated and observed DOC concentrations in the Santa Clara River ranging significantly higher than those evaluated in the DeForest et al. (2011) study (up to 87 mg/L), coupled with the naturally high levels of observed hardness in Santa Clara River Reach 5 (the average hardness observed in Santa Clara Reach 5 during wet weather is 194 mg/L as $CaCO_3$), the level of dissolved copper necessary to adversely affect salmon olfaction would likely be 10 to 100 times greater than the 7.1 µg/L predicted to be discharged in stormwater to the Santa Clara River from the Project. As such, Project stormwater discharges of dissolved copper are very unlikely to adversely affect juvenile steelhead in the Santa Clara River. To confirm this conclusion, these DOC data were used to run the Biotic Ligand Model, the results of which are shown in Table 21 Copper Concentrations That Would Inhibit the Olfaction of 50% of the Exposed Steelhead Smolt Population (IC_{50}) Santa Clara River Reach 5, and Table 22,Estimated DOC in Santa Clara River Reach 3 Range of Copper Concentrations That Would Inhibit the Olfaction of 50% of the Exposed Steelhead Smolt Population (IC_{50}) for the Santa Clara River Reach 3. [26]

Based on the DOC and other water character data for the Santa Clara River, the olfactory Biotic Ligand Model predicted that the concentrations required to impair salmon/steelhead olfaction would be 40 to 80 times greater than that expected to be discharged from the Project. This information is provided in Tables 21 and 22. Thus, Project discharges of dissolved copper are very unlikely to adversely affect juvenile steelhead in the Santa Clara River.

As previously shown, the average annual dissolved copper concentration in stormwater runoff from the Project after treatment in the LID BMPs is predicted to be well below the copper water quality criteria for aquatic life protection in the CTR. Also, as previously shown, the predicted average annual dissolved copper concentration in stormwater runoff from the Project is less than the observed average concentration in the Santa Clara River; therefore, Project runoff is not

[26] IC_{50} stands for "half maximal inhibitory concentration." It is a standard metric for measuring the effectiveness of a substance in inhibiting a specific biological or biochemical function.

expected to increase the concentration of dissolved copper in the Santa Clara River. For additional detailed information regarding southern steelhead and disspolved copper, see Section 7.2.7 of the Water Quality Technical Report (Geosyntec 2014).

In summary, with the implementation of required avoidance and minimization measures to control pollutant discharges and water runoff, including LID design measures, the Project would not make a cumulatively considerable contribution to cumulative impacts on steelhead. The impact is not significant.

Table 21
Copper Concentrations That Would Inhibit the Olfaction of 50% of the Exposed Steelhead Smolt Population (IC_{50}) Santa Clara River Reach 5

Statistic	IC_{50} (µg/L)
Average	488.7
Median	279.2
Maximum	3,758.1
Minimum	104.4
Standard Deviation	693.1
Coefficient of Variation	140%

Source: Geosyntec 2014.

Table 22
Range of Copper Concentrations That Would Inhibit the Olfaction of 50% of the Exposed Steelhead Smolt Population (IC_{50}) for the Santa Clara River Reach 3

Statistic	IC_{50} (µg/L)
Average	237.0
Median	167.6
Maximum	740.9
Minimum	45.0
Standard Deviation	169.3
Coefficient of Variation	71%

Source: Geosyntec 2014.

Impact CBIO-5. Development of Newhall Land property and other planned and approved projects in the study area would directly impact special status species through habitat conversion, changes in habitat suitability, or disturbance of individuals or populations.

The CNDDB has records for 64 special-status species in the study area (refer to Section 7.3.5). However, only 13 of those 64 species in the CNDDB record have been documented on Newhall Land property, as shown in Table 23. Several special-status species that have been recorded in the study area are restricted to areas east (i.e., up-watershed) of Newhall Land property in the Coastal/Mojave Transition area and higher elevations of the San Gabriel Mountains. As result, Newhall Land projects will not affect them or their watershed functions.

The Santa Clara River SMA/SEA includes habitat for the endangered unarmored threespine stickleback (see Table 23; CDFW 2014c). Many of the other CNDDB element occurrences (locations where a special-status species has been recorded in the CNDDB) would be protected on Newhall Land property within designated preserves (e.g., Spineflower Preserve,

SMA/SEAs) and other open space areas proposed and designated on Newhall Land property (CDFW 2014c; Dudek 2010).

Table 23
CNDDB Element Occurrences for Special-Status Species on Newhall Land Property

Species	Total Element Occurrences
Plants – Chaparral/Scrub	
San Fernando Valley spineflower	64
Slender mariposa-lily	275
Plummer's mariposa-lily	4
Davidson's bush-mallow	1
Plants – Generalist	
Late-flowered mariposa-lily	1
Plants – Grassland	
Ojai navarretia	2
Plants – Wetland	
Newhall sunflower	1
Fish	
Santa Ana sucker	1
Arroyo chub	1
Reptiles – Low Mobility	
Coastal whiptail	1
Reptile and Amphibian – Semi-Aquatic	
Western pond turtle	1
Bird – Riparian	
Least Bell's vireo	5
Bird – Nesting/Foraging Raptor	
Burrowing owl	1

Source: CDFW 2014c.

Altered hydrology and water quality primarily could affect species guilds associated with riparian/wetland habitats in the Santa Clara River, including the following: Plant–Wetland; Fish; Reptile and Amphibian – Semi-Aquatic; Bird – Riparian; Bird – Riparian/Upland Woodland; and Bat guilds. Indirect impacts include changes in flow rates and patterns in streams and rivers that could affect habitat suitability. For the bats, altered hydrology and water quality could affect the prey base. However, the River and Tributaries Drainage Analysis prepared by PACE found that there would be no long-term significant impacts to water flows, velocities, depth, sedimentation, or floodplain and channel conditions downstream as a result of Newhall Land development associated with the RMDP (PACE 2010). These hydrologic effects were also found to be insufficient to alter the amount, location, and nature of aquatic and riparian habitats within the study area and downstream into Ventura County. The PACE study determined that the River

would retain sufficient width to allow natural fluvial processes to continue. For this reason, any altered hydrology resulting from development of Newhall Land property is expected to be minor.

The specific effects of Newhall Land development on suitable fish habitat in the Santa Clara River and surrounding watershed were also analyzed by ENTRIX for the RMDP/SCP EIS/EIR (ENTRIX 2009). ENTRIX evaluated key habitat variables such as potential changes in floodplain width, backwater refuge habitat area (flood condition aquatic refugia), and water velocity during various theoretical flood frequency events, using the unarmored threespine stickleback as an indicator species because of its susceptibility to higher-velocity conditions.

Newhall Land development within the river channel (i.e., placement of buried bank stabilization, installation of bridge footings) may alter natural stream hydrology and the quantity of stickleback (and other fish) habitat available. Based on an evaluation of velocity tolerance studies of stickleback fishes, ENTRIX inferred that unarmored threespine stickleback in the Santa Clara River require flood refugia velocities of two feet per second or less in natural river floodplain in order to avoid being washed downstream during flood events (ENTRIX 2009). Arroyo chub may be more tolerant of higher flow velocity conditions; however, this analysis used the more conservative assumptions applied to unarmored threespine stickleback. Therefore, consistent with this approach, any areas maintaining velocities less than or equal to two feet per second would provide refuge for these species during storm events. While the placement of bridge footings would result in some loss of river channel, the large width and hydrology of the river would maintain the formation of natural channels that would maintain lower velocities to support special-status fish species. Therefore, even after development of Newhall Land, sufficient refugia (as defined as water with velocities of less than or equal to two feet per second) would exist for use by arroyo chub and unarmored threespine stickleback.

Note that cumulative water quality-related impacts on southern steelhead are discussed under **Impact CBIO-4**.

Low mobility guilds (Reptile – Low Mobility; Mammal – Low Mobility) would be affected by loss of habitat related to vegetation clearing, grading, and development. Permanent loss of suitable habitat will be mitigated by measures requiring preservation, enhancement and restoration, and management in the Santa Clara River SMA/SEA, the High Country SMA/SEA, and the Salt Creek area. This will result in a large, permanent open space system that will provide suitable habitat to support these species. Western pond turtles and western spadefoots (Reptile and Amphibian – Semi-Aquatic guild) on Newhall Land property could be directly affected during all phases of their life histories. For example, impacts to riparian and wetland areas could adversely affect these species during the reproductive season, and impacts to upland areas could adversely affect species dispersal, aestivation, and nesting (western pond turtle). In

addition to loss of habitat, these species are highly vulnerable to mortality or injury during vegetation and grading activities because they tend to be cryptic (difficult to detect, well hidden), slow-moving, and belowground during aestivation periods following the breeding phase of their life cycles. Permanent loss of general suitable habitat and designated critical habitat for Reptile and Amphibian – Semi-Aquatic guild species will be mitigated by measures requiring preservation, enhancement, and restoration, and management that will result in a large, permanent open space system that will include suitable aquatic habitat and suitable upland habitat to support these species.

Birds in the Upland Grassland/Agriculture, Scrub and Chaparral, Nesting/Foraging Raptor, and Foraging Raptor guilds would experience disturbance of foraging activity and potentially nesting activity within the study area from Newhall development. Species in the Nesting/Foraging Raptor and Foraging Raptor guilds could forage virtually anywhere within the study area where prey are available, although species such as Swainson's hawk and prairie falcon tend to forage in more open habitats such as grasslands and agricultural areas. Development will likely cause these highly mobile species to avoid sites due to both human activities and a lack of prey once areas are cleared of vegetation and graded. Permanent loss of suitable habitat for the Nesting/Foraging Raptor and Foraging Raptor species will be mitigated by measures requiring preservation, enhancement and restoration, and management that will result in a large, permanent open space system that will provide suitable nesting and foraging habitat to support these species.

Species in the Mammal – Bat guild may forage in virtually all of the non-developed land covers on Newhall Land property where insect prey is present. As a group, all of the natural habitats, agriculture, and disturbed lands on Newhall Land property provide potential foraging habitat for these species. However, the potential for maternity roosts of any of these bat species is low because they tend to establish maternity roosts in caves, cliffs, crevices, and buildings, of which there are very few on Newhall Land property. Permanent loss of suitable habitat for the Mammal – Bat guild will be mitigated by measures requiring preservation, enhancement and restoration, and management that will result in a large, permanent open space system that will provide suitable roosting and foraging habitat to support these species.

San Diego black-tailed jackrabbits and American badgers (Mammal – Moderate Mobility guild) are mobile and can generally relocate from a disturbed or converted habitat area to an intact one. Permanent loss of suitable habitat for the Mammal – Moderate Mobility guild species will be mitigated by measures requiring preservation, enhancement and restoration, and management that will result in a large, permanent open space system that will provide suitable habitat to support these species.

In addition to these special status species, several vegetation types that occur on Newhall Land property are considered sensitive according to the CNDDB:

- Southern cottonwood–willow riparian forest – Newhall Land plans protect a total of 891 acres of this community, mostly within the Santa Clara River SMA/SEA. This represents 17% of the total area of this community in the study area. This is approximately seven times the 113 acres of Southern cottonwood–willow riparian forest that would be impacted by Newhall Land development.
- Southern riparian scrub – Approximately 59 acres of southern riparian scrub would be impacted by Newhall development, which represents 1.2% of the 4,776 acres of this community within the study area.
- Southern willow scrub – Newhall Land plans to protect 122 acres of this community, or 6.9% of the 1,769 acres of this community within the study area. No southern willow scrub would be impacted by Newhall development.
- Valley oak woodland – Newhall Land plans to protect 68 acres of this community, or 3.8% of the 1,793 acres of this community within the study area. 4.6 acres would be impacted by Newhall Land development (Sawyer et al. 2009).

Prior to the implementation of proposed mitigation measures for affected species, Newhall Land projects would have a cumulatively considerable contribution to impacts to special status species. With implementation of proposed mitigation measures, these Newhall Lands projects' contribution to these impacts would not be cumulatively considerable.

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8 REFERENCES

59 FR 4845–4867. Final rule: "Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Least Bell's Vireo." February 2, 1994.

70 FR 52488–52627. Final rule: "Endangered and Threatened Species; Designation of Critical Habitat for Seven Evolutionarily Significant Units of Pacific Salmon and Steelhead in California." September 2, 2005.

76 FR 7246-7467. Final rule: "Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the Arroyo Toad." February 9, 2011.

ACOE and CDFG (U.S. Army Corps of Engineers and California Department of Fish and Game). 2010. *Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan Joint Environmental Impact Statement and Environmental Impact Report*. Final. SCH no. 2000011025. Los Angeles, California: ACOE and CDFG. June 2010.

Allan E. Seward Engineering Geology Inc. 2002. "Geologic Evaluation: San Fernando Valley Spineflower Occurrences." Letter report prepared for Gatzke, Dillon and Balance LLP. October 1, 2002.

Allan E. Seward Engineering Geology Inc. 2004. "Surface and Subsurface Geologic Evaluation: San Fernando Valley Spineflower Occurrences." Letter report prepared for The Newhall Land and Farming Company. August 13, 2004.

AOU (American Ornithologists' Union). 1998. *Check-List of North American Birds: The Species of Birds of North America from the Arctic through Panama, including the West Indies and Hawaiian Islands*. 7th ed. Lawrence, Kansas: Allen Press Inc. Accessed March 31, 2010. http://www.aou.org/checklist/north/print.php.

AOU. 2000. "Forty-Second Supplement to the American Ornithologists' Union *Check-List of North American Birds*." Auk 117(3):847–858.

AOU. 2013. "Fifty-fourth Supplement to the American Ornithologists' Union *Check-List of North American Birds*." *Auk* 130(3):558–571.

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, eds. 2012. *The Jepson Manual: Vascular Plants of California*. 2nd ed. Berkeley, California: University of California Press.

BLM (Bureau of Land Management). 2001. H-4180-1: Rangeland Health Standards. U.S. Department of the Interior, Bureau of Land Management. January 19, 2001.

Bloom, P.H. 2007. Report on Arroyo Toad Surveys on Landmark Village, Newhall Land and Farming Company Property, Los Angeles County, California. Prepared for U.S. Fish and Wildlife Service. Santa Ana, California: P.H. Bloom (Bloom Biological, Inc.). November 2007.

Bloom Biological, Inc. 2007. *Summary of Late Winter and Spring Avian Survey with Focus on the California Condor (*Gymnogyps californianus*) on Portions of Newhall Land and Farming Company Property, Los Angeles County, California.* Revised. Prepared for Newhall Land Company. Ventura, California: Bloom Biological, Inc. July 2007.

Bloom Biological, Inc. 2008. *Interim Report of Winter Surveys of Special-Status Bird Species on Portions of Newhall Land and Farming Company Property (Including Newhall Ranch), Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Santa Ana, California: Bloom Biological, Inc. February 28, 2008.

Bloom Biological, Inc. 2009. *Report on White-Tailed Kites on Portions of Newhall Land and Farming Company Property (including Newhall Ranch); Los Angeles and Ventura Counties, California*. Prepared for The Newhall Land and Farming Company. Santa Ana, California: Bloom Biological, Inc. January 2009.

Bloom Biological, Inc. 2011. *2011 NRMP Bird Survey Report.* Prepared for The Newhall Land and Farming Company. Santa Ana, California: Bloom Biological, Inc. August 2011.

Bloom Biological, Inc. 2012. *Results of Special-status Riparian Bird Surveys Conducted on Newhall Land and Planning Areas in Spring and Summer 2012*. Prepared for Newhall Land. Santa Ana, California: Bloom Biological, Inc. August 2012.

Bloom Biological, Inc. 2013. *2013 Natural River Management Plan Riparian Bird Surveys – Suitable Habitat for Least Bell's Vireo and Southwestern Willow Flycatcher. Prepared for Newhall Land*. Lake Forest, California: Bloom Biological, Inc. August 2013.

Boyd, S. 1999. "Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California." *Aliso* 18(2): 93–129.

Brown-Berry Biological Consulting. 2012. *Bat Roosting Habitat Assessment for Mission Village.* Prepared for Dudek. August 2012.

Carpenter, M. 2007. Verbal communication by M. Carpenter (Newhall Land and Farming Company) regarding incidental observations of the southwestern pond turtle in the Santa Clara River in relation to agricultural crossings and ponded water, August 2007.

Carpenter, M. 2009. "RE: Potrero Canyon Pond Turtle Record." Email from M. Carpenter (Newhall Land) to P. Behrends (Dudek), January 2009.

Carpenter, M. 2011. "Final Newhall Ranch Project Description." Attachment 3 to Letter from M. Carpenter (Newhall) to A. Allen. August 2011.

CDFG (California Department of Fish and Game). 2003. *The Vegetation Classification and Mapping Program List of California Terrestrial Natural Communities Recognized by The California Natural Diversity Database*. September 2003.

CDFG. 2010. *Hierarchical List of Natural Communities with Holland Types*. September 2010. http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_list.asp.

CDFG. 2011. "Special Animals (898 taxa)." California Natural Diversity Database, Biogeographic Data Branch. January 2011. Accessed July 2013. http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp.

CDFG. 2012. Rarefind 4: Commercial version. Online database. California Natural Diversity Database. CDFG, Biogeographic Data Branch. Accessed March 2012. http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp.

CDFW. 2014a. *State and Federally Listed Endangered, Threatened, and Rare Plants of California.* California Natural Diversity Database. April 2014.

CDFW. 2014b. *Special Vascular Plants, Bryophytes, and Lichens List*. California Natural Diversity Database. April 2014.

CDFW. 2014c. *RareFind*. California Natural Diversity Database. Accessed 2014. http://www.dfg.ca.gov/bdb/html/cnddb.html.

Chapman, G.A., 1978. "Toxicities of Cadmium, Copper, and Zinc to Four Juvenile Stages of Chinook Salmon and Steelhead." *Transactions of the American Fisheries Society* 107(6):841–847.

CNPS (California Native Plant Society). 2012. Inventory of Rare and Endangered Plants. Online ed. Version 8-01a. Sacramento, California: CNPS. Accessed April 2012. http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi.

Compliance Biology, Inc. 2003a. *Results of Focused Coastal California Gnatcatcher Surveys; Prospective Water Tank Locations, River Park Project, Los Angeles County, California*. Prepared for Impact Sciences, Inc. Camarillo, California: Compliance Biology.

Compliance Biology, Inc. 2003b. *Results of Focused Survey for Coastal California Gnatcatcher Surveys; River Park Project, Santa Clarita, Los Angeles County, California*. Prepared for Impact Sciences, Inc. Agoura Hills, California: Compliance Biology, January 24, 2003.

Compliance Biology, Inc. 2004a. *Results of Butterfly Surveys on the Newhall Ranch Project Site, Los Angeles County, California*. Camarillo, California: Compliance Biology, Inc. September 16, 2004.

Compliance Biology, Inc. 2004b. *Results of Butterfly Surveys on Newhall Land, Stevenson Ranch Phase V Site, Los Angeles County, California*. Camarillo, California: Compliance Biology, Inc. September 16, 2004.

Compliance Biology, Inc. 2004c. *Results of Butterfly Surveys on Magic Mountain Entertainment Site, Los Angeles County, California*. Camarillo, California: Compliance Biology, Inc. August 4, 2004.

Compliance Biology, Inc. 2004d. *Results of Focused Surveys for Arroyo Toad and Special-Status Aquatic Reptiles and Amphibians, River Village Project; Newhall Ranch, Valencia, California*. Prepared for Newhall Ranch Company. Camarillo, California: Compliance Biology, Inc. October 2004.

Compliance Biology, Inc. 2004e. "Results of Focused Western Spadefoot Toad Surveys on the River Village Project Site and Associated Borrow Sites." Letter report from D. Crawford (Compliance Biology) to Newhall Ranch Company. Camarillo, California: Compliance Biology, Inc. November 3, 2004.

Compliance Biology, Inc. 2004f. *Results of Focused Surveys for Arroyo Toad and Special-Status Aquatic Reptiles and Amphibians*, *Newhall Ranch*, *Valencia*, *California*. Prepared for Newhall Ranch Company. Camarillo, California: Compliance Biology, Inc. September 2004.

Compliance Biology, Inc. 2004g. *Western Spadefoot Toad Habitat Enhancement and Monitoring Plan, Valencia Commerce Center Project, Los Angeles County, California*. Prepared for Newhall Ranch Company. Camarillo, California: Compliance Biology, Inc. November 2004.

Compliance Biology, Inc. 2005. *Results of Butterfly Surveys on Newhall Salt Canyon Habitat Preservation Area, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology, Inc. July 31, 2005.

Compliance Biology, Inc. 2006a. *Results of Focused Coastal California Gnatcatcher Surveys; Castaic Mesa Project, Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology.

Compliance Biology, Inc. 2006b. *Results of the Focused Western Spadefoot Toad Surveys on the Castaic Mesa Project Site*. Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology.

Compliance Biology, Inc. 2006c. *Results of the Focused Western Spadefoot Toad Surveys on the Mission Village Project Site*. Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology.

Compliance Biology, Inc. 2008. *Results of Focused California Gnatcatcher Surveys on the Valencia Commerce Center SCP Site; Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology, Inc. August 28, 2008.

Compliance Biology, Inc. 2006d. *Biological Resource Assessment, Castaic Mesa Project, Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology, Inc. October 16, 2006.

Compliance Biology, Inc. 2012a. *Results of Focused Western Spadefoot Toad and Fairy Shrimp Habitat Surveys on the Entrada South Project Site*. Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology, Inc. July 2012.

Compliance Biology, Inc. 2012b. *Results of Focused Western Spadefoot Toad and Fairy Shrimp Habitat Surveys on the Entrada Project Site*. Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology, Inc. May 2012.

Compliance Biology, Inc. 2012c. *Results of Focused Western Spadefoot Toad and Fairy Shrimp Habitat Surveys on the Homestead Project Site*. Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology, Inc. May 2012.

Compliance Biology, Inc. 2012d. *Results of Focused Western Spadefoot Toad and Fairy Shrimp Habitat Surveys on the Legacy Village Project Site*. Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology, Inc. May 2012.

Compliance Biology, Inc. 2013. *Results of Small Mammal Trapping Surveys; Entrada South Project.* Prepared for The Newhall Land and Farming Company. Camarillo, California: Compliance Biology, Inc. September 2013.

Corps (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetland Delineation Manual*. Online ed. Environmental Laboratory, Wetlands Research Program Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineer Waterways Experiment Station. January 1987. Accessed September 1, 2010. http://www.fedcenter.gov/Bookmarks/index.cfm?id=6403&pge_id=1606.

Corps. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).* ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Corps and CDFG (U.S. Army Corps of Engineers and California Department of Fish and Game). 1998. *Final Environmental Impact Statement/Environmental Impact Report 404 Permit and 1603 Streambed Alteration Agreement for Portions of the Santa Clara River and its Tributaries.* SCH no. 970061090. Los Angeles, California: Corps and CDFG. August 1998.

Corps and CDFG. 2010. *Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan Joint Environmental Impact Statement and Environmental Impact Report*. Final. SCH no. 2000011025. Los Angeles, California: Corps and CDFG. June 2010. County of Los Angeles. 1988. Oak Tree Ordinance. Los Angeles, California County Code; Municipal.

County of Los Angeles. 1999. *Environmental Impact Report for the Newhall Ranch Specific Plan and Water Reclamation Plant.* SCH no. 95011015. March 1999.

County of Los Angeles. 2003. *Revised Draft Additional Analysis to the Newhall Ranch Specific Plan and Water Reclamation Plant Final Environmental Impact Report* (Volumes 1 and 2) and *Final Additional Analysis to the Newhall Ranch Specific Plan and Water Reclamation Plant Final Environmental Impact Report* (Volumes 3–7). Project # 94087, SCH # 95011015. 7 vol., November 2002 to May 2003. Prepared by Impact Sciences, Inc. for Los Angeles County Department of Regional Planning. Agoura Hills, California: Impact Sciences, Inc.

County of Los Angeles. 2006. Sensitive Species Occurring or Potentially Occurring within the Los Angeles County SEAs. Prepared by the PCR Project Team. January 2006.

County of Los Angeles. 2012. *Santa Clarita Valley Area Plan: One Valley One Vision.* Prepared by the Los Angeles County Department of Regional Planning.

Crooks, K.R., and M.E. Soulé. 1999. "Mesopredator Release and Avifaunal Extinctions in a Fragmented System." *Nature* 400:563–566.

Crother, B.I., ed. 2008. *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding*. Herpetological Circular, no. 37. 6th ed. Shoreview, Minnesota: Society for the Study of Amphibians and Reptiles. January 2008. Accessed December 14, 2010. http://ssarherps.org/pdf/HC_37_6thEd.pdf.

DeForest, D.K., J. Meyer, B. Adams, B. Dwyer, B. Gensemer, J. Gorsuch, and E. Van Genderen. 2011c. Importance of water chemistry in evaluating the olfactory effects of copper in salmonids. SETAC Globe, Volume 12, Issue 9, 15 September 2011

Dimmett, M.A., and R. Ruibal. 1980. "Environmental Correlates of Emergence in Spadefoots (*Scaphiopus)." Journal of Herpetology* 14(1):21–29.

Dudek. 2006a. *2005 Sensitive Plant Survey Results for the Newhall Ranch Specific Plan Area, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. June 2006.

Dudek. 2006b. *2005 Sensitive Plant Survey Results for the Entrada Site, Los Angeles, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek. June 2006.

Dudek. 2006c. *2005 Sensitive Plant Survey Results for the Valencia Commerce Center, Los Angeles, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek. June 2006.

Dudek. 2006d. *2006 Sensitive Plant Survey Results for the Newhall Ranch Specific Plan Area, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek. October 2006.

Dudek. 2006e. *2006 Sensitive Plant Survey Results for the Entrada Site, Los Angeles, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek. October 2006.

Dudek. 2006f. *2006 Sensitive Plant Survey Results for the Valencia Commerce Center, Los Angeles, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek. October 2006.

Dudek. 2006g. *Biological Resources Technical Report, Entrada, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek. October 2006.

Dudek. 2007a. *2007 Sensitive Plant Survey Results for the Newhall Ranch Specific Plan Area, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. December 2007.

Dudek. 2007b. *2007 Sensitive Plant Survey Results for the Entrada Site, Los Angeles, California*. Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. December 2007.

Dudek. 2007c. *Draft RMDP Slender Mariposa Lily Mitigation and Monitoring Plan. Prepared for Newhall Land and Farming.* Valencia, California: Dudek. August 2007.

Dudek. 2007d. *Revised Draft Newhall Ranch Mitigation Feasibility Report*. Prepared for the Newhall Land and Farming Company. Encinitas, California: Dudek. January 2007.

Dudek. 2008a. *Draft Santa Clara River Watershed Study*. Prepared for the Newhall Land and Farming Company. Valencia, California: Dudek. October 2008.

Dudek. 2008b. *Wet Season Presence/Absence Survey for Vernal Pool Branchiopods for Newhall Ranch, Los Angeles* County*, California.* Encinitas, California: Dudek. October 2008.

Dudek. 2010. *Final Spineflower Conservation Plan*. Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. December 2010.

Dudek. 2012a. *2011 Sensitive Plant Survey Results for the Entrada Site, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. January 2012.

Dudek. 2012b. *2012 Botanical Survey Results for the Entrada South Site, Los Angeles, California*. Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. December 2012.

Dudek. 2012c. *Focused Grasshopper Sparrow and General Wildlife Report for the Entrada South Site, Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Santa Barbara, California: Dudek. August 2012.

Dudek. 2012d. *Focused California Gnatcatcher Survey, Entrada North and South Projects, Los Angeles County, California.* Prepared for U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office. July 2012.

Dudek. 2012e. *Bat Survey, Entrada South Project, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. October 2012.

Dudek. 2012f. *Focused California Gnatcatcher Survey, Homestead South Project, Los Angeles County, California.* Prepared for U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office. August 2012.

Dudek. 2012g. *2012 Botanical Survey Results for the Homestead South Site, Los Angeles, California*. Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. December 2012.

Dudek. 2012h. *Bat Survey, Legacy Project, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. October 2012.

Dudek. 2012i. *Focused California Gnatcatcher Survey, Legacy Project, Los Angeles County, California.* Prepared for U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office. August 2012.

Dudek. 2012j. *2012 Botanical Survey Results for Legacy Site, Los Angeles, California*. Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. December 2012.

Dudek. 2012k. *Focused California Gnatcatcher Survey, Mission Village Project, Los Angeles County, California.* Prepared for U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office. August 2012.

Dudek. 2012l. *Focused American Badger, Burrowing Owl, San Emigdio Blue Butterfly, and General Wildlife Survey Report for the Mission Village Site Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. August 2012

Dudek. 2012m. *Report for Focused Arroyo Toad Surveys for the Mission Village Project, Newhall Ranch, Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. August 2012.

Dudek. 2012n. *2012 Botanical Survey Results for Mission Village Site, Los Angeles, California.* Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. December 2012.

Dudek. 2013a. *2013 Survey Results for San Fernando Valley Spineflower within the Spineflower Conservation Plan Area Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Dudek. June 2013.

Dudek. 2013b. *2012 and 2013 Botanical Survey Results for Homestead South Village Site, Los Angeles, California.* Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. August 2013.

Dudek. 2013c. *2012 and 2013 Botanical Survey Results for the Advanced Mitigation Sites, Los Angeles, California.* Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. October 2013.

Dudek. 2013d. *2013 Botanical Survey Results for Potrero Village Site, Los Angeles, California.* Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. October 2013.

Dudek. 2013e. *Focused Grasshopper Sparrow and General Wildlife Survey Report for the Homestead South Site, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. October 2013.

Dudek. 2013f. *Newhall Ranch Potrero Bat Survey.* Memorandum prepared for The Newhall Land and Farming Company. Valencia, California: Dudek. November 2013.

Dudek and Associates, Inc. 2002a. *2002 Sensitive Plant Survey Results for Newhall Ranch Specific Plan Area, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. November 2002.

Dudek and Associates, Inc. 2002b. *2002 Sensitive Plant Survey Results for Entrada [Magic Mountain Entertainment], Los Angeles County, California*. Draft. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. January 2003.

Dudek and Associates, Inc. 2002c. *2002 Sensitive Plant Survey Results for the Valencia Commerce Center, Los Angeles County, California*. Draft. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. January 2003.

Dudek and Associates, Inc. 2004a. *2003 Sensitive Plant Survey Results for the Isola and Ventura Homestead Sites, Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. June 2004.

Dudek and Associates, Inc. 2004b. *2003 Sensitive Plant Survey Results for the Valencia Commerce Center, Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. June 2004.

Dudek and Associates, Inc. 2004c. *2003 Sensitive Plant Survey Results for Newhall Ranch Specific Plan Area, Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. June 2004.

Dudek and Associates, Inc. 2004d. 2003 Sensitive Plant Survey Results for the Castaic Junction Site, Los Angeles County, California. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. June 2004.

Dudek and Associates, Inc. 2004e. *2003 Sensitive Plant Survey Results for the Magic Mountain Entertainment Site, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. June 2004.

Dudek and Associates, Inc. 2004f. *2004 Sensitive Plant Survey Results for the Newhall Ranch Specific Plan Area, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. October 2004.

Dudek and Associates, Inc. 2004g. *2004 Sensitive Plant Survey Results for the Valencia Commerce Center, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. October 2004.

Dudek and Associates, Inc. 2004h. *2004 Sensitive Plant Survey Results for the Entrada Site, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. October 2004.

Dudek and Associates, Inc. 2004i. *2003 Sensitive Plant Survey Results for the Salt Creek Site, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Encinitas, California: Dudek and Associates, Inc. June 2004.

Ecological Sciences, Inc. 2003a. "Results of Focused Arroyo Toad Surveys, Castaic Creek, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Oxnard, California: Ecological Sciences, Inc. August 31, 2003.

Ecological Sciences, Inc. 2003b. "Results of Focused Arroyo Toad Surveys, Castaic Reservoir Site, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Oxnard, California: Ecological Sciences, Inc. August 27, 2003.

Ecological Sciences, Inc. 2003c. "Results of Focused Arroyo Toad Surveys, Hart/Pony Baseball Site and Hart/Pony Commercial Site, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Oxnard, California: Ecological Sciences, Inc. August 21, 2003.

Ecological Sciences, Inc. 2003d. "Results of Focused Arroyo Toad Surveys, NRMP Project Area, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Oxnard, California: Ecological Sciences, Inc. August 31, 2003.

Ecological Sciences, Inc. 2003e. "Results of Focused Arroyo Toad Surveys, Round Mountain Site, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Oxnard, California: Ecological Sciences, Inc. August 25, 2003.

Ecological Sciences, Inc. 2003f. "Results of Focused Arroyo Toad Surveys, Soledad Site, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Oxnard, California: Ecological Sciences, Inc. August 23, 2003.

Ecological Sciences, Inc. 2004a. "Results of Focused Arroyo Toad Surveys, Castaic Creek, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Santa Paula, California: Ecological Sciences, Inc. August 11, 2004.

Ecological Sciences, Inc. 2004b. "Results of Focused Arroyo Toad Surveys, Portions of Santa Clara River/South Fork, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Santa Paula, California: Ecological Sciences, Inc. August 21, 2004.

Ecological Sciences, Inc. 2004c. "Results of Focused Arroyo Toad Surveys, NRMP Soledad/Riverpark Area, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to Susan Tebo (Impact Sciences). Santa Paula, California: Ecological Sciences, Inc. August 29, 2004.

Ecological Sciences, Inc. 2004d. "Results of Focused Arroyo Toad Surveys, San Francisquito Creek, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Santa Paula, California: Ecological Sciences, Inc. August 25, 2004.

Ecological Sciences, Inc. 2005a. "Results of Focused Arroyo Toad Surveys, Castaic Creek, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Santa Paula, California: Ecological Sciences, Inc. August 17, 2005.

Ecological Sciences, Inc. 2005b. "Results of Focused Arroyo Toad Surveys, San Francisquito Creek, Santa Clarita, California." Letter report from S.D. Cameron (Ecological Sciences, Inc.) to M. Subbotin (Newhall Ranch Company). Santa Paula, California: Ecological Sciences, Inc. August 21, 2005.

Eckardt, S. 2013. Personal communication via email from Scott Eckardt (Dudek) to Spenser Lucarelli (Dudek) regarding MacDonald oaks on July 16, 2013.

Emmel, T.C., and J.F. Emmel. 1973. *The Butterflies of Southern California*. Science Series 26:1–148. Los Angeles, California: Natural History Museum of Los Angeles County.

ENTRIX, Inc. 1994. *Results of Fish Passage Monitoring at the Vern Freeman Diversion Facility, Santa Clara River.* Prepared for United Water Conservation District, Santa Paula, California. December 2, 1994.

ENTRIX, Inc. 1995. *Results of Fish Passage Monitoring at the Vern Freeman Diversion Facility, Santa Clara River*. Prepared for United Water Conservation District, Santa Paula, California. October 11, 1995.

ENTRIX, Inc. 1996. *Results of Fish Passage Monitoring at the Vern Freeman Diversion Facility, Santa Clara River*. Prepared for United Water Conservation District, Santa Paula, California. December 26, 1996.

ENTRIX, Inc. 1998. *Vern Freeman Diversion Fish Passage Study, 1998 Fish Handling and Data Collection Protocols*. Prepared for United Water Conservation District, Santa Paula, California. April 7, 1998.

ENTRIX, Inc. 1999. *Results of Fish Passage Monitoring at the Vern Freeman Diversion Facility, Santa Clara River, 1997*. Prepared for United Water Conservation District, Santa Paula, California. September 15, 1999.

ENTRIX, Inc. 2000. *Results of Fish Passage Monitoring at the Vern Freeman Diversion Facility, Santa Clara River, 1994–1998*. Final Report. Prepared for United Water Conservation District, Santa Paula, California. March 14, 2000.

ENTRIX, Inc. 2006a. *Focused Special-Status Aquatic Species Assessment—Santa Clara River, Mission Village Project, Newhall Ranch, California*. Prepared for Newhall Land. Ventura, California: ENTRIX.

ENTRIX, Inc. 2006b. *Focused Special-Status Aquatic Species Assessment—Santa Clara River, Landmark Village Project, Newhall Ranch, California.* Prepared for Newhall Land. Ventura, California: ENTRIX.

ENTRIX, Inc. 2009. *Focused Special-Status Fish Species Habitat Assessment—Santa Clara River and Tributary Drainages, Newhall Ranch, Los Angeles County, California.* Prepared for Newhall Land. Ventura, California: ENTRIX.

EPA (U.S. Environmental Protection Agency). 2007. "Aquatic Life Ambient Freshwater Quality Criteria – Copper." U.S. Environmental Protection Agency, Office of Water.

EPA. 2014. "Principles of Water Management." Watershed Academy Web. www.epa.gov/watertrain.

Florida Fish and Wildlife Conservation Commission. 2003. *Issue Assessment: Impacts of Feral and Free-Ranging Cats on Wildlife in Florida*. Prepared by the Feral Cat Issue Team. http://myfwc.com/cats/resources/whitepaper.pdf

FL*x*. 2002a. *Rare Plant Surveys: Newhall Ranch Specific Plan Project Sites, Los Angeles County, California*. Prepared for Impact Sciences, Inc. Santa Barbara, California: FL*x*. September 2002.

FL*x*. 2002b. *Rare Plant Survey for* Helianthus *sp., River Village and Water Reclamation Plant, Los Angeles County, California*. Prepared for Impact Sciences, Inc. Santa Barbara, California: FL*x*.

FL*x*. 2002c. *Rare Plant Survey for* Helianthus *sp.; Castaic Junction, Los Angeles County, California*. Prepared for Impact Sciences, Inc. Santa Barbara, California: FL*x*. November 2002.

FL*x*. 2004a. *Sensitive Plant Species Surveys: Santa Clara River, Newhall Ranch/Valencia Company Project Sites, Los Angeles County, California*. Prepared for Newhall Land and Farming Company. Santa Barbara, California: FL*x*. October 2004.

FL*x*. 2004b. "Sensitive Plant Species Surveys at the Magic Mountain Entertainment Site Fireworks Area." Letter report from N. Gale and A.K. Parikh (FL*x*) to C. Perez (The Newhall Land and Farming Company). Santa Barbara, California: FL*x*. May 8, 2004.

FL*x*. 2005. "Sensitive Plant Species Surveys at the Magic Mountain Entertainment Site Fireworks Area." Letter report from N. Gale and A.K. Parikh (FL*x*) to C. Perez (The Newhall Land and Farming Company). Santa Barbara, California: FL*x*. May 7, 2004.

FL*x*. 2006a. "Sensitive Plant Species Surveys at the Magic Mountain Entertainment Site Fireworks Area." Letter report from N. Gale and A.K. Parikh (FL*x*) to C. Perez (The Newhall Land and Farming Company). Santa Barbara, California: FL*x*. May 7, 2006.

FL*x*. 2006b. "Sensitive Plant Species Survey for the Potrero Irrigation Project." Letter report from N. Gale and A.K. Parikh (FL*x*) to C. Perez (The Newhall Land and Farming Company). Santa Barbara, California: FL*x*. April 25, 2006.

Foley, J. 1996. "The Potential for Catastrophic Infectious Disease Outbreaks in Populations of Mountain Lions in the Western United States." In *Proceedings of the Fifth Mountain Lion Workshop*, edited by W.D. Padley, 29–36. Organized by the California Department of Fish and Game and the Southern California Chapter of the Wildlife Society. San Diego, California, February 27–March 1, 1996.

Garrett, K., and J. Dunn. 1981. *The Birds of Southern California: Status and Distribution.* Los Angeles Audubon Society.

Geosyntec. 2014. *Entrada South Water Quality Technical Report*. Prepared by Geosyntec Consultants for Newhall Land. October 2014.

Glenn Lukos Associates Inc. 2006. "Jurisdictional Delineation for Entrada, an Approximately 850-Acre Property in Los Angeles County, California." Letter report from A. Kessans (Glenn Lukos Associates Inc.) to A. Herrell (Newhall Land). October 18, 2000; revised 2006.

Guthrie, D.A. 1988. *Status of the Least Bell's Vireo along the Santa Clara River and Its Tributaries near Valencia, California, Spring 1988*. Prepared for Valencia Company and Sikand Engineering. Claremont, California: Joint Science Department, Claremont Colleges.

Guthrie, D.A. 1989. *Status of the Least Bell's Vireo along the Santa Clara River and Its Tributaries near Valencia, California, Spring 1989*. Prepared for Valencia Company. Claremont, California: Joint Science Department, Claremont Colleges. July 5, 1989.

Guthrie, D.A. 1990. *Birds along the Santa Clara River and Its Tributaries near Valencia, California, with Special Reference to Least Bell's Vireo; Spring 1990.* Prepared for Valencia Company. Claremont, California: Joint Science Department, Claremont Colleges. July 26, 1990.

Guthrie, D.A. 1991a. *Surveys for Least Bell's Vireo Along the Santa Clara River and Its Tributaries near Valencia*. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: Joint Science Department, Claremont Colleges.

Guthrie, D.A. 1991b. *Surveys along Castaic Creek for least Bell's Vireo.* Claremont, California: Joint Science Department, Claremont Colleges.

Guthrie, D.A. 1992. *Bird Surveys along the Santa Clara River and Its Tributaries near Valencia, California*. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: Joint Science Department, Claremont Colleges.

Guthrie, D.A. 1993a. *Bird Surveys along the Santa Clara River and Its Tributaries near Valencia, California*. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center.

Guthrie, D.A. 1993b. *Bird Surveys along the Santa Clara River, 1993; Castaic Creek Downstream to just below Newhall Ranch*. Prepared for B. Braly, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. August 4, 1993.

Guthrie, D.A. 1994a. *Bird Surveys along the Santa Clara River and Its Tributaries near Valencia, California*. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. July 5, 1994.

Guthrie, D.A. 1994b. *Bird Surveys along the Santa Clara River, 1994; Castaic Creek Downstream to just below Las Brisas Crossing*. Prepared for B. Braly, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. July 5, 1994.

Guthrie, D.A. 1995a. *Bird Surveys along the Santa Clara River and Its Tributaries near Valencia, California, 1995*. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. July 12, 1995.

Guthrie, D.A. 1995b. *Bird Surveys along the Santa Clara River, 1995; Castaic Creek Downstream to just below Las Brisas Crossing*. Prepared for J. Harter, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. July 13, 1995.

Guthrie, D.A. 1996a. *Bird Surveys along the Santa Clara River and Its Tributaries near Valencia, California, 1996*. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. July 10, 1996.

Guthrie, D.A. 1996b. *Bird Surveys along the Santa Clara River, 1996; Castaic Creek Downstream to just below Las Brisas Crossing*. Prepared for J. Harter, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. July 11, 1996.

Guthrie, D.A. 1997a. *Bird Surveys along the Santa Clara River and Its Tributaries near Valencia, California, 1997*. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. June 23, 1997.

Guthrie, D.A. 1997b. *Bird Surveys along the Santa Clara River, 1997; Castaic Creek Downstream to just below Las Brisas Crossing*. Prepared for J. Harter, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. June 23, 1997.

Guthrie, D.A. 1998a. *Bird Surveys along the Santa Clara River, 1998; Castaic Creek Downstream to just below Las Brisas Crossing*. Prepared for M. Subbotin, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. July 28, 1998.

Guthrie, D.A. 1998b. *Bird Surveys along the Santa Clara River and Its Tributaries near Valencia, California, 1998*. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. July 28, 1998.

Guthrie, D.A. 1999a. *Bird Surveys along a Portion of the Santa Clara River and Its Tributaries Upstream from the Castaic Creek Confluence, near Valencia California, 1999.* Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 26, 1999.

Guthrie, D.A. 1999b. *Bird Surveys in the Proposed Riverwood Project Area, near Valencia, California*. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 26, 1999.

Guthrie, D.A. 1999c. *Bird Surveys along the Santa Clara River, 1999; Ventura County Line Downstream to just below Las Brisas Crossing*. Prepared for M. Subbotin, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. August 26, 1999.

Guthrie, D.A. 2000a. *Bird Observations for Spring 2000 in the Proposed Potrero and Long Canyon Development Area near Valencia, California*. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. July 17, 2000.

Guthrie, D.A. 2000b. *Bird Observations for Spring 2000 in the Proposed Mesa Development near Valencia, California*. Revised. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. July 17, 2000.

Guthrie, D.A. 2000c. *Bird Surveys along the Santa Clara River, 2000; Mouth of Castaic Creek Downstream to the Los Angeles/Ventura County Line*. Prepared for M. Subbotin, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. August 2, 2000.

Guthrie, D.A. 2000d. *Bird Surveys in the Proposed Magic Mountain Entertainment Project Area, near Valencia, California, 2000*. Revised. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. July 17, 2000.

Guthrie, D.A. 2000e. *Bird Surveys along a Portion of the Santa Clara River and Its Tributaries Upstream from the Castaic Creek Confluence, near Valencia California, 2000.* Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 2, 2000.

Guthrie, D.A. 2000f. *Bird Surveys of Castaic Junction, an Area on the North Side of the Santa Clara River at the Junction of State Route 126 and Interstate 5, near Valencia, California.* Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. July 17, 2000.

Guthrie, D.A. 2000g. *Bird Surveys along the Santa Clara River; Los Angeles/Ventura County Line Downstream to Just Below Las Brisas Crossing.* Prepared for M. Subbotin, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. August 2, 2000.

Guthrie, D.A. 2001a. *Bird Surveys along a Portion of the Santa Clara River and Its Tributaries Upstream from the Castaic Creek Confluence, near Valencia California, 2001.* Corrected version. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. September 14, 2001.

Guthrie, D.A. 2001b. *Bird Surveys along the Santa Clara River, 2001; Mouth of Castaic Creek Downstream to just below Las Brisas Crossing*. Corrected version. Prepared for M. Subbotin, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. September 14, 2001.

Guthrie, D.A. 2002a. *Bird Surveys along a Portion of the Santa Clara River and Its Tributaries Upstream from the Castaic Creek Confluence, near Valencia California, 2002.* Revised. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 16, 2002.

Guthrie, D.A. 2002b. *Bird Surveys along the Santa Clara River, 2002; Mouth of Castaic Creek Downstream to just below Las Brisas Crossing*. Prepared for M. Subbotin, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. August 16, 2002.

Guthrie, D.A. 2003a. *Bird Surveys along a Portion of the Santa Clara River and Its Tributaries Upstream from the Castaic Creek Confluence, near Valencia California, 2003.* Revised. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. July 28, 2003.

Guthrie, D.A. 2003b. *Bird Surveys along the Santa Clara River, 2003; Mouth of Castaic Creek Downstream to just below Las Brisas Crossing*. Prepared for M. Subbotin, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. July 28, 2003.

Guthrie, D.A. 2004a. *Bird Observations for Spring 2004 in the Proposed Homestead and Chiquito Areas, near Valencia, California.* Revised. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 24, 2004.

Guthrie, D.A. 2004b. *Bird Observations in the Commerce Center Project Site, near Valencia, California, 2004.* Revised. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 24, 2004.

Guthrie, D.A. 2004c. *Bird Observations in the Stevenson Ranch, Phase 5 Area, near Valencia, California, 2004.* Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. July 2, 2004.

Guthrie, D.A. 2004d. *Bird Observations for Spring 2004 in the Proposed Potrero Valley, Long Canyon, Oak Valley and Onion Fields Development Areas near Valencia, California*. Revised. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 24, 2004.

Guthrie, D.A. 2004e. *Bird Observations for Spring 2004 in the Proposed Mesa East and West Development near Valencia, California*. Revised. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 24, 2004.

Guthrie, D.A. 2004f. *Bird Surveys along a Portion of the Santa Clara River and Its Tributaries Upstream from the Castaic Creek Confluence, near Valencia, California, 2004.* Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 24, 2004.

Guthrie, D.A. 2004g. *Bird Observations in the Proposed Magic Mountain Entertainment Project Area, near Valencia, California, 2004.* Revised. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 24, 2004.

Guthrie, D.A. 2004h. *Bird Surveys along the Santa Clara River, 2004; Mouth of Castaic Creek Downstream to just below Las Brisas Crossing*. Prepared for M. Subbotin, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. August 24, 2004.

Guthrie, D.A. 2004i. *Bird Observations during 2004 at Castaic Junction, an Area on the North Side of the Santa Clara River at the Junction of State Route 126 and Interstate 5, near Valencia, California*. Revised. Prepared for M. Subbotin, Valencia Corporation. Claremont, California: W.M. Keck Science Center. August 24, 2004.

Guthrie, D.A. 2005a. *Bird Surveys along a Portion of the Santa Clara River and Its Tributaries Upstream from the Castaic Creek Confluence, near Valencia California.* Prepared for M. Subbotin, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center.

Guthrie, D.A. 2005b. *Bird Surveys along the Santa Clara River, 2005; Mouth of Castaic Creek Downstream to just below Las Brisas Crossing*. Prepared for M. Subbotin, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center.

Guthrie, D.A. 2005c. *White-Tailed Kite Populations along the Upper Santa Clara River.* Revised. Prepared for S. Rojas, Newhall Land. Claremont, California: W.M. Keck Science Center. July 26, 2005.

Guthrie, D.A. 2006A. *Bird Surveys along the Santa Clara River, 2006; Mouth of Castaic Creek Downstream to just below Las Brisas Crossing*. Final Report. Prepared for M. Carpenter, Newhall Land and Farming. Claremont, California: W.M. Keck Science Center. October 11, 2006.

Guthrie, D.A. 2006B. *Bird Surveys of The Old Road Phase III Environmental Project Study Area, near Valencia, California, 2006*. Claremont, California: W.M. Keck Science Center. July 20, 2006.

Guthrie, D.A. 2006C. *Bird Surveys along a Portion of the Santa Clara River and Its Tributaries Upstream from the Castaic Creek Confluence, near Valencia California.* Prepared for M. Carpenter, Valencia Corporation. Claremont, California: W.M. Keck Science Center. October 11, 2006.

Haglund, T.R. 1989. *Current Status of the Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*) along Portions of the Santa Clara River Drainage.* Prepared for Newhall Land and Farming Company. Los Angeles, California: University of California

Haglund, T.R., and J.N. Baskin. 2000. *Fish and Wildlife Survey and Habitat Assessment of the Santa Clara River at Interstate 5*. Prepared for Environmental Planning Branch, California State Department of Transportation. Pomona, California: California State Polytechnic University. October 2000.

Hall, E.R. 1981. *The Mammals of North America*. 2nd ed. New York, New York: John Wiley & Sons.

Hecht, S.A., D.H. Baldwin, C.A. Mehane, T. Hawkes, S.J. Gross, and N.L. Scholz, 2007. *An Overview of Sensory Effects on Juvenile Salmonids exposed to Dissolved Copper: Applying a Benchmark Concentration Approach to Evaluate Sublethal Neurobehavioral Toxicity*. U.S. Department of Commerce, NOAA Technical Memorandum. NMFS-NWFSC-83, 39 p. October 2007.

Hickman, J.C., ed. 1996. *The Jepson Manual: Higher Plants of California*. 3rd printing, with corrections. Berkeley, California: University of California Press.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame-Heritage Program, California Department of Fish and Game. October 1986.

Huntley, C. 2006. Observations of reptiles in the Project area, including coast horned lizard (south of The Old Road Bridge) and silvery legless lizard (in Long Canyon). Personal communication (in written comments) from C. Huntley (Aspen) to Sherri Miller (Dudek). October 2006.

Huntley, C. 2008. Observation of mountain lion in the Project area (in upper Middle Canyon) from C. Huntley (Aspen) to Matt Carpenter (Newhall Land). 2008.

Huntley, C. 2010. "Re: Snail Methods, etc." Email from C. Huntley (Aspen) to P. Behrends (Dudek), A.C. Lynch (Sohagi Law Group), D. Bedford (CDFG), K. Drewe (CDFG), S. White (Aspen), M. Carpenter (Newhall Land), S. Rojas (Newhall Land), and S. Miller (Dudek). March 12, 2010.

Impact Sciences, Inc. 2000. "Results of Focused Surveys for the Coastal California Gnatcatcher, ±156-Acre Project Site, Santa Clarita, Los Angeles County, California." Letter report from S.D. Cameron (Impact Sciences, Inc.) to M. Weinstein (Science Applications International Corporation). Agoura Hills, California: Impact Sciences, Inc. July 7, 2000.

Impact Sciences, Inc. 2001. *Results of Focused Surveys for Arroyo Toad and Special-Status Aquatic Reptiles and Amphibians within the Natural River Management Plan Area, Valencia, California*. Prepared for Valencia Company. Agoura Hills, California: Impact Sciences, Inc. September 19, 2001.

Impact Sciences, Inc. 2002. *Results of Focused Surveys for Arroyo Toad and Special-Status Aquatic Reptiles and Amphibians, Newhall Ranch, Valencia, California.* Prepared for Newhall Ranch Company. Agoura Hills, California: Impact Sciences, Inc. May 21, 2002.

Impact Sciences, Inc. 2003a. *Results of Focused Surveys for Unarmored Threespine Stickleback and Other Special-Status Fish Species; Newhall Ranch, Valencia, California*. Prepared for Newhall Land and Farming. Agoura Hills, California: Impact Sciences, Inc. January 24, 2003.

Impact Sciences, Inc. 2003b. *Results of Focused Surveys for Unarmored Threespine Stickleback and Other Special-Status Fish Species; Natural River Management Plan Area, Valencia, California*. Prepared for Newhall Land and Farming. Agoura Hills, California: Impact Sciences, Inc. June 2003.

Impact Sciences, Inc. 2003c. *Annual Status Report for Unarmored Threespine Stickleback within the Natural River Management Plan Area, Valencia, California*. Prepared for Newhall Land and Farming. Agoura Hills, California: Impact Sciences, Inc. October 1, 2003.

Impact Sciences, Inc. 2003d. *Results of Focused Surveys for Unarmored Threespine Stickleback and Other Special-Status Fish Species; Castaic Mesa, Castaic Creek, Los Angeles County, California*. Prepared for Newhall Land and Farming. Agoura Hills, California: Impact Sciences, Inc. June 2003.

Impact Sciences, Inc. 2005. *Assessment and Survey of Mammals within the Newhall Ranch Specific Plan Area, Los Angeles County, California*. Draft. Prepared for The Newhall Land and Farming Company. Camarillo, California: Impact Sciences, Inc. May 2005.

Impact Sciences, Inc. 2006a. *Newhall Ranch Oak Tree Survey.* Camarillo, California: Impact Sciences, Inc.

Impact Sciences, Inc. 2006b. *2004 and 2006 Reptile Survey Results, Newhall Ranch Specific Plan area, Los Angeles County, California.* Prepared for The Newhall Land and Farming Company. Camarillo, California: Impact Sciences, Inc. October 2006.

Impact Sciences, Inc. 2006c. *Mission Village Oak Tree Report, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Camarillo, California: Impact Sciences, Inc. December 2006.

Impact Sciences, Inc. 2006d. *Landmark Village Planning Area Oak Tree Report, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Camarillo, California: Impact Sciences, Inc. September 2006.

Ingles, L.G. 1965. *Mammals of the Pacific States: California, Oregon, Washington*. Stanford, California: Stanford University Press.

Jepson Flora Project. 2012. *Jepson eFlora*. Version 1.0. Berkeley, California: University of California. Accessed October May 2, 2012. http://ucjeps.berkeley.edu/ cgi-bin/get_JM_name_data.pl.

Johnson, H.L. 2006. "Bat Survey; August 7–10, 2006 for the Newhall Ranch, Valencia, California." Letter report by H.L. Johnson prepared for G. Ainsworth (Impact Sciences, Inc.), October 10, 2006.

Jones, C.E., F.M. Shropshire, L.L. Taylor-Taft, S.E. Walker, L.C. Song Jr., Y.C. Atallah, R. L. Allen, D.R. Sandquist, J. Luttrell, and J.H. Burk. 2009. "Reproductive Biology of the San Fernando Valley Spineflower, *Chorizanthe parryi* var. *fernandina* (Polygonaceae)." Madroño 56:23-42.

Kennedy CJ, Stecko P, Truelson B, Petkovich D, 2012. "Dissolved Organic Carbon Modulates the Effects of Copper on Olfactory-Mediated Behaviors of Chinook Salmon." *Environmental Toxicology and Chemistry* 31(10):2281–2288.

Kus, B.E., and K.L. Miner. 1989. "The Use of Non-Riparian Habitats by Least Bell's Vireos (Vireo bellii pusillus)." In California Riparian Systems Conference: Protection, Management, and Restoration for the 1990's; 1988 September 22–24, Davis, CA, ed. D.L. Abell. U.S. Forest Service General Technical Report. PSW 110. Berkeley, California: U.S. Forest Service, Pacific Northwest Forest and Range Experiment Station.

Labinger, Z., and J. Greaves. 1999. *Results of 1998 Avian Surveys and Least Bell's Vireo Monitoring: Restoration Phase of the ARCO/Four Corners January 17, 1994 Oil Spill on the Santa Clara River, California*. Draft. Prepared for the U.S. Fish and Wildlife Service. Goleta, California: Labinger Biological Consulting. March 1, 1999.

Labinger, Z., J. Greaves, and D. Haupt. 1995. *Preliminary Results of Avian Surveys Following the January 17, 1994, ARCO/Four Corners Oil Spill on the Santa Clara River, California*. Draft. Goleta, California: Labinger Biological Consulting.

Labinger, Z., J. Greaves, and D. Haupt. 1996. *Results of 1995 Avian Surveys following the January 17, 1994, ARCO/Four Corners Oil Spill on the Santa Clara River, California*. Draft. Goleta, California: Labinger Biological Consulting. January 17, 1996.

Labinger, Z., J. Greaves, and D. Haupt. 1997a. *1996 Avian Survey Results following the ARCO/Four Corners Oil Spill (January 17, 1994) on the Santa Clara River, California*. Draft. Prepared for the U.S. Fish and Wildlife Service. Goleta, California: Labinger Biological Consulting. January 9, 1997.

Labinger, Z., J. Greaves, and D. Haupt. 1997b. *Results of 1997 Avian Surveys and Least Bell's Vireo Monitoring: Restoration Phase of the ARCO/Four Corners January 17, 1994, Oil Spill on the Santa Clara River, California*. Draft. Prepared for the U.S. Fish and Wildlife Service. Goleta, California: Labinger Biological Consulting. November 30, 1997.

LDC (Land Design Consultants). 2011. *Oak Tree Report "Entrada" V.T.T.M. No 53295.* Prepared for Newhall Land. February 2007, revised January 2011.

LDC. 2014. V.T.T.M. 53295–*"Entrada South."* Prepared for Newhall Land. January 20, 2014.

Longcore, T., and C. Rich. 2004. "Ecological Light Pollution." *Frontiers in Ecology and the Environment* 2:191–198.

Miller, B. W. 2001. "A Method for Determining Relative Activity of Free Flying Bats Using a New Activity Index for Acoustic Monitoring. *Acta Chiropterologica* 3:93–105.

Munz, P.A. 1974. *A Flora of Southern California*. University of California Press, Berkeley.

NABA (North American Butterfly Association). 2001. *North American Butterfly Association (NABA) Checklist & English Names of North American Butterflies.* 2nd ed. Morristown, New Jersey: NABA. Accessed August 16, 2010. http://www.naba.org/pubs/checklst.html.

NABA. 2003. "Report of the NABA Names Committee." By M. Caterino, J. Glassberg, and J. Heraty. In *American Butterflies*, 24–27. Update to *North American Butterfly Association (NABA) Checklist & English Names of North American Butterflies* (2nd ed., 2001). Accessed August 16, 2010. http://www.naba.org/pubs/checklst.html.

NABA. 2012. "Checklist of North American Butterflies Occurring North of Mexico." Update to *North American Butterfly Association (NABA) Checklist & English Names of North American Butterflies* (2nd ed., 2001). May 13, 2012. Accessed March 24, 2015. http://www.naba.org/pubs/enames2.html.

Nason, J.A., P.O. Nelson, D.J. Bloomquist, M.S. Sprick. 2011. *Copper Speciation in Highway Stormwater Runoff as Related to Bioavailability and Toxicity to ESA-Listed Salmon*. Final Report. SPR 663. Oregon Department of Transportation, Research Section.

Nason, J.A., M.S. Sprick, and D.J. Bloomquist. 2012. "Determination of Copper Speciation in Highway Stormwater Runoff Using Competitive Ligand Exchange-Adsorptive Cathodic Stripping Voltammetry." *Water Research* 46(17): 5788–5798.

Niemela, C. 2009. Memo from C. Niemela (Bloom Biological) to Jesse Grantham (USFWS) regarding observations of California condor in Potrero Canyon in January 2009. March 11, 2009.

O'Farrell, M.J., B.W. Miller, and W.L. Gannon. 1999. "Qualitative Identification of Free-Flying Bats Using the Anabat Detector." *Journal of Mammalogy* 80:11–23.

PACE (Pacific Advanced Civil Engineering, Inc). 2010. *Revised Newhall Ranch Resource Management & Development Plan River & Tributaries Drainage Analysis – Santa Clara River*. Prepared for Newhall Land. Fountain Valley, California: PACE. June 2010.

PCR (Planning Consultants Research). 1998. "Results of Focused California Gnatcatcher Surveys for the West Creek/East Creek Project Site, Valencia, Los Angeles County." Letter report from S.G. Nelson (PCR) to D. Krofta (U.S. Fish and Wildlife Service). Santa Monica, California: PCR. August 25, 1998.

Penrod, K., C. Cabanero, P. Beier, C. Luke, W. Spencer, E. Rubin, R. Sauvajot, S. Riley, and D. Kamradt. 2006. *South Coast Missing Linkages Project: A Linkage Design for the Santa Monica-Sierra Madre Connection.* Idyllwild, California: South Coast Wildlands, in cooperation with the National Park Service, Santa Monica Mountains Conservancy, California State Parks, and The Nature Conservancy.

Priest, J. 2007a. "Documentation of California Gnatcatcher Observation at Newhall, Valencia Commerce Center Project on 10/5/07." Memorandum from J. Priest (Dudek) to D. Crawford and R. Francis (Compliance Biology, Inc.), October 8, 2007.

Priest, J. 2007b. "Focused California Gnatcatcher Survey, Landmark Village Project, Los Angeles County, California." Letter report from J.D. Priest (Dudek) to U.S. Fish and Wildlife Service, July 9, 2007.

Rahn (Rahn Conservation Consulting, LLC). 2013a. *Bat Surveys and Habitat Assessment: SR 126/Commerce Center Drive Project*. Prepared for AECOM. August 2013.

Rahn. 2013b. *Bat Surveys and Habitat Assessment: SR 126/Commerce Center Drive Project, Fall Survey Addendum*. Prepared for AECOM. September 2013.

Raven, P.H., R.F. Evert, S.E. Eichhorn. 1992. *Biology of Plants*. 4th edition. New York, New York: Worth Publishers, Inc.

Rebman, J.P., and M.G. Simpson. 2006. *Checklist of the Vascular Plants of San Diego County*. 4th ed. San Diego, California: San Diego Natural History Museum and San Diego State University.

RECON. 1999a. *Survey for Arroyo Southwestern Toad for Newhall Ranch*. Prepared for Newhall Ranch Company. San Diego, California: RECON. July 12, 1999.

RECON. 1999b. *Santa Clara River Corridor Habitat Assessment for Newhall Ranch*. Prepared for Newhall Ranch Company. San Diego, California: RECON. December 28, 1999.

RECON. 1999C. *Quino Checkerspot Butterfly Habitat Assessment for Phase 1 Development and Permit Areas of Newhall Ranch*. Prepared for Newhall Ranch Company by G.A. Scheid (RECON). San Diego, California: RECON. July 15, 1999RECON and Impact Sciences, Inc. 1996. *Biota Report: Newhall Ranch Specific Plan; Santa Clara River Valley, California; Tentative Tract Map 44831.* Prepared for Los Angeles County, Department of Regional Planning. September 7, 1995; revised July 1996.

Reid, L.M. 1993. *Research and Cumulative Watershed Effects*. General Technical Report PSW-GTR-141. Albany, California: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. March 1993.

RJA (Richard Johnson & Associates, Inc.) 2007. *Arborist Survey Report for Valencia Commerce Center VTPM 18108, Los Angeles County, California.* Prepared for Valencia Company, Valencia, California. April 3, 2007.

Root, R.P. 2008. "Acknowledgement of Request for Formal Consultation on the Proposed Newhall Ranch Specific Plan, Santa Clarita, Los Angeles County, California." Letter from R.P. Root (USFWS) to A.O. Allen (Corps), November 12, 2008.

SAIC (Science Applications International Corporation). 2003. "Results of Focused Coastal California Gnatcatcher Surveys for the Stevenson Ranch Phase V Project Site, Los Angeles, California." Letter report from M. Blain (SAIC) to R. Farris (U.S. Fish and Wildlife Service). September 3, 2003.

Sandburg, N.H. 2001. "Field Summary of Santa Clara River Surveys for *Bufo californicus* and *Rana aurora draytonii*, May 8 through May 29, 2001." Letter report from N.H. Sandburg (Biological Consultant). Santa Barbara, California. June 6, 2001.

Sawyer, J.O., and T. Keeler-Wolf. 1995. *Manual of California Vegetation*. Sacramento, California: California Native Plant Society.

Sawyer, John O., Todd Keeler-Wolf, and Julie Evens. 2009. *A Manual of California Vegetation*. 2nd edition. Sacramento, California: California Native Plant Society.

Shapovalov, L., and A.C. Taft. 1954. *The Life Histories of the Steelhead Trout (*Salmo gairdneri*) and Silver Salmon (*Oncorhynchus kisutch*) with Special Reference to Waddell Creek, California, and Recommendation Regarding Their Management*. CDFG Fish Bulletin No. 98.

Shuford, W.D., and T. Gardali, eds. 2008. *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*. Studies of Western Birds 1. Camarillo, California: Western Field Ornithologists, and Sacramento, California: California Department of Fish and Game.

SMEA (San Marino Environmental Associates). 1994a. *Two-Striped Garter Snake Data, ARCO Natural Resource Damage Assessment.* San Marino, California: San Marino Environmental Associates.

SMEA. 1994b. *Southwestern Pond Turtle Data, ARCO Natural Resource Damage Assessment*. San Marino, California: San Marino Environmental Associates

SMEA. 1995a. *Sensitive Aquatic Species Survey; Santa Clara River and San Francisquito Creek; Newhall Land and Farming Company Property; Los Angeles, California.* Final report. Prepared for M. Subbotin, Valencia Company by J.N. Baskin and T.R. Haglund. San Marino, California: SMEA. December 1995

SMEA. 1995b. *Rare Plant and Animal Survey; Santa Clarita Water District Service Area, Los Angeles County, California*. Prepared for Santa Clarita Water Company. San Marino, California: San Marino Environmental Associates. August 1995.

Stebbins, R.C. 2003. *A Field Guide to Western Reptiles and Amphibians*. 3rd edition. New York, New York: Houghton Mifflin Company.

Stoeker, M., and E. Kelly. 2005. *Santa Clara River Steelhead Trout: Assessment and Recovery Opportunities.* Prepared for The Nature Conservancy and The Santa Clara River Trustee Council.

Swift, C.C. 2009. Summary of the recent reconnaissance survey work conducted to detect freshwater snail presence in selected aquatic habitat locations on Newhall Ranch. Memorandum from C.C. Swift (ENTRIX) to M. Carpenter (Newhall Land), April 7, 2009

Titus, G.G., D.C. Erman, and W.M. Snider. 2010. *History and Status of Steelhead in California Coastal Drainages South of San Francisco Bay.* Forthcoming.

TNC (The Nature Conservancy). 2006. *Santa Clara River Upper Watershed Conservation Plan*. Funded in part by Santa Clara River Trustee Council ARCO Oil Spill Settlement. Fall 2006.

URS. 2014. *Wetland Delineation and Jurisdictional Determination Report for the Entrada Project, Los Angeles County, California*. Prepared for The Newhall Land and Farming Company. Santa Barbara, California: URS. April 28, 2014.

USDA (U.S. Department of Agriculture). 2015a. Web Soil Survey: Antelope Valley Area, California. USDA Natural Resources Conservation Service, Soil Survey Staff. Accessed March 25, 2015. http://websoilsurvey.nrcs.usda.gov/.

USDA. 2015b. Official Soil Series Descriptions. USDA Natural Resources Conservation Service, Soil Survey Staff. Accessed March 25, 2015. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/home/?cid=nrcs142p2_053587.

USDA. 2015c. "California." State PLANTS Checklist. Accessed March 25, 2015. http://plants.usda.gov/dl_state.html.

USGS (U.S. Geological Survey). 2012. National Hydrography Dataset (NHD). NHD flowline map. July 7, 2012.

USFWS (U.S. Fish and Wildlife Service). 1997. *Coastal California Gnatcatcher* (Polioptila californica californica) *Presence/Absence Survey Protocol*. July 28, 1997.

USFWS. 1998. *Vernal Pools of Southern California Recovery Plan*. September 1998. Portland, Oregon: USFWS.

USFWS. 2008. *Strategic Habitat Conservation Handbook: A Guide to Implementing the Technical Elements of Strategic Habitat Conservation* (Version 1.0). Report from the National Technical Assistance Team. February 11, 2008.

Wilson, D.E., and D.M. Reeder, eds. 2005. *Mammal Species of the World: A Taxonomic and Geographic Reference.* 3rd ed. Online version. Baltimore, Maryland: Johns Hopkins University Press. Accessed August 17, 2010. http://www.bucknell.edu/msw3/.

WRCC (Western Regional Climate Center). 2012. "Piru 2 ESE, California (046940)." Reno, Nevada: National Oceanic and Atmospheric Administration, National Climatic Data Center, WRCC. Accessed 2012. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6940.

WRCC. 2013. "Piru Remote Automatic Weather Station (RAWS)." Reno, Nevada: National Oceanic and Atmospheric Administration, National Climatic Data Center, WRCC. Accessed July 2013. http://www.raws.dri.edu/cgi-bin/rawMAIN.pl?caCPIR

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APPENDIX A

Comprehensive Mitigation Implementation Plan

DRAFT

COMPREHENSIVE MITIGATION IMPLEMENTATION PLAN
for the
NEWHALL RANCH – RESOURCE MANAGEMENT AND DEVELOPMENT PLAN AND SPINEFLOWER CONSERVATION PLAN STUDY AREA

Prepared for:

The Newhall Land and Farming Company
25124 Springfield Court, Suite 300
Valencia, California 91355

Prepared by:

DUDEK

25124 Springfield Court, Suite 210
Valencia, California 91355
Contact: Sherri Miller
661.705.3399 ext. 3611

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EXECUTIVE SUMMARY

The Comprehensive Mitigation Implementation Plan (CMIP) for the Newhall Ranch Resource Management and Development Plan (RMDP) and Spineflower Conservation Plan (SCP) study area outlines the procedures for implementing the open space dedication and restoration mitigation required by the RMDP, the associated environmental impact statement/environmental impact report (EIS/EIR), and those measures that should be applied to the Entrada South and Valencia Commerce Center (VCC) planning areas. The CMIP briefly describes the context and process for mitigation implementation; however, the primary purpose of the CMIP is to provide a road map of "rough-step" implementation of planned RMDP activities and SCP study area development projects (Entrada South and VCC), implementation in terms of impacts and mitigation. The rough-step analysis, defined below, is presented in a series of tables and exhibits that show how the planned activities relate to significant biological impacts and associated preservation and restoration measures. The intent of the CMIP is to establish a feasible step-wise procedure for implementing preservation- and restoration-related mitigation measures as set forth in the Specific Plan EIR and RMDP/SCP EIS/EIR (with the exception of spineflower-specific mitigation measures) within the project study area. Spineflower-specific activities are governed by the SCP and requirements of the SFVS Incidental Take Permit. Mitigation related to individual oak trees is addressed in the Oak Resource Management Plan.

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1 INTRODUCTION

On December 3, 2010, the California Department of Fish and Game (CDFG) – now the Department of Fish and Wildlife (CDFW) – approved the Newhall Ranch Spineflower Conservation Plan (SCP). The SCP establishes a system of managed preserves that will maximize the long-term persistence of the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) (spineflower) within the Specific Plan area, Valencia Commerce Center (VCC) planning area, and Entrada South planning area. CDFW required the SCP as a condition of issuing Newhall an Incidental Take Permit (ITP) for spineflower. On August 31, 2011, the Army Corps of Engineers (ACOE) approved the Newhall Ranch Resource Management and Development Plan (RMDP), - a conservation, mitigation, and permitting plan for the long-term management of sensitive biological resources within the 11,999-acre Newhall Ranch Specific Plan area (Specific Plan area) located in northern Los Angeles County (Figure 1 (see Appendix A for figures and tables))[1].

Together, the RMDP and SCP form a complementary project, the boundaries of which extend beyond the Specific Plan area and include VCC, most portions of Entrada South, and some off-site improvement areas. Because the RMDP and SCP approvals would facilitate development of the Specific Plan, VCC, and Entrada South, the Corps and CDFW elected to prepare a comprehensive EIS/EIR.[2] This document analyzed (1) the direct environmental impacts of the RMDP's infrastructure/facilities (bank stabilization, roads, bridges, etc.); (2) the direct impacts of the SCP/ITP for spineflower; (3) the indirect impacts from those residential, commercial, and non-residential projects that would be facilitated by the RMDP/SCP project (i.e., Specific Plan, VCC, and Entrada South); and (4) the secondary impacts that could occur outside the development footprints of such facilitated projects.

This Comprehensive Mitigation Implementation Plan (CMIP) describes the process by which impacts to biological resources will be mitigated consistent with the requirements set forth in the Specific Plan EIR, and the RMDP/SCP EIS/EIR. Note, however, that the CMIP does not address

[1] The Specific Plan was approved by Los Angeles County in May 2003 (County of Los Angeles 2003), and subsequent development plans; subdivision maps; and federal and state permitting, consultations, and agreements will be required to implement build-out of the Specific Plan area, which is projected to occur over the next 20 to 25 years.

[2] The EIR portion of the EIS/EIR and Newhall Ranch RMDP/SCP project was approved by the CDFG on December 3, 2010. The CDFG also approved the spineflower ITP covering Newhall's landholdings, including the Homestead South site (ACOE and CDFG 2010). For its part, the ACOE approved the EIS portion of the EIS/EIR and the RMDP/SCP project, pursuant to a Record of Decision (ROD) for the Least Environmentally Damaging Practical Alternative (LEDPA) and other supporting documents, in January 2011. The ROD was signed in August 2011.

mitigation of impacts to San Fernando Valley spineflower, as that is covered in the SCP itself. Mitigation related to individual oak trees is addressed in the Oak Resource Management Plan.

For purposes of the CMIP, the study area (14,600 acres) includes the following tract maps: Mission Village, Landmark Village, Homestead South, Potrero Village, Homestead North, Entrada South, and VCC, as well as three areas outside tract map boundaries: High Country Special Management Area (SMA), Salt Creek SMA, and the Water Reclamation Plant (WRP)–Utility Corridor (Figure 2). The land use designations within the study area include residential, industrial, mixed-use, parks and recreation, public facilities, preserved area, SMA/Significant Ecological Area (SEA), and natural Open Area. The RMDP identifies various master-planned communities and regional infrastructure related to the development of these land uses (e.g., bridges, drainage improvements, viewing platforms, debris and water quality basins) and evaluates how resources will be managed while this infrastructure is being developed. Specifically, resources will be managed through a design development process that seeks to avoid and minimize impacts, and through mitigation measures that offset unavoidable significant impacts, both during and after construction of project components.

As indicated above, the study area, includes sensitive biological areas of the Santa Clara River Special Management Area/Significant Ecological Area (SMA/SEA), High Country SMA/SEA, Open Area, and oak resources; and the Salt Creek area, which is a conservation area that occurs outside the Specific Plan area boundary. Within the tract map boundaries open space in the study area is protected in the form of seven Spineflower Preserves, the San Martinez Grande Adaptive Management Area, the Mariposa Lily Reserve, natural open space land use designation, and the Santa Clara River SMA/SEA. The total Open Area protected within the tract map boundaries totals 3,770 acres. Outside the tract maps, open space is protected by the High Country SMA/SEA (4,167 acres) and the Salt Creek area (1,518 acres). The total Open Area protected within the study area is 9,417 acres (Figure 3).

The CMIP is organized to outline the implementation of mitigation measures related to the preservation and restoration of land within the RMDP/SCP study area. Section 2 describes the objectives of the permits requested by the applicant and the general process required to comply with the permit conditions. Section 3 describes the general environmental conditions and resources of the RMDP/SCP study area, summarizes the project impacts to sensitive resources, and summarizes the avoidance and preserve dedication/restoration-related mitigation measures. Section 4 discusses the implementation process of the mitigation measures following development approval. Section 5 addresses the phasing of development and the schedule for submittal of tentative maps and any related mitigation. Section 6 identifies the conceptual locations and acreage for geographically located mitigation areas.

Newhall Ranch Project Development Phasing

Phase	Village	Anticipated Time Frame (1)(2)
1	Landmark Village	3-5 years
2	Mission Village	3-5 years
3	WRP / Utility Corridor	3-5 years
4	Homestead Village South	3-5 years
5	Homestead Village North	5-10 years
6	Potrero Village	10-15 years
7	Entrada South	3-5 years
8	VCC	5-10 years

(1) Time frames indicate the approximate time frame for development to commence.
(2) Any given area could take from 3 to 5 years to complete.

1.1 RMDP Project Description

The RMDP will facilitate the development of approximately 19,517 residential units, 5.45 million square feet of commercial uses and public facilities such as parks, schools and libraries on approximately 2,570 acres. Of the 13,651 acres within the RMDP project property, approximately 5,084 acres will be graded, with approximately 2,356 acres related to residential and commercial development; approximately 235 acres related to public facilities; approximately 552 acres related to roads and other infrastructure such as electrical substations; and the remaining 1,975 acres restored as manufactured open space (stabilized slopes revegetated with native vegetation) and recreational areas. This restored manufactured open space consists of approximately 700 acres of contoured slopes that will be planted with native vegetation, approximately 110 acres of utility corridor with restricted native vegetation (native shrub and grasses), approximately 200 acres of golf course (recreational planning unit overlay of approved residential planning areas in Potrero Canyon), 90 acres of parks and recreational areas, and approximately 875 acres of parkways and other landscaped areas. The remaining 8,566 acres will be preserved as natural open space, for a total of approximately 10,528 acres of open space. The grading of the RMDP site will take place in a balanced cut-and-fill process.

1.2 Village Level Project Descriptions

1.2.1 Mission Village

The Mission Village, as approved by the Los Angeles County Board of Supervisors as outlined above, encompasses approximately 1,260-acres located in the northeast corner of the NRSP area, south of the Santa Clara River and SR-126 and west of Interstate 5 (Mission Village Project). Development proposed for the Mission Village Project includes a mix of housing types; mixed-use, office, and commercial facilities; open space and recreation areas; and infrastructure uses

(e.g., parks, a fire station, library, school, utilities, roads, etc.). The Mission Village Project also includes regional access improvements, including the construction of the Commerce Center Drive Bridge, which will connect the existing northern terminus of Commerce Center Drive at SR-126 with the proposed southern extension of Commerce Center Drive onto the Mission Village Project. Residential development will occupy approximately 389 acres of the Mission Village Project, while mixed use and commercial uses will occupy approximately an additional 57 acres. School, park, recreation and other public service uses will occupy approximately 56 acres, and utility and road facilities will occupy approximately 164 acres. In total, proposed development will involve grading of approximately 666 acres, or approximately 49 percent, of the Mission Village Project.

1.2.2 Landmark Village

The Landmark Village portion of the RMDP, as approved by the Los Angeles County Board of Supervisors as outlined above, will be developed on approximately 294 acres located in the central portion of the NRSP area, west of the confluence of Castaic Creek with the Santa Clara River, north of the River and south of SR-126 (Landmark Village Project), all of which will be graded. Development proposed for the Landmark Village Project tract map site includes a mix of housing types; mixed-use/commercial facilities; open space and recreation facilities; and infrastructure uses (e.g., parks, a fire station, elementary school, utilities, roads, etc.). Residential development will occupy approximately 129 acres of the Landmark Village Project site, while mixed use/commercial uses will occupy approximately 35 acres. Schools, park, open space, recreation and public service uses will occupy approximately 75 acres, and roads and a park and ride facility will occupy approximately 55 acres.

1.2.3 Utility Corridor/WRP Outfall/SR 126 Bridge Widening

The RDMP includes the development of utility service systems to serve urban development on the NRSP area. Utility systems that will result in permanent and temporary impacts to waters of the United States include a utility corridor, the treated wastewater outfall of the Newhall Ranch WRP, and widened bridges and culverts located along Highway 126 (“SR-126”) adjacent to the Project site.

WRP

Los Angeles County approved the NRSP, and, as an individual project, the WRP development. The Regional Board adopted Waste Discharge Requirements for the Newhall Ranch Sanitation District (Order No. R4-2007-0046) effective October 27, 2007. The development of the WRP

includes buried soil cement flood protection along the Santa Clara River and involves filling of two on-site minor tributary drainages as further described below.

Utility Corridor

The Los Angeles County approved subdivision maps for both the Landmark Village and Mission Village tracts, described above, including the primary electrical, sewer, water, gas and communication lines serving the NRSP area that will be installed in a utility corridor generally located parallel to the south side of SR-126 and north of the Santa Clara River. The corridor will extend approximately three miles between Castaic Creek to the east and the WRP to the west, and will be approximately 100 feet wide. The corridor will cross several tributaries to the Santa Clara River, including (from east to west) Castaic Creek, Chiquito Canyon, Mid-Martinez Canyon, San Martinez Canyon, and Off-Haul Canyon. Trenching or where necessary, directional boring, will be used to install utility lines across the tributaries, and a 30 to 50-foot wide construction corridor will be required. Utility lines across watercourses will be located below scour depth and weighted or cemented in place, where appropriate, or co-located with bed stabilization features that provide scour protection. Following completion of construction activities, temporary impact areas will be restored to channel grade and re-vegetated with native riparian and upland species as appropriate. Permanent access for the maintenance of utilities will be provided outside the limits of the streambed and associated habitats.

1.2.4 Homestead South Village

The tentative tract map for the Homestead South Village portion of the Newhall Ranch master planned community has not been submitted to Los Angeles County for subdivision approval, and therefore detailed land use planning is not available for this planning area nor has the project-level EIR for the Homestead South Village been completed. Under the RMDP, a land use plan consistent with the NRSP was used in the impacts analysis. Under the RMDP, Homestead South Village will be developed on approximately 1,635 acres located in the central portion of the NRSP site. The Homestead South Village Project site is generally located south of the Santa Clara River, west of the Mission Village Project site and north of the Potrero Village site. A small portion of the Homestead South Village Project site will be located north of the River and south of SR-126. Development proposed for the Homestead South Village includes a mix of housing types; mixed-use/commercial facilities; open space and recreation facilities; and infrastructure uses (e.g., parks, high school and elementary school, utilities, roads, etc.). Residential development will occupy approximately 487 acres of the Homestead South Village Project site. School, park, open space, recreation and public service uses will occupy approximately 1,238 acres, and roads will occupy approximately 90 acres.

1.2.5 Potrero Village

The tentative tract map for the Potrero Village portion of the NRMDP has not been submitted to Los Angeles County for subdivision approval, and therefore detailed land use planning is not available for this planning area nor has the project-level EIR for Potrero been completed. Under the RMDP, a land use plan consistent with the NRSP was used in the impacts analysis. The Potrero Village portion of the Newhall Ranch master planned community will be developed on 3,000 acres located south of SR-126 and north of the High Country open space area that is to be established on the NRSP area. Development proposed for the Potrero Village Project includes a mix of housing types; mixed-use/commercial facilities; open space and golf and recreation facilities; elementary school; visitor service center in the High Country; and infrastructure uses (e.g., parks, utilities, roads, etc.*)*. Residential development will occupy approximately 900 acres of the Potrero Village Project site, while commercial uses will occupy approximately 38 acres. School, park, open space, recreation and public service uses will occupy approximately 1,550 acres, and roads will occupy approximately 104 acres.

1.2.6 Homestead North Village

The tentative tract map for the Homestead North Village portion of the RMDP has not been submitted to Los Angeles County for subdivision approval, and therefore detailed land use planning is not available for this planning area nor has the project-level EIR for Homestead North Village been completed. Under the RMDP, a land use plan consistent with the NRSP was used in the impacts analysis. The Homestead North Village portion of the RMDP will be developed on approximately 1,600 acres located in the northwestern portion of the NRSP area. The Homestead North Village site is generally located north of SR-126 and west of the Landmark Village Project site. Development proposed for the Homestead North Village Project includes a mix of housing types; mixed-use/commercial facilities; open space and recreation facilities; and infrastructure uses (e.g., parks, utilities, roads, etc.). Residential development will occupy approximately 295 acres of the Homestead North Village Project site, while mixed use/commercial uses will occupy approximately 77 acres. Park, open space, recreation and public service uses will occupy approximately 1,153 acres, and roads will occupy approximately 75 acres.

Entrada South

The Entrada South planning area consists of approximately 392 acres. The applicant is seeking approval from Los Angeles County for planned residential and nonresidential development within the Entrada South planning area. The applicant has submitted to Los Angeles County Entrada South development applications, which cover the portion of the Entrada South planning area facilitated by the SCP. As of this writing, the County has not yet issued an NOP of an EIR

or released an EIR for Entrada South. The proposed project consists of open space as well as residential, commercial, and public facility uses.

Valencia Commerce Center

The VCC planning area consists of approximately 333 acres. This planning area is the remaining undeveloped portion of the VCC commercial/industrial complex currently under development by the applicant. VCC was the subject of an EIR certified by Los Angeles County in April 1990 (County of Los Angeles. 1990). The applicant has recently submitted to Los Angeles County the last tentative parcel map (Tentative Parcel Map No. 18108) needed to complete build-out of the remaining portion of the VCC planning area. The County will require preparation of a subsequent EIR in conjunction with the parcel map and related project approvals; however, the County has not yet issued a Notice of Preparation (NOP) of the subsequent EIR or released the subsequent EIR for the remaining portion of the VCC planning area.

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2 REGULATORY FRAMEWORK AND PERMITTING PROCESS

The RMDP will be implemented in the unincorporated County of Los Angeles (County). For that reason, the County is reviewing the RMDP for consistency with its plans and policies, including the Newhall Ranch Specific Plan's Resource Management Plan (RMP) (Section 2.6 of the Specific Plan), which the County approved on May 27, 2003, when it adopted the Specific Plan and its attendant EIR (County of Los Angeles 2003).

The RMP sets forth mitigation and management standards for sensitive biological resources located within the boundary of the approved Specific Plan. The RMP also establishes standards governing public access, recreational use, management, and ownership of the Newhall Ranch River Corridor SMA, the High Country SMA, and the Open Area portions of the Specific Plan area.[3] Under the RMP, the Salt Creek area, adjacent to the westerly boundary of the Specific Plan site, is also to be managed in conjunction with, and in the same manner as, the High Country SMA.

In 2010, the Corps and CDFG4 approved the EIS/EIR for the RMDP/SCP project (Corps and CDFG 2010; Figure 3). The RMDP/SCP project consists of two components. The first is the RMDP, which is a conservation, mitigation, and permitting plan for sensitive biological resources within the RMDP project area. Newhall relied on the RMDP to obtain federal and state permits for implementing the infrastructure and facilities required to build out the approved Specific Plan. Those facilities included the Magic Mountain Parkway extension through the Specific Plan area and Entrada South to Interstate 5 (I-5). The RMDP directs both resource management and development within the RMDP area, as shown on Figure 2.0-3 of the EIS/EIR. The second component is the SCP, which is a conservation and management plan to permanently protect the San Fernando Valley spineflower, a federal candidate and state-listed endangered species, through an actively managed system of preserves. The SCP addresses known spineflower populations located within the Specific Plan area, and at study areas located at VCC and Entrada South.

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[3] The River Corridor SMA and the High Country SMA retain their local County designation as SEAs under the approved Specific Plan. The River Corridor SMA is now referred to as the Santa Clara River SMA/SEA; the High Country SMA/SEA name is still consistent.

The California Department of Fish and Game (CDFG) was officially renamed the California Department of Fish and Wildlife (CDFW) as of January 1, 2013. Where references are made in this document to the department for background information, documents, permits, consultations, etc. prior to January 1, 2013, the title CDFG is used and after January 1, 2013, CDFW is used.

The RMDP is one of the detailed implementation plans contemplated by the previously approved RMP. The RMP was prepared at a conceptual level of detail only, and acknowledged that future conservation, mitigation, and permitting activities within the Specific Plan area would be subject to federal and state permits, consultations, and agreements, which would be implemented through more detailed planning. The RMDP will guide future resource conservation, mitigation, and permitting for the long-term management of sensitive biological resources in conjunction with the infrastructure improvements and facilities approved under the Specific Plan. This CMIP outlines the implementation of the RMDP, building further upon the RMP.

Because the infrastructure components of the RMDP would facilitate development of the Specific Plan and Entrada South (i.e., Magic Mountain Parkway extension), and because such development would result in impacts to the spineflower, thus necessitating an ITP and SCP, the Corps and CDFW elected to prepare a comprehensive EIS/EIR. This document analyzed: (1) the direct environmental impacts of the RMDP's infrastructure/facilities (bank stabilization, roads, bridges, etc.); (2) the direct impacts of the SCP/ITP for spineflower; (3) the indirect impacts from those residential, commercial, and non-residential projects that would be facilitated by the RMDP/SCP project (i.e., Specific Plan, Entrada South, and VCC); and (4) the secondary impacts that could occur outside the development footprints of such facilitated projects. Thus, Entrada South and VCC were among the projects whose impacts were evaluated in the EIS/EIR.

As part of the RMDP/SCP project, Newhall requested and obtained from CDFG ITPs for spineflower and three other state-listed species: western yellow-billed cuckoo (C*occyzus americanus occidentalis*), southwestern willow flycatcher (*Empidonax traillii extimus*), and least Bell's vireo (*Vireo bellii pusillus*) (i.e., "Covered Species"). Newhall and the CDFG also approved a Master Streambed Alteration Agreement (MSAA) for project-related changes to the Santa Clara River and its tributaries. In addition, Newhall obtained from the Corps a Clean Water Act Section 404(b)(1) permit, following review and approval of its Least Environmentally Damaging Practical Alternative (LEDPA).

The LEDPA process resulted in a Final Newhall Ranch Project LEDPA that was a modified version of the Draft LEDPA described in the Final RMDP/SCP EIS/EIR (Carpenter 2011). The Final LEDPA avoids an additional 18.4 acres of waters of the U.S. compared to the Draft LEDPA, primarily by reconfiguring development in Potrero Canyon and relocating development in San Martinez Grande Canyon (thus allowing bank stabilization to occur entirely in upland areas).

The LEDPA also reflects input from CDFW that provides increased spineflower preserve acreage by adding two new spineflower preserves—the Magic Mountain and Spring preserves. Finally, the LEDPA provides for larger riparian corridors within five major tributaries: lower Potrero Canyon (by eliminating Potrero Canyon Bridge); Long Canyon (new channel

construction); and in Lion, San Martinez Grande, and Chiquito Canyons by incorporating limited channel grading to expand the drainages and adjacent riparian areas and realign their banks. Of the total 660 acres of waters of the U.S. present on the RMDP site, the LEDPA would avoid permanent or temporary impacts to approximately 87% (576.9 acres), compared to 85% avoidance for the Draft LEDPA. The Section 404 Individual Permit (IP) based on the LEPDA authorized fill of approximately 47.9 acres of the Corps-jurisdictional waters of the U.S. and temporary disturbance of 35.3 acres.

The Los Angeles Regional Water Quality Control Board (RWQCB) issued Waste Discharge Requirements (WDRs) in lieu of 401 Water Quality Certification for the Corps 404 Permit, mirroring the impacts approved by the Corps.

The MSAA and IP authorized the conversion to buried storm drain of Magic Mountain Canyon (6,111 linear feet), Unnamed Canyon 1 (4,647 linear feet), and Unnamed Canyon 2 (416 linear feet). The IP authorized the fill of 7.21 acres of Corps-jurisdictional non-wetland waters, and the MSAA authorized the fill of 7.38 acres of CDFW-jurisdictional streambed associated with the extension of Magic Mountain Parkway through the Entrada South project site. However, the MSAA did not cover jurisdictional impacts associated with the residential and commercial development portions of the Entrada South or VCC projects.

Due to the long-term nature of the RMDP, the Corps and CDFW will perform subsequent assessment of the project by evaluating "Subnotifications," prepared and submitted by Newhall, which demonstrate individual project compliance with the RMDP/SCP and the mitigation measures discussed in this CMIP. The County will review individual tract maps and project-specific EIRs that will also further evaluate the project impacts and may adopt additional mitigation, if warranted. The CMIP will be a guiding document for the mitigation selection and implementation throughout the RMDP and SCP planning areas.

It is important to note that Newhall must demonstrate compliance with the RMDP/SCP, but need not propose mitigation that matches the measures presented in this CMIP in terms of acreage or location as impacts and associated conservation may change over the long-term implementation. The acreages and location of impacts and mitigation measures will be updated as appropriate in the future during project implementation; the CMIP is a conceptual rough-step analysis of that process. Please note that VCC and Entrada South developments are subject to further environmental review pursuant to CEQA with the County of Los Angeles and state and federal wetland regulatory programs which may result in resource impacts different than presented in the CMIP.

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3 EXISTING ENVIRONMENTAL SETTING, PROPOSED IMPACTS, AND MITIGATION MEASURES

3.1 Existing Conditions

The RMDP/SCP study area includes both upland and riparian areas. The major upland plant communities include coastal scrub, undifferentiated chaparral, coast live oak and valley oak woodlands, and California annual grassland. However, the study area also contains smaller areas of valley oak/grass, mixed oak woodland and forest, chamise chaparral, California walnut woodland, and big sagebrush scrub. The Santa Clara River and associated tributaries support a variety of riparian plant communities, including southern cottonwood–willow riparian forest, southern willow scrub, southern coast live oak riparian forest, mulefat scrub, Mexican elderberry scrub, arrowweed scrub, giant reed, shrub tamarisk, herbaceous wetland, bulrush–cattail wetland, cismontane alkali marsh, coastal and valley freshwater marsh, and river wash. The study area also supports a wide variety of wildlife species, including special-status birds, reptiles, amphibians, mammals, and invertebrates.

There are two County SEAs within the boundary of the approved Specific Plan: (1) the High Country SMA/SEA, which consists of diverse coastal scrub, chaparral, California annual grassland, oak woodland, and riparian habitats that function as a wildlife corridor/linkage between the San Gabriel Mountains and the Santa Monica Mountains, and (2) the Santa Clara River SEA, which consists primarily of riparian and aquatic habitat within the Santa Clara River corridor and Castaic Creek. The Santa Clara River SEA supports the federally endangered and state fully protected unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) and other listed and special-status species. Note also that the Santa Clara River SEA includes portions of the Grapevine Mesa Spineflower Preserve and Airport Mesa Spineflower Preserve (Figure 3).

The Specific Plan boundary also encompasses the Ventura County portion of the High Country known as the Salt Creek area, which, while not a formally designated SEA, is contiguous with, and supports similar vegetation communities as, the High Country SMA. The Salt Creek area also provides connectivity between the High Country SMA/SEA and the Santa Clara River SMA/SEA.[5], and will be dedicated as "Open Space" and managed in the same way as the High Country SMA/SEA. The Open Area designation provides natural areas; however, some of the land is designated for public parks and trails.

[5] The Open Area designation provides natural areas; however, some of the land is designated for public parks and trails.

3.2 Impacts

The RMDP's infrastructure projects will cause *direct* impacts on biological resources including the permanent or temporary loss of vegetation communities, land covers, and wildlife; loss of or harm to special-status plant and wildlife species; and permanent or temporary loss of habitat for special-status species. In addition, the RMDP and SCP will cause *indirect* impacts as well by facilitating build-out of the Specific Plan, VCC, and Entrada South projects. These indirect impacts include the permanent loss of vegetation communities, land covers, mostly upland unique landscape features, and wildlife; loss of or harm to special-status plant and wildlife species; and permanent loss of habitat for special-status species. Finally, the RMDP and SCP will also result in *secondary* impacts. Secondary impacts are those reasonably foreseeable biological effects which, while caused by build-out of the Specific Plan, VCC, and Entrada South, nevertheless occur adjacent to development and/or off-site.

Table 1 in Appendix A, identifies those significant impacts on jurisdictional waters/drainages and sensitive biological resources that require either preservation or restoration within the project's open space. To reduce redundancy, Table 1 organizes species by mitigation measures they share in common rather than by guilds or taxonomic groups. For example, the mitigation measures for Allen's hummingbird (*Selasphorus sasin*), Costa's hummingbird (*Calypte costae*), and northern harrier (*Circus cyaneus*) are the same, so these three species are presented together in the table.

4 IMPLEMENTATION PROCESS

Within the Specific Plan area, five tentative maps will be submitted over a period of time: (1) Landmark Village (currently approved), (2) Mission Village (currently approved), (3) Homestead Village South (in process), (4) Homestead Village North (to be submitted in the future), and (5) Potrero Village (in process). In addition, tentative maps will be submitted for Entrada South (in process) and Valencia Commerce Center (to be submitted in the future). Newhall may propose numerous infrastructure components as part of its tentative map submittals or as individual projects. Likewise, Newhall may subdivide the tentative map areas into phases and submit them separately. However, this CMIP assumes that each of the seven tentative maps includes all infrastructure within those map areas and that each map will be submitted in the sequence listed above.

For each development, Newhall will submit a notification to the resource agencies and the County to demonstrate compliance with design criteria and mitigation measures. With regard to mitigation measures discussed in this CMIP (i.e., preservation- and restoration-related measures) the Subnotification will include a calculation of impacts, mitigation requirements, and proposed mitigation, as well as exhibits and planning documents illustrating how mitigation would be successfully implemented. These planning documents include habitat and/or species restoration plans; a short-term monitoring and maintenance program until habitat/species are established; land preservation exhibits with accompanying easement documents; and documents identifying the applicable management funding source.

Land preservation shall include the seven Spineflower Preserves, San Martinez Grande Adaptive Management Area (including Mariposa Lily Reserve), the Santa Clara River SMA/SEA, the High Country SMA/SEA, the Salt Creek area in Ventura County, and Open Area within tract boundaries. The total open space protected within the study area totals 9,417 acres. The dedications of these areas are as follows:

Spineflower Preserves

The proposed Airport Mesa, Grapevine Mesa, Potrero, San Martinez Grande, Entrada, Magic Mountain, and Spring preserve areas would conserve spineflower locations at five out of the six known occurrences within Newhall Land property holdings in the project study area6. The seven preserve areas total approximately 226 acres and include approximately 76.1% of the cumulative area occupied by spineflower, as determined by surveys conducted from 2002 through 2007. A

[6] The sixth occurrence of spineflower is within the VCC tract boundary. The SCP did not designate a preserve in this area.

conservation area adjacent to the San Martinez Grande spineflower preserve has also been identified for adaptive management activities. Conservation Easements will be offered to CDFW prior to dedication of the land to Center for Natural Lands Management (CNLM).

Funding will be applied in accordance with the conditions required by the section 2081(b) ITP and MSAA. Newhall, will post short-term bonds (or other CDFW-approved financial assurance mechanisms) and fund endowments in perpetuity for the management, monitoring, and reporting measures described in *Sections 9.0, 10.0, and 11.0* of the SCP. Two bonds (or other CDFW-approved financial assurance mechanisms) will be posted: one for costs during construction and one-time start-up costs, and one for initial restoration activities. An endowment will be funded for long-term management, monitoring, and reporting costs to be expended in perpetuity.

Mariposa Lily Reserve

Habitat replacement/enhancement for slender mariposa lily (*Calochortus clavatus* var. *gracilis*) will be at a ratio of 1:1 (acres restored/enhanced to acres impacted). In addition, a minimum of 133 acres of slender mariposa lily cumulative occupied area will be conserved in the RMDP and SCP project boundaries. At least 28 of the 133 acres will be conserved in the San Martinez Grande Canyon area, previously identified as mitigation for the Entrada South project.

Santa Clara River SMA/SEA (formerly referred to as the River Corridor SMA)

- Upon final approval of the Specific Plan, the Special Management Area designation for the River Corridor SMA became effective. Newhall shall offer to the County a permanent, non-revocable conservation and public access easement shall be offered to the County and/or CDFW prior to completion of the Newhall Ranch Specific Plan buildout.
- The public access easements shall be dedicated in phases to the County upon completion of development of all land uses, utilities, roads, flood control improvements, bridges, trails, and other improvements necessary for implementation of the Specific Plan within the River Corridor SMA in each subdivision, allowing construction within or adjacent to the River Corridor SMA.
- Prior to the recordation of the River Corridor SMA Conservation and Public Access Easements, Newhall shall provide a plan to the County for the permanent ownership and management of the River Corridor SMA, including any necessary financing.
- The River Corridor SMA shall be transferred to the ownership of the CNLM or, if the CNLM is declared bankrupt or dissolved, ownership will transfer or revert to a joint powers authority consisting of the County (four members), the City of Santa Clarita (two members), and the Santa Monica Mountains Conservancy (two members).

High Country SMA

- Upon final approval of the Specific Plan, the Special Management Area designation for the High Country SMA became effective. A permanent, non-revocable conservation and public access easement shall be offered to the County, and a conservation and management easement offered to the CNLM.
- The High Country SMA shall be offered for dedication in permanent fee in three approximately equal phases of approximately 1,400 acres each as follows: (1) The first offer of dedication will take place with the issuance of the 2,000th residential building permit of Newhall Ranch. (2) The second offer of dedication will take place with the issuance of the 6,000th residential building permit of Newhall Ranch. (3) The remaining offer of dedication will be completed with the issuance of the 11,000th residential building permit of Newhall Ranch. and (4) The Specific Plan applicant shall provide a quarterly report to the Department of Public Works and Regional Planning that indicates the number of residential building permits issued in the Specific Plan area by subdivision map number.
- An appropriate type of service or assessment district shall be formed under the authority of the Los Angeles County Board of Supervisors for the collection of up to $24 per single-family detached dwelling unit per year and $15 per single-family attached dwelling unit per year, excluding any units designated as Low and Very Low affordable housing units pursuant to Section 3.10, Affordable Housing Program of the Specific Plan (County of Los Angeles 2003). This revenue will be assessed to the homeowner beginning with the occupancy of each dwelling unit and distributed to the joint powers authority for the purposes of recreation, maintenance, construction, conservation, and related activities within the High Country SMA. A JPA, the Newhall Ranch High Country Regional Conservation Authority (NRHCRCA), was formed in 2007.
- The High Country SMA shall be offered for dedication in permanent fee to a joint powers authority consisting of the County (four members), the City of Santa Clarita (two members), and the Santa Monica Mountains Conservancy (two members). The joint powers authority will have overall responsibility for recreation within and conservation of the High Country SMA.

Salt Creek Area

- The 1,518-acre Salt Creek area shall be offered for dedication to the public pursuant to Condition 42 of the approved Specific Plan (County of Los Angeles 2003) using a “rough-step” land dedication approach.

- Irrevocable offers of dedication will be provided to CDFW for identified impact offsets in accordance with Tables 2–11.
- The Salt Creek area will be managed in conjunction with the High Country SMA.

Open Area

- At the time that final subdivision maps permitting construction are recorded, the Open Area within the map will be offered for dedication to a Natural Lands Management Organization (NLMO), such as the CNLM.
- Prior to the offer of dedication of Open Area to an NLMO, all necessary public access easements, as well as easements for infrastructure, shall be offered to the County and conservation easements or other restrictive covenants preserving conservation value of the areas to the benefit of CDFW.

5 CONCEPTUAL MITIGATION IMPLEMENTATION

5.1 Non-jurisdictional Resources

Tables 2 through 11 show the impacts to non-jurisdictional vegetation communities for each tract map and the WRP–Utility Corridor, as well as the mitigation ratios, required mitigation acreage, and proposed location of the corresponding mitigation acreage. Table 12 summarizes the permanent impacts and mitigation required by Project. Table 13 depicts the additional available mitigation within project open space. Figures 4through 13 illustrate the location of the anticipated impacts on non-jurisdictional vegetation communities and proposed mitigation for each tract map. Figure 14 illustrates additional available mitigation within project open space. Figure 15 illustrates an overview of non-jurisdictional resources vegetation communities mitigation and remaining available mitigation within project open space.

Mitigation requirements are calculated based on ratios established in the RMDP/SCP. Resources that can be mitigated jointly are grouped together (e.g., California annual grassland, agriculture, and disturbed land are grouped).

Individual oak trees would be mitigated based on ratios in the County of Los Angeles Oak Tree Ordinance per the ORMP. Slender mariposa lilies would be mitigated with habitat replacement/enhancement at a 1:1 ratio (acres restored/enhanced to acres impacted). Individual undescribed everlasting (*Gnaphalium* sp. *nova*) would be planted and/or translocated at a minimum 1:1 ratio within suitable habitat at a site where no future construction-related disturbance will occur.

5.2 Jurisdictional Streams, Waters, and Wetlands

Table 14 shows the RMDP impacts to jurisdictional wetland resources7. Table 15 shows the impacts to jurisdictional wetland resources for VCC and Entrada South. Table 16 shows the total impacts to wetland resources for RMDP, VCC, and Entrada South and associated required mitigation. Figures 16 through 25 illustrate the location of the planned wetland resources impacts and the quality of the jurisdictional resources for each tract map. Jurisdictional wetland resources are grouped according to habitat quality, which determines the mitigation ratio necessary to address any project-related impact those resources might sustain. Note that mitigation for wetland resource impacts involves both a creation component and a restoration/enhancement component. Specifically, all impacts to jurisdictional wetlands will require a minimum 1:1

[7] The term "jurisdictional wetland resources" refers to the various habitats and vegetation communities located within riparian areas that meet the federal and/or state definition of wetlands, waters and streams.

creation of new wetlands, plus additional requirements fulfilled through wetlands enhancement/restoration. Restoration mitigation ratios vary depending on (1) habitat quality and (2) when the restoration effort is completed in relation to commencement of project construction. If the restoration is completed 2 years or more prior to construction impact, the mitigation ratio is 1:1, regardless of the vegetation community affected or its habitat quality. However, if the restoration is completed *less* than 2 years in advance of impact, the mitigation must be implemented at a 1:1 to 2:1 ratio for low reach value communities; a 1:1 to 3:1 ratio for moderate reach value communities; and a 1:1 to 4:1 ratio for high reach value communities. Ratios are generally dependent upon the time it may require for restoration communities to function in a manner as those impacted, so that a predominately woody vegetation requires more time to become established, therefore requiring a higher ratio to offset the temporal loss of function. Other vegetation communities, such as riverwash, are essentially functioning in the same capacity as that which is impacted immediately upon creation, therefore justifying a 1:1 ratio.4.

Temporary impacts to jurisdictional wetlands resources will be mitigated at a 1:1 ratio, generally in the same location as the resource impacted. In addition, due to the temporal loss associated with establishing replacement woodland communities as discussed above, temporary impacts to wetland communities where trees predominate in least Bell's vireo habitat areas along the river will be mitigated at a 2:1 ratio.

Within the Santa Clara River SMA/SEA, which is divided in this report by tract map, waters/wetlands mitigation is defined by type. Waters/wetlands mitigation within the Santa Clara River SMA/SEA is provided at like or greater habitat quality (i.e., medium-quality wetlands are mitigated by creation of medium- or high-quality wetlands). Waters/wetlands mitigation within the Open Area, at this point in time, can only be defined as channel or channel buffer. In general, channels are expected to support low- to high-quality waters/wetlands, whereas channel buffers are limited to medium-quality habitat (mainly big sagebrush scrub).

In total, the RMDP, VCC, and Entrada South projects would permanently disturb 89.77 acres of jurisdictional waters, wetlands and streambed and temporarily disturb 53.87 acres. Collectively, these impacts will require 222.46 acres of jurisdictional waters and wetlands creation, enhancement, and/or restoration, with a minimum creation of 89.77 acres (minimum creation ratio of 1:1). A total of 970.58 acres of post-project existing jurisdictional resources will be preserved.

To meet its mitigation requirements for impacts to jurisdictional resources, Newhall has identified locations for wetland creation, restoration, and enhancement. These are shown on Figure 26. Table 16 depicts the locations to implement mitigation for jurisdictional resources. Some of the wetland mitigation areas overlap with the RMDP preservation areas and thus represent opportunities for enhancement during mitigation implementation. The project would

result in the creation of 327.11 acres of jurisdictional resources. A minimum creation of 89.77 acres is required. Thus, the project would create an excess of 293.91 acres of jurisdictional area on site, which would be capable of supporting riparian and wetland habitats. The project would also result in the enhancement of 712.91 acres along the Santa Clara River corridor through the conversion of non-native vegetated areas to native riparian habitats and exotic/invasive species removal and control. Approximately 94.10 acres would be restored along the Santa Clara River and tributaries, including restoration of temporary impact areas and reconstruction of portions of Chiquito Canyon, Lion Canyon, Long Canyon, Potrero Canyon, San Martinez Grande Canyon and the Santa Clara River.

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6 SUBSTANTIAL CONFORMANCE

The presentation of mitigation in this document is conceptual and programmatic and is based on some general assumptions that will require more specification in the future (e.g., tributary channel wetlands mitigation design). Likewise, much of the proposed mitigation is dependent on the implementation of RMDP infrastructure. The timing of this infrastructure construction in relation to the timing of impacts cannot be precisely defined at this time. Therefore, although this document presents impacts and mitigation in the sequence in which they are planned to occur, this sequence, and thus the proposed mitigation for each impact, may change during implementation. All proposed mitigation will be subject to review in accordance with the RMDP Subnotification procedures, which do not include conformance with this CMIP.

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7 LITERATURE CITED

Carpenter, M. 2011. "Final Newhall Ranch Project Description." Attachment 3 to Letter from M. Carpenter (Newhall) to A. Allen. August 2011.

Corps and CDFG (U.S. Army Corps of Engineers and California Department of Fish and Game). 2010. *Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan Final Joint Environmental Impact Statement and Environmental Impact Report.* SCH. No. 2000011025. 7 vols. June 2010.

County of Los Angeles. 2003. *Newhall Ranch Specific Plan*. Project No. 94087, SCH No. 95011015. 2 vols, May 27, 2003. Prepared by Forma for the County of Los Angeles Department of Regional Planning. Irvine, California: Forma.

County of Los Angeles. 2003b. *Newhall Ranch Specific Plan Environmental Impact Report.*

Dudek. 2007. *Draft Middle Canyon Spring Survey and Status Report. Prepared for Newhall Land and Farming.* Valencia, California: Dudek. August 2007.

PWA (Philip Williams and Associates). 2008. Draft Memorandum: "Geomorphic Monitoring of Newhall Tributaries." October 20, 2008. San Francisco, California: PWA.

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APPENDIX A

Figures and Tables

DUDEK

FIGURE 1

Regional Map

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DUDEK-FILES\GIS\Data\Projects\j37380\2014_Scopes\MAPDOC\MAPS\229_CMIP\Figure 1 Regional.mxd- Date Saved: 2/3/2014 11:35:03 AM

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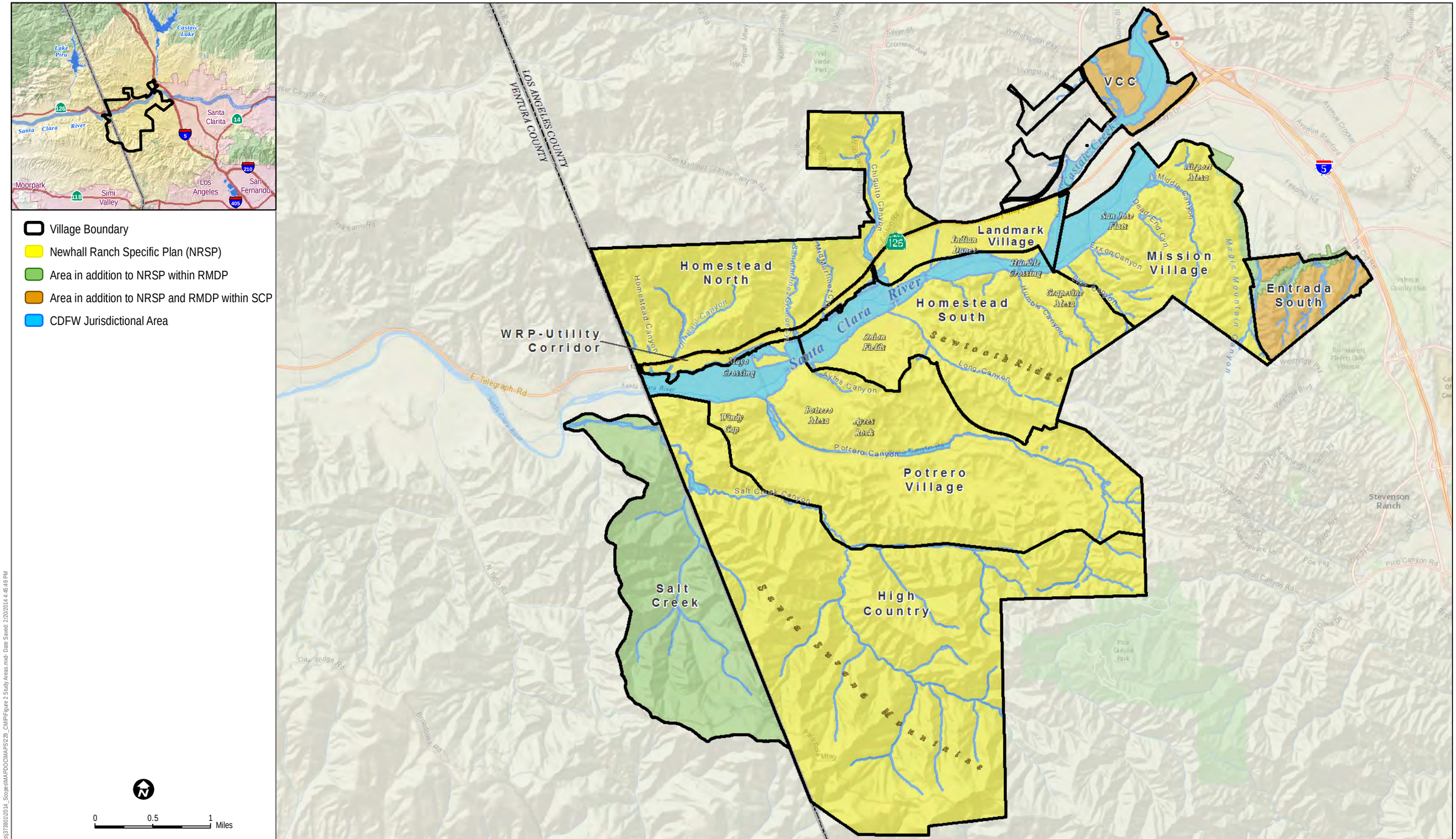

DUDEK

SOURCE: Bing Maps Aerial, Newhall Alternative 13 LEDPA Development Plan

FIGURE 2
Study Areas

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DJDEK-FILES\GISData\Projects\3738012014_Scrapes\MAPDOC\MAPS\29_CMIP\Figure 2 Study Areas.mxd: Date Saved: 2/20/2014 4:45:49 PM

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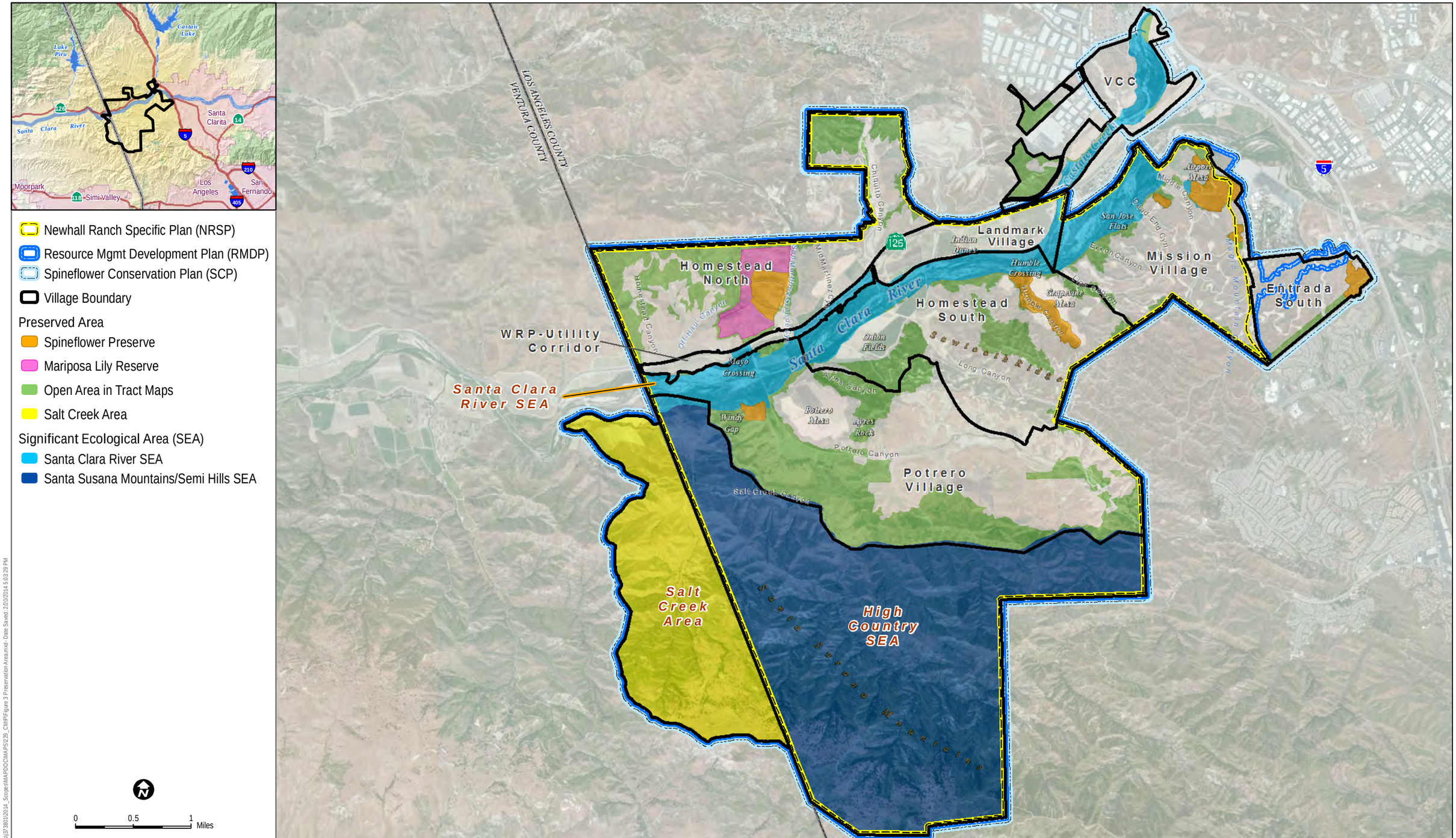

SOURCE: Bing Maps Aerial, Newhall Alternative 13 LEDPA Development Plan

DUDEK

FIGURE 3
Preservation Areas

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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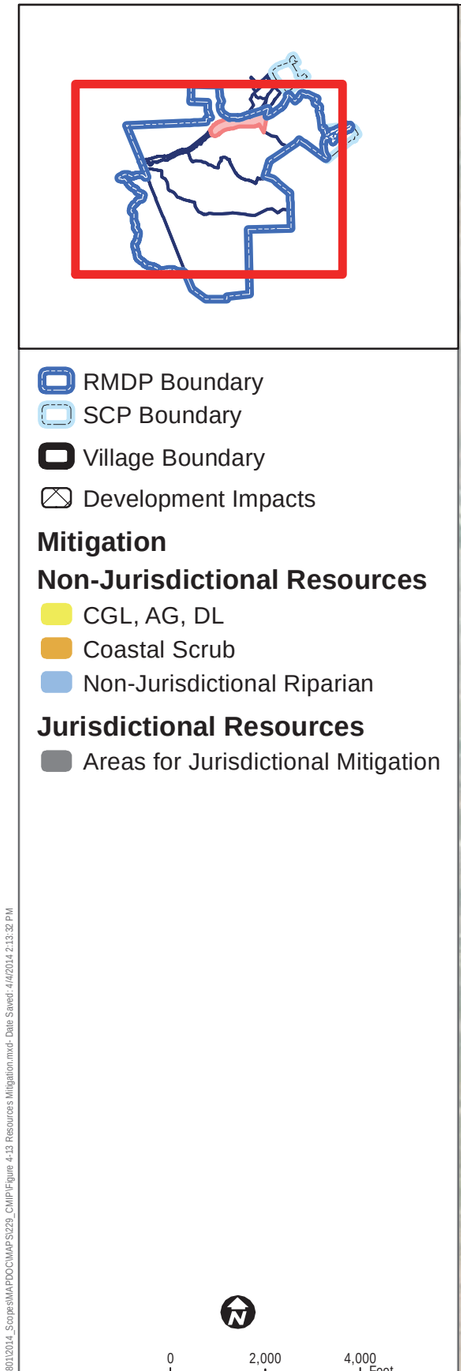

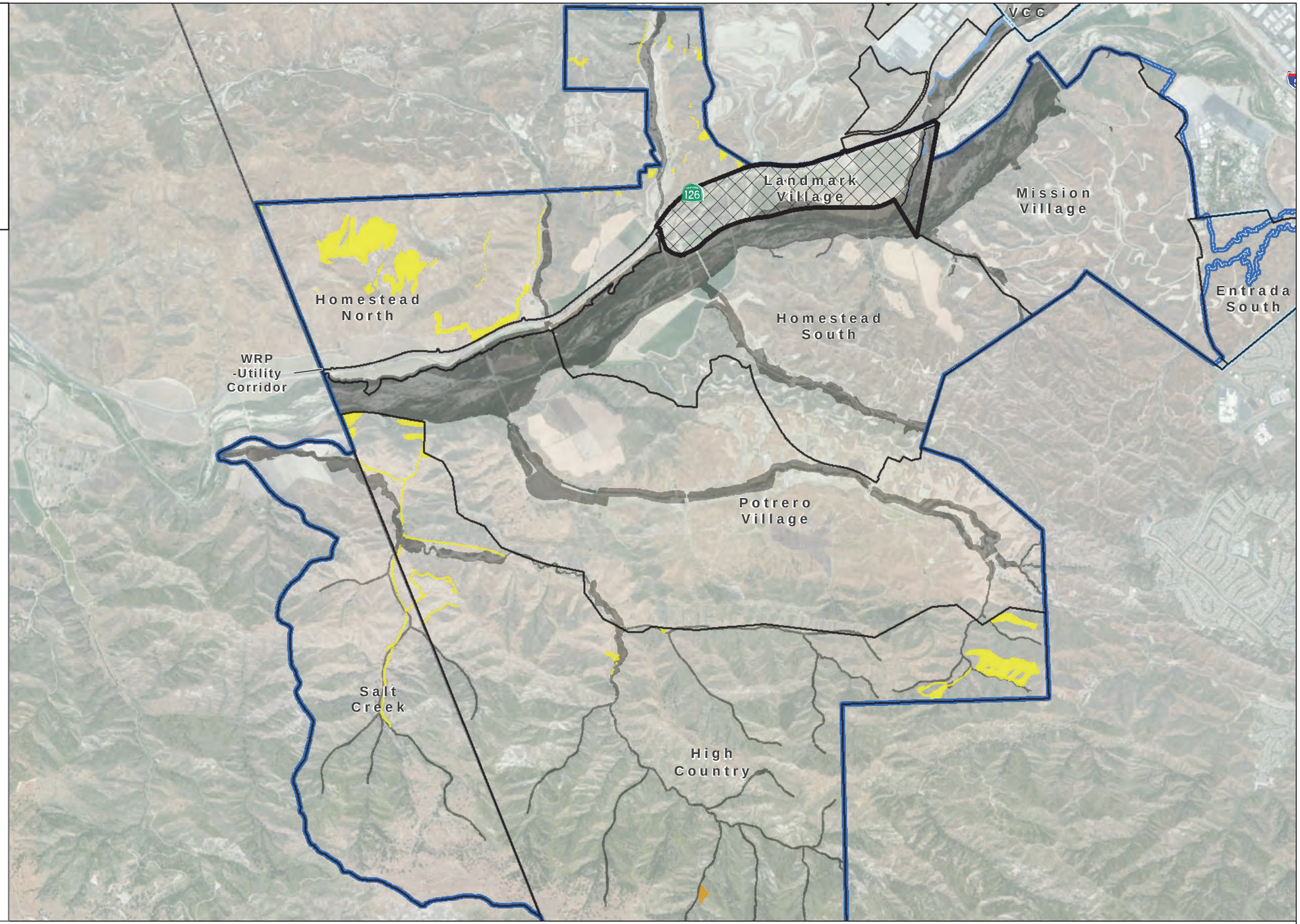

AERIAL SOURCE: ESRI ArcGIS Online World Imagery

DUDEK

FIGURE 4
Landmark Village Non-Jurisdictional (Trustee) Resources Mitigation

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DJ\DEX-FILES\GIS\Data\Projects\3738\012014_Scripts\MAP\DOC\MAPS\229_CMIP\Figure 4-13 Resources Mitigation.mxd - Date Saved: 4/4/2014 2:13:32 PM

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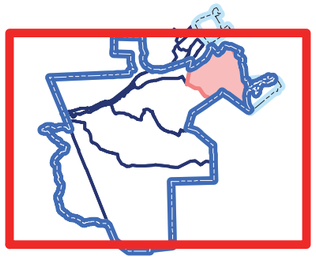


RMDP Boundary
SCP Boundary
Village Boundary
Development Impacts

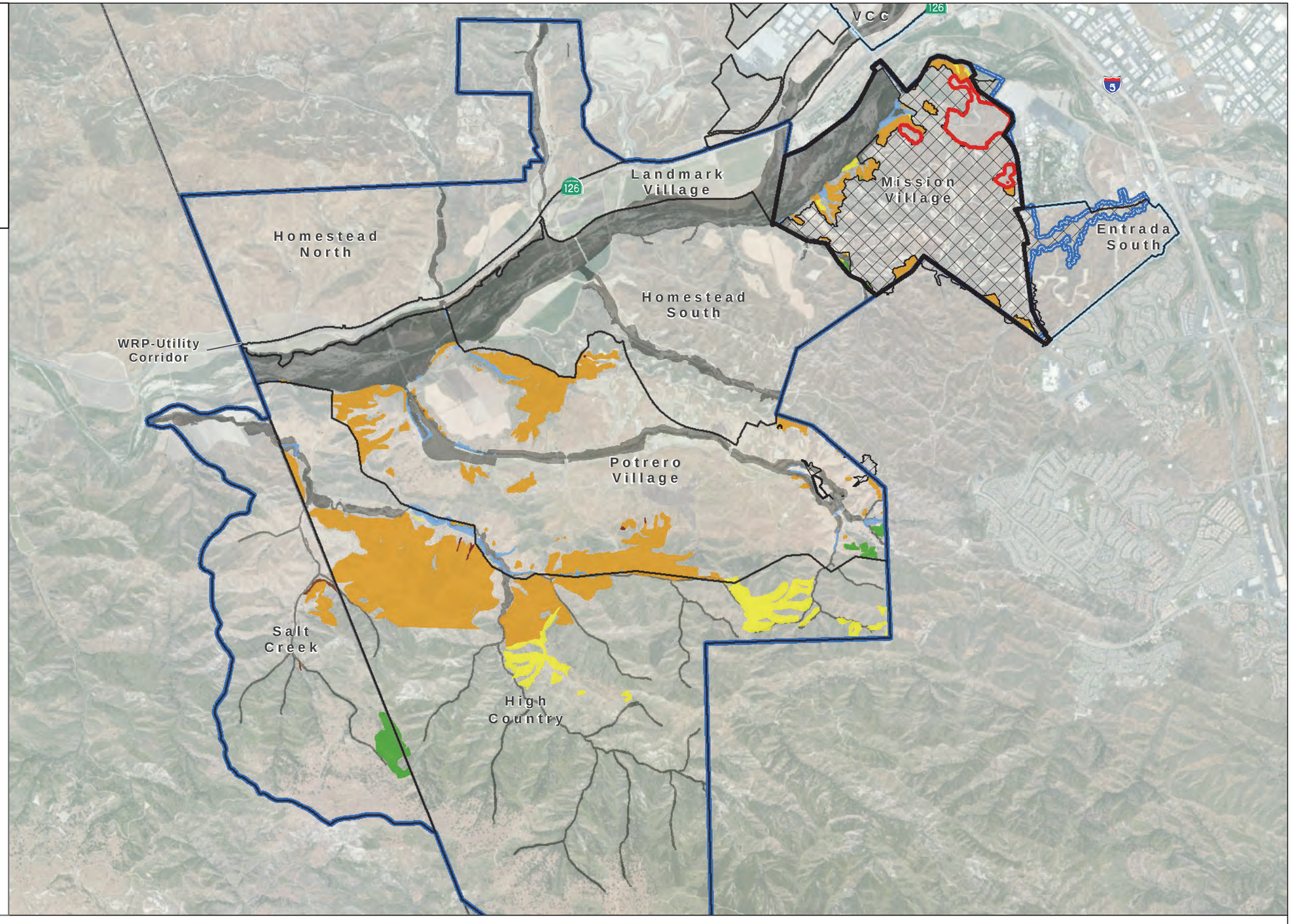
Mitigation

Non-Jurisdictional Resources

- CGL, AG, DL
- Chaparral
- Coastal Scrub
- Non-Jurisdictional Riparian
- Oak Woodland
- Other Woodland
- Spineflower Preserve

Jurisdictional Resources

- Areas for Jurisdictional Mitigation



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AERIAL SOURCE: ESRI ArcGIS Online World Imagery

DUDEK

FIGURE 5
Mission Village Non-Jurisdictional (Trustee) Resources Mitigation

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DJDEX-FILES\GIS\Data\Projects\3738012014_Scripps\MAPDOC\MAPS\229_CMIP\Figure 4-13 Resources Mitigation.mxd - Date Saved: 4/4/2014 2:13:32 PM

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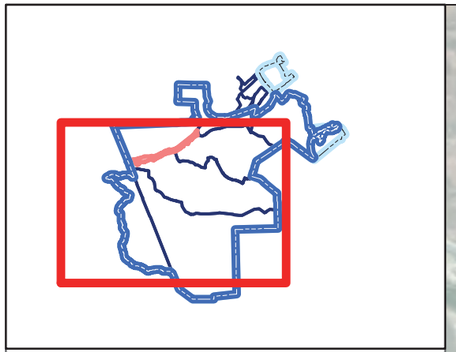


RMDP Boundary
SCP Boundary
Village Boundary
Development Impacts

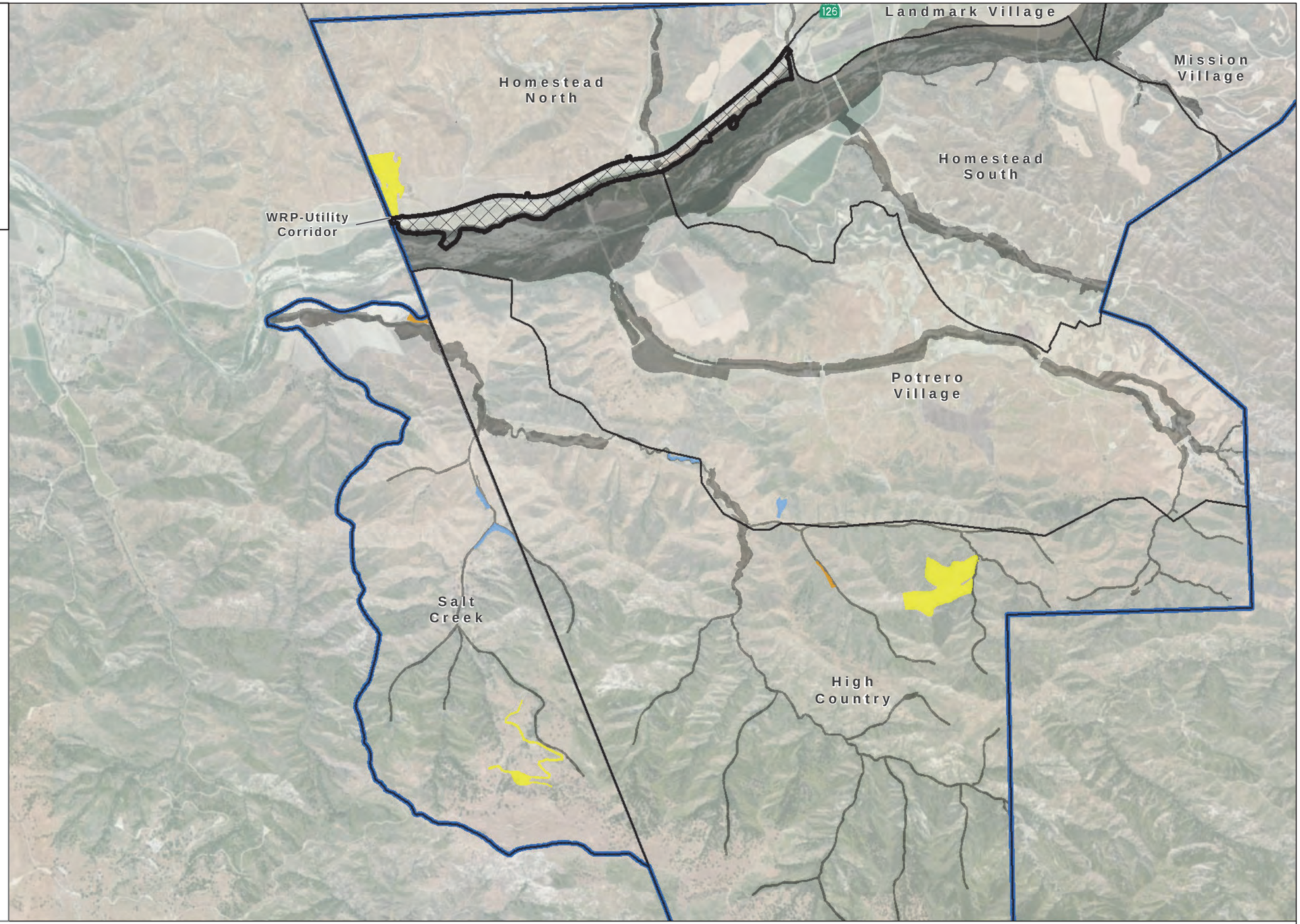
Mitigation

Non-Jurisdictional Resources

CGL, AG, DL
Coastal Scrub
Non-Jurisdictional Riparian

Jurisdictional Resources

Areas for Jurisdictional Mitigation



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AERIAL SOURCE: ESRI ArcGIS Online World Imagery

DUDEK

FIGURE 6
WRP-Utility Corridor Non-Jurisdictional (Trustee) Resources Mitigation

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DUDEK-FILES\GIS\Data\Projects\373\38012014_Scope\MAP\DOC\MAP\S229_CMIP\Figure 4-13 Resources Mitigation.mxd- Date Saved: 4/4/2014 2:13:32 PM

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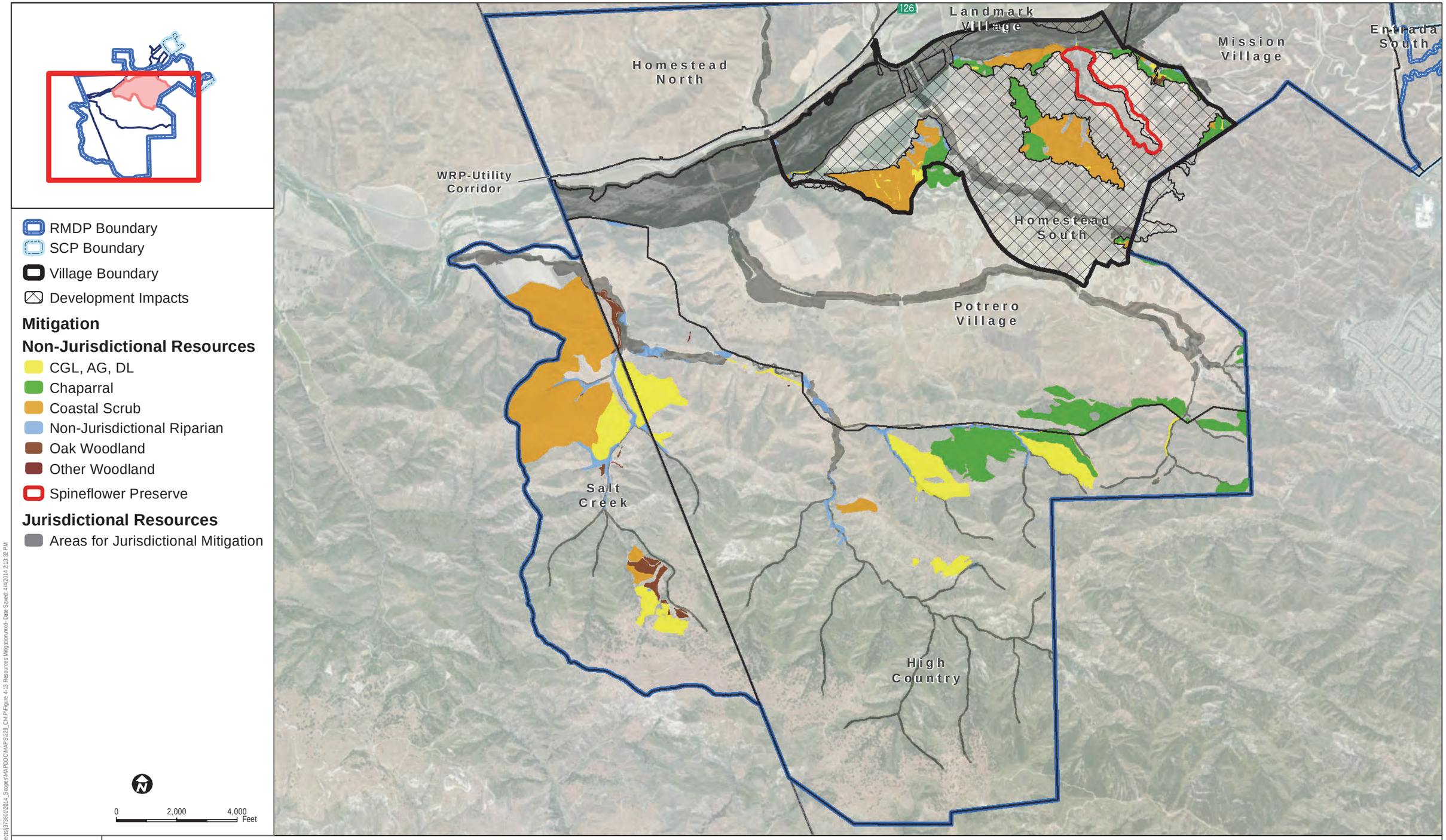

AERIAL SOURCE: ESRI ArcGIS Online World Imagery

DUDEK

FIGURE 7

Homestead South Non-Jurisdictional (Trustee) Resources Mitigation

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DUDEK-FILES\GIS\Data\Projects\3738\01\2014_Scopes\MAPDOC\MAPS\229_CMIP\Figure 4-13 Resources Mitigation.mxd- Date Saved: 4/4/2014 2:13:32 PM

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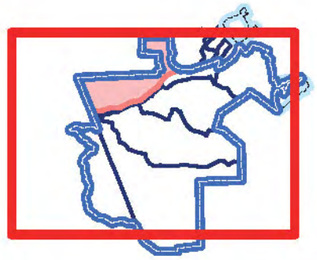


RMDP Boundary
SCP Boundary
Village Boundary
Development Impacts

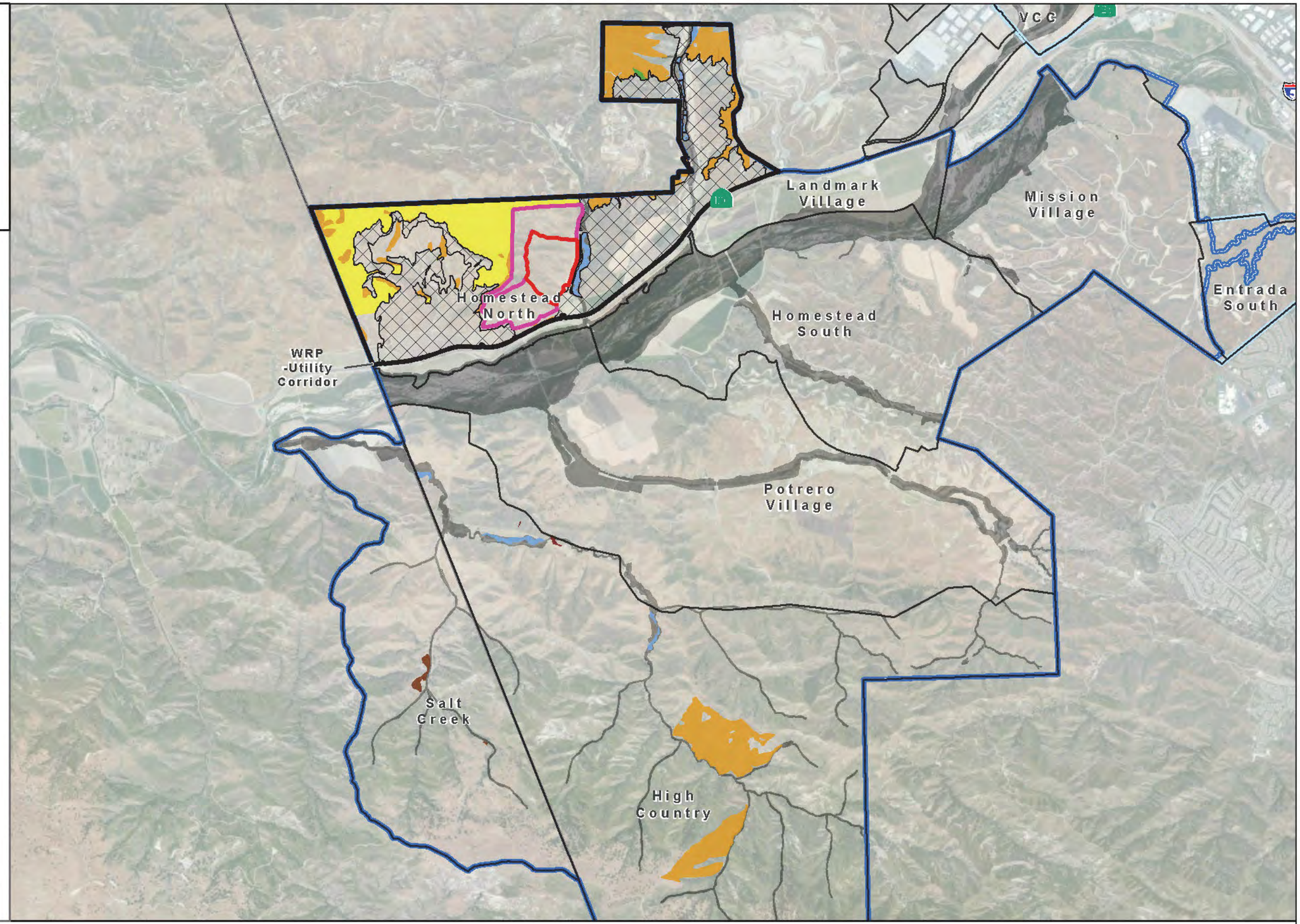
Mitigation

Non-Jurisdictional Resources

- CGL, AG, DL
- Chaparral
- Coastal Scrub
- Non-Jurisdictional Riparian
- Oak Woodland
- Other Woodland
- Spineflower Preserve
- SMG Lily Reserve Area

Jurisdictional Resources

- Areas for Jurisdictional Mitigation



AERIAL SOURCE: ESRI ArcGIS Online World Imagery

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FIGURE 8
Homestead North Non-Jurisdictional (Trustee) Resources Mitigation

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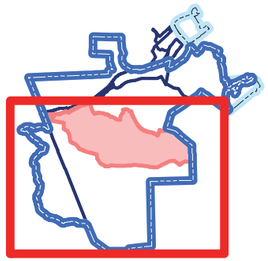


RMDP Boundary
SCP Boundary
Village Boundary
Development Impacts

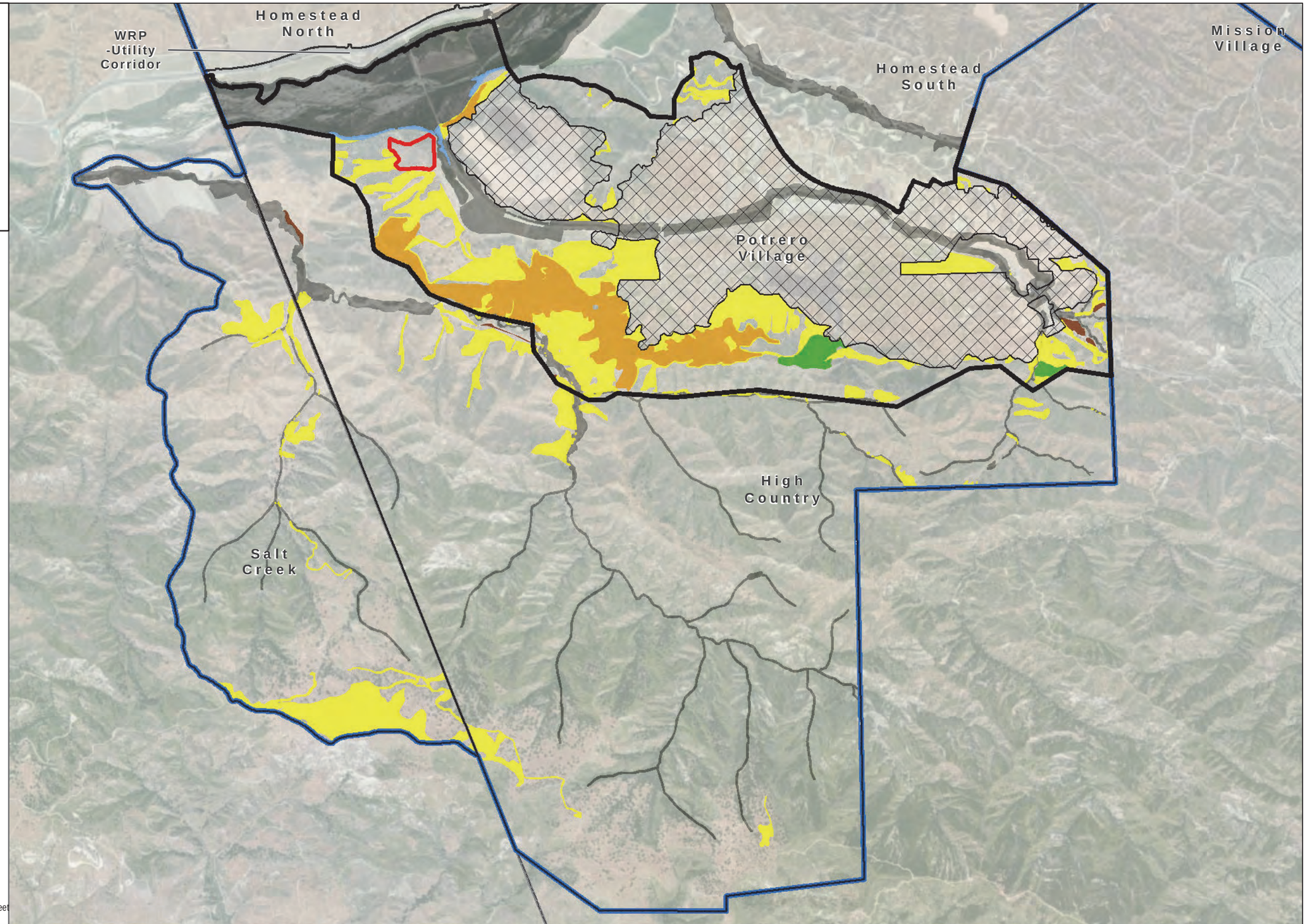
Mitigation

Non-Jurisdictional Resources

CGL, AG, DL
Chaparral
Coastal Scrub
Non-Jurisdictional Riparian
Oak Woodland
Other Woodland
Spineflower Preserve

Jurisdictional Resources

Areas for Jurisdictional Mitigation



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AERIAL SOURCE: ESRI ArcGIS Online World Imagery

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FIGURE 9
Potrero Village Non-Jurisdictional (Trustee) Resources Mitigation

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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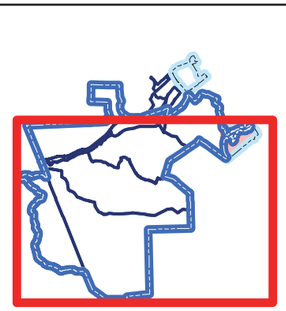

RMDP Boundary
SCP Boundary
Village Boundary
Development Impacts

Mitigation

Non-Jurisdictional Resources

CGL, AG, DL
Chaparral
Coastal Scrub
Non-Jurisdictional Riparian
Other Woodland
Spineflower Preserve

Jurisdictional Resources

Areas for Jurisdictional Mitigation

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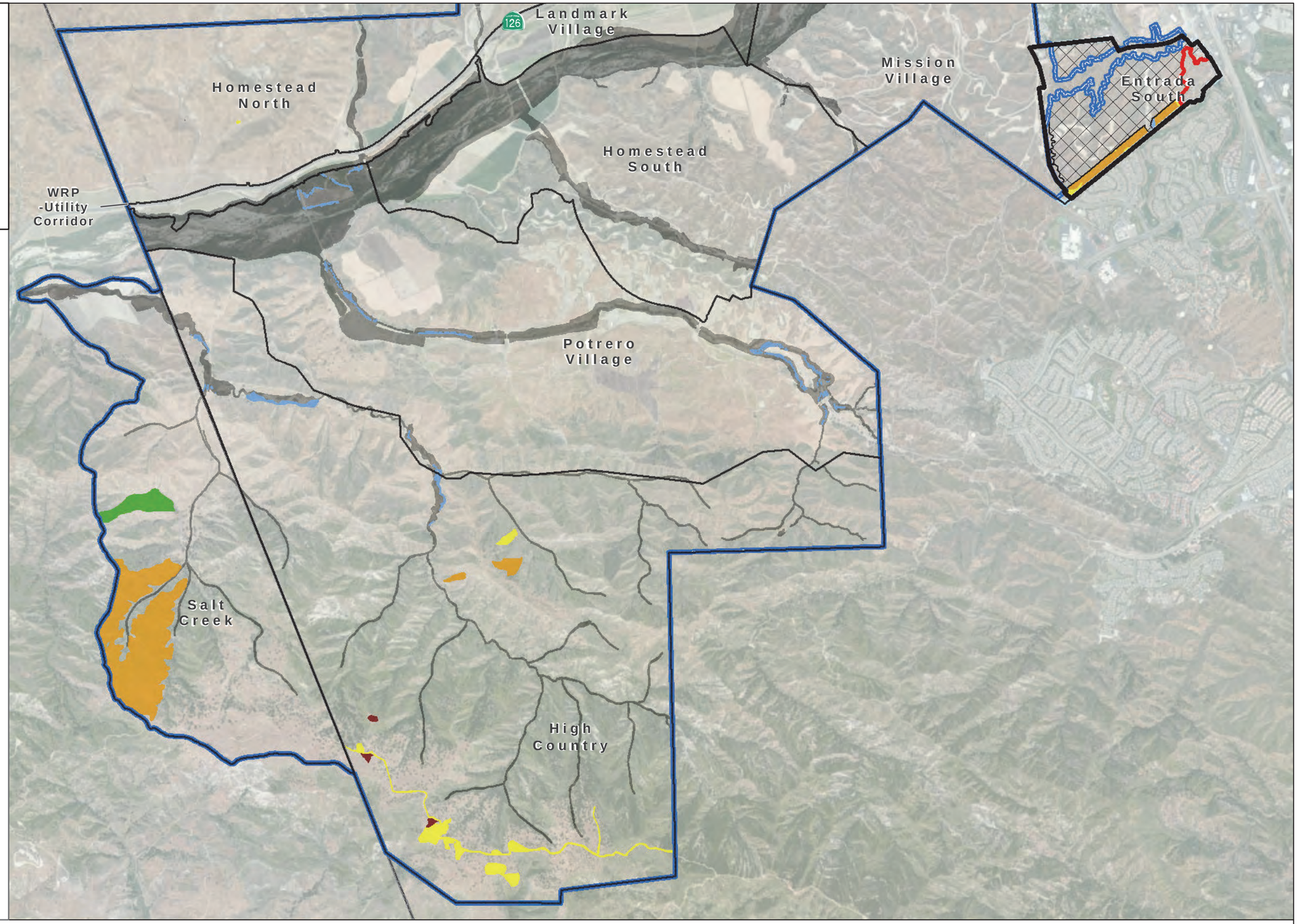

AERIAL SOURCE: ESRI ArcGIS Online World Imagery

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FIGURE 10
Entrada South Non-Jurisdictional (Trustee) Resources Mitigation

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DUDEK-FILES\GIS\Data\Projects\3738010\2014_Scope\MAP\DOC\MAP\S229_CMIP\Figure 4-13 Resources Mitigation.mxd- Date Saved: 4/4/2014 2:13:32 PM

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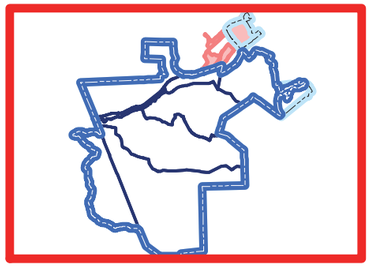

RMDP Boundary
SCP Boundary
Village Boundary
Development Impacts

Mitigation

Non-Jurisdictional Resources

- CGL, AG, DL
- Chaparral
- Coastal Scrub
- Non-Jurisdictional Riparian
- Oak Woodland

Jurisdictional Resources

- Areas for Jurisdictional Mitigation

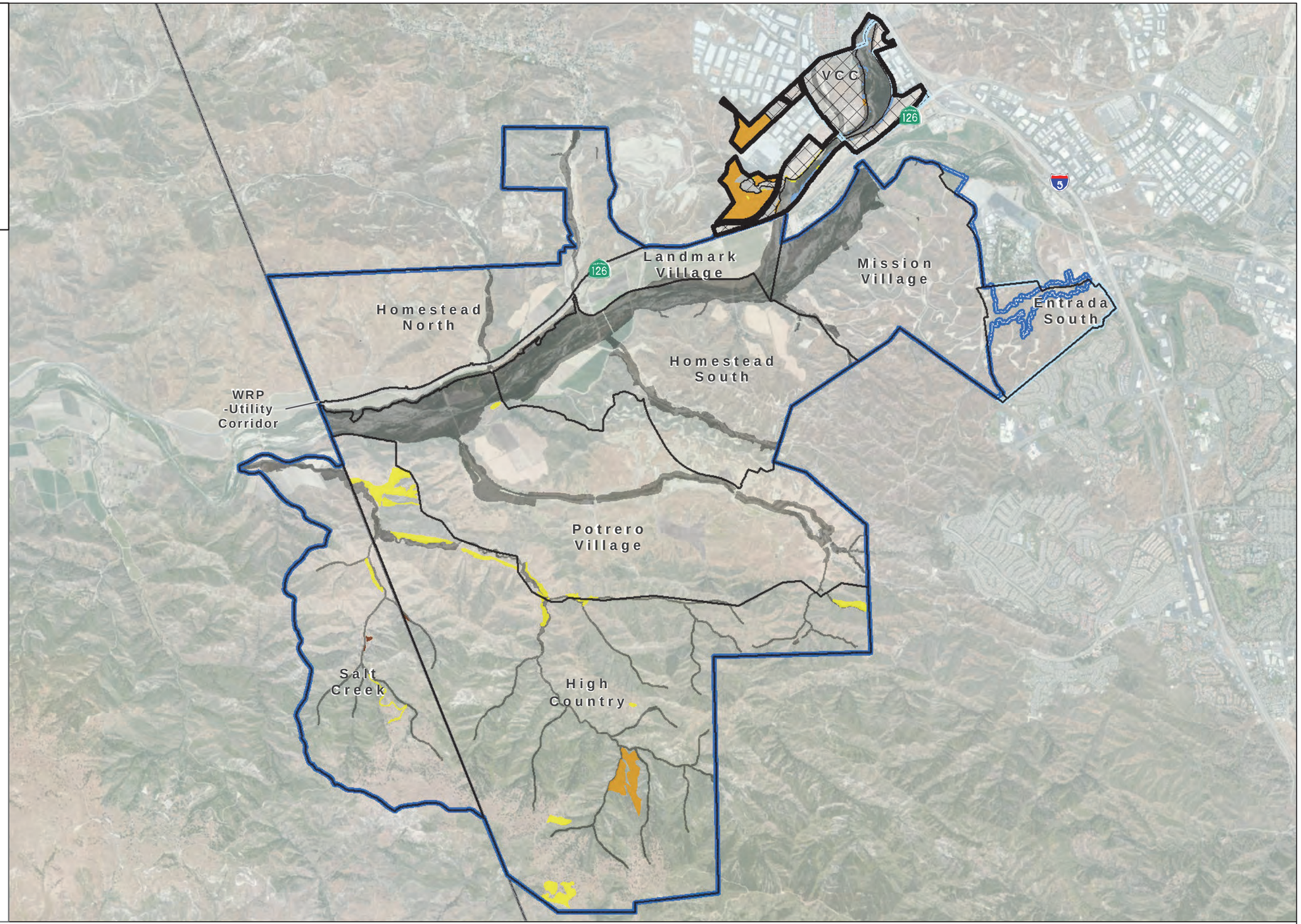

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FIGURE 11
VCC Non-Jurisdictional (Trustee) Resources Mitigation

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DUDEK-FILES\GIS\Data\Projects\13738\01\2014_Scope\MAPDOC\MAPS\229_CMIP\Figure 4-13 Resources Mitigation.mxd; Date Saved: 4/4/2014 2:13:32 PM

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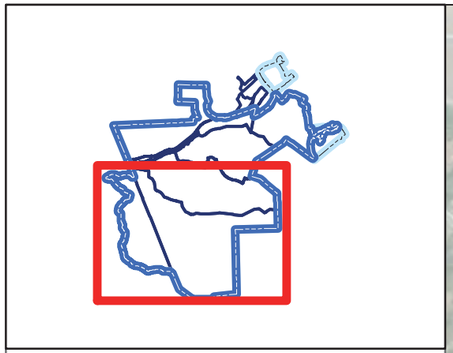


RMDP Boundary
SCP Boundary
Village Boundary
Development Impacts

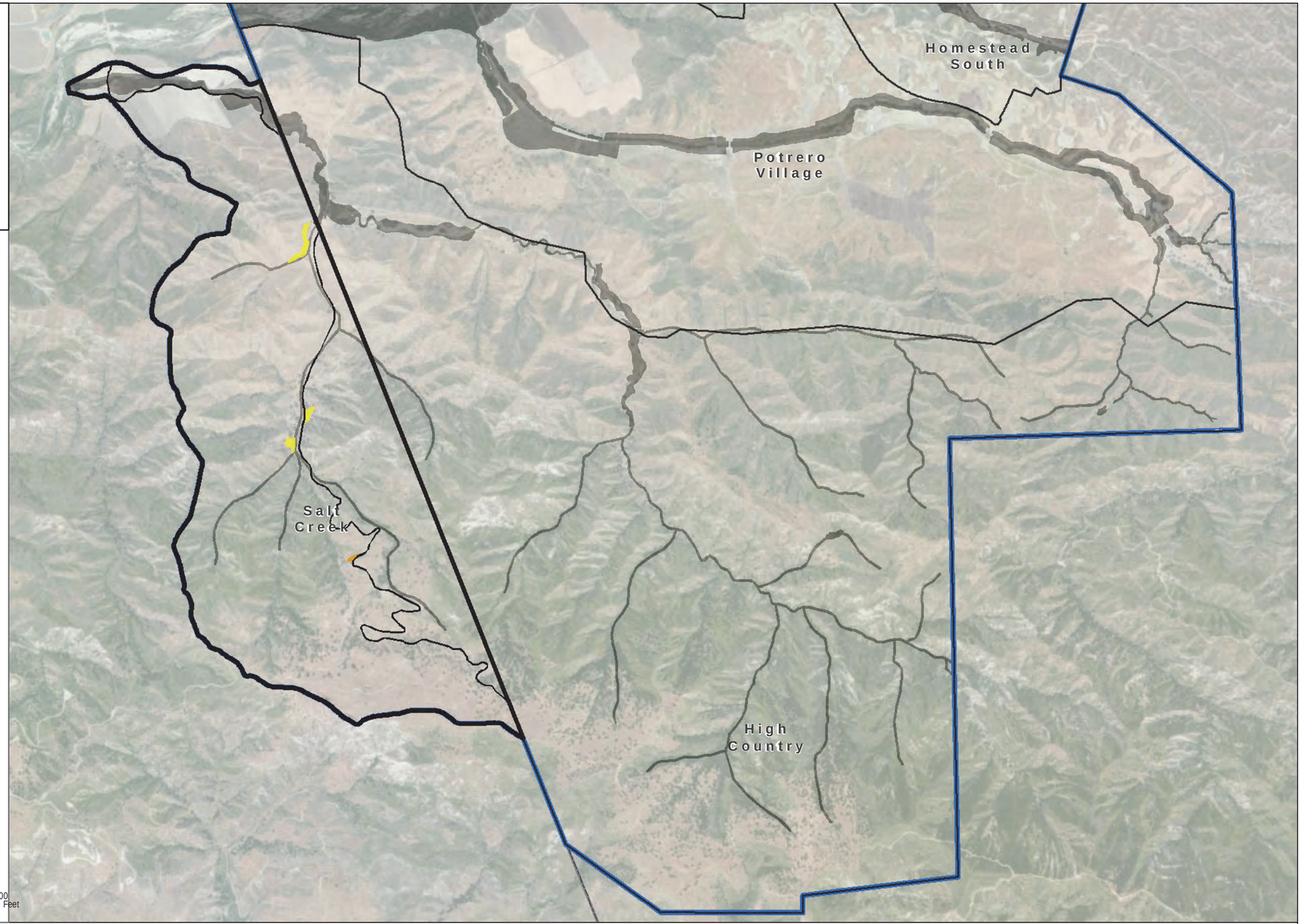
Mitigation

Non-Jurisdictional Resources

CGL, AG, DL
Coastal Scrub
Non-Jurisdictional Riparian

Jurisdictional Resources

Areas for Jurisdictional Mitigation



AERIAL SOURCE: ESRI ArcGIS Online World Imagery

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FIGURE 12
Salt Creek Non-Jurisdictional (Trustee) Resources Mitigation

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DUDEK-FILES\GIS\Data\Projects\3738\112014_Scripts\MAP\DOC\MAPS\229_CMIP\Figure 4-13 Resources Mitigation.mxd- Date Saved: 4/4/2014 2:13:32 PM

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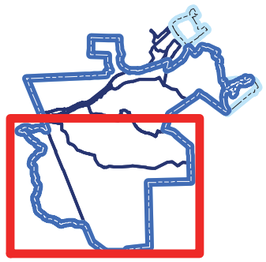


RMDP Boundary
SCP Boundary
Village Boundary
Development Impacts

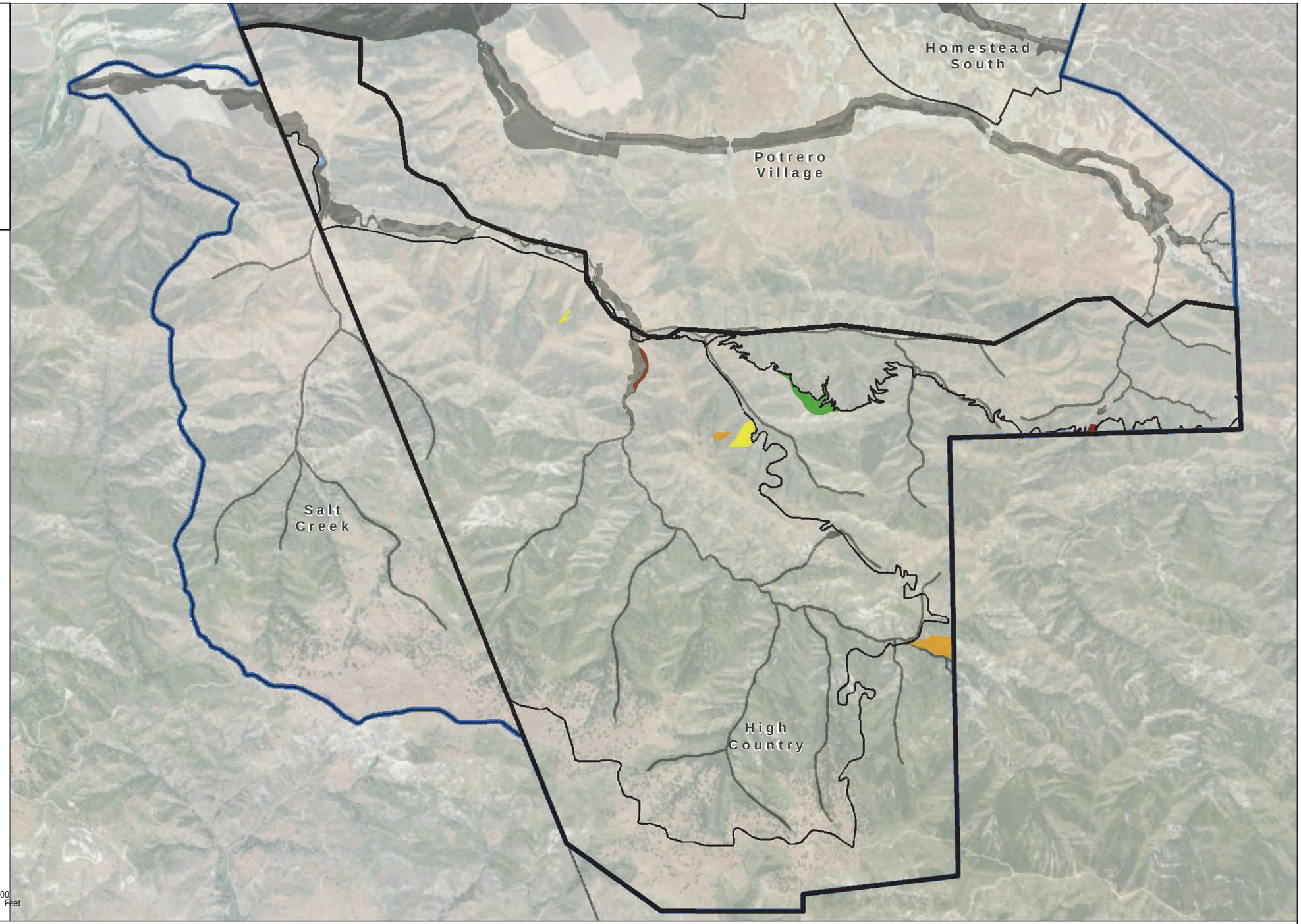
Mitigation

Non-Jurisdictional Resources

- CGL, AG, DL
- Chaparral
- Coastal Scrub
- Non-Jurisdictional Riparian
- Oak Woodland
- Other Woodland

Jurisdictional Resources

- Areas for Jurisdictional Mitigation



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AERIAL SOURCE: ESRI ArcGIS Online World Imagery

DUDEK

FIGURE 13

High Country Non-Jurisdictional (Trustee) Resources Mitigation

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DUDEK-FILES\GIS\Data\Projects\3738012014_Scope\MAPDOC\MAPS\229_CMIP\Figure 4-13 Resources Mitigation.mxd- Date Saved: 4/4/2014 2:13:32 PM

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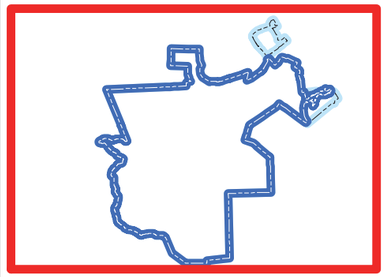
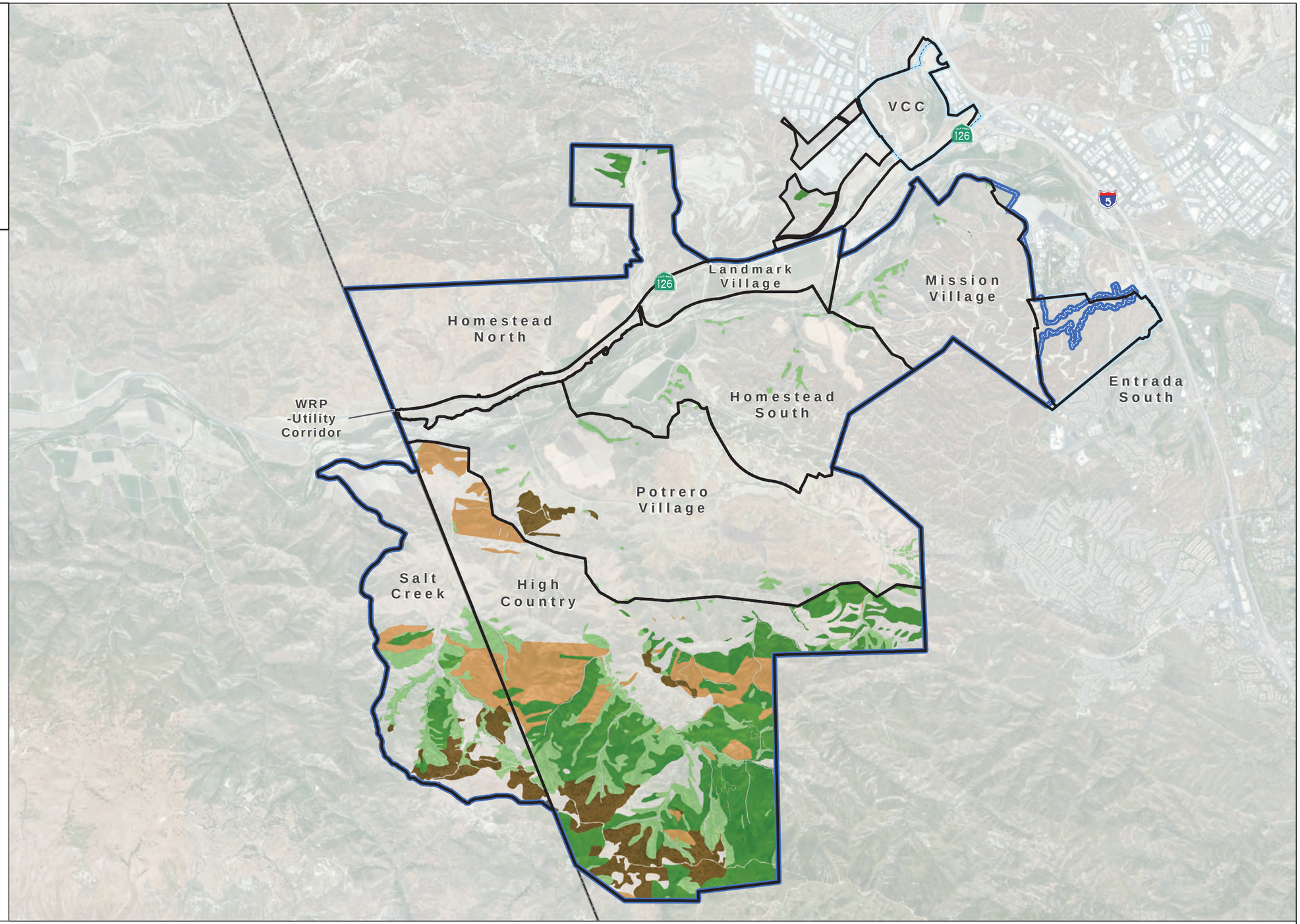


RMDP Boundary
SCP Boundary
Village Boundary

Remaining Avaialble Non-Jurisdictional Resources

- Chaparral
- Coastal Scrub
- Oak Woodland
- Other Woodland



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SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 14
Remaining Available Non-Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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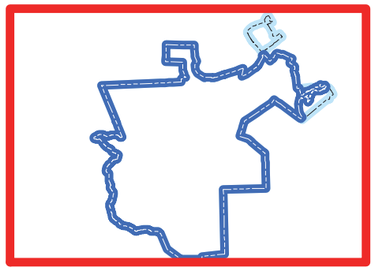


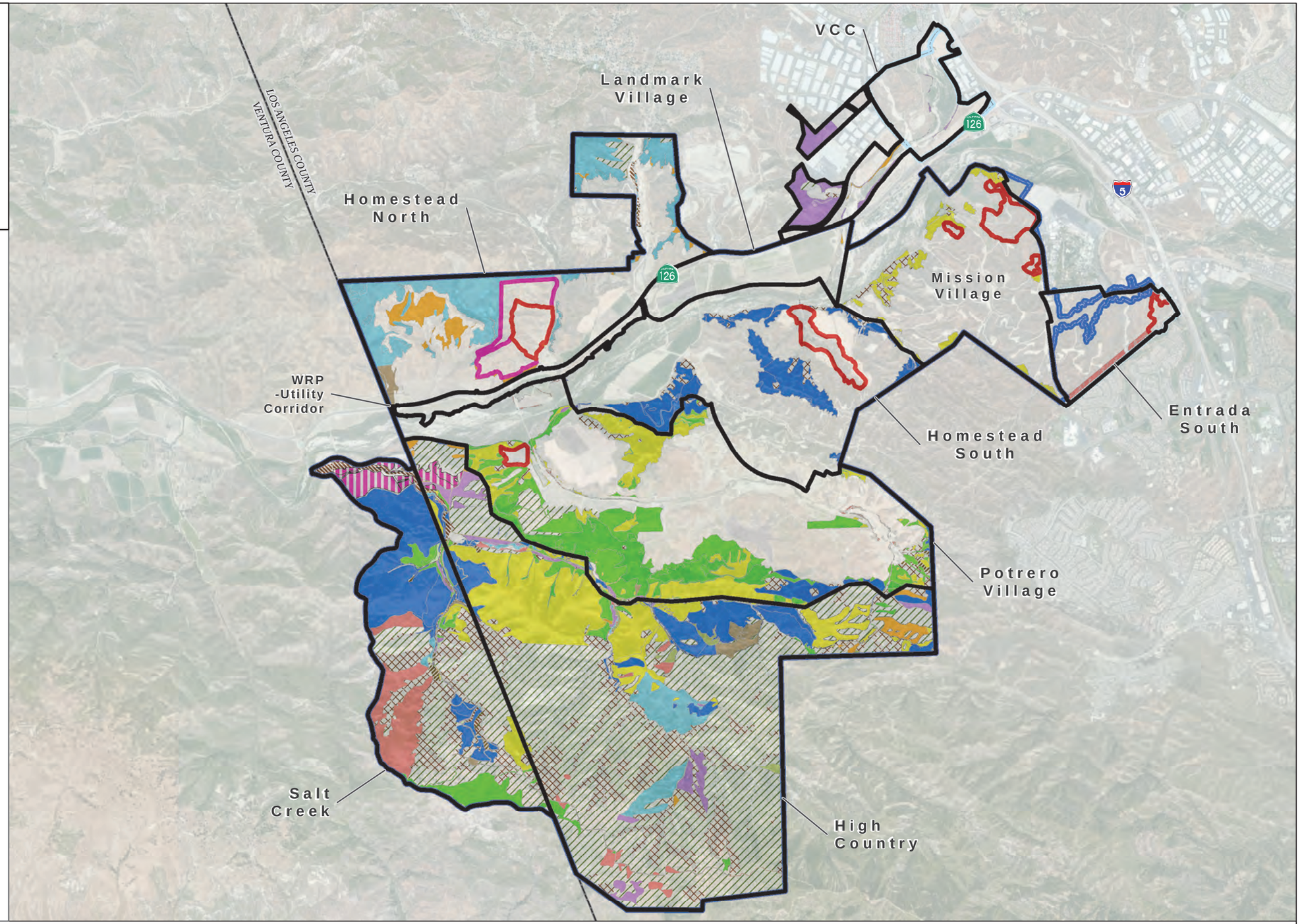
RMDP Boundary
SCP Boundary
Village Boundary
Spineflower Preserve
SMG Lily Reserve Area
Potential CSB or Lily Mitigation

Non-Jurisdictional Mitigation For:
- Landmark Village
- Mission Village
- WRP-Utility Corridor
- Homestead South
- Homestead North
- Potrero Village
- Entrada South
- VCC
- Salt Creek
- High Country

Remaining ORMP Selected Mitigation Areas
- Oak Woodland Creation
- Oak Woodland Enhancement

Remaining Avaialble Resources
- Chaparral, Coastal Scrub, Woodland
- Oak Woodland

0 2,000 4,000 Feet



SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 15
Non-Jurisdictional Resources Mitigation Allocation

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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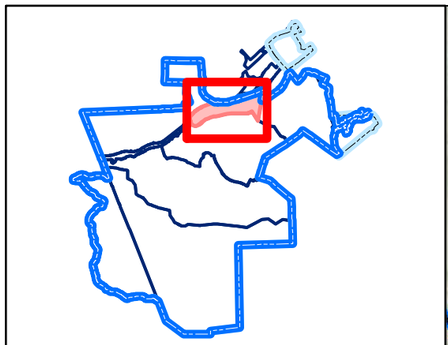


RMDP Boundary
SCP Boundary
Village Boundary

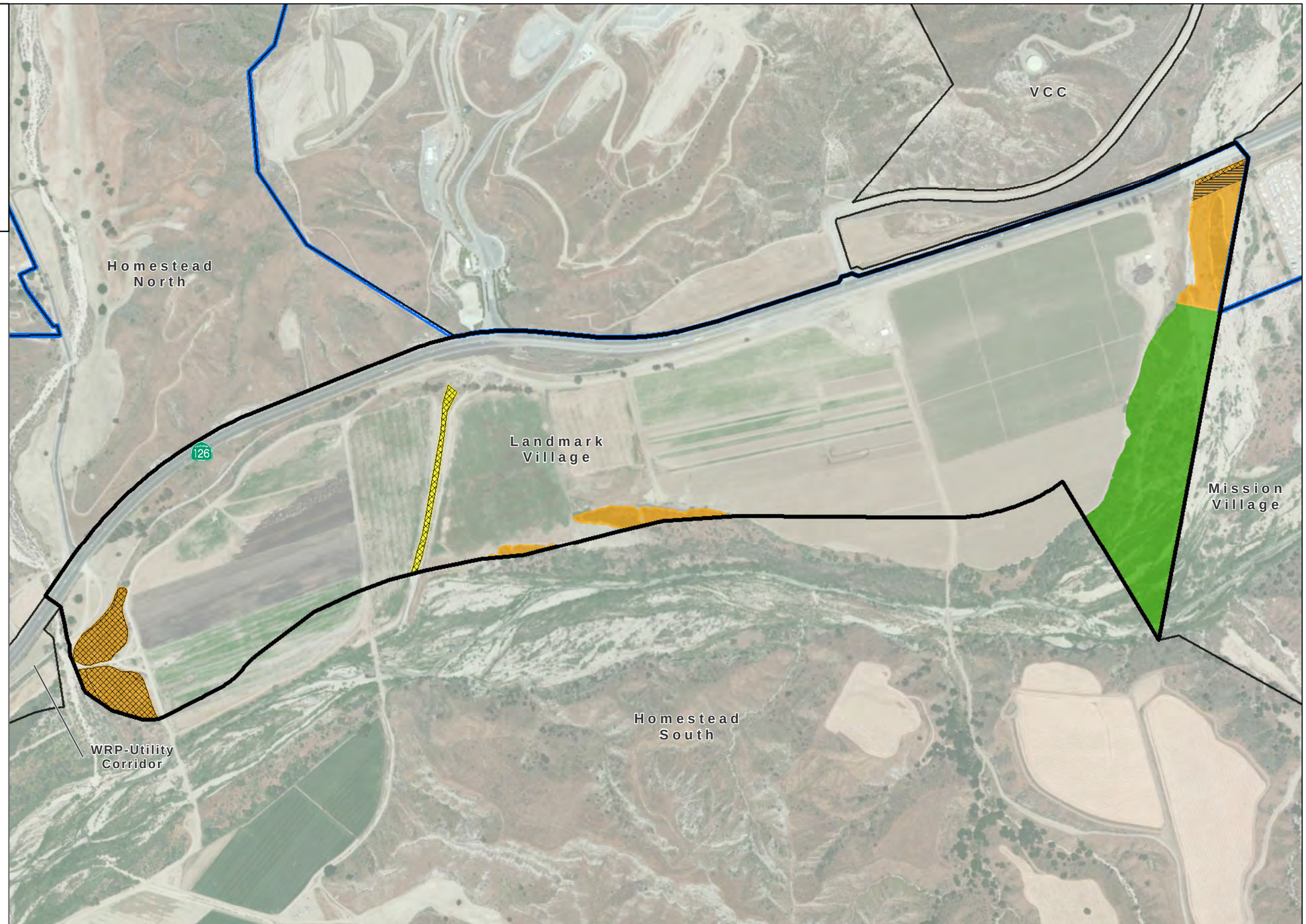
Jurisdictional Resources

Quality of Resource

- Low
- Medium
- High

Impact to Resource

- Permanent Impact
- Temporary Impact



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SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 16
Landmark Village Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DUDEK-FILES\GIS\Data\Projects\3738\01\2014_Scops\MAP\DOC\MAPS\229_CMIP\Figure 16-25 Jurisdictional Resources.mxd - Date Saved: 5/7/2014 4:33:24 PM

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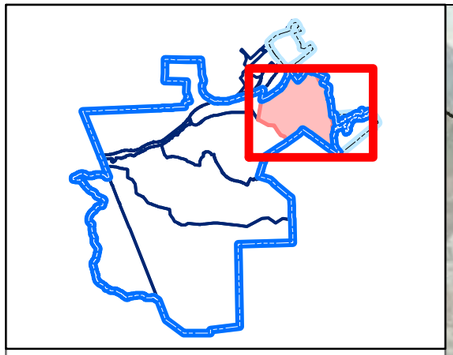


RMDP Boundary
SCP Boundary
Village Boundary

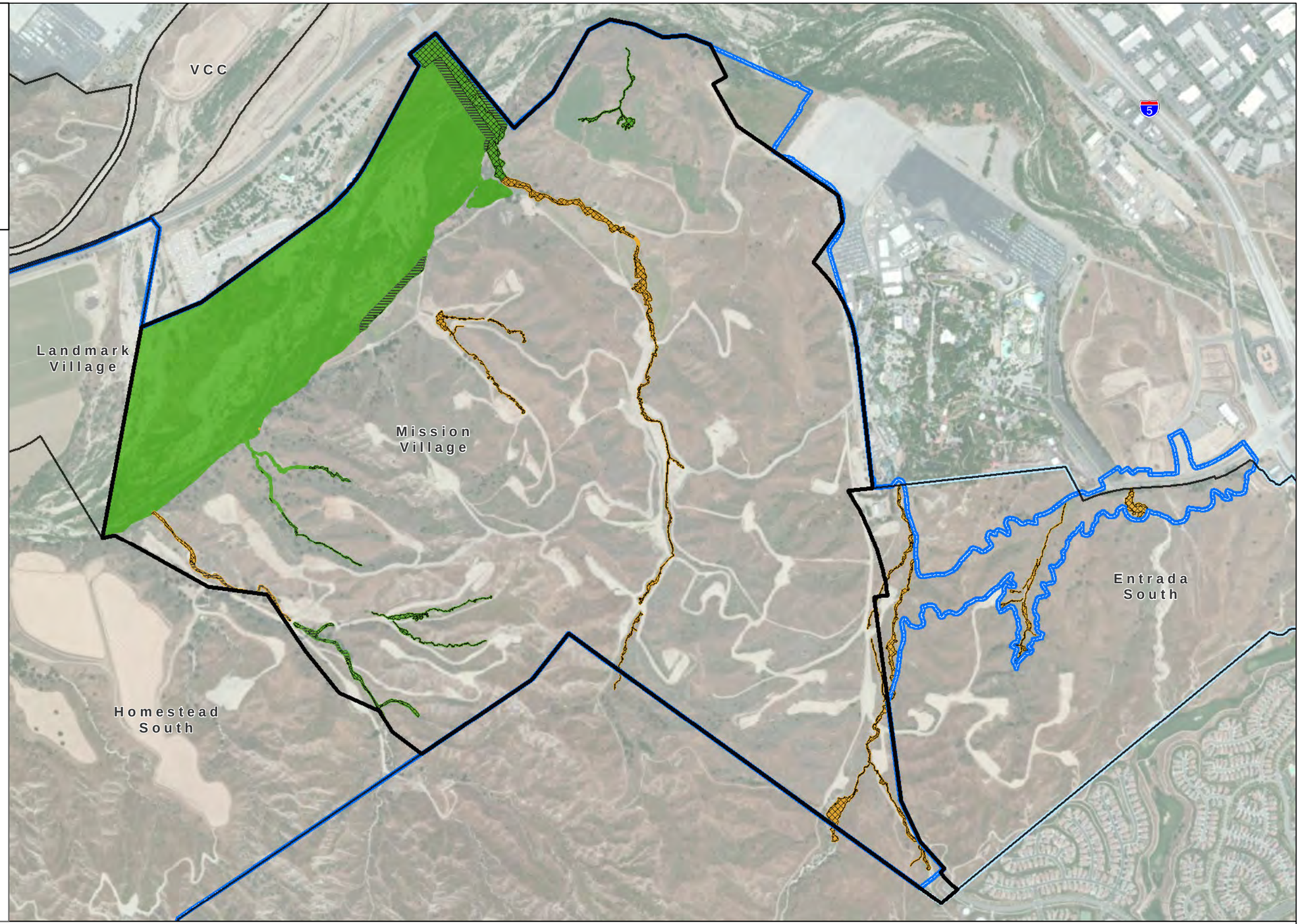
Jurisdictional Resources

Quality of Resource

Medium
High

Impact to Resource

Permanent Impact
Temporary Impact



0 500 1,000 Feet

SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 17
Mission Village Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DUDEK-FILES\GIS\Data\Projects\3738\13014_Scopes\MAPDOC\MAPS\229_CMIP\Figure 16-25 Jurisdictional Resources.mxd - Date Saved: 5/7/2014 4:33:24 PM

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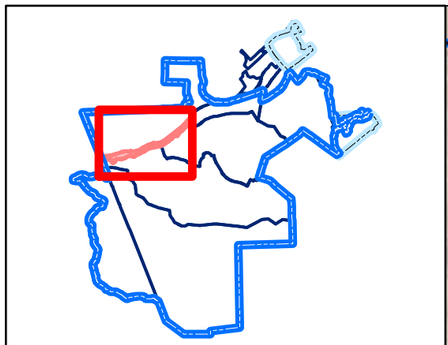


RMDP Boundary
SCP Boundary
Village Boundary

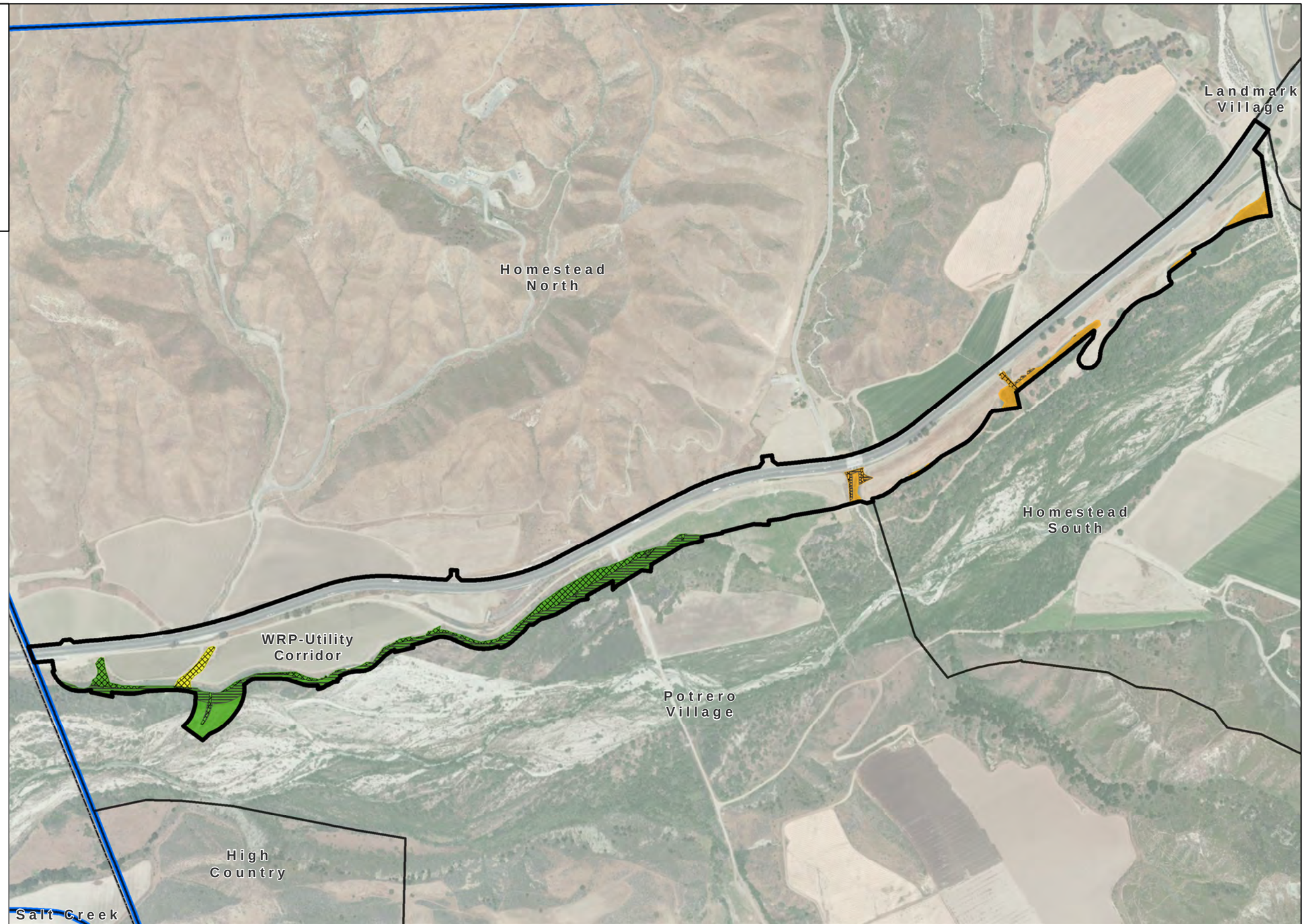
Jurisdictional Resources

Quality of Resource

Low
Medium
High

Impact to Resource

Permanent Impact
Temporary Impact



SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 18
WRP-Utility Corridor Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

\\DUDEK-FILES\GIS\Data\Projects\373801\2014_Scops\MAP\DOC\MAPS\229_CMIP\Figure 16-25 Jurisdictional Resources.mxd - Date Saved: 5/7/2014 4:33:24 PM

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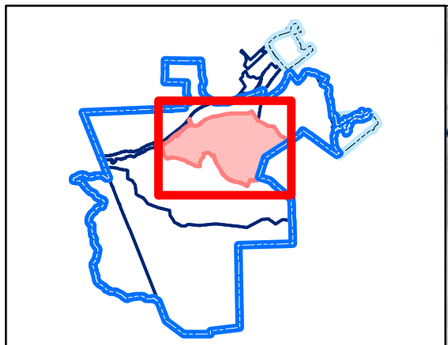


RMDP Boundary
SCP Boundary
Village Boundary

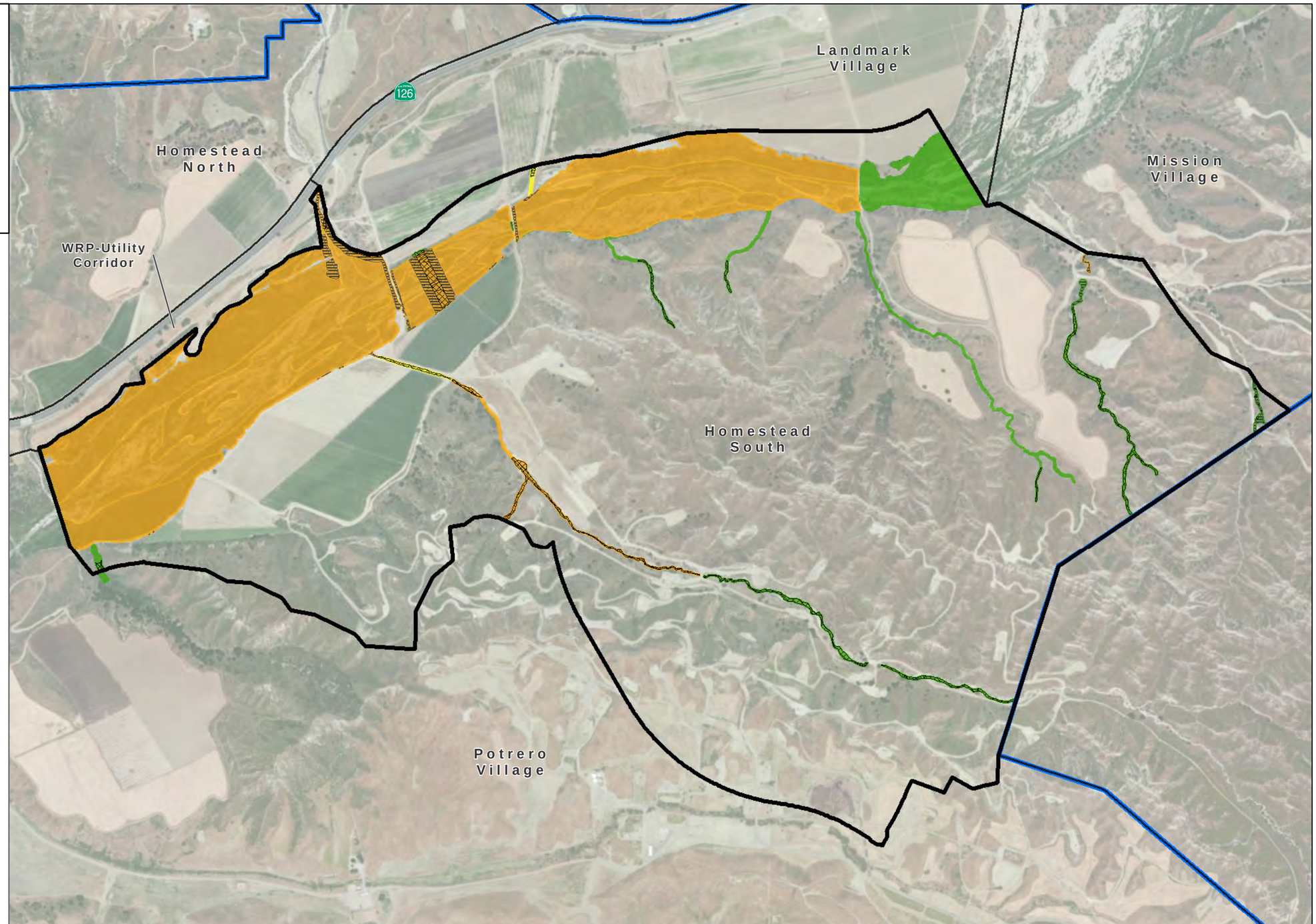
Jurisdictional Resources

Quality of Resource

Low
Medium
High

Impact to Resource

Permanent Impact
Temporary Impact



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SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 19
Homestead South Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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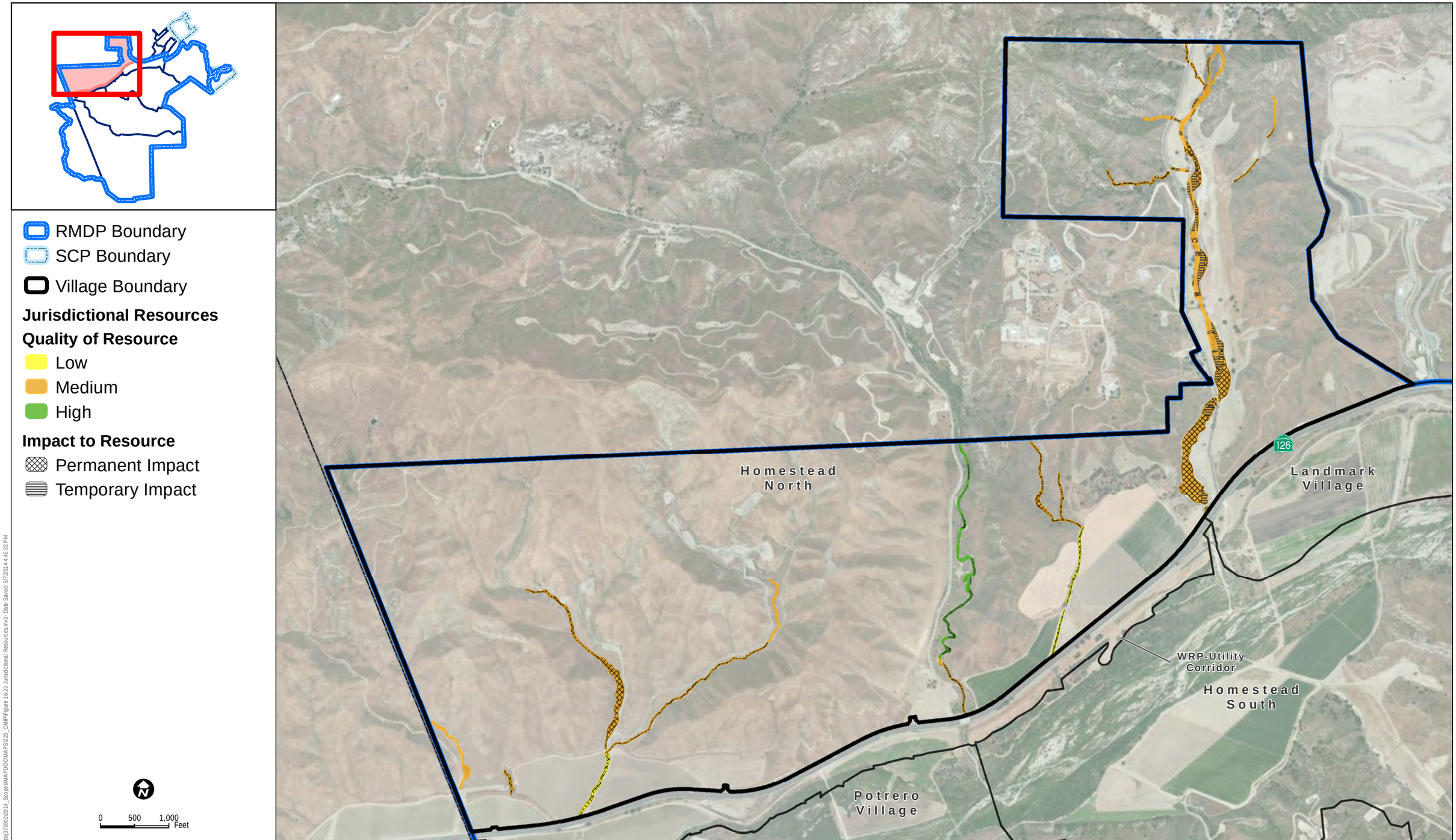

SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 20
Homestead North Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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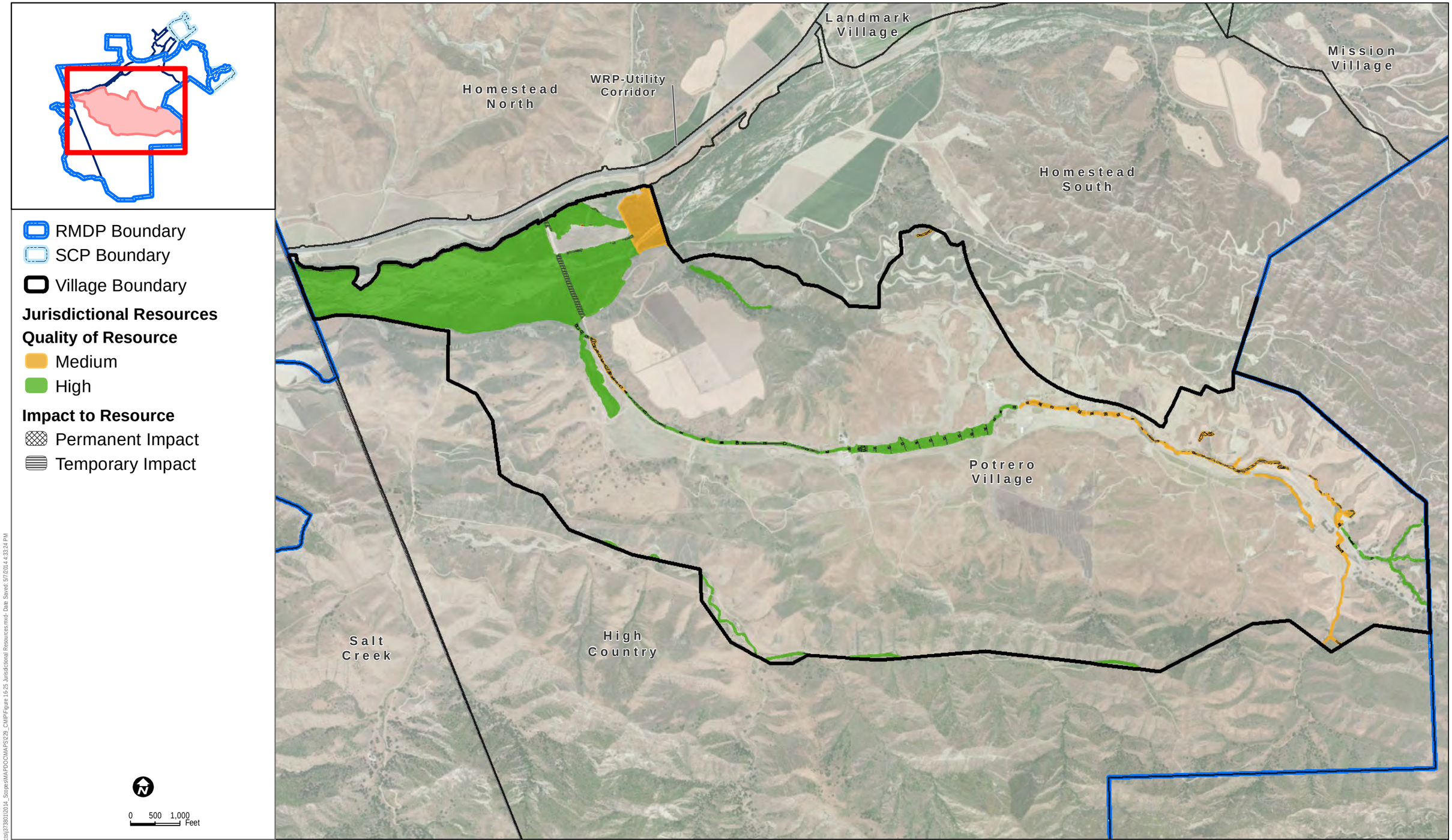

SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 21
Potrero Village Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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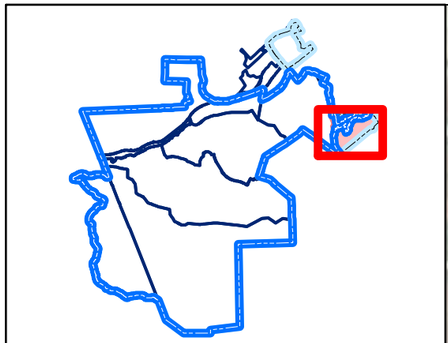


RMDP Boundary
SCP Boundary
Village Boundary

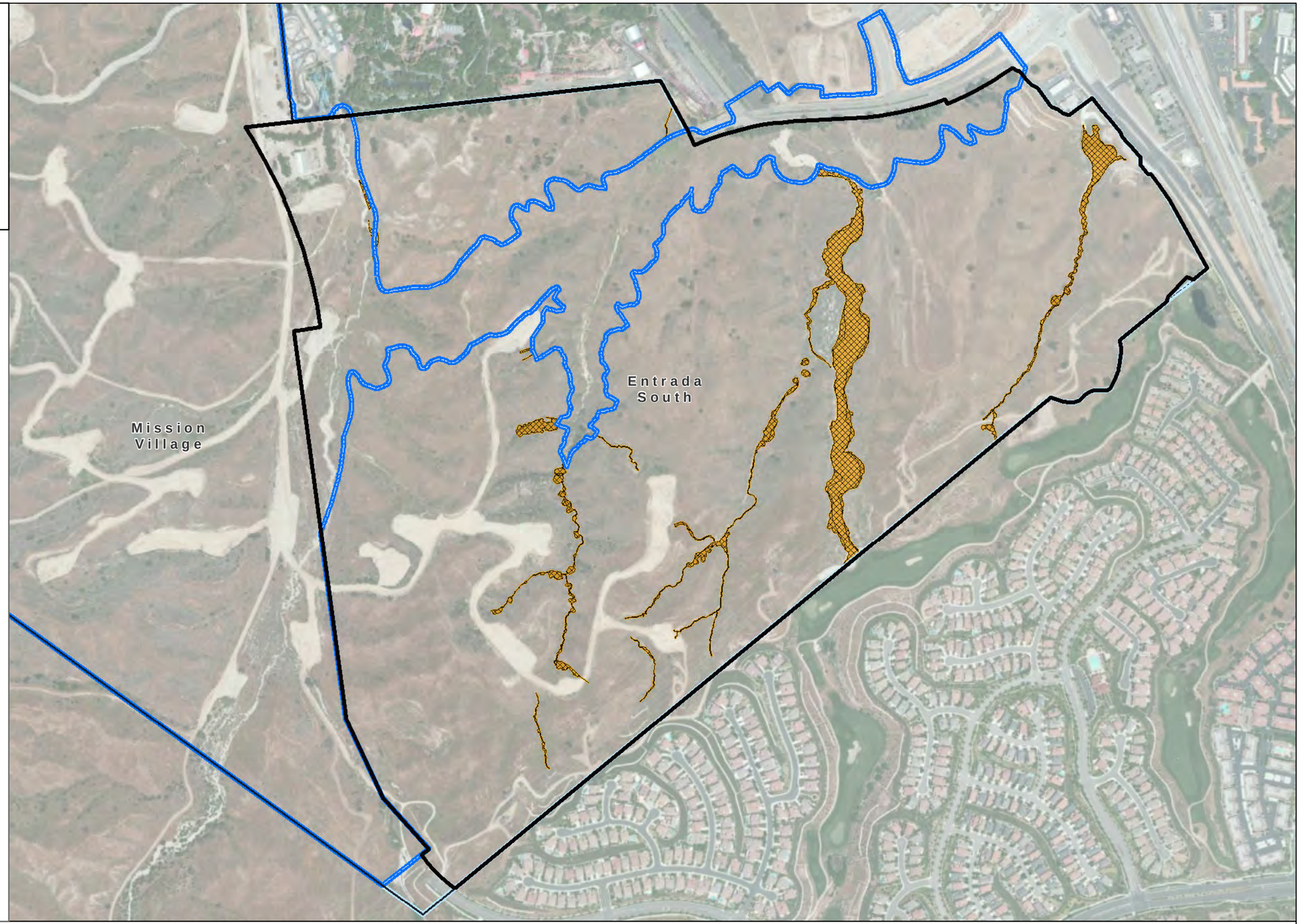
Jurisdictional Resources

Quality of Resource

Medium

Impact to Resource

Permanent Impact



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SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 22
Entrada South Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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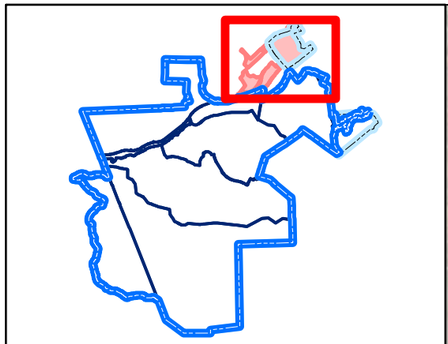


RMDP Boundary
SCP Boundary
Village Boundary

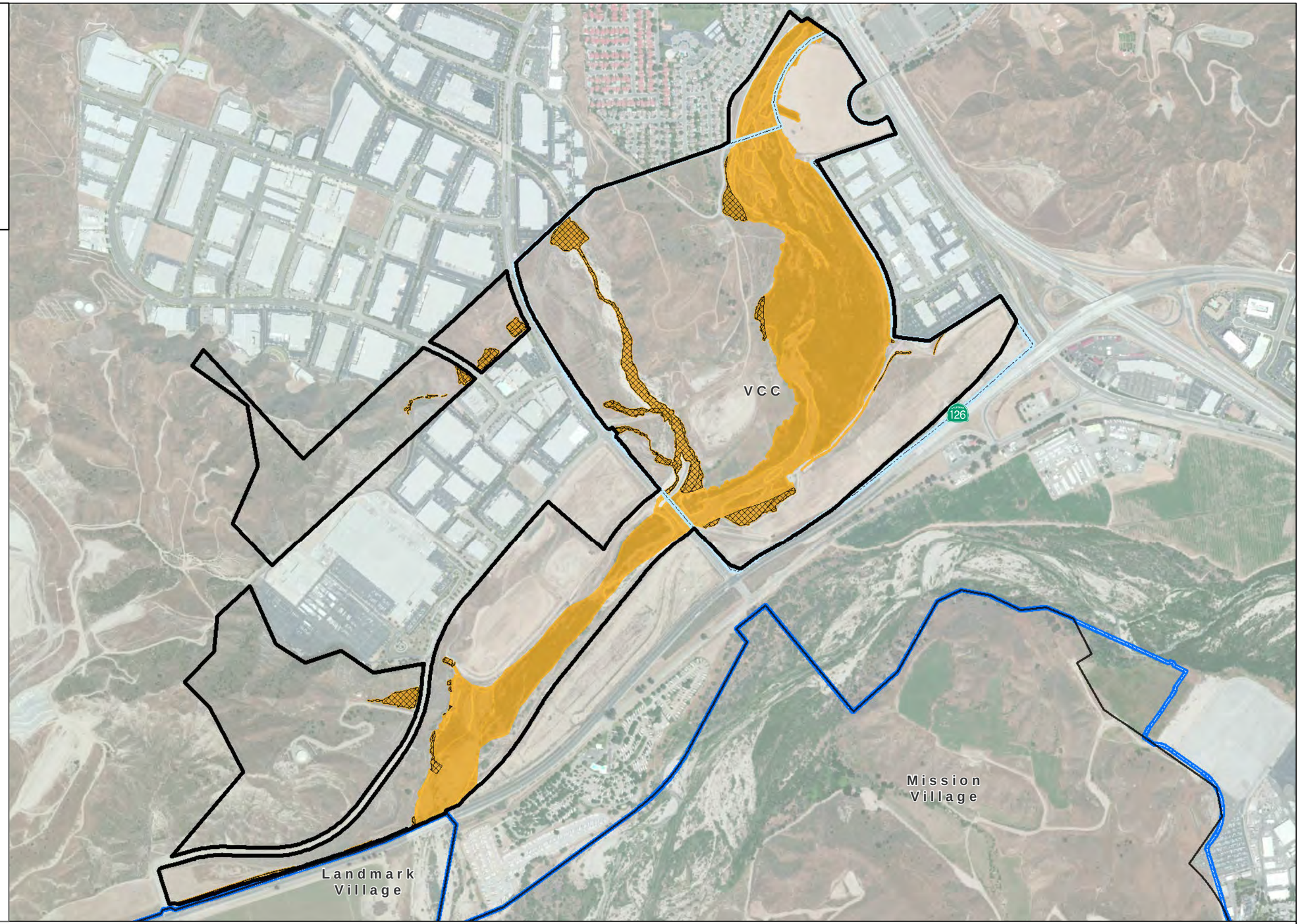
Jurisdictional Resources

Quality of Resource

Medium

Impact to Resource

Permanent Impact



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SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 23
VCC Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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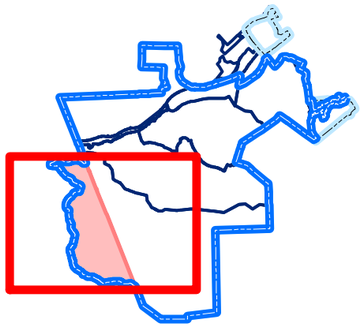


RMDP Boundary
SCP Boundary

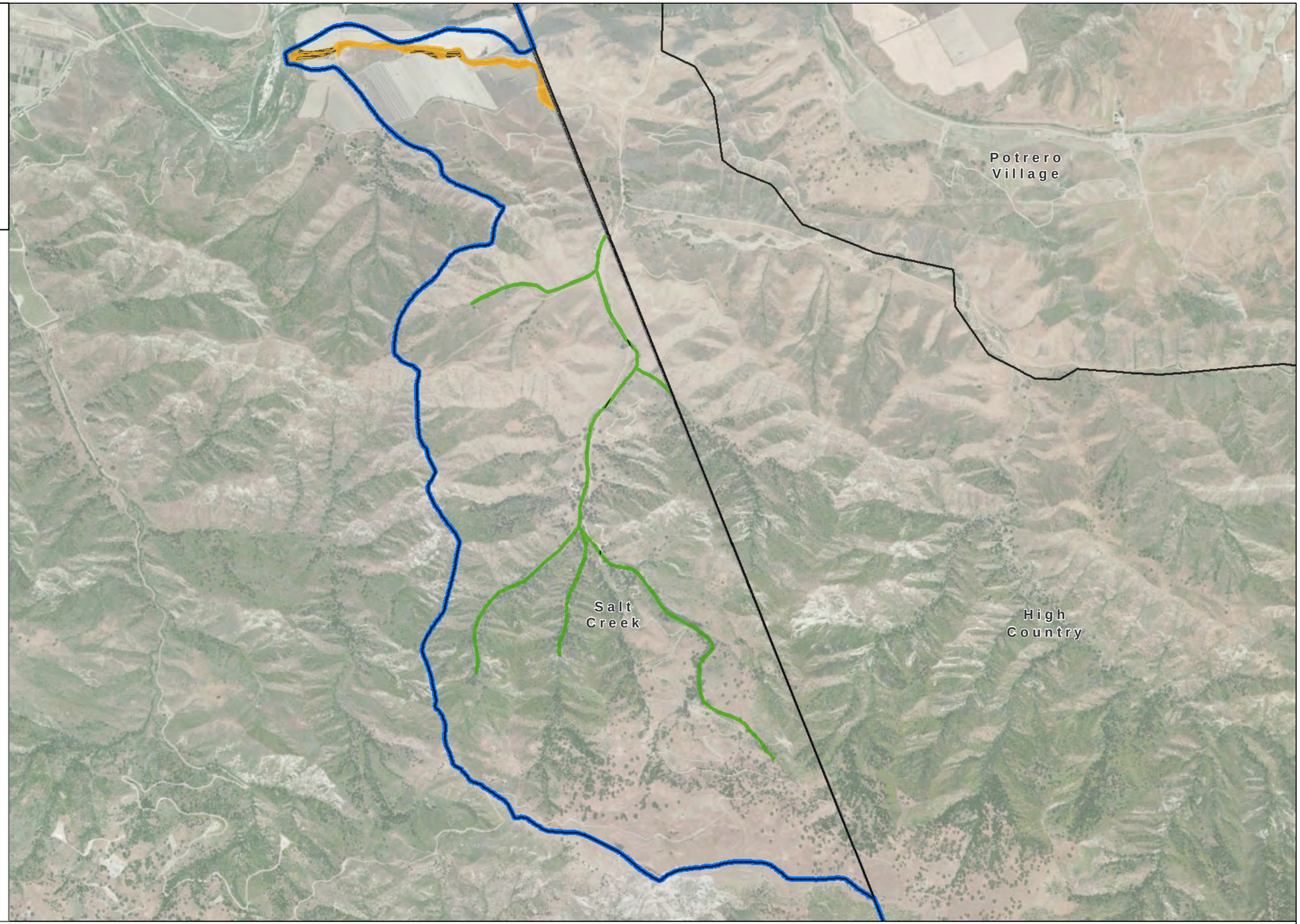
Jurisdictional Resources

Quality of Resource

Medium
High

Impact to Resource

Permanent Impact
Temporary Impact



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SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 24
Salt Creek Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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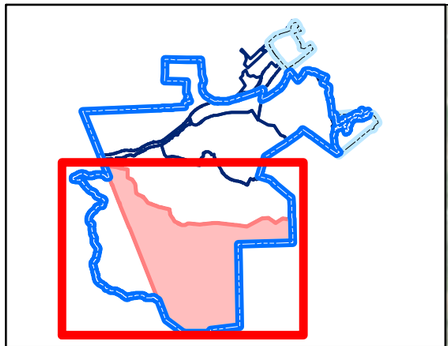

RMDP Boundary
SCP Boundary

Jurisdictional Resources

Quality of Resource

Medium
High

Impact to Resource

Permanent Impact
Temporary Impact

0 500 1,000 Feet

SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 25
High Country Jurisdictional Resources

Comprehensive Mitigation Implementation Plan for Newhall Ranch

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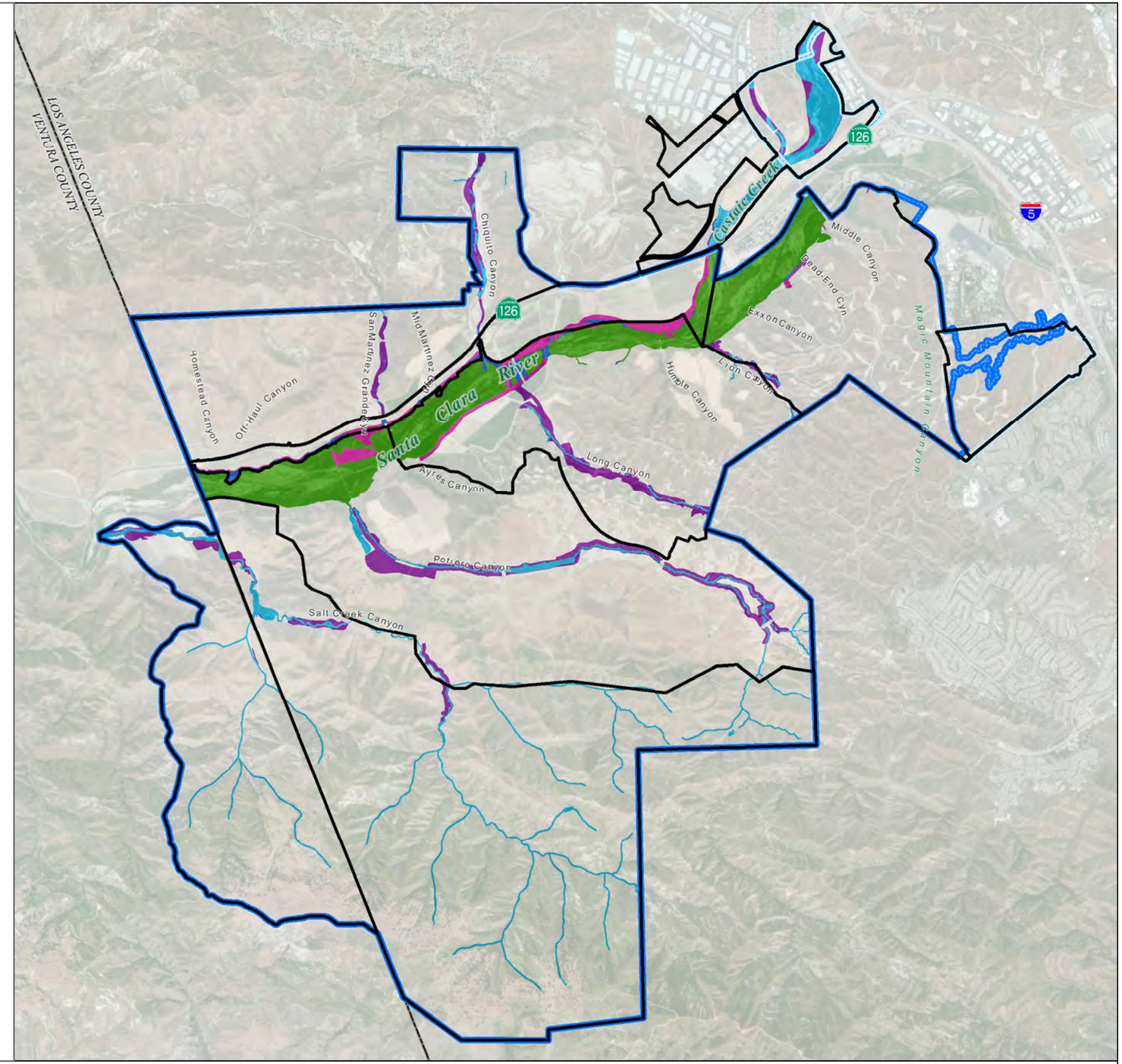
Mitigation Sites	Acres
CREATION AREAS	
Castaic Creek Creation	34.86
Chiquito Canyon Creation	17.17
Lion Canyon Creation	9.35
Long Canyon Creation	53.11
Potrero Canyon Creation	113.23
Salt Creek Creation	45.46
San Martinez Grande Canyon Creation	10.48
Santa Clara River Creation	123.77
TOTAL	***407.44***
RESTORATION AREAS	
Castaic Creek Restoration	128.94
Chiquito Canyon Restoration	11.34
Lion Canyon Restoration	2.41
Long Canyon Restoration	3.46
Potrero Canyon Restoration	41.48
Salt Creek Restoration	93.88
San Martinez Grande Canyon Restoration	2.45
Santa Clara River Restoration	32.96
TOTAL	***316.93***
ENHANCEMENT AREA	
Santa Clara River Enhancement	712.91



RMDP Boundary
SCP Boundary
Village Boundary

Mitigation
- Creation Areas
- Restoration Areas
- Santa Clara River - Creation Areas
- Santa Clara River - Restoration Areas
- Santa Clara River - Enhancement Area

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SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 26
Locations to Implement Mitigation for Jurisdictional Resources

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Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Riparian Communities	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, and SP-4.6-47 (include the open space dedication of the River Corridor and High Country SMAs and Open Area), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at State Route 126 (SR-126)), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)	Riparian communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-26a (riparian revegetation and oak tree replacement opportunities in the High Country SMA), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), SP-4.6-28 (mitigation banking for riparian and oak resources in High Country SMA), SP-4.6-43 (Open Area use for mitigation of riparian, oak resources, or elderberry scrub), SP-4.6-47a (allows mitigation banking for riparian habitats, oak resources, and Mexican elderberry within the River Corridor SMA, High Country SMA, and Open Area), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site)	Riparian communities
California Annual Grassland, Agriculture, and Disturbed Land (Impacts to Developed Land not considered significant)	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, and SP-4.6-47 (include the open space dedication of the River Corridor and High Country SMAs and Open Area), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)	California Annual Grassland, Agriculture, and Disturbed Land	SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-27 (removal of grazing from High Country SMA)	

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Coastal scrub communities	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, and SP-4.6-47 (include the open space dedication of the River Corridor and High Country SMAs and Open Area), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)	Coastal Scrub	SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-27 (removal of grazing from High Country SMA), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA)	
Chaparral Communities	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, and SP-4.6-47 (include the open space dedication of the River Corridor and High Country SMAs and Open Area), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)		SP-4.6-27 (removal of grazing from High Country SMA)	

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Oak Woodland Communities	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, and SP-4.6-47 (include the open space dedication of the River Corridor and High Country SMAs and Open Area), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)	Mixed oak woodland, coast live oak woodland, and valley oak grass/woodland	SP-4.6-26a (oak tree replacement opportunities in the High Country SMA), SP-4.6-28 (mitigation banking for riparian and oak resources in High Country SMA), SP-4.6-43 (Open Area use for mitigation of oak resources), SP-4.6-48 (restoration and enhancement of oak resources in High Country SMA and Open Area), BIO-22 (preparation and implementation of an Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation)	Coast live oak woodland and valley oak grass/woodland
Mainland (holly-leaf) cherry	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, and SP-4.6-47 (include the open space dedication of the River Corridor and High Country SMAs and Open Area), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)	Chaparral, big sage-brush scrub, and river wash	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-26a (riparian revegetation and oak tree replacement opportunities in the High Country SMA), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), SP-4.6-28 (mitigation banking for riparian and oak resources in High Country SMA), SP-4.6-43 (Open Area use for mitigation of riparian, oak resources, or elderberry scrub), SP-4.6-47a (allows mitigation banking for riparian habitats, oak resources, and Mexican elderberry within the River Corridor SMA, High Country SMA, and Open Area), SP-4.6-48 (restoration and enhancement of oak resources in High Country SMA and Open Area), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities	Restoration and enhancement of mainland (holly-leaf) cherry, chaparral, big sage-brush scrub, and river wash

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
			on the project site), BIO-22 (preparation and implementation of an Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation), BIO-88 (replacement of southern California black walnut and mainland cherry trees or shrubs outside riparian areas)	
Oak-leaved nemophila	SP-4.6-36 through SP-4.6-38 and SP-4.6-40 through SP-4.6-42 (include the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO	Oak Woodland communities	4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA)	
Oak trees	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, and SP-4.6-47 (include the open space dedication of the River Corridor and High Country SMAs and Open Area), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO	Oak woodland communities, chaparral, coastal sage scrub, and riparian communities	SP-4.6-26a (oak tree replacement opportunities in the High Country SMA), SP-4.6-28 (mitigation banking for riparian and oak resources in High Country SMA), SP-4.6-43 (Open Area use for mitigation of oak resources), SP-4.6-48 (restoration and enhancement of oak resources in High Country SMA and Open Area), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-22 (preparation and implementation of an Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation)	Restoration and enhancement of oak trees, oak woodland communities, chaparral, coastal sage scrub, and riparian communities

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Parish's sagebrush	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, and SP-4.6-47 (include the open space dedication of the River Corridor and High Country SMAs and Open Area), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)	Big sagebrush scrub	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-26a (riparian revegetation and oak tree replacement opportunities in the High Country SMA), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), SP-4.6-28 (mitigation banking for riparian and oak resources in High Country SMA), SP-4.6-43 (Open Area use for mitigation of riparian, oak resources, or elderberry scrub), SP-4.6-47a (allows mitigation banking for riparian habitats, oak resources, and Mexican elderberry within the River Corridor SMA, High Country SMA, and Open Area), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site)	Big sagebrush scrub
San Fernando Valley spineflower	SP-4.6-66 (guidelines for design, establishment, and management of spineflower preserves), SP-4.6-67 (open space connections and setbacks for spineflower preserves prohibition of disturbance within spineflower preserves or buffers), SP-4.6-70 (road construction to reduce or avoid impacts to spineflower), SP-4.6-71 (engineering, design, and grading modifications around spineflower preserves), SP-4.6-72 (fire management plan to avoid and		SP-4.6-66 (guidelines for design, establishment, and management of spineflower preserves), SP-4.6-67 (open space connections and setbacks for spineflower preserves prohibition of disturbance within spineflower preserves or buffers, revegetation requirements), SP-4.6-77 (spineflower monitoring and management plan), SP-4.6-78 (spineflower translocation and reintroduction plan), BIO-24 (management of spineflower preserves), BIO-25 (guidelines for restoration and enhancement of degraded and/or damaged spineflower habitat), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
	minimize impacts to the spineflower), SP-4.6-76 (reassessment of impacts to spineflower populations), SP-4.6-80 (San Martinez Grande spineflower preserve area), BIO-23 (placement of the proposed spineflower preserves into a permanent conservation easement)			
Island mountain-mahogany	SP-4.6-36 through SP-4.6-38 and SP-4.6-40 through SP-4.6-42 (include the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)	Chaparral	SP-4.6-27 (removal of grazing from High Country SMA)	
Peirson's morning glory	SP-4.6-36 through SP-4.6-38 and SP-4.6-40 through SP-4.6-42 (include the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)	Chaparral, coastal scrub, and grassland vegetation communities	SP-4.6-27 (removal of grazing from High Country SMA), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA)	

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Slender mariposa lily	SP-4.6-36 through SP-4.6-38 and SP-4.6-40 through SP-4.6-42 (includes the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Areas occupied by slender mariposa lilies and suitable coastal scrub and California annual grassland	SP-4.6-27 (removal of grazing in High Country SMA), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-40 (implementation of an approved slender mariposa lily mitigation plan)	Coastal sage scrub and California annual grassland areas that support populations of slender mariposa lilies or are suitable relocation sites
Southern California black walnut	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, and SP-4.6-47 (include the open space dedication of the River Corridor and High Country SMAs and Open Area), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)	California walnut woodland, chaparral, coastal scrub, alluvial scrub, oak woodland, and southern cottonwood–willow riparian	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-26a (riparian revegetation and oak tree replacement opportunities in the High Country SMA), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), SP-4.6-28 (mitigation banking for riparian and oak resources in High Country SMA), SP-4.6-43 (Open Area use for mitigation of riparian, oak resources, or elderberry scrub), SP-4.6-47a (allows mitigation banking for riparian habitats, oak resources, and Mexican elderberry within the River Corridor SMA, High Country SMA, and Open Area), SP-4.6-48 (restoration and enhancement of oak resources in High Country SMA and Open Area), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-22 (preparation and implementation of an Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation), BIO-88 (replacement of southern California black walnut and mainland cherry trees or shrubs outside riparian areas)	Restoration and enhancement of southern California black walnut trees, California walnut woodlands

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Undescribed everlasting	SP-4.6-21 through SP-4.6-26, BIO-75 (surveys in undescribed everlasting habitat prior to grading/construction activities and avoidance measure to extent possible)		SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-47a (allows mitigation banking for riparian habitats, oak resources, and Mexican elderberry within the River Corridor SMA, High Country SMA, and Open Area), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-75 (surveys in undescribed everlasting habitat prior to grading/construction activities), BIO-76 (undescribed everlasting mitigation and monitoring program)	
Undescribed sunflower	SP-4.6-21 through SP-4.6-26		SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-47a (allows mitigation banking for riparian habitats, oak resources, and Mexican elderberry within the River Corridor SMA, High Country SMA, and Open Area), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-77 (Middle Canyon Spring Habitat Management Plan (Dudek 2007), which prescribes monitoring and management related to water quality and water quantity)	
Undescribed snail	NA	NA	BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-77 (Middle Canyon Spring Habitat Management Plan (Dudek 2007), which prescribes monitoring and management related to water quality and water quantity)	Middle Canyon Spring

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
San Emigdio blue butterfly	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126)	Riparian communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-26a (riparian revegetation and oak tree replacement opportunities in the High Country SMA), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), SP-4.6-28 (mitigation banking for riparian and oak resources in High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-66 (replacement of quail brush plants within the San Emigdio blue butterfly colony), BIO-79 (monitoring and habitat creation for San Emigdio blue butterfly)	Riparian communities, quailbush plants
Unarmored threespine stickleback, arroyo chub, and Santa Ana sucker	SP-4.6-21 through SP-4.6-26 (includes the open space dedication of the River Corridor SMA)	Riparian communities (open water)	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-80 (monitoring and control of invasive, non-native aquatic wildlife species in perpetuity)	Riparian communities (open water)
Arroyo toad, western spadefoot toad	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs),	Riparian communities and adjacent upland communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-	Riparian communities and adjacent uplands, Middle Canyon Spring

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
	BIO-19 dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)		4.6-26a (riparian revegetation and oak tree replacement opportunities in the High Country SMA), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-77 (Middle Canyon Spring Habitat Management Plan (Dudek 2007), which prescribes monitoring and management related to water quality and water quantity), BIO-80 (monitoring and control of invasive, non-native aquatic wildlife species in perpetuity)	
Two-striped garter snake, south coast garter snake	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126)	Riparian communities and adjacent upland communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-26a (riparian revegetation and oak tree replacement opportunities in the High Country SMA), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-77 (Middle Canyon Spring Habitat Management Plan (Dudek 2007), which prescribes monitoring and management related to water quality and water quantity), BIO-80 (monitoring and control of invasive, non-native aquatic wildlife species in perpetuity), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	Riparian communities and adjacent uplands

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Southwestern pond turtle	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Riparian communities and adjacent upland communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-26a (riparian revegetation and oak tree replacement opportunities in the High Country SMA), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-77 (Middle Canyon Spring Habitat Management Plan (Dudek 2007), which prescribes monitoring and management related to water quality and water quantity), BIO-80 (monitoring and control of invasive, non-native aquatic wildlife species in perpetuity)	Riparian communities and adjacent uplands
California red-legged frog	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126)	Riparian communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-26a (riparian revegetation and oak tree replacement opportunities in the High Country SMA), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-77 (Middle Canyon Spring Habitat Management Plan (Dudek 2007), which prescribes monitoring and management related to water quality and	Riparian communities, Middle Canyon Spring

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
			water quantity), BIO-80 (monitoring and control of invasive, non-native aquatic wildlife species in perpetuity), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	
Coastal California gnatcatcher	SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Natural communities in High Country SMA and Salt Creek area	BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-55 (replace or enhance nesting and foraging habitat for coastal California gnatcatcher), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	Coastal scrub
Southern California rufous-crowned sparrow	SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Natural communities in High Country SMA and Salt Creek area	BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	Coastal scrub
Bell's sage sparrow	SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of	Natural communities in High Country SMA and Salt Creek area	BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-78 (cowbird monitoring and trapping program), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	Coastal scrub

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
	existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)			
California condor, golden eagle,	SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Natural communities in High Country SMA and Salt Creek area	BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA)	Coastal scrub
Least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, yellow-breasted chat, yellow warbler	SP-4.6-21 through SP-4.6-26 (open space dedication of the River Corridor)	Riparian communities in River Corridor SMA	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-55 (replace or enhance nesting and foraging habitat for least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo; this will also benefit yellow-breasted chat and yellow warbler), BIO-78 (cowbird monitoring and trapping program), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	Riparian communities in River Corridor SMA

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Loggerhead shrike	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Natural communities in River Corridor SMA, High Country SMA and Salt Creek area	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-48 (restoration and enhancement of oak resources in the High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the Project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-22 (preparation and implementation of an Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation)	
Cooper's hawk, white-tailed kite	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Natural communities in River Corridor SMA, High Country SMA and Salt Creek area	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-48 (restoration and enhancement of oak resources in the High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-22 (preparation and implementation of an Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation), BIO-55 (replace or enhance nesting and foraging habitat for least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, and coastal California gnatcatcher; this will also benefit Cooper's hawk and white-tailed kite)	

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Long-eared owl	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126)	Natural communities in River Corridor SMA, High Country SMA and Salt Creek area	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the Project site), BIO-55 (replace or enhance nesting and foraging habitat for least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo; this will also benefit long-eared owl)	
Tricolored blackbird	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126)	Natural communities in River Corridor SMA, High Country SMA and Salt Creek area	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site)	
Ferruginous hawk	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Natural communities in River Corridor SMA, High Country SMA and Salt Creek area	BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA)	Coastal scrub

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Northern harrier	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Natural communities in River Corridor SMA, High Country SMA and Salt Creek area	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA)	
Allen's hummingbird, Costa's hummingbird	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Natural communities in River Corridor SMA, High Country SMA and Salt Creek area	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-55 (replace or enhance nesting and foraging habitat for least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, and coastal California gnatcatcher; this will also benefit Allen's hummingbird and Costa's hummingbird), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Turkey vulture	SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Upland natural communities in High Country SMA and Salt Creek area	BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA)	
Western burrowing owl	SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126)	Grasslands in High Country SMA and Salt Creek area, oak woodlands	NA	
Chipping sparrow	SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the High Country SMA), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126)	Grasslands in High Country SMA and Salt Creek area, oak woodlands	BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-22 (preparation and implementation of an Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation), BIO-78 (cowbird monitoring and trapping program), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	
California horned lark	SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the High Country SMA), BIO-19	Grasslands in High Country SMA and Salt Creek area, oak woodlands	BIO-78 (cowbird monitoring and trapping program), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
	(dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126)			
Lawrence's goldfinch	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Natural communities in River Corridor SMA, High Country SMA and Salt Creek area	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-78 (cowbird monitoring and trapping program), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	
Nuttall's woodpecker, oak titmouse	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126)		SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-22 (preparation and implementation of an Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	

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Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
Coast horned lizard, coast patch-nosed snake, coastal western whiptail, rosy boa, San Bernardino ringneck snake, silvery legless lizard	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Coastal sage scrub, chaparral, grassland, oak woodland, and riparian communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA)	Coastal scrub, chaparral, grassland, oak woodland, and riparian communities
Coast horned lizard, coast patch-nosed snake, coastal western whiptail, rosy boa, San Bernardino ringneck snake, silvery legless lizard, American badger, San Diego black-tailed jackrabbit, San Diego desert woodrat, southern grasshopper mouse	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Coastal sage scrub, chaparral, grassland, oak woodland, and riparian communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-87 (quarterly monitoring and control measures for Argentine ants for up to 50 years)	Coastal scrub, chaparral, grassland, oak woodland, and riparian communities
Ringtail	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and	Riparian communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-26a (riparian revegetation and oak tree replacement opportunities in the High Country SMA), SP-4.6-27	Riparian communities

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
	enhancement of existing agricultural undercrossing at SR-126)		(removal of grazing and enhancement of habitat in the High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-55 (replace or enhance nesting and foraging habitat for least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo; this will benefit ringtail as well)	
Fringed myotis, long-legged myotis, pallid bat, pocketed free-tailed bat, Townsend's big-eared bat, western mastiff bat, western red bat, western small-footed myotis	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	All natural communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA), SP-4.6-27 (removal of grazing and enhancement of habitat in the High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-68 (day roost site replacement), BIO-84 (culvert and bridge design to provide roosting habitat for bats)	All natural communities, roost sites
Yuma myotis	BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126)		BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-68 (day roost site replacement), BIO-84 (culvert and bridge design to provide roosting habitat for bats)	Roost sites
American black bear, mountain lion	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing	All preserved open space vegetation communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the Project site), BIO-21 (restoration/enhancement of coastal scrub in the High	All restored open space vegetation communities

Table 1
Mitigation for Impacts to Sensitive Biological Resources

Significant Impacts, Absent Mitigation to Sensitive Biological Resources	Preservation Mitigation Measures*	Preserve Type	Restoration Mitigation Measures	Restoration Type
	at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)		County SMA, Salt Creek area, and River Corridor SMA), BIO-22 (preparation and implementation of an Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation)	
Restriction of wildlife movement corridors	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-20 (preservation of approximately 1,900 acres of coastal scrub on site)	Coastal sage scrub, chaparral, grassland, oak woodland, and riparian communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site), BIO-21 (restoration/enhancement of coastal scrub in the High County SMA, Salt Creek area, and River Corridor SMA), BIO-22 (preparation and implementation of an Oak Resource Management Plan identifying areas suitable for oak woodland enhancement and creation)	Coastal sage scrub, chaparral, grassland, oak woodland, and riparian communities
Jurisdictional waters, streams, and drainages.	SP-4.6-21 through SP-4.6-26, SP-4.6-36 through SP-4.6-38, SP-4.6-40 through SP-4.6-42, (includes the open space dedication of the River Corridor and High Country SMAs), BIO-19 (dedication of the Salt Creek area to the public and enhancement of existing agricultural undercrossing at SR-126), BIO-62 (dedication to the public of at least 1,900 acres of Open Area to an NLMO)	Riparian communities	SP-4.6-1 through SP-4.6-16, and SP-4.6-63 (provide habitat restoration/enhancement in the River Corridor SMA and require a 1:1 riparian resource replacement), SP-4.6-18 and SP-4.6-19 (provide transition areas between the River Corridor SMA and development), SP-4.6-26a (oak tree replacement opportunities in the High Country SMA), SP-4.6-28 (mitigation banking for riparian and oak resources in High Country SMA), BIO-1 through BIO-16 (wetlands mitigation plan and riparian restoration activities on the project site)	Riparian communities

Notes:

* The following measures are prescribed to the RMDP project area (Specific Plan) and for implementation of the Spineflower Conservation Plan. Many of these measures have been recommended for implementation of the Entrada South and VCC developments to ensure secondary impacts associated with the SCP to mitigate significant impacts. Subsequent EIRs for these planning areas should incorporate measures as appropriate.

Table 2
Landmark Village: Non-jurisdictional Resources

Resource	Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required for Permanent Impacts (acres)	Conceptual Mitigation		
				Acreage	*Type*	*Location*
California Annual Grassland, Agriculture, or Disturbed Land	312.05	0.5:1	156.03	57.08	Preservation	High Country SMA
				98.27		Homestead Village North
				2.44		Salt Creek area
Coastal Scrub	1.03	1.5:1	1.55	1.76	Preservation	High Country SMA
Non-jurisdictional Riparian	6.16	1:1	6.16	0.77	Preservation	Landmark Village
				0.74		Homestead North
				5.12		Valencia Commerce Center
Total Upland Habitat	**319.24**	**—**	**163.74**	**166.18**	**—**	**—**

Table 3
Mission Village: Non-jurisdictional Resources

Resource		Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required for Permanent Impacts (acres)	Conceptual Mitigation		
					Acreage	*Type*	*Location*
California Annual Grassland, Agriculture, or Disturbed Land		264.17	0.5:1	132.09	19.04	Preservation	Mission Village
					111.96		High Country SMA
					1.19		Potrero Village
Broad Leafed Upland Forest and Woodland	Coast Live Oak Woodland	3.90	1:1 Creation and/or 2:1 Enhancement	*	*	Creation and/or Enhancement	High Country SMA, Homestead Village North, Homestead Village South, Potrero Village, and Salt Creek area
	Other Woodland	2.59	1:1	2.59	0.20	Preservation	Mission Village
					1.56		High Country SMA
					0.87		Potrero Village
Chaparral		43.27	1:1	43.27	3.76	Preservation	Mission Village
					3.80		High Country SMA
					9.03		Potrero Village
					29.39		Salt Creek area
Coastal Scrub		588.07	1.5:1	837.11	80.81	Preservation	Mission Village
					494.31		High Country SMA
					297.23		Potrero Village
					15.07		Salt Creek area
Non-jurisdictional Riparian		30.64	1:1	30.64	8.67	Preservation	Mission Village
					9.35		High Country SMA
					13.22		Potrero Village
Total Upland Habitat		**932.64**	**—**	**1,045.70**	**1,099.47**	**—**	**—**

* Mitigation acreage is dependent on the amount of oak woodland habitat created at a 1:1 mitigation ratio and/or enhanced at a 2:1 mitigation ratio. In addition to oak habitat mitigation, oak trees will be mitigated individually based on ratios in the County of Los Angeles Oak Tree Ordinance.

Table 4
Water Reclamation Plant (WRP) – Utility Corridor: Non-jurisdictional Resources

Resource	Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required for Permanent Impacts (acres)	Conceptual Mitigation		
				Acreage	*Type*	*Location*
California Annual Grassland, Agriculture, or Disturbed Land	110.88	0.5:1	59.29	20.05	Preservation	Homestead North
				34.29		High Country SMA
				4.96		Salt Creek area
Coastal Scrub	0.96	1.5:1	2.80	0.70	Preservation	High Country SMA
				2.09		Salt Creek area
Non-jurisdictional Riparian	5.92	1:1	5.93	1.04	Preservation	High Country SMA
				1.61		Potrero Village
				3.28		Salt Creek area
Total Upland Habitat	**117.76**	**—**	**62.80**	**68.02**	**—**	**—**

Table 5
Homestead Village South: Non-jurisdictional Resources

Resource		Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required for Permanent Impacts (acres)	Conceptual Mitigation		
					Acreage	*Type*	*Location*
California Annual Grassland, Agriculture, or Disturbed Land		463.68	0.5:1	231.84	19.35	Preservation	Homestead Village South
					139.66		High Country SMA
					74.55		Salt Creek area
Broad Leafed Upland Forest and Woodland	Coast Live Oak Woodland	30.78	1:1 Creation and/or 2:1 Enhancement	*	*	Creation and/or Enhancement	High Country SMA, Homestead Village North, Homestead Village South, Potrero Village, and Salt Creek area
	Other Woodland	0.28	1:1	0.28	0.35	Preservation	High Country SMA
Chaparral		264.67	1:1	264.67	81.80	Preservation	Homestead Village South
					107.84		High Country SMA
					75.55		Potrero Village
Coastal Scrub		316.82	1.5:1	475.24	161.52	Preservation	Homestead Village South
					7.97		High Country SMA
					307.94		Salt Creek area
Non-jurisdictional Riparian		33.94	1:1	33.94	3.41	Preservation	Homestead Village South
					15.46		High Country SMA
					3.61		Potrero Village
					11.82		Salt Creek area
Total Upland Habitat		**1,110.17**	**—**	**1,005.97**	**1,010.84**	**—**	**—**

* Mitigation acreage is dependent on the amount of oak woodland habitat created at a 1:1 mitigation ratio and/or enhanced at a 2:1 mitigation ratio. In addition to oak habitat mitigation, oak trees will be mitigated individually based on ratios in the County of Los Angeles Oak Tree Ordinance.

Table 6
Homestead Village North: Non-jurisdictional Resources

Resource		Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required for Permanent Impacts (acres)	Conceptual Mitigation		
					Acreage	*Type*	*Location*
California Annual Grassland, Agriculture, or Disturbed Land		506.34	0.5:1	253.17	255.80	Preservation	Homestead Village North
Broad Leafed Upland Forest and Woodland	Coast Live Oak Woodland	6.28	1:1 Creation and/or 2:1 Enhancement	*	*	Creation and/or Enhancement	High Country SMA, Homestead Village North, Homestead Village South, Potrero Village, and Salt Creek area
	Other Woodland	1.13	1:1	1.13	1.14	Preservation	High Country SMA, Salt Creek area
Chaparral		1.89	1:1	1.89	2.37	Preservation	Homestead Village North
Coastal Scrub		223.45	1.5:1	335.17	186.17	Preservation	Homestead Village North
					150.72		High Country SMA
Non-jurisdictional Riparian		16.95	1:1	16.95	10.20	Preservation	Homestead Village North
					7.07		High Country SMA
Total Upland Habitat		**756.05**	**—**	**608.31**	**613.46**	**—**	**—**

* Mitigation acreage is dependent on the amount of oak woodland habitat created at a 1:1 mitigation ratio and/or enhanced at a 2:1 mitigation ratio. In addition to oak habitat mitigation, oak trees will be mitigated individually based on ratios in the County of Los Angeles Oak Tree Ordinance.

Table 7
Potrero Village: Non-jurisdictional Resources

Resource		Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required for Permanent Impacts (acres)	Conceptual Mitigation		
					Acreage	*Type*	*Location*
California Annual Grassland, Agriculture, or Disturbed Land		1,083.14	0.5:1	541.57	347.85	Preservation	Potrero Village
					70.96		High Country SMA
					123.53		Salt Creek area
Broad Leafed Upland Forest and Woodland	Oak Woodland	7.61	1:1 Creation and/or 2:1 Enhancement	*	*	Creation and/or Enhancement	High Country SMA, Homestead Village North, Homestead Village South, Potrero Village, and Salt Creek area
	Other Woodland	0.04	1:1	0.04	0.06	Preservation	Potrero Village
Chaparral		20.63	1:1	20.63	21.29	Preservation	Potrero Village
Coastal Scrub		125.98	1.5:1	188.96	189.25	Preservation	Potrero Village
Non-jurisdictional Riparian		5.84	1:1	5.84	6.14	Preservation	Potrero Village
Total Upland Habitat		**1,243.23**	**—**	**757.04**	**759.08**	**—**	**—**

* Mitigation acreage is dependent on the amount of oak woodland habitat created at a 1:1 mitigation ratio and/or enhanced at a 2:1 mitigation ratio. In addition to oak habitat mitigation, oak trees will be mitigated individually based on ratios in the County of Los Angeles Oak Tree Ordinance.

Table 8
Entrada South: Non-jurisdictional Resources

Resource	Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required for Permanent Impacts (acres)	Conceptual Mitigation		
				Acreage	*Type*	*Location*
California Annual Grassland, Agriculture, or Disturbed Land	71.46	0.5:1	35.52	8.17	Preservation	Entrada South
				30.35		High Country SMA
				0.12		Homestead Village North
Oak Woodland	4.29	1:1 Creation and/or 2:1 Enhancement	*	*	Creation and/or Enhancement	
Chaparral	21.39	1:1	21.39	22.30	Preservation	Salt Creek area
Coastal Scrub	129.21	1.5:1	193.82	21.68	Preservation	Entrada South
				7.79		High Country SMA
				165.58		Salt Creek area
Non-jurisdictional Riparian	13.28	1:1	13.28	0.83	Preservation	Entrada South
				6.32		High Country SMA
				6.92		Potrero Village
Total Upland Habitat	**239.63**	**—**	**264.01**	**274.00**	**—**	**—**

Table 9
Valencia Commerce Center: Non-jurisdictional Resources

Resource		Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required for Permanent Impacts (acres)	Conceptual Mitigation		
					Acreage	*Type*	*Location*
California Annual Grassland, Agriculture, or Disturbed Land		186.46	0.5:1	93.23	6.58	Preservation	Valencia Commerce Center
					78.81		High Country SMA
					4.53		Salt Creek area
					5.39		Potrero Village
Broad Leafed Upland Forest and Woodland	Oak Woodland	1.92	1:1 Creation and/or 2:1 Enhancement	*	*	Creation and/or Enhancement	High Country SMA, Homestead Village North, Homestead Village South, Potrero Village, and Salt Creek area
Chaparral		1.30	1:1	1.30	1.30	Preservation	Valencia Commerce Center
Coastal Scrub		88.68	1.5:1	133.01	100.78	Preservation	Valencia Commerce Center
					32.74		High Country SMA
Non-jurisdictional Riparian		10.93	1:1	10.93	11.04	Preservation	Valencia Commerce Center
Total Upland Habitat		**289.27**	**—**	**238.47**	**241.17**	**—**	**—**

* Mitigation acreage is dependent on the amount of oak woodland habitat created at a 1:1 mitigation ratio and/or enhanced at a 2:1 mitigation ratio. In addition to oak habitat mitigation, oak trees will be mitigated individually based on ratios in the County of Los Angeles Oak Tree Ordinance.

Table 10
Salt Creek Area: Non-jurisdictional Resources

Resource	Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required for Permanent Impacts (acres)	Conceptual Mitigation		
				Acreage	*Type*	*Location*
California Annual Grassland, Agriculture, or Disturbed Land	6.41	0.5:1	3.21	3.77	Preservation	Salt Creek area
Coastal Scrub	0.22	1.5:1	0.33	0.41	Preservation	Salt Creek area
Non-jurisdictional Riparian	0.01	1:1	0.01	0.02	Preservation	Salt Creek area
Total Upland Habitat	**6.64**	**—**	**3.55**	**4.20**	**—**	**—**

Table 11
High Country SMA: Non-jurisdictional Resources

Resource		Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required for Permanent Impacts (acres)	Conceptual Mitigation		
					Acreage	*Type*	*Location*
California Annual Grassland, Agriculture, or Disturbed Land		6.45	0.5:1	3.23	4.42	Preservation	High Country SMA
Broad Leafed Upland Forest and Woodland	Oak Woodland	1.78	1:1 Creation and/or 2:1 Enhancement	*	*	Creation and/or Enhancement	High Country SMA, Homestead Village North, Homestead Village South, Potrero Village, and Salt Creek area
	Other Woodland	0.27	1:1	0.27	0.98	Preservation	High Country SMA
Chaparral		6.46	1:1	6.46	6.61	Preservation	High Country SMA
Coastal Scrub		4.39	1.5:1	6.58	7.19	Preservation	High Country SMA
Non-jurisdictional Riparian		0.22	1:1	0.22	0.20	Preservation	High Country SMA
Total Upland Habitat		**19.58**	**—**	**16.76**	**21.23**	**—**	**—**

* Mitigation acreage is dependent on the amount of oak woodland habitat created at a 1:1 mitigation ratio and/or enhanced at a 2:1 mitigation ratio. In addition to oak habitat mitigation, oak trees will be mitigated individually based on ratios in the County of Los Angeles Oak Tree Ordinance.

Table 12
Total Impacts and Mitigation Required by Project

Project	Permanent Impacts (Acres)	Mitigation Required (Acres)[8]	Resource Impacted
Landmark Village	319.24	163.74	California Annual Grassland, Agriculture, or Disturbed Land; Coastal Scrub; Non-jurisdictional Riparian
Mission Village	932.64	1,045.70	California Annual Grassland, Agriculture, or Disturbed Land; Broad Leafed Upland Forest and Woodland (Coast Live Oak Woodland, and Other Woodland); Chaparral; Coastal Scrub; Non-jurisdictional Riparian
WRP-Utility Corridor	117.76	62.80	California Annual Grassland, Agriculture, or Disturbed Land; Coastal Scrub; Non-jurisdictional Riparian
Homestead South Village	1,110.17	1,005.97	California Annual Grassland, Agriculture, or Disturbed Land; Broad Leafed Upland Forest and Woodland (Coast Live Oak Woodland, and Other Woodland); Chaparral; Coastal Scrub; Non-jurisdictional Riparian
Homestead North Village	756.05	608.31	California Annual Grassland, Agriculture, or Disturbed Land; Broad Leafed Upland Forest and Woodland (Coast Live Oak Woodland, and Other Woodland); Chaparral; Coastal Scrub; Non-jurisdictional Riparian
Potrero Village	1,243.23	757.04	California Annual Grassland, Agriculture, or Disturbed Land; Broad Leafed Upland Forest and Woodland (Coast Live Oak Woodland, and Other Woodland); Chaparral; Coastal Scrub; Non-jurisdictional Riparian
Entrada South Village	239.63	264.01	California Annual Grassland, Agriculture, or Disturbed Land; Broad Leafed Upland Forest and Woodland (Coast Live Oak Woodland); Chaparral; Coastal Scrub; Non-jurisdictional Riparian
Valencia Commerce Center (VCC)	289.27	238.47	California Annual Grassland, Agriculture, or Disturbed Land; Broad Leafed Upland Forest and Woodland (Coast Live Oak Woodland, and Other Woodland); Chaparral; Coastal Scrub; Non-jurisdictional Riparian
Salt and High Country	26.22	20.31	California Annual Grassland, Agriculture, or Disturbed Land; Broad Leafed Upland Forest and Woodland (Coast Live Oak Woodland, and Other Woodland); Chaparral; Coastal Scrub; Non-jurisdictional Riparian
Summary Totals	**4,714.97**	**4,002.61**	

[8] Permanent Impacts and Mitigation required are based on mitigation ratios as follows: CGL, AG, DL at 0.5:1; Broad Leafed Upland Forest and Woodland (Other Woodland) at 1:1; Chaparral at 1:1; Coastal Scrub at 1.5:1; and Non-Jurisdictional Riparian at 1:1.

Table 13
Additional Available Mitigation for Non-jurisdictional Resources

Resource	Acreage	Location
Chaparral	1,217.13	High Country SMA
	0.42	Potrero Village
	72.89	Salt Creek Area
	28.72	Homestead North
	3.86	Valencia Commerce Center
Coastal Scrub	572.29	High Country SMA
	129.62	Salt Creek area
Oak Woodland	*	High Country SMA, Homestead Village North, Homestead Village South, Potrero Village, and Salt Creek area
Other Woodland	304.39	High Country SMA
	0.14	Mission Village
	133.58	Salt Creek area
	55.30	Potrero Village
Total	**2,518.35**	**—**

* Available Oak Woodland acreage is dependent on the amount of oak woodland habitat created at a 1:1 mitigation ratio and/or enhanced at a 2:1 mitigation ratio.

Table 14
RMDP Jurisdictional Waters/Wetlands Impacts

	Santa Clara River and Castaic Creek							Tributary							RMDP TOTAL					
Vegetation Types	*Total Preserved (Acres)*	*Total Impacts (Temp + Perm) (Acres)*	*Temp Impacts (Acres)*	*Temp Impact Mitigation (Acres)*	*Perm Impacts (Acres)*	*Quality*	*Perm Impact Mitigation (Acres)*	*Total Preserved (Acres)*	*Total Impacts (Temp + Perm) (Acres)*	*Temp Impacts (Acres)*	*Temp Impact Mitigation (Acres)*	*Perm Impacts (Acres)*	*Quality*	*Perm Impact Mitigation (Acres)*	*Total Preserved (Acres)*	*Total Impacts (Temp + Perm) (Acres)*	*Temp Impacts (Acres)*	*Temp Impact Mitigation (Acres)*	*Perm Impacts (Acres)*	*Perm Impact Mitigation (Acres)*
Agricultural, Developed, Disturbed	4.75	4.36	3.21	3.21	0.83	Medium	0.83	5.16	9.86	1.30	1.30	3.44	Low	3.44	9.91	14.22	4.51	4.51	9.70	9.69
					0.31	High	0.31					4.29	Medium	4.29						
												0.82	High	0.82						
California Annual Grasslands	6.03	0.00	0.00	0.00	0.00	N/A	0.00	10.13	2.34	0.61	0.61	1.60	Medium	1.60	16.15	2.34	0.61	0.61	1.74	1.74
												0.14	High	0.14						
California Sagebrush and dominated habitats)	2.68	0.29	0.11	0.11	0.01	Medium	0.01	8.54	4.00	0.21	0.21	2.40	Medium	3.60	11.22	4.29	0.32	0.32	3.97	6.74
					0.17	High	0.35					1.39	High	2.78						
Dry Riparian Scrub (Arrowweed, Alluvial, Mulefat scrub)*	30.47	9.67	3.44	3.44	6.20	Medium	9.30	15.77	4.61	3.90	3.90	0.56	Medium	0.83	46.24	14.28	7.34	7.34	6.94	10.49
					0.03	High	0.06					0.15	High	0.30						
Herbaceous Wetland	3.12	0.00	0.00	0.00	0.00	N/A	0.00	0.02	0.02	0.01	0.01	0.01	Medium	0.01	3.14	0.02	0.01	0.01	0.02	0.02
												0.00	High	0.01						
Cismontane Alkaline Marsh/Freshwater Marsh	0.00	0.00	0.00	0.00	0.00	N/A	0.00	16.75	2.34	1.74	1.74	0.06	Medium	0.09	16.75	2.34	1.74	1.74	0.60	1.17
												0.54	High	1.08						
Mature Riparian Forest (Cottonwood/Coast Live Oak)	396.76	25.46	17.28	17.28	0.57	Medium	1.72	6.92	4.31	1.45	1.45	0.01	Low	0.02	403.67	29.77	18.73	18.73	11.04	41.46
					7.61	High	30.44					2.11	Medium	6.33						
												0.74	High	2.95						
Oak Forest (Coast Live, Valley, Mixed, Oak Grassland)	1.41	0.00	0.00	0.00	0.00	N/A	0.00	34.08	5.20	1.37	1.37	2.51	Medium	6.28	35.49	5.2	1.37	1.37	3.83	10.23
												1.32	High	3.95						
Other Scrub (Coyote Brush, Chaparral, Chamise, Eriodictyon Scrub)	0.19	0.00	0.00	0.00	0.00	N/A	0.00	14.37	3.88	0.27	0.27	0.74	Medium	1.10	14.59	3.88	0.27	0.27	3.61	6.84
												2.87	High	5.74						
Riparian Scrub (Big Sage Scrub, Mexican Elderberry)	47.46	2.15	1.38	1.38	0.67	Medium	1.67	6.56	11.51	2.89	2.89	8.26	Medium	20.64	54.02	13.66	4.27	4.27	9.38	23.68
					0.09	High	0.28					0.36	High	1.09						
River Wash	217.95	7.74	5.82	5.82	1.01	Medium	1.26	16.79	20.00	8.88	8.88	0.65	Low	0.65	234.74	27.74	14.70	14.70	13.04	17.01
					0.92	High	1.38					7.97	Medium	9.96						
												2.50	High	3.76						
Totals	**710.82**	**49.67**	**31.24**	**31.24**	**18.42**	**-**	**47.61**	**135.09**	**68.07**	**22.63**	**22.63**	**45.44**	**-**	**81.46**	**845.92**	**117.74**	**53.87**	**53.87**	**63.87**	**129.07**
Total Mitigation Required:							**78.85**	**Total Mitigation Required:**						**104.09**	**Total Mitigation Required:**					**182.94**
Post-Project Jurisdiction (net of Preserved):							**710.82**	**Post-Project Jurisdiction (net of Preserved):**						**135.09**	**Post-Project Jurisdiction (net of Preserved):**					**845.88**

* Includes TAM (Tamarisk) and GRG (Giant Reed Grass)

Table 15
Valencia Commerce Center and Entrada South Jurisdictional Waters/Wetlands Impacts

	Valencia Commerce Center – Santa Clara River and Castaic Creek							Entrada South – Tributary						
Vegetation Types	*Total Preserved (Acres)*	*Total Impacts (Temp + Perm) (Acres)*	*Temp Impacts (Acres)*	*Temp Impact Mitigation (Acres)*	*Perm Impacts (Acres)*	*Quality*	*Perm Impact Mitigation (Acres)*	*Total Preserved (Acres)*	*Total Impacts (Temp + Perm) (Acres)*	*Temp Impacts (Acres)*	*Temp Impact Mitigation (Acres)*	*Perm Impacts (Acres)*	*Quality*	*Perm Impact Mitigation (Acres)*
Agricultural, Developed, Disturbed	2.41	2.49	0.00	0.00	2.49	Medium	2.49	0.00	0.31	0.00	0.00	0.31	Medium	0.31
California Annual Grasslands	0.84	1.13	0.00	0.00	1.13	Medium	1.13	0.00	1.31	0.00	0.00	1.31	Medium	1.31
California Sagebrush and dominated habitats)	0.27	0.73	0.00	0.00	0.73	Medium	1.09	0.00	0.75	0.00	0.00	0.75	Medium	1.12
Dry Riparian Scrub (Arrowweed, Alluvial, Mulefat scrub)*	4.63	1.77	0.00	0.00	1.77	Medium	2.66	0.00	0.00	0.00	0.00	0.00	N/A	0.00
Herbaceous Wetland	0.00	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00	0.00	N/A	0.00
Cismontane Alkaline Marsh/Freshwater Marsh	0.00	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00	0.00	N/A	0.00
Mature Riparian Forest (Cottonwood/Coast Live Oak)	85.55	3.31	0.00	0.00	3.31	Medium	9.93	0.00	0.00	0.00	0.00	0.00	N/A	0.00
Oak Forest (Coast Live, Valley, Mixed, Oak Grassland)	0.00	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.17	0.00	0.00	0.17	Medium	0.43
Other Scrub (Coyote Brush, Chaparral, Chamise, Eriodictyon Scrub)	0.00	0.00	0.00	0.00	0.00	N/A	0.00	0.00	1.01	0.00	0.00	1.01	Medium	1.51
Riparian Scrub (Big Sage Scrub, Mexican Elderberry)	0.18	0.02	0.00	0.00	0.02	Medium	0.06	0.00	1.08	0.00	0.00	1.08	Medium	2.71
River Wash	30.78	6.76	0.00	0.00	6.76	Medium	8.45	0.00	5.06	0.00	0.00	5.06	Medium	6.32
Totals	**124.66**	**16.21**	**0.00**	**0.00**	**16.21**	**-**	**25.81**	**0.00**	**9.69**	**0.00**	**0.00**	**9.69**	**-**	**13.71**
Total Mitigation Required:							**25.81**	**Total Mitigation Required:**						**13.71**
Post-Project Jurisdiction (net of Preserved):							**124.66**	**Post-Project Jurisdiction (net of Preserved):**						**0.00**

Table 16
Total (RMDP, VCC, and Entrada South) Jurisdictional Waters/Wetlands Impacts

Vegetation Types	RMDP Total					
	Total Preserved	*Total Impacts (Temp + Perm)*	*Temp Impacts*	*Temp Impact Mitigation*	*Perm Impacts*	*Perm Impact Mitigation*
	(Acres)	*(Acres)*	*(Acres)*	*(Acres)*	*(Acres)*	*(Acres)*
Agricultural, Developed, Disturbed	12.32	17.02	4.51	4.51	12.5	12.49
California Annual Grasslands	16.99	4.78	0.61	0.61	4.18	4.18
California Sagebrush and dominated habitats)	11.49	5.77	0.32	0.32	5.45	8.95
Dry Riparian Scrub (Arrowweed, Alluvial, Mulefat scrub)*	50.87	16.05	7.34	7.34	8.71	13.15
Herbaceous Wetland	3.14	0.02	0.01	0.01	0.02	0.02
Cismontane Alkaline Marsh/Freshwater Marsh	16.75	2.34	1.74	1.74	0.60	1.17
Mature Riparian Forest (Cottonwood/Coast Live Oak)	489.22	33.08	18.73	18.73	14.35	51.39
Oak Forest (Coast Live, Valley, Mixed, Oak Grassland)	35.49	5.37	1.37	1.37	4.00	10.66
Other Scrub (Coyote Brush, Chaparral, Chamise, Eriodictyon Scrub)	14.59	4.89	0.27	0.27	4.62	8.35
Riparian Scrub (Big Sage Scrub, Mexican Elderberry, Southern Willow Scrub)	54.20	14.76	4.27	4.27	10.48	26.45
River Wash	265.52	39.56	14.70	14.70	24.86	31.78
Totals	**970.58**	**143.64**	**53.87**	**53.87**	**89.77**	**168.59**
					Total Mitigation Required:	**222.46**
					Post-Project Jurisdiction (net of Preserved):	**970.58**

* Includes TAM (Tamarisk) and GRG (Giant Reed Grass)

Table 17
Locations to Implement Mitigation for Jurisdictional Resources

Resource	Creation Acreage	Enhancement Acreage	Restoration Acreage	Total Acreage	Habitats and Location
Chiquito Canyon	17.17	0.00	11.34	28.51	Various riparian and transitional habitats along the bed and bank of modified Chiquito Canyon Drainage.
Lion Canyon	9.35	0.00	2.41	11.76	Various riparian and transitional habitats along the bed and bank of stabilized Lion Canyon Drainage.
Long Canyon	53.11	0.00	3.46	56.57	Various riparian and transitional habitats along the bed and bank of reconstructed Long Canyon Drainage.
Potrero Canyon	113.23	0.00	41.48	154.71	Various wetland, riparian and transitional habitats along the bed and bank of reconstructed Potrero Canyon Drainage.
San Martinez Grande Canyon	10.48	0.00	2.45	12.93	Various wetland, riparian and transitional habitats along the bed and bank of modified San Martinez Grande Canyon Drainage.
Santa Clara River	123.77	712.91	32.96	869.64	Creation: Various wetland, riparian and transitional habitats along the river bank stabilization and converted agricultural fields. Enhancement: Conversion of non-native vegetated areas of the Santa Clara River corridor to native riparian habitats and exotic / invasive species removal and control.
Total	**327.11**	**712.91**	**94.10**	**1,134.12**	**—**

APPENDIX B

Plant Species Compendium

APPENDIX B
Plant Species Compendium

NONVASCULAR SPECIES

LIVERWORTS

PTILIDIACEAE – NO COMMON NAME

Ptilidium californicum – Pacific fuzz wort

VASCULAR SPECIES

DICOTS

ADOXACEAE – MUSKROOT FAMILY

Sambucus nigra ssp. *caerulea* – blue elderberry

AMARANTHACEAE – AMARANTH FAMILY

* *Amaranthus albus* – prostrate pigweed

* *Amaranthus retroflexus* – redroot amaranth

ANACARDIACEAE – SUMAC OR CASHEW FAMILY

* *Schinus molle* – Peruvian peppertree

* *Schinus terebinthifolius* – Brazilian peppertree

Rhus aromatica – skunkbush sumac

Rhus ovata – sugar sumac

Rhus trilobata var. *simplicifolia* – single-leaved skunkbrush

Toxicodendron diversilobum – Pacific poison oak

APIACEAE – CARROT FAMILY

Apiastrum angustifolium – mock parsley

Bowlesia incana – hoary bowlesia

Daucus pusillus – American wild carrot

Lomatium utriculatum – common lomatium

APOCYNACEAE – DOGBANE FAMILY

Asclepias californica – California milkweed

Asclepias eriocarpa – woollypod milkweed

Asclepias fascicularis – Mexican whorled milkweed

ASTERACEAE – SUNFLOWER FAMILY

* *Arctotheca calendula* – Capeweed

* *Carduus pycnocephalus* ssp. *pycnocephalus* – Italian plumeless thistle

* *Centaurea benedicta* – blessed thistle
* *Centaurea melitensis* – Maltese star-thistle
* *Cotula australis* – Australian waterbuttons
* *Cotula coronopifolia* – common brassbuttons
* *Cynara cardunculus* – cardoon
* *Dimorphotheca sinuata* – glandular Cape marigold
* *Helminthotheca echioides* – bristly oxtongue
* *Hypochaeris glabra* – smooth cat's ear
* *Lactuca serriola* – prickly lettuce
* *Logfia gallica* – narrowleaf cottonrose
* *Matricaria discoidea* – disc mayweed
* *Pseudognaphalium luteoalbum* – Jersey cudweed
* *Senecio vulgaris* – old-man-in-the-Spring
* *Silybum marianum* – blessed milkthistle
* *Sonchus asper* ssp. *asper* – spiny sowthistle
* *Sonchus oleraceus* – common sowthistle
Acourtia microcephala – sacapellote
Ambrosia acanthicarpa – flatspine bur ragweed
Ambrosia confertiflora – weakleaf bur ragweed
Ambrosia psilostachya – Cuman ragweed
Artemisia californica – coastal sagebrush
Artemisia douglasiana – Douglas' sagewort
Artemisia dracunculus – tarragon
Artemisia tridentata – big sagebrush
Baccharis pilularis – coyotebrush
Baccharis sarothroides – desertbroom
Brickellia knappiana – Knapp brickellbush
Brickellia nevinii – Nevin's brickellbush
Chaenactis glabriuscula – yellow pincushion
Cirsium occidentale var. *californicum* – cobwebby thistle
Cirsium occidentale var. *occidentale* – cobwebby thistle
Corethrogyne filaginifolia var. *linifolia* – Del Mar Mesa sand aster
Corethrogyne filaginifolia – common sandaster
Deinandra fasciculata – clustered tarweed
Encelia actoni – Acton's brittlebush
Encelia californica – California brittlebush
Encelia farinosa – brittlebush
Ericameria linearifolia – narrowleaf goldenbush
Ericameria nauseosa – rubber rabbitbrush

Ericameria palmeri var. *pachylepis* – Palmer's rabbitbrush
Erigeron canadensis – Canadian horseweed
Erigeron foliosus – leafy fleabane
Eriophyllum confertiflorum – golden-yarrow
Euthamia occidentalis – western goldentop
Hazardia squarrosa var. *grindelioides* – sawtooth bristleweed
Helianthus annuus – common sunflower
Heterotheca grandiflora – telegraphweed
Heterotheca sessiliflora – sessileflower false goldenaster
Isocoma menziesii – Menzies' goldenbush
Laennecia coulteri – Coulter's horseweed
Lasthenia californica – California goldfields
Lasthenia glabrata ssp. *coulteri* – Coulter's goldfields
Layia platyglossa – coastal tidytips
Lepidospartum squamatum – California broomsage
Leptosyne bigelovii – Bigelow's tickseed
Lessingia glandulifera – valley lessingia
Logfia filaginoides – California cottonrose
Madia gracilis – grassy tarweed
Malacothrix saxatilis var. *commutata* – cliff desertdandelion
Malacothrix saxatilis var. *tenuifolia* – cliff desertdandelion
Osmadenia tenella – false rosinweed
Pluchea sericea – arrowweed
Pseudognaphalium californicum – ladies' tobacco
Pseudognaphalium canescens – Wright's cudweed
Pseudognaphalium stramineum – cottonbatting plant
Rafinesquia californica – California plumeseed
Senecio californicus – California ragwort
Senecio flaccidus var. *douglasii* – Douglas' ragwort
Stebbinsoseris heterocarpa – grassland silverpuffs
Stephanomeria exigua – small wirelettuce
Stephanomeria pauciflora – brownplume wirelettuce
Stephanomeria virgata – rod wirelettuce
Stylocline gnaphaloides – mountain neststraw
Tetradymia comosa – hairy horsebrush
Uropappus lindleyi – Lindley's silverpuffs
Xanthium spinosum – spiny cocklebur
Xanthium strumarium – rough cocklebur
Baccharis salicifolia ssp. *salicifolia* – mulefat

BORAGINACEAE – BORAGE FAMILY

Amsinckia intermedia – common fiddleneck
Amsinckia menziesii – Menzies' fiddleneck
Amsinckia tessellata var. *tessellata* – bristly fiddleneck
Cryptantha sp. – forget-me-not
Cryptantha intermedia – Clearwater cryptantha
Cryptantha micrantha – redroot cryptantha
Cryptantha microstachys – Tejon cryptantha
Cryptantha muricata – pointed cryptantha
Cryptantha nevadensis – Nevada cryptantha
Emmenanthe penduliflora – whisperingbells
Eriodictyon crassifolium var. *nigrescens* – thickleaf yerba santa
Eucrypta chrysanthemifolia – spotted hideseed
Heliotropium curassavicum var. *oculatum* – seaside heliotrope
Pectocarya linearis ssp. *ferocula* – sagebrush combseed
Pectocarya penicillata – sleeping combseed
Pectocarya setosa – moth combseed
Phacelia cicutaria – caterpillar phacelia
Phacelia distans – distant phacelia
Phacelia imbricata – imbricate phacelia
Phacelia minor – wild canterbury bells
Phacelia ramosissima – branching phacelia
Phacelia tanacetifolia – lacy phacelia
Plagiobothrys sp. – popcorn flower
Plagiobothrys arizonicus – Arizona popcornflower
Plagiobothrys canescens – valley popcornflower
Plagiobothrys collinus – Cooper's popcornflower
Plagiobothrys fulvus var. *campestris* – fulvous popcornflower
Plagiobothrys nothofulvus – rusty popcornflower

BRASSICACEAE – MUSTARD FAMILY

* *Brassica nigra* – black mustard
* *Capsella bursa-pastoris* – shepherd's purse
* *Hirschfeldia incana* – shortpod mustard
* *Lepidium chalepense* – lenspod whitetop
* *Raphanus sativus* – cultivated radish
* *Sisymbrium irio* – London rocket
* *Sisymbrium orientale* – Indian hedgemustard
Erysimum capitatum var. *capitatum* – sanddune wallflower

Lepidium virginicum – Virginia pepperweed
Nasturtium officinale – watercress
Thysanocarpus curvipes – sand fringepod
Thysanocarpus laciniatus – mountain fringepod
Tropidocarpum gracile – dobie pod

CACTACEAE – CACTUS FAMILY

* *Opuntia ficus-indica* – Barbary fig
Cylindropuntia californica – California cholla
Opuntia ×vaseyi – Vasey's coastal pricklypear
Opuntia basilaris var. *basilaris* – beavertail pricklypear
Opuntia californica var. *californica* – snake cholla
Opuntia littoralis – coastal pricklypear

CAPRIFOLIACEAE – HONEYSUCKLE FAMILY

Lonicera subspicata – southern honeysuckle

CARYOPHYLLACEAE – PINK FAMILY

Chenopodium sp. – chenopod
* *Silene gallica* – common catchfly
Spergularia sp. – sand-spurrey
* *Spergularia rubra* – red sandspurry
* *Stellaria media* – common chickweed
Loeflingia squarrosa var. *artemisiarum* – sagebrush loeflingia

CHENOPODIACEAE – GOOSEFOOT FAMILY

* *Atriplex micrantha* – twoscale saltbush
* *Atriplex rosea* – tumbling saltweed
* *Atriplex semibaccata* – Australian saltbush
* *Atriplex suberecta* – peregrine saltbush
* *Bassia hyssopifolia* – fivehorn smotherweed
* *Chenopodium murale* – nettleleaf goosefoot
* *Dysphania ambrosioides* – Mexican tea
* *Salsola tragus* – prickly Russian thistle
Atriplex canescens – fourwing saltbush
Atriplex lentiformis – big saltbush
Atriplex serenana – bractscale
Chenopodium berlandieri – pitseed goosefoot
Chenopodium californicum – California goosefoot

CLEOMACEAE – CLEOME FAMILY

Peritoma arborea – bladderpod spiderflower

CONVOLVULACEAE – MORNING-GLORY FAMILY

* *Convolvulus arvensis* – field bindweed
Calystegia macrostegia ssp. *cyclostegia* – island false bindweed
Calystegia peirsonii – Peirson's morning-glory
Cuscuta californica – chaparral dodder

CRASSULACEAE – STONECROP FAMILY

Crassula connata – sand pygmyweed
Dudleya lanceolata – lanceleaf liveforever

CUCURBITACEAE – GOURD FAMILY

Cucurbita foetidissima – Missouri gourd
Marah horrida – Sierra manroot
Marah macrocarpa – Cucamonga manroot

EUPHORBIACEAE – SPURGE FAMILY

Chamaesyce albomarginata – whitemargin sandmat
Chamaesyce polycarpa – smallseed sandmat
Croton californicus – California croton
Croton setigerus – dove weed
Stillingia linearifolia – queen's-root

FABACEAE – LEGUME FAMILY

* *Medicago polymorpha* – burclover
* *Melilotus albus* – yellow sweetclover
* *Melilotus indicus* – annual yellow sweetclover
* *Robinia pseudoacacia* – black locust
* *Trifolium hirtum* – rose clover
* *Vicia villosa* – winter vetch
Acmispon americanus var. *americanus* – American bird's-foot trefoil
Acmispon brachycarpus – foothill deervetch
Acmispon glaber – common deerweed
Acmispon maritimus – coastal bird's-foot trefoil
Acmispon micranthus – San Diego bird's-foot trefoil
Acmispon strigosus – strigose bird's-foot trefoil
Acmispon wrangelianus – Chilean bird's-foot trefoil
Astragalus didymocarpus – dwarf white milkvetch

Astragalus gambelianus – Gambel's dwarf milkvetch
Astragalus trichopodus var. *phoxus* – Santa Barbara milkvetch
Lupinus bicolor – miniature lupine
Lupinus excubitus var. *hallii* – Hall's bush lupine
Lupinus formosus var. *formosus* – summer lupine
Lupinus hirsutissimus – stinging annual lupine
Lupinus microcarpus var. *densiflorus* – whitewhorl lupine
Lupinus microcarpus – valley lupine
Lupinus sparsiflorus – Coulter's lupine
Lupinus succulentus – hollowleaf annual lupine
Lupinus truncatus – collared annual lupine
Trifolium sp. – clover
Trifolium albopurpureum – rancheria clover
Trifolium ciliolatum – foothill clover
Trifolium gracilentum – pinpoint clover

TRIFOLIUM WILLDENOVII – TOMCAT CLOVERFAGACEAE – OAK FAMILY

* *Quercus ilex* – holly oak
Quercus agrifolia – coast live oak
Quercus berberidifolia – scrub oak
Quercus douglasii – blue oak
Quercus john-tuckeri – Tucker oak
Quercus lobata – valley oak

GERANIACEAE – GERANIUM FAMILY

* *Erodium botrys* – longbeak stork's bill
* *Erodium cicutarium* – redstem stork's bill
* *Erodium moschatum* – musky stork's bill

GROSSULARIACEAE – GOOSEBERRY FAMILY

Ribes aureum – golden currant

JUGLANDACEAE – WALNUT FAMILY

Juglans californica – Southern California black walnut

LAMIACEAE – MINT FAMILY

* *Marrubium vulgare* – horehound
Salvia apiana – white sage
Salvia columbariae – chia
Salvia leucophylla – San Luis purple sage

Salvia mellifera – black sage
Trichostema lanceolatum – vinegarweed

MALVACEAE – MALLOW FAMILY
* *Malva parviflora* – cheeseweed mallow
Malacothamnus fasciculatus – Mendocino bushmallow

MONTIACEAE – MONTIA FAMILY
Calandrinia ciliata – fringed redmaids
Claytonia parviflora – streambank springbeauty
Claytonia perfoliata – miner's lettuce

NYCTAGINACEAE – FOUR O'CLOCK FAMILY
Mirabilis laevis var. *crassifolia* – California four o'clock

OLEACEAE – OLIVE FAMILY
* *Ligustrum lucidum* – glossy privet

ONAGRACEAE – EVENING PRIMROSE FAMILY
Camissoniopsis bistorta – southern suncup
Camissoniopsis hirtella – Santa Cruz Island suncup
Camissoniopsis micrantha – miniature suncup
Camissoniopsis robusta – robust suncup
Clarkia purpurea – winecup clarkia
Clarkia speciosa – redspot clarkia
Clarkia unguiculata – elegant clarkia
Epilobium brachycarpum – tall annual willowherb
Epilobium canum – hummingbird trumpet
Eremothera boothii ssp. *decorticans* – shredding suncup
Eulobus californicus – California suncup

OROBANCHACEAE – BROOM-RAPE FAMILY
Castilleja exserta – exserted Indian paintbrush
Castilleja foliolosa – Texas Indian paintbrush

PAEONIACEAE – PEONY FAMILY
Paeonia californica – California peony

PAPAVERACEAE – POPPY FAMILY
Eschscholzia californica – California poppy
Platystemon californicus – creamcups

PHRYMACEAE – LOPSEED FAMILY

Mimulus aurantiacus – orange bush monkeyflower

PLANTAGINACEAE – PLANTAIN FAMILY

* *Plantago lanceolata* – narrowleaf plantain
* *Plantago major* – common plantain
* *Veronica anagallis-aquatica* – water speedwell
Keckiella cordifolia – heartleaf keckiella
Penstemon centranthifolius – scarlet bugler
Plantago erecta – dotseed plantain
Plantago ovata – desert Indianwheat

POLEMONIACEAE – PHLOX FAMILY

Eriastrum densifolium ssp. *densifolium* – giant woollystar
Eriastrum densifolium ssp. *elongatum* – giant woollystar
Eriastrum sapphirinum – sapphire woollystar
Gilia angelensis – chaparral gilia
Gilia capitata – bluehead gilia
Leptosiphon androsaceus – false babystars
Leptosiphon liniflorus – narrowflower flaxflower
Leptosiphon parviflorus – variable linanthus
Linanthus californicus – California prickly phlox
Navarretia atractyloides – hollyleaf pincushionplant

POLYGONACEAE – BUCKWHEAT FAMILY

* *Polygonum aviculare* ssp. *depressum* – prostrate knotweed
* *Rumex crispus* – curly dock
Chorizanthe parryi var. *fernandina* – San Fernando Valley spineflower
Chorizanthe staticoides – turkish rugging
Eriogonum elongatum var. *elongatum* – longstem buckwheat
Eriogonum evanidum – vanishing wild buckwheat
Eriogonum fasciculatum var. *foliolosum* – Eastern Mojave buckwheat
Eriogonum gracile var. *gracile* – slender woolly buckwheat
Eriogonum viridescens – twotooth buckwheat
Lastarriaea coriacea – leather spineflower
Pterostegia drymarioides – woodland pterostegia
Rumex hymenosepalus – canaigre dock

PORTULACACEAE – PURSLANE FAMILY

* *Portulaca oleracea* – little hogweed

RANUNCULACEAE – BUTTERCUP FAMILY

Clematis lasiantha – pipestem clematis
Clematis ligusticifolia – western white clematis
Delphinium parryi ssp. *parryi* – San Bernardino larkspur

RHAMNACEAE – BUCKTHORN FAMILY

Ceanothus crassifolius – hoaryleaf ceanothus
Rhamnus crocea – redberry buckthorn
Rhamnus ilicifolia – hollyleaf redberry

ROSACEAE – ROSE FAMILY

Adenostoma fasciculatum – chamise
Cercocarpus betuloides var. *betuloides* – birchleaf mountain mahogany
Cercocarpus betuloides var. *blancheae* – island mountain-mahogany
Fragaria sp. – strawberry
Heteromeles arbutifolia – toyon
Prunus ilicifolia ssp. *ilicifolia* – hollyleaf cherry

RUBIACEAE – MADDER FAMILY

Galium angustifolium – narrowleaf bedstraw
Galium aparine – stickywilly
Galium porrigens – graceful bedstraw

SALICACEAE – WILLOW FAMILY

Populus fremontii ssp. *fremontii* – Fremont cottonwood
Salix exigua – narrowleaf willow
Salix laevigata – red willow
Salix lasiolepis – arroyo willow

SAURURACEAE – LIZARD'S-TAIL FAMILY

Anemopsis californica – yerba mansa

SOLANACEAE – NIGHTSHADE FAMILY

* *Nicotiana glauca* – tree tobacco
Datura wrightii – sacred thorn-apple
Solanum americanum – American black nightshade
Solanum parishii – Parish's nightshade
Solanum xanti – chaparral nightshade

TAMARICACEAE – TAMARISK FAMILY

* *Tamarix ramosissima* – saltcedar

URTICACEAE – NETTLE FAMILY

* *Urtica urens* – dwarf nettle

VIOLACEAE – VIOLET FAMILY

Viola pedunculata – Johnny-jump-up

VITACEAE – GRAPE FAMILY

* *Parthenocissus inserta* – woodbine

ZYGOPHYLLACEAE – CALTROP FAMILY

* *Tribulus terrestris* – puncturevine

FERNS AND FERN ALLIES

PTERIDACEAE – BRAKE FAMILY

Pellaea andromedifolia – coffee cliffbrake
Pentagramma triangularis – goldback fern

GYMNOSPERMS AND GNETOPHYTES

CUPRESSACEAE – CYPRESS FAMILY

Cupressus sp. – cypress
Juniperus californica – California juniper

MONOCOTS

AGAVACEAE – AGAVE FAMILY

Chlorogalum pomeridianum – wavyleaf soap plant
Hesperoyucca whipplei – chaparral yucca
Yucca schidigera – Mojave yucca

CYPERACEAE – SEDGE FAMILY

Cyperus esculentus – yellow nutsedge

LILIACEAE – LILY FAMILY

Calochortus catalinae – Catalina mariposa lily
Calochortus clavatus var. *gracilis* – slender mariposa lily
Calochortus plummerae – Plummer's mariposa lily
Calochortus venustus – butterfly mariposa lily

PINEACEAE – PINE FAMILY

* *Pinus halepensis* – Allepo pine
Pinus sp.– pine

POACEAE – GRASS FAMILY

* *Avena barbata* – slender oat
* *Avena fatua* – wild oat
* *Avena sativa* – common oat
* *Bromus catharticus* – rescuegrass
* *Bromus diandrus* – ripgut brome
* *Bromus hordeaceus* – soft brome
* *Bromus madritensis* ssp. *rubens* – red brome
* *Bromus sterilis* – poverty brome
* *Bromus tectorum* – cheatgrass
* *Cynodon dactylon* – Bermudagrass
* *Festuca myuros* – rat-tail fescue
* *Hordeum murinum* – mouse barley
* *Hordeum vulgare* – common barley
* *Lamarckia aurea* – goldentop grass
* *Polypogon interruptus* – ditch rabbitsfoot grass
* *Polypogon monspeliensis* – annual rabbitsfoot grass
* *Schismus barbatus* – common Mediterranean grass
* *Stipa miliacea* var. *miliacea* – smilograss
* *Triticum aestivum* – common wheat
Bromus arizonicus – Arizona brome
Distichlis spicata – saltgrass
Elymus elymoides – squirreltail
Elymus glaucus – blue wildrye
Elymus triticoides – beardless wildrye
Festuca microstachys – desert fescue
Hordeum brachyantherum – meadow barley
Leptochloa fusca ssp. *uninervia* – Mexican sprangletop
Melica imperfecta – smallflower melicgrass
Poa secunda – Sandberg bluegrass
Stipa cernua – nodding needlegrass
Stipa lepida – foothill needlegrass
Stipa pulchra – purple needlegrass

THEMIDACEAE – BRODIAEA FAMILY

Bloomeria crocea – common goldenstar
Brodiaea terrestris ssp. *kernensis* – Kern brodiaea
Dichelostemma capitatum – bluedicks
Muilla maritima – sea muilla

TYPHACEAE – CATTAIL FAMILY

Typha latifolia – broadleaf cattail

* signifies introduced (non-native) species

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APPENDIX C

Wildlife Species Compendium

APPENDIX C
Wildlife Species Compendium

VERTEBRATES

AMPHIBIANS

TRUE TOADS

Anaxyrus boreas – Western toad

BIRDS

BLACKBIRDS, ORIOLES AND ALLIES

Agelaius phoeniceus – Red-winged blackbird
Euphagus cyanocephalus – Brewer's blackbird
Icterus bullockii – Bullock's oriole
Icterus cucullatus – Hooded oriole
* *Molothrus ater* – Brown-headed cowbird
Sturnella neglecta – Western meadowlark

BUSHTITS

Psaltriparus minimus – Bushtit

CARDINALS, GROSBEAKS AND ALLIES

Passerina amoena – Lazuli bunting
Pheucticus melanocephalus – Black-headed grosbeak
Piranga ludoviciana – Western tanager

EMBERIZINES

Aimophila ruficeps canescens – Southern California rufous-crowned sparrow
Amphispiza belli – Sage sparrow
Amphispiza bilineata – Black-throated sparrow
Chondestes grammacus – Lark sparrow
Melozone crissalis – California towhee
Melospiza melodia – Song sparrow
Pipilo maculatus – Spotted towhee
Spizella atrogularis – Black-chinned sparrow
Zonotrichia leucophrys – White-crowned sparrow

FALCONS

Falco peregrinus anatum – American peregrine falcon
Falco sparverius – American kestrel

FINCHES

Carpodacus mexicanus – House finch
Spinus psaltria – Lesser goldfinch
Spinus tristis – American goldfinch
Spinus lawrencei – Lawrence's goldfinch

FLYCATCHERS

Empidonax oberholseri – Dusky flycatcher
Myiarchus cinerascens – Ash-throated flycatcher
Sayornis nigricans – Black phoebe
Sayornis saya – Say's phoebe
Tyrannus verticalis – Western kingbird
Tyrannus vociferans – Cassin's kingbird

HAWKS, KITES, EAGLES AND ALLIES

Buteo jamaicensis – Red-tailed hawk
Buteo lineatus – Red-shouldered hawk
Circus cyaneus – Northern harrier
Elanus leucurus – White-tailed kite

HUMMINGBIRDS

Archilochus alexandri – Black-chinned hummingbird
Calypte anna – Anna's hummingbird
Calypte costae – Costa's hummingbird
Selasphorus sasin – Allen's hummingbird

JAYS, MAGPIES AND CROWS

Aphelocoma californica – Western scrub-jay
Corvus brachyrhynchos – American crow
Corvus corax – Common raven

LARKS

Eremophila alpestris – Horned lark

MOCKINGBIRDS AND THRASHERS

Mimus polyglottos – Northern mockingbird
Toxostoma redivivum – California thrasher

NEW WORLD QUAIL

Callipepla californica – California quail

NEW WORLD VULTURES

Cathartes aura – Turkey vulture

OWLS

Tyto alba – Barn owl
Athene cunicularia – Burrowing owl

PIGEONS AND DOVES

* *Columba livia* – Rock pigeon (rock dove)
Zenaida macroura – Mourning dove

ROADRUNNERS AND CUCKOOS

Geococcyx californianus – Greater roadrunner

SHOREBIRDS

Charadrius vociferus – Killdeer

SHRIKES

Lanius ludovicianus – Loggerhead shrike

SILKY FLYCATCHERS

Phainopepla nitens – Phainopepla

STARLINGS AND ALLIES

* *Sturnus vulgaris* – European starling

SWALLOWS

Hirundo rustica – Barn swallow
Petrochelidon pyrrhonota – Cliff swallow
Stelgidopteryx serripennis – Northern rough-winged swallow
Tachycineta thalassina – Violet-green swallow

SWIFTS

Aeronautes saxatalis – White-throated swift
Chaetura vauxi – Vaux's swift

THRUSHES

Sialia mexicana – Western bluebird
Turdus migratorius – American robin

TITMICE

Baeolophus inornatus – Oak titmouse

DUCKS, GEESE, AND SWANS

Branta canadensis – Canada goose

WOOD-WARBLERS AND ALLIES

Cardellina pusilla – Wilson's warbler
Geothlypis trichas – Common yellowthroat
Setophaga coronata – Yellow-rumped warbler

WOODPECKERS

Colaptes auratus – Northern flicker
Melanerpes formicivorus – Acorn woodpecker
Picoides nuttallii – Nuttall's woodpecker

WRENS

Catherpes mexicanus – Canyon wren
Thryomanes bewickii – Bewick's wren
Troglodytes aedon – House wren

WRENTITS

Chamaea fasciata – Wrentit

MAMMALS

BATS

Eumops perotis californicus – Greater bonnetted bat
Eptesicus fuscus – Big brown bat
Lasiurus blossevillii – Western red bat
Lasiurus cinereus – Hoary bat
Myotis californicus – Californian myotis
Myotis melanorhinus – dark-nosed small-footed myotis
Myotis yumanensis – Yuma myotis
Nyctinomops femorosaccus – Pocketed free-tailed bat
Parastrellus hesperus – canyon bat
Tadarida brasiliensis – Brazilian free-tailed bat

CANIDS

Canis latrans – Coyote
Urocyon cinereoargenteus – Gray fox

CATS

Lynx rufus – bobcat
Puma concolor – mountain lion

DOMESTIC

* *Canis lupus familiaris* – Domestic dog

HARES AND RABBITS

Sylvilagus audubonii – Desert cottontail
Sylvilagus bachmani – Brush rabbit

RATS AND MICE

Neotoma sp. – woodrat

MUSTELIDS

Mephitis mephitis – Striped skunk
Mustela frenata – Long-tailed weasel

POCKET GOPHERS

Thomomys bottae – Botta's pocket gopher

RACCOONS

Procyon lotor – Raccoon

SQUIRRELS

Sciurus griseus – Western gray squirrel
Spermophilus (Otospermophilus) beecheyi – California ground squirrel

UNGULATES

Odocoileus hemionus – Mule deer

REPTILES

LIZARDS

Sceloporus occidentalis – Western fence lizard
Uta stansburiana – Common side-blotched lizard

SNAKES

Crotalus oreganus – Western rattlesnake
Pituophis catenifer – Gophersnake

INVERTEBRATES

BUTTERFLIES

Agathymus stephensi – California giant-skipper
Anthocharis sara sara – Pacific sara orangetip
Apodemia mormo virgulti – Behr's metalmark
Danaus plexippus – Monarch
Glaucopsyche lygdamus australis – Southern blue
Nymphalis californica – California tortoiseshell
Papilio rutulus – Western tiger swallowtail
Papilio zelicaon – Anise swallowtail
Pieris rapae – Cabbage white
Plebejus acmon – Acmon blue
Vanessa cardui – Painted lady

MOTHS

Euproserpinus euterpe – Kern primrose sphinx moth

* signifies introduced (non-native) species

APPENDIX D

Oak Resources Management Plan

DRAFT

OAK RESOURCE MANAGEMENT PLAN FOR THE RESOURCE MANAGEMENT AND DEVELOPMENT PLAN AND SPINEFLOWER CONSERVATION PLAN, INCLUDING THE NEWHALL RANCH SPECIFIC PLAN, ENTRADA SOUTH, AND VALENCIA COMMERCE CENTER PLANNING AREAS

Los Angeles County, California

Prepared for:

THE NEWHALL LAND AND FARMING COMPANY
25124 Springfield Court, 3rd Floor
Valencia, California 91355
Contact: Sam Rojas

Prepared by:

DUDEK

25152 Springfield Court, Suite 180
Valencia, California 91355
Contact: Scott Eckardt or Andy Thomson
661.705.3399

MARCH 2015

Draft Oak Resources Management Plan for the RMDP/SCP, Including the Newhall Ranch Specific Plan, Entrada South, and Valencia Commerce Center Planning Areas

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ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
Cal-IPC	California Invasive Plan Council
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CLAOTO	County of Los Angeles Oak Tree Ordinance
Corps	U.S. Army Corps of Engineers
dbh	diameter at breast height
EIS/EIR	RMDP-SCP Final Environmental Impact Statement / Environmental Impact Report
GIS	geographic information system
GPS	Global Positioning System
I-5	Interstate 5
ORMP	Oak Resource Management Plan
PVC	polyvinyl chloride
RMDP	Newhall Ranch Resource Management and Development Plan
SCP	Spineflower Conservation Plan
SEA	Significant Ecological Area
SMA	Special Management Area
SR-126	State Route 126
VCC	Valencia Commerce Center
WRP	Water Reclamation Plant

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Draft Oak Resources Management Plan for the RMDP/SCP, Including the Newhall Ranch Specific Plan, Entrada South, and Valencia Commerce Center Planning Areas

SUMMARY

This Oak Resource Management Plan (ORMP) outlines the multi-layered oak resource mitigation approach for the Newhall Ranch Resource Management and Development Plan (RMDP) and the Spineflower Conservation Plan (SCP) area, including the Newhall Ranch Specific Plan (Specific Plan), Entrada South, and Valencia Commerce Center (VCC) planning areas (hereafter referred to as the RMDP/SCP area). To prepare the ORMP, Dudek evaluated available oak tree and oak woodland information, conducted site assessments and analyses, and developed an oak tree and oak woodland mitigation framework to cohesively satisfy multiple agency requirements. Substantial portions of the RMDP/SCP area include oak trees (*Quercus* spp.) or oak woodlands. A percentage of these trees and woodlands would be impacted by proposed development, while the majority of the oak resources on the Newhall Ranch are not within planned development areas and will be preserved. The work completed during preparation of this ORMP includes the following:

- Establishing oak resource baseline information
- Determining/confirming tree impact levels within the RMDP/SCP area, in total and by individual project
- Determining/confirming woodland impact levels within the RMDP/SCP area, in total and by individual project
- Analyzing mitigation requirements according to the County of Los Angeles Oak Tree Ordinance (CLAOTO), the Specific Plan, the RMDP/SCP Final Environmental Impact Statement / Environmental Impact Report (EIS/EIR), and California Public Resources Code Section 21083.4
- Developing an oak resource mitigation program that satisfies multiple agency requirements while considering the suitability of planting areas, the feasibility of required maintenance and monitoring, and other Newhall Ranch habitat mitigation needs.

Site-specific oak tree reports required by CLAOTO, inclusive of mitigation, have been or are in the process of being prepared for the planned villages within the RMDP/SCP area. These oak tree reports meet the County of Los Angeles's (County's) requirements for oak tree mitigation and have been considered in the preparation of this ORMP. This ORMP summarizes the current status of oak-related information for the RMDP/SCP area and provides a comprehensive plan for coordinating mitigation efforts and requirements so that appropriate tree planting and creation or enhancement of oak woodlands is completed in proportion to the impacts and implemented in a sustainable manner.

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Draft Oak Resources Management Plan for the RMDP/SCP, Including the Newhall Ranch Specific Plan, Entrada South, and Valencia Commerce Center Planning Areas

1 INTRODUCTION

This Oak Resources Management Plan (ORMP) addresses oak tree and oak woodland resource impacts and mitigation for the Newhall Ranch Resource Management and Development Plan (RMDP) and Spineflower Conservation Plan (SCP) study area, including the Newhall Ranch Specific Plan (Specific Plan), Entrada South, and Valencia Commerce Center (VCC) planning areas (RMDP/SCP area). The purpose of the ORMP is to detail project goals and guidelines for mitigating impacts to oak resources through (1) enhancing existing oak woodlands through resource management, including planting and weed control; (2) establishing new oak woodlands in suitable areas that have been previously disturbed; (3) replacing oak trees as a component of habitat restoration in temporarily impacted areas that supported oak trees and oak woodlands prior to development; and (4) planting oak trees in open space to mitigate individual oak tree impacts in accordance with the County of Los Angeles Oak Tree Ordinance (CLAOTO).

The Newhall Ranch RMDP is a conservation, mitigation, and permitting plan for the long-term management of sensitive biological resources within the 11,999-acre Specific Plan area (Specific Plan area) located in northern Los Angeles County (Figure 1). The Specific Plan was approved by the County of Los Angeles (County) in May 2003 (County of Los Angeles 2003), and subsequent development plans; subdivision maps; and federal and state permitting, consultations, and agreements will be required to implement build-out of the Specific Plan area, which is projected to occur over the next 20 to 25 years. The SCP is a conservation and management plan to permanently protect and manage a system of preserves designed to maximize the long-term persistence of the San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) (spineflower) within the Specific Plan area, VCC planning area, and Entrada South planning area.

The RMDP is proposed in conjunction with the SCP to create a combined RMDP/SCP project. The RMDP/SCP boundaries extend beyond the Specific Plan area and include all or portions of the following additional project areas: Entrada South, VCC, and some off-site improvement areas. Because the infrastructure components of the RMDP would facilitate development of the Specific Plan and Entrada South (i.e., Magic Mountain Parkway extension), and because such development would result in impacts to the spineflower, thus necessitating an Incidental Take Permit and SCP, the U.S. Army Corps of Engineers (Corps) and California Department of Fish and Game (CDFG; now California Department of Fish and Wildlife (CDFW)) elected to prepare a comprehensive Environmental Impact Statement / Environmental Impact Report

(EIS/EIR).[1] In addition to addressing impacts to the spineflower, the RMDP/SCP Final EIS/EIR addresses impacts to oak trees and oak woodlands and identifies measures to mitigate such impacts, which are identified and presented in this ORMP.

1.1 ORMP Study Area

The study area (14,600 acres), for the purposes of this ORMP, includes the following tract maps: Landmark Village, Mission Village, Homestead South, Homestead North, Potrero Village, Entrada South, and VCC, as well as three areas outside tract map boundaries: High Country Special Management Area (SMA), Salt Creek SMA, and the Water Reclamation Plant (WRP)–Utility Corridor. The land use designations within the study area include residential, industrial, mixed-use, parks and recreation, public facilities, preserved area, SMA/Significant Ecological Area (SEA), and natural Open Area. The RMDP identifies numerous infrastructure facilities related to the development of these land uses (e.g., bridges, drainage improvements, viewing platforms, and debris and water quality basins) and provides an evaluation of the management of resources in the context of this infrastructure development. Resource management occurs through a design development process that seeks to avoid and minimize impacts, and through the implementation of mitigation that offsets unavoidable significant impacts both during and after construction of project components.

The ORMP study area lies roughly 0.5 mile west of Interstate 5 (I-5) and largely southwest of the junction of I-5 and State Route 126 (SR-126). Site elevations range from 825 feet above mean sea level (amsl) in the Santa Clara River bottom at the Ventura County / Los Angeles County line to approximately 3,200 feet amsl on the ridgeline of the Santa Susana Mountains along the ORMP study area's southern boundary (Figure 2). The study area is located to the north and south of SR-126, from Homestead Canyon in the northwest to I-5, and from Chiquito Canyon to the north to the canyons of the High Country Special Management Area (SMA) in the extreme south.

[1] The EIR portion of the EIS/EIR and Newhall Ranch RMDP/SCP project was approved by the CDFG on December 3, 2010. The CDFG also approved the spineflower Incidental Take Permit covering Newhall's landholdings, including the Homestead South site. For its part, the Corps approved the EIS portion of the EIS/EIR and the RMDP/SCP project, pursuant to a Record of Decision for the Least Environmentally Damaging Practical Alternative and other supporting documents, in January 2011. The Record of Decision was signed in August 2011.

DUDEK

FIGURE 1

Regional Map

Draft Oak Resources Management Plan for the RMDP/SCP

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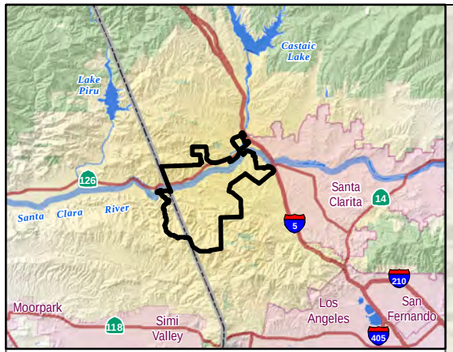

ORMP Study Area Includes:

- Newhall Ranch Specific Plan (Specific Plan)
- Area in addition to Specific Plan within RMDP
- Area in addition to Specific Plan and RMDP within SCP
- VCC Planning Area within ORMP, outside Specific Plan, RMDP, SCP
- CDFW Jurisdictional
- Village Boundary

0 0.5 1 Miles

SOURCE: Bing Maps Aerial, Newhall Alternative 13 LEDPA Development Plan

DUDEK

FIGURE 2
Oak Resources Management Plan (ORMP) Study Area

Draft Oak Resources Management Plan for the RMDP/SCP

\\DUDEK-FILES\GIS\Data\Projects\j738012014_Scopes\MAPPO\OMAPS\22_ORMPFigure 2 ORMP Study Area.mxd- Date Saved: 5/12/2014 5:44:51 PM

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The study area includes sensitive biological areas of the Santa Clara River SMA/SEA and High Country SMA/SEA, Open Area, oak resources, and the Salt Creek area, which is a conservation area that occurs outside the Specific Plan area boundary. The protection of open space in the study area occurs within the tract map boundaries in the form of seven Spineflower Preserves, the Mariposa Lily Reserve, natural open space land use designation, and the Santa Clara River SMA/SEA. The total Open Area protected within the tract map boundaries is 3,770 acres. Outside the tract maps, open space is protected by the High Country SMA/SEA (4,167 acres) and the Salt Creek area (1,518 acres). The total Open Area protected within the study area totals 9,417 acres (Figure 3).

1.2 Supporting Documents

This ORMP includes a comprehensive summary of on-site oak tree and woodland resources along with analysis of anticipated impacts associated with the proposed projects' grading footprints. Determination of total oak tree and woodland impacts from the various projects was completed through analysis of previously collected tree inventory information. Individual oak tree inventories have been completed within the RMDP/SCP area and form the basis for individual oak tree impacts discussed in this ORMP. Additionally, oak woodland habitat mapping for the Newhall Ranch was completed and forms the basis for the oak woodland impact totals discussed in this ORMP. The following documents or data sets were evaluated during the preparation of this ORMP:

- Revised Oak Tree Permit (No. 2005-00043) for the Mission Village Project (VTTM No. 061105), County of Los Angeles, January 27, 2011
- Oak Tree Permit (No. 2005-00032) for the Easterly Terminus of Magic Mountain Parkway, County of Los Angeles, September 16, 2010
- Tree impact assessment for the Homestead South development area (Hunsaker 2013)
- GIS habitat mapping data (Dudek 2013)
- *High Country and Salt Creek Oak Woodland Sampling and Tree Population Estimation* (Dudek 2007a)
- *Newhall Ranch Mitigation Feasibility Study* (Dudek 2007b).

1.3 Summary of Requirements

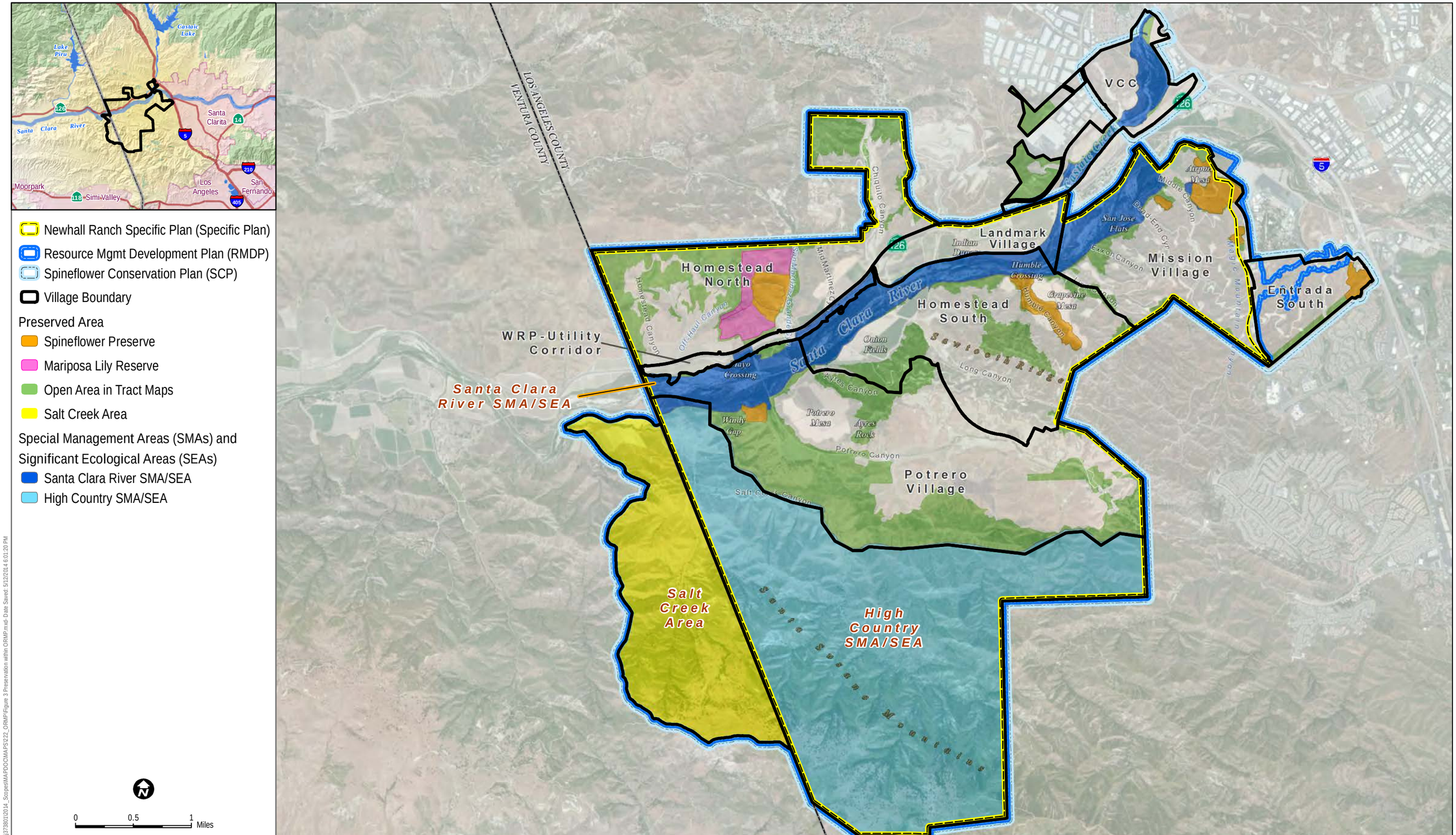
The regulatory requirements that form the basis of this ORMP are derived from three main sources, including the CLAOTO, the Newhall Ranch Specific Plan Program EIR, and the RMDP/SCP EIS/EIR, each of which are described in detail below.

1.3.1 County of Los Angeles Requirements

The CLAOTO (Los Angeles County Code Section 22.56.2050 et seq.) requires that a permittee replace oaks approved for removal at a ratio of at least 2:1 for every impacted tree:

> Required replacement trees shall consist exclusively of indigenous oak trees and shall be in the ratio of at least two to one. Each replacement tree shall be at least a 15-gallon size specimen and measure at least one inch in diameter one foot above the base. The hearing officer, director or commission may, in lieu of this requirement, require the substitution of one larger container specimen for each oak tree to be replaced, where, in its opinion, the substitution is feasible and conditions warrant such greater substitution (Los Angeles County Code, Section 22.56.2180A.6.a).

Additionally, any oaks meeting the criteria for classification as a heritage tree (defined as "any oak tree measuring 36 inches or more in diameter") require replacement at a ratio of 10:1 in accordance with CLAOTO. Replacement trees are required to be maintained for a period of 2 years and replaced if mortality occurs within that period. The CLAOTO also identifies requirements for protection of retained trees adjacent to development activity.



SOURCE: Bing Maps Aerial, Newhall Alternative 13 LEDPA Development Plan

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FIGURE 3
Preservation within ORMP Study Area

Draft Oak Resources Management Plan for the RMDP/SCP

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1.3.2 Newhall Ranch Specific Plan Program EIR Requirements

Mitigation Measure SP-4.6-48 of the certified Newhall Ranch Specific Plan Program EIR (County of Los Angeles 2003) identifies oak resources as including oak trees of the sizes regulated under CLAOTO, southern California black walnut (*Juglans californica* var. *californica*), mainland cherry trees (*Prunus ilicifolia* ssp. *ilicifolia*), and mainland cherry shrubs. This mitigation measure states the following:

> Standards for the restoration and enhancement of oak resources within the High Country SMA and the Open Area include the following (oak resources include oak trees of the sizes regulated under the County Oak Tree Ordinance, southern California black walnut trees, Mainland cherry trees, and Mainland cherry shrubs):
>
> - To mitigate the impacts to oak resources that may be removed as development occurs in the Specific Plan Area, replacement trees shall be planted in conformance with the oak tree ordinance in effect at that time.
> - Oak resource species obtained from the local gene pool shall be used in restoration or enhancement.
> - Prior to recordation of construction level final subdivision maps, an oak resource replacement plan shall be prepared that provides the guidelines for the oak tree planting and/or replanting. The Plan shall be reviewed by the Los Angeles Department of Regional Planning and the County Forester and shall include the following: site selection and preparation, selection of proper species including sizes and planting densities, protection from herbivores, site maintenance, performance standards, remedial actions, and a monitoring program.
> - All plans and specifications shall follow County oak tree guidelines, as specified in the County Oak Tree Ordinance.

1.3.3 RMDP/SCP EIS/EIR Requirements

Mitigation measures in the EIS/EIR are consistent with and supplement those mitigation measures listed in the previously certified Newhall Ranch Specific Plan Program EIR (County of Los Angeles 2003). Additional requirements related to oak tree resources exist, but are met through implementing the requirements and conditions of the CLAOTO and EIS/EIR. Related oak tree resource regulations include California's county oak woodland conversion mitigation provisions (California Public Resources Code, Section 21083.4), which outline mitigation

programs for significant oak impacts as determined by the California Environmental Quality Act (CEQA). The Oak Woodlands Conservation Act provides several mitigation alternatives that can be implemented to mitigate significant impacts on oak woodlands. The comprehensive nature of this ORMP is intended to mitigate impacts to oak resources while maintaining consistency with all aforementioned regulations and requirements.

The following mitigation measures included in the RMDP/SCP EIS/EIR address the mitigation required for impacts to oak resources.

1.3.3.1 Mitigation Measure BIO-22

Mitigation Measure BIO-22 identifies required mitigation of impacts to oak trees and oak woodlands and states the following:

BIO-22a Newhall Land shall prepare an Oak Resource Management Plan, to be submitted for approval to CDFG and County of Los Angeles, and implemented upon approval. The Plan shall identify areas suitable for oak woodland enhancement and creation. The Plan shall distinguish between oaks to be planted in compliance with CLAOTO (BIO-22b) and the additional measures required by this EIS/EIR (BIO-2 for woodlands in jurisdictional streambeds; and BIO-22c and BIO-22d for upland areas).

The Oak Resource Management Plan shall include measures to create or enhance woodlands as follows: (1) locations and acreages of mitigation sites where woodland creation or enhancement will occur; (2) a description of proposed cover and number of native trees, shrubs, and grasses per acre to be established. This description shall be based on comparable intact woodlands in the area of impact or elsewhere within the RMDP planning area, consistent with conditions of the proposed mitigation site; (3) site preparation measures to include (as appropriate) topsoil treatment, soil decompaction, erosion control, weed grow/kill cycle, or as otherwise approved by the agencies; (4) methods for the removal of non-native plants (*e.g.*, mowing, weeding, raking, herbicide application, or burning); (5) a plant palette listing all species, including sizes, planting densities, or seeding rates, to be based on target vegetation; (6) the source of all plant propagules (*e.g.*, seed, potted nursery stock) and the quantity and species of seed or potted stock of all plants to be introduced or planted into the mitigation areas; (7) temporary irrigation, protection from herbivores, fertilizer, weeding, *etc.*; (8) a schedule and action plan to maintain and monitor the enhancement/restoration areas to include,

at minimum, qualitative annual monitoring for revegetation success and site degradation due to erosion, trespass, or animal damage for a period no less than five years total and no less than two years after removal of irrigation (if any); (9) where sites are near trails or other access points, measures such as fencing, signage, or security patrols to exclude unauthorized entry into the mitigation areas shall be implemented as needed; (10) tree protection standards to be implemented for individual trees or woodlands adjacent to development activity; (11) success criteria as stated in BIO-22b and BIO-22d; and (12) contingency measures, such as replanting, erosion control, irrigation system repair, or understory re-seeding, to be implemented if habitat improvement/restoration efforts do not meet the success criteria stated in the plan.

BIO-22b To meet the minimum mitigation criteria set forth in CLAOTO, Newhall Land will replace impacted oaks (measuring 8 inches in diameter, or greater, or with a combined diameter of 12 inches for multi-stem oaks) at a ratio of 2:1. Additionally, oaks meeting the criteria for classification as a Heritage Tree (defined by CLAOTO as "any oak tree measuring 36 inches or more in diameter") will be replaced at a ratio of 10:1.

Whether they are planted in dedicated open space areas or developed areas, replacement oak trees planted in conformance with CLAOTO shall adhere to the following standards:

1. Replacement oak trees shall be exclusively indigenous species, shall be at least a 15-gallon size specimen, and measure at least one inch in diameter one foot above the base, unless otherwise approved by the County Forester.
2. Replacement trees shall be properly cared for and maintained for a period of two years and replaced by Newhall Land if mortality occurs within that period.
3. Replacement planting shall be conducted in phases as impacts occur. Alternatively, Newhall Land may choose to plant replacement trees in open space areas prior to realization of Project-related impacts (pre-mitigation). Any pre-mitigation shall adhere to the standards outlined herein.
4. Following completion of the two-year maintenance period, the County Forester shall provide final authorization that CLAOTO standards have been met.

BIO-22c In addition to the CLAOTO requirements (BIO-22b, above), this EIS/EIR requires replacement of oak trees at the ratios in the table below for trees lost or impacted in uplands. These trees are in addition to the CLAOTO requirement described above. These additional trees may also be incorporated into woodland habitat enhancement or creation, as described above.

Additional replacement ratios are provided in Table 1 [Table 4.5-70 in the EIS/EIR].

Table 1
Additional BIO-22c Oak Tree Replacement Ratios

Trunk Diameter*	Mitigation Ratio
8–35	0.5:1
36+	2.5:1

* Trunk diameter measured at 4.5 feet above mean natural grade. Mitigation required for single-stem oaks with a minimum 8-inch diameter and multi-stem oaks with a combined diameter of 12 inches.

BIO-22d Newhall will mitigate lost oak woodlands occurring on upland sites (i.e., outside CDFG/Corps jurisdictional stream channels) by creating or enhancing oak woodlands in the Salt Creek area and High Country SMA. At minimum, Newhall Land will mitigate woodland habitat at a 1:1 ratio through creation of new oak woodlands. As an alternative, Newhall Land may choose to enhance, improve, and manage existing degraded woodland areas at a minimum 2:1 ratio for lost woodland acreage.

For woodland enhancement or replacement, dominant species (coast live oak or valley oak) and planting densities will be based on mitigation site suitability. All plant propagules, including acorns or tree cuttings and all seed or potted nursery stock of oaks or other species, shall be collected within a five-mile radius and within 1,000 feet elevation of the restoration site.

The woodland creation or enhancement sites shall be monitored for oak tree survival and vigor and other habitat values, including species diversity and wildlife use. The replacement or enhancement sites will be considered "complete" upon meeting all of the following success criteria, or as otherwise approved by CDFG. Any replacement oak trees planted in woodlands for conformance with CLAOTO will also be subject to CLAOTO performance criteria (BIO-22b).

1. Regardless of the date of initial woodland creation or enhancement, each site must have been without active manipulation by irrigation, planting, or re-seeding for a minimum of three years prior to evaluation for successful completion.
2. The percent cover and species richness of restored or enhanced native vegetation shall be evaluated based on target vegetation described in the woodland creation or enhancement plan.
3. Densities (numbers/acre) of surviving, healthy oak shall be within 5% of the plan target density. Cover and species richness of other native shrubs shall reach 50% of the cover and species richness described for the "target" woodland. Optimal woodland densities and acorn planting quantities, by oak woodland type, are presented in Table 2 [Table 4.5-71 in the EIS/EIR].

Table 2
Optimal Woodland Densities and Acorn Planting Quantities, by Oak Woodland Type

Woodland Type	Average Existing Woodland Density (trees per acre)	Target Density for Newhall Land (trees per acre)
Coast live oak woodland	22	50
Mixed oak woodland	19	40
Valley oak woodland	16	25

4. Non-native grass cover shall not exceed the "target" woodland non-native grass cover, and other non-native species shall not exceed 10% cover at any time. Any species listed on the California State Agricultural list (CDFA 2009) or Cal-IPC list of noxious weeds (Cal-IPC 2006, 2007) will not be present on the revegetation site at the time that project success is determined.

1.3.3.2 Mitigation Measure BIO-2

In addition to Mitigation Measure BIO-22, Mitigation Measure BIO-2 from the EIS/EIR requires mitigation for oak habitats that occur within CDFW and Corps jurisdictional boundaries. The relevant portions of Mitigation Measure BIO-2 state the following:

> For permanent and temporary impacts to CDFG jurisdiction, consistent with the sub-notification, quantities of mitigation acreage required shall be calculated in accordance with the criteria below:
>
> - If suitable mitigation sites have met success criteria (BIO-6) prior to disturbance at the impact site, the mitigation sites shall replace the permanently impacted habitats in kind at a 1:1 ratio.
> - If a suitable mitigation site has not met success criteria prior to disturbance of the impact site, habitat shall be replaced in kind (tributary for tributary impacts, river for river impacts) according to the replacement ratios specified in Table 3 [Table 4.5-68 in the EIS/EIR], below. These ratios provide compensatory mitigation for temporal losses of riparian function by considering the existing functional condition of the resources to be impacted, as well as time required for different vegetation types to become established and mature.
> - If a suitable mitigation site has not been initiated within two years following disturbance of the impact site, but is initiated within five years following such disturbance, the permanently impacted habitats shall be replaced in kind at a replacement ratio equal to the ratio required by Table 3 [Table 4.5-68 in the EIS/EIR], below, plus 0.5:1. (For example, if mitigation for impacts to high-quality mulefat scrub were initiated three years after disturbance, the required replacement ratio would be 2.5:1.)
> - If a suitable mitigation site has not been initiated within five years following disturbance of the impact site, the permanently impacted habitats shall be replaced in kind at a replacement ratio equal to the ratio required by Table 3 [Table 4.5-68 in the EIS/EIR], below, plus 1:1. (For example, if mitigation for impacts to high-quality mulefat scrub were initiated six years after disturbance, the required replacement ratio would be 3:1.)

Table 3
CDFG[2] Jurisdictional Permanent Impacts Mitigation Ratios

Ratios Listed by Vegetation Types & Quality				
Vegetation Community	*Veg Code / ID*	*HIGH Reach Value** (Mit. Ratio)*	*MEDIUM Reach Value*** (Mit. Ratio)*	*LOW Reach Value**** (Mit. Ratio)*
Southern Cottonwood–Willow Riparian Forrest	SCWRF	4:1	3:1	2:1
Southern Willow Scrub	SWS	3:1	2.5:1	2:1
Oak Woodland (Coast Live, Valley)	CLOW / VOW	3:1	2.5:1	2:1
Big Sagebrush Scrub	BSS	2.5:1	2:1	1.5:1
Mexican Elderberry Scrub	MES	2.5:1	2:1	1.5:1
Cismontane Alkaline Marsh	CAM	2.5:1	2:1	1.5:1
Coastal and Valley Fresh Water Marsh	CFWM	2:1	1.5:1	1:1
Mulefat Scrub	MFS	2:1	1.5:1	1.25:1
Arrowweed Scrub	AWS	2:1	1.5:1	1:1
California Sagebrush scrub, and CSB-dominated habitats	CSB, CSB-A, -BS, -CB, -CHP, and -PS	2:1	1.5:1	1:1
Herbaceous Wetland	HW	1.5:1	1.25:1	1:1
River Wash, emergent veg.	RW	1.5:1	1.25:1	1:1
Chaparral, Chamise Chaparral	CHP, CC	1.5:1	1.25:1	1:1
Coyote Brush Scrub	CYS	1.5:1	1.25:1	1:1
Eriodictyon Scrub	EDS	1.5:1	1.25:1	1:1
California Grass Lands	CGL	1:1	1:1	1:1
Agricultural / Disturbed / Developed	AGR / DL / DEV	1:1	1:1	1:1

Notes:
* HIGH reach value indicates a portion of the Santa Clara River or main tributary that scored above 0.79 Total Score utilizing the HARC methodology described in Section 4.2, Geomorphology and Riparian Resources, of this EIS/EIR.
** MEDIUM reach value indicates a portion of the Santa Clara River or main tributary that scored between 0.4 and 0.79 Total Score utilizing the HARC methodology described in Section 4.2.
*** LOW reach value indicates a portion of the Santa Clara River or main tributary that scored below 0.4 Total Score utilizing the HARC methodology described in Section 4.2.

[2] Table sourced from RMDP/SCP EIS/EIR; the CDFG (California Department of Fish and Game) is now known as the CDFW (California Department of Fish and Wildlife).

1.3.3.3 Mitigation Measure BIO-42

Mitigation Measure BIO-42 addresses protection of retained oak trees adjacent to development areas and states the following:

> All oaks that will not be removed that are regulated under CLAOTO with driplines within 50 feet of land clearing (including brush clearing) or areas to be graded shall be enclosed in a temporary fenced zone for the duration of the clearing or grading activities. Fencing shall extend to the root protection zone (i.e., the area at least 15 feet from the trunk or five feet beyond the drip line, whichever distance is greater). No parking or storage of equipment, solvents, or chemicals that could adversely affect the trees shall be allowed within 25 feet of the trunk at any time. Removal of the fence shall occur only after the Project arborist or qualified biologist confirms the health of preserved trees.

1.3.3.4 Mitigation Measure BIO-88

Mitigation Measure BIO-88 addresses mitigation for non-oak species, specifically California black walnut and mainland cherry trees or shrubs and states the following:

> Any southern California black walnut and mainland cherry trees or shrubs outside riparian areas greater than one inch dbh shall be replaced in the ratio of at least 2:1. Multi-trunk trees/shrub dbh shall be calculated based on combined trunk dbh. Mitigation shall be deemed complete when each replacement tree attains at least one inch in diameter one foot above the base.

2 SUMMARY OF TREE AND WOODLAND TYPES

2.1 Individual Tree Species

The vast majority of the oaks in the RMDP/SCP area are coast live oak (*Quercus agrifolia*), but valley oak (*Q. lobata*), scrub oak (*Q. berberidifolia)*, interior live oak (*Q. wislizeni*), MacDonald oak (*Q.* × *MacDonaldii*) (a hybrid or evolutionary intermediate between valley oak and scrub oak), and Alvord oak (*Q.* × *alvordiana*) (a hybrid or evolutionary intermediate between blue oak (*Q. douglasii*) and Tucker's oak (*Q. john-tuckeri*)) also occur. The oak species found on site differ from one another by one or more physical characteristics or growing-site preferences. Descriptions of these species follow. Mainland cherry and southern California black walnut are also discussed in this section due to their classification as oak resources under the Specific Plan Program EIR.

2.1.1 Coast Live Oak

Coast live oaks are endemic to California and northern Mexico and occur along the Coast, Transverse, and Peninsular ranges in California, and the Sierra de Juarez and Sierra San Pedro Martir in Mexico, from southern Mendocino County, California, south to Canada El Piquillo, Baja California (Minnich 1987; Pavlik et al. 1991; Steinberg and Howard 1992). They are found on many soil types in valleys and woodlands, and in mixed evergreen forests below about 1,500 meters (5,000 feet) amsl (Hickman 1993).

Coast live oaks are evergreens, growing to about 25 meters (80 feet) tall, and have widely ridged, furrowed, checkered dark-gray trunk bark. The leaf blades are variable in size, shape, and margin patterns, usually oblong to round with a rounded to spine-toothed tip. Leaf margins are sometimes weakly spine toothed. The upper leaf surface is dull green and usually strongly convex (Dole and Rose 1996). On the undersides, the leaves are irregularly veined, with tufts of brownish hairs where lateral veins join the midvein (Steinberg and Howard 1992); this character is generally diagnostic for coast live oak. Male and female inflorescences generally appear in early spring, while new leaves are immature. The acorn matures in one year (Dole and Rose 1996; Hickman 1993). The cup is obconic with thin scales. The nut is ovoid with a pointed tip (Hickman 1993). Coast live oaks are slow-growing, long-lived (125 to 250 years) trees, and do not mature until about age 60 to 80 years (Griffin 1977). Coast live oak is the dominant oak species on site and found throughout the ORMP study area. It is found concentrated along drainages in woodlands and scattered in more upland sites, and occurs as isolated specimens in other habitat types.

2.1.2 Valley Oak

Valley oaks are endemic to California and occur from Shasta County south through the Central Valley and lower-elevation foothills and valleys of the Sierra Nevada and Coast Ranges to Los Angeles County (Pavlik et al. 1991; Howard 1992). They are found primarily in bottomland soils on slopes, valleys, and savannas below about 1,700 meters (5,600 feet) amsl (Hickman 1993), usually on silty loam, clay loam, and sandy clay loam soils typical of floodplains and valley floors.

Valley oaks are characteristic, stately looking deciduous trees growing up to about 35 meters (115 feet) tall. They have deeply checkered, light grayish bark. The leaves are broad and lobed. The upper leaf surface is dull green with minute hairs. Catkins emerge from March to April and produce acorns during the fall (Howard 1992). The acorns mature in 1 year (Dole and Rose 1996; Hickman 1993). The acorn cups are hemispheric with tubercled scales; the nuts are long-conic with tapered to pointed tips (Hickman 1993).

Valley oaks are long-lived trees, but many stands are apparently not regenerating at high enough rates to replace natural mortality, especially on dry sites and on grazing lands (Griggs 1990; Allen-Diaz et al. 2007). The lack of regeneration is due to poor seedling establishment, largely due to wholesale changes in woodland understory ecology, from native shrubs and herbs to non-native grasses and forbs (Pavlik et al. 1991). Valley oak occurs in relatively large numbers throughout the ORMP study area. Large numbers of valley oaks compose the valley oak woodlands in the High Country and Salt Creek portions of the ORMP study area. Valley oaks found at lower elevations are typically more scattered and occur at lower densities. Most of the valley oak trees in the lower elevations of the ORMP study area occur in the Potrero Valley, with a smaller population at the eastern edge of the study area, within the area encompassed by Homestead South and Entrada South.

2.1.3 Scrub Oak

Scrub oaks are found throughout the outer Coast, Transverse, and Peninsular ranges, from Tehama County to northern Baja California (Pavlik et al. 1991), and are common throughout much of their range. They are generally found in well-drained soils, in chaparral or with other oak species in mixed woodlands (Allen-Diaz et al. 2007; Keeley and Davis 2007), on dry slopes between about 300 and 1,500 meters (1,000 and 5,000 feet) amsl (Hickman 1993). Scrub oaks are evergreen, growing to about 3 meters (10 feet) tall, and have smooth to chunky grayish bark. The leaf blades are variable in size and shape. The upper surfaces are generally flat or somewhat convex or wavy, and dull olive green. The lower surfaces are pale, dull gray- or yellow-green, covered by minute, closely appressed hairs (not visible without magnification) (Hickman 1993).

The flowers generally appear in early spring while new leaves are immature. The acorns mature in 1 year (Dole and Rose 1996; Hickman1993). The acorn cup is hemispheric with tubercled scales; the nut is ovoid with an obtuse to acute tip (Hickman 1993). Scrub oak can be found on site in an area associated with chaparral on south- and west-facing slopes in one small pocket in the Potrero Valley.

2.1.4 Interior Live Oak

Interior live oaks are endemic to California and northern Mexico, from Siskiyou and Shasta counties south along the foothills of the Sierra Nevada and inner Coast Ranges into northern Baja California (Tirmenstein 1989). They are found on a variety of soils, including well-drained, fine-grained to cobbly or gravelly sandy loams, or skeletal soils, in interior canyons, slopes, valleys, chaparral, and mixed evergreen forests and woodlands below about 2,000 meters (6,500 feet) amsl (Hickman 1993; White and Sawyer 1994).

Where they occur on valley floors, interior live oaks may grow to about 22 meters (72 feet) tall but often occur as smaller trees or shrubs in chaparral and dense forest stands. They have checkered, furrowed, grayish bark. They are evergreens. The leaf blades are strongly variable in size, shape, and margin patterns. Their upper surfaces are smooth, shiny, and dark green, and the lower surfaces are slightly yellow-green and also smooth and shiny (Tirmenstein 1989). This characteristic distinguishes interior live oak from other evergreen oaks, including the shrubby species, throughout the region.

Flowers and fruit begin production from March to May. The acorns mature in 2 years (Dole and Rose 1996; Hickman 1993). The hemispheric cup has thin scales, while the nut is cylindrical-ovoid to obconic (Hickman 1993). Interior live oak occurs at extremely low levels in the ORMP study area. In areas where 100% inventory was not completed, interior live oak is expected to occur as scattered individuals among coast- live oak– or valley oak–dominated woodlands.

2.1.5 MacDonald Oak

MacDonald oak is an oak species of hybrid origin, involving valley oak and scrub oak. The species occurs at elevations from sea level to nearly 2,000 feet amsl. MacDonald oak is located within the areas encompassed by Homestead Village North and Mission Village.

2.1.6 Alvord Oak

Alvord oak is an oak species of hybrid origin, involving blue oak and Tucker's oak (Nixon and Muller 1997). Alvord oak is a semideciduous shrub to small tree, usually less than about 10

feet tall. Its distribution is mainly the interior Coast Ranges and Tehachapi Mountains (Hickman 1993) and Liebre Mountains (Boyd 1999). The ORMP study area is evidently at or near the Alvord oak's southernmost distribution. The species is recognized by its semideciduous life history, its leaf shape, and the fine structure of the minute leaf hairs (Roberts 1995). This Fagaceae species is found on dry slopes and hills between 400 and 1,300 meters (1,300 and 4,300 feet) amsl. Catkins emerge in spring and produce acorns during the fall that mature in 1 year (Pavlik et al. 1991; Hickman 1993).

2.1.7 Mainland Cherry

Mainland cherry is a sclerophyllous, broad-leaved shrub or shrubby tree found throughout the central and southern Coast Ranges and from Napa County southward to Baja California (Hickman 1993; McMurray 1990). It is a shrub of the Rosaceae family. In southern California, it is a component of mesic chaparral below 1,600 meters (5,900 feet) amsl within foothill woodland, chaparral, and coastal scrub communities (McMurray 1990; Dole and Rose 1996). In mature chaparral communities, mainland cherry will occur as a dominant woody species in relatively moist, cool sites, such as eroded channels, arroyos, depressions, washes, and the toes and shoulders of slopes (McMurray 1990; Dole and Rose 1996). The species is able to establish as a widespread component of fire-prone environments because of vigorous resprouting. Population expansion and seedling establishment primarily occur during extended fire-free periods because seedlings can develop in gaps created by the death of shorter-lived species (McMurray 1990).

2.1.8 Southern California Black Walnut

Southern California black walnut is a low-growing, deciduous hardwood tree or large shrub endemic to southern California. Southern California black walnut is known to occur within Los Angeles, Santa Barbara, Ventura, Orange, Riverside, San Bernardino, and San Diego counties (CNPS 2007). Swanson (1976) also notes the occurrence of this species within San Luis Obispo County, inland of Cambria. Within Orange County, this species is known to occur along the Santa Ana River and, within San Bernardino County, it occurs as far east as Yucaipa (Swanson 1976). Although southern California black walnut is fairly widespread, extant walnut-dominated woodlands and forests are limited to the Santa Clara River drainage in the vicinity of Sulphur Mountain as well as small stands in the Simi Hills and Santa Susana Mountains, the north slope of the Santa Monica Mountains, the San Jose Hills, Puente Hills, and Chino Hills (Griffin and Critchfield 1972; Quinn 1989).

Southern California black walnut is found primarily on dry south- and west-facing slopes and within canyons at elevations between 50 and 900 meters (165 and 3,000 feet) amsl (CNPS 2007; Hickman 1993; Dole and Rose 1996). It grows to 15 meters (50 feet) in height. Mature trees may have a single trunk or may be multiple-stemmed from the base due to post-fire resprouting (Quinn 1989). It inhabits chaparral and cismontane woodlands with Miocene–Pliocene shale and coastal scrub with alluvial soils (NatureServe 2007; CNPS 2007).

2.2 Woodland Types

Oak woodland on site consists of four different communities: coast live oak woodland, mixed oak woodland, valley oak/grass, and valley oak woodland. In addition, California walnut woodland is dominated by native walnut trees, covering about 27 acres in the High Country SMA and the Salt Creek area. Descriptions of these woodland types follow. Mainland cherry occurs as a component of chaparral, coastal scrub, or other woodland habitats and is therefore not discussed as its own woodland type.

2.2.1 Coast Live Oak Woodland

According to Holland (1986), coast live oak woodland is dominated by a single evergreen species: coast live oak. Canopy height ranges from 30 to 80 feet. The shrub layer is poorly developed, but may include toyon (*Heteromeles arbutifolia*), gooseberry (*Ribes* spp.), laurel sumac (*Malosma laurina*), or Mexican elderberry (*Sambucus mexicana*). The herb component is continuous, dominated by a variety of introduced species, such as brome grasses (*Bromus* spp.) (Holland 1986).

On site, coast live oak woodland is defined as areas with 20% to 50% cover by coast live oak. Most of the coast live oak woodland on the RMDP/SCP area occurs in the southern half, generally in south-facing canyons in the High Country SMA and Salt Creek area. In accessible areas along Salt Creek, the understory of this woodland community has been impacted by historical and ongoing grazing practices and is dominated by non-native grasses, such as wild oat (*Avena fatua*), slender oat (*Avena barbata*), and bromes. Smaller patches of coast live oak woodland generally occur in south-facing canyons throughout the ORMP study area, including along the East Fork of Salt Creek and, to a lesser extent, along the Santa Clara River tributary canyons, including Ayres Canyon, Long Canyon, Humble Canyon, Lion Canyon, Exxon Canyon, and upper Chiquito Canyon, among others.

In addition to coast live oak trees, the coast live oak woodland includes occasional valley oak trees; a variety of native shrubs, such as goldenbush (*Ericameria palmeri* var. *pachylepis)*,

Mexican elderberry, yerba santa (*Eriodictyon* spp.), gooseberry (*Ribes* spp.), and Great Basin sagebrush (*Artemisia tridentata*); native herbaceous species, including common owl's clover (*Castilleja exserta*), California aster (*Corethrogyne filaginifolia*), Menzies' fiddleneck (*Amsinckia menziesii*), Cucamonga manroot (*Marah macrocarpus*), elegant clarkia (*Clarkia unguiculata*), miner's lettuce (miner's lettuce *Claytonia perfoliata*), wild pea (*Lathyrus vestitus*), Parry's larkspur (*Delphinium parryi*), California mugwort (*Artemisia douglasiana*), blue fiddleneck (*Phacelia distans*), chaparral nightshade (*Solanum xanti*), American bowlesia (*Bowlesia incana*), Pacific sanicle (*Sanicula crassicaulis*), California melic (*Melica californica*), California maidenhair (*Adiantum jordanii*), fiesta flower (*Pholistoma auritum*), California hedge parsley (*Yabea microcarpa*), poison sanicle (*Sanicula bipinnata*), California goldenrod (*Solidago californica*), California goosefoot (*Chenopodium californicum*), bluedicks (*Dichelostemma capitatum*), globe gilia (*Gilia capitata*), and chaparral gilia (*G. angelensis*); and non-native species (hedge mustard (*Sisymbrium officinale*), common sow-thistle (*Sonchus oleraceus*), goose grass (*Galium aparine*), Maltese star-thistle (*Centaurea melitensis*), redstem stork's bill (*Erodium cicutarium*), yellow sweet clover (*Melilotus officinalis*), milk thistle (*Silybum marianum*), common chickweed (*Stellaria media*), and tree tobacco (*Nicotiana glauca*)).

2.2.2 Mixed Oak Woodland

The mixed oak woodland and forest alliance includes a co-dominance of coast live oak trees and valley oak trees in sufficient numbers to constitute 20% to 50% of the oak woodland cover. On site, mixed oak woodland and forest is limited to the High Country SMA and Salt Creek Area, and typically occurs in patches where other oak woodland associations intergrade, such as coast live oak woodland and valley oak/grass. In areas subject to grazing, the understory of mixed oak woodland is typically dominated by non-native grasses, such as wild oat, slender oat, and bromes.

Mixed oak woodland on site is characterized by a co-dominance of coast live oak and valley oak canopy trees, and also supports many of the same understory species described above for coast live oak woodland, valley oak woodland, and valley oak/grass. Understory species for the mixed oak woodland include native shrubs, such as currants, Mexican elderberry, and Pacific poison oak (*Toxicodendron diversilobum*); smaller native species, including California goosefoot, climbing bedstraw (*Galium porrigens*), coast Indian paintbrush (*Castilleja affinis*), Menzies' fiddleneck, branching phacelia (*Phacelia ramosissima*), Cucamonga manroot, and bluedicks; and non-native species (milk thistle, cheeseweed (*Malva parviflora*), shortpodd mustard (*Hirschfeldia incana*), bull thistle (*Cirsium vulgare*), and horehound (*Marrubium vulgare)*).

2.2.3 Valley Oak Woodland and Valley Oak/Grass

According to Holland (1986), this vegetation community is typically manifested by valley oak trees providing a canopy over a grassy-understoried savanna. The canopy of the valley oaks rarely exceeds 30% to 40% cover (Holland 1986). On site, valley oak woodland includes a predominance of valley oaks in sufficient numbers to constitute 20% to 50% of the total cover. Valley oak/grass includes areas where valley oak composes less than 20% of the total cover. This association on site includes valley oaks sparsely occurring in California annual grassland.

On site, valley oak woodland occurs in relatively small patches in the southern portions of the Salt Creek Area, in the High Country SMA, and along the East Fork of Salt Creek and in other smaller, scattered patches in the Windy Gap area and along the Santa Clara River north of Airport Mesa. Much larger patches of valley oak/grass occur on site in the southern portion of the Salt Creek area and High Country SMA, as well as smaller patches between the East Fork of Salt Creek and Potrero Canyon and the Magic Mountain Canyon area. Valley oak woodland and valley oak/grass appear to relate to grazing pressure, particularly in the southern portion of the Specific Plan area, where open woodland provides cattle with ideal forage and shade.

In addition to valley oak trees, valley oak woodland and valley oak/grass support native shrubs (Mexican elderberry and coyotebrush (*Baccharis pilularis*)); native herbaceous species, including miner's lettuce, California fuchsia (*Epilobium canum* ssp. *canum*), common owl's-clover, bluedicks, common lomatium (*Lomatium utriculatum*), fiesta flower, Cucamonga manroot, Menzies' fiddleneck, hollowleaf annual lupine (*Lupinus succulentus*), California goosefoot, coast Indian paintbrush, branching phacelia, common forget-me-not (*Myosotis* sp.), and common eucrypta (*Eucrypta chrysanthemifolia*) ; as well as non-native species (common chickweed, shortpod mustard, black mustard (*Brassica nigra*), common sow-thistle, bull thistle, shepherd's purse (*Capsella bursa-pastoris*), milk thistle, cheeseweed, and non-native grasses).

2.2.4 California Walnut Woodland

Holland (1986) describes California walnut woodland as having an open tree canopy dominated by California walnut (*Juglans californica*), which allows a grassy understory to develop. This association was mapped where a predominance of California walnut occurred in sufficient numbers to constitute 20% to 50% absolute cover. On site, California walnut woodland occurs very locally in the southwestern corner of the RMDP/SCP area, mostly on south-facing slopes within the Salt Creek area and within the southern portion of the High Country SMA. The southern California black walnut trees in these areas are low (generally less than 20 feet tall) and

exhibit multiple trunks that give the trees a shrubby character (in contrast to the tall trees often seen in bottomlands and riparian areas).

The California walnut woodland that occurs on site supports an understory of native shrubs, such as Mexican elderberry, coyotebrush, giant ryegrass, yerba santa, and poison oak; smaller native species, including cliff malacothrix (*Malacothrix saxatilis* var. *saxatilis*), pipestems (*Clematis lasiantha*), common eucrypta, bluedicks, hollowleaf annual lupine, chaparral nightshade, Cucamonga manroot, common forget-me-not, fiesta flower, Pacific sanicle, purple Chinese houses (*Collinsia heterophylla*), miner's lettuce, elegant clarkia, California melicgrass, caterpillar phacelia (*Phacelia cicutaria*), lacepod (*Thysanocarpus laciniatus*), valley clover (*Trifolium willdenovii*), and climbing bedstraw; and nonnative species (yellow sweet clover, horehound, common chickweed, cheeseweed, goosegrass, black mustard, bull thistle, and California burclover (*Medicago polymorpha*)).

3 TREE AND WOODLAND ASSESSMENTS AND INVENTORY

The oak resource information for the RMDP/SCP area is analyzed and discussed in two forms: individual trees and woodlands. Analysis of both types of data is critical to adequately address oak resource mitigation requirements. The following sections summarize the methods used in compiling and analyzing these data sets.

3.1 Individual Oak Trees

Individual tree inventory efforts were conducted by numerous consultants for much of the RMDP/SCP area, focusing within the individual village boundaries where impacts from development were anticipated. Each tree inventory included Global Positioning System (GPS)-based mapping data identifying point locations and tree attribute information for individually mapped trees. The tree inventory data sets for all villages were compiled into a master GPS tree inventory data set, which was subsequently analyzed for this ORMP. Additionally, estimates of individual tree totals within the High Country SMA and Salt Creek area (outside the GPS tree inventory area) were made based on an analysis of aerial images, combined with field sampling and statistical analysis (Dudek 2007a).

3.1.1 Individually Mapped Oak Trees

GPS inventory area tree totals were determined by conducting spatial analysis of tree location data in relation to village boundaries in a geographic information system (GIS). Table 4 presents individually mapped tree totals by development area. Figure 4 presents the locations of individually mapped trees within the ORMP study area.

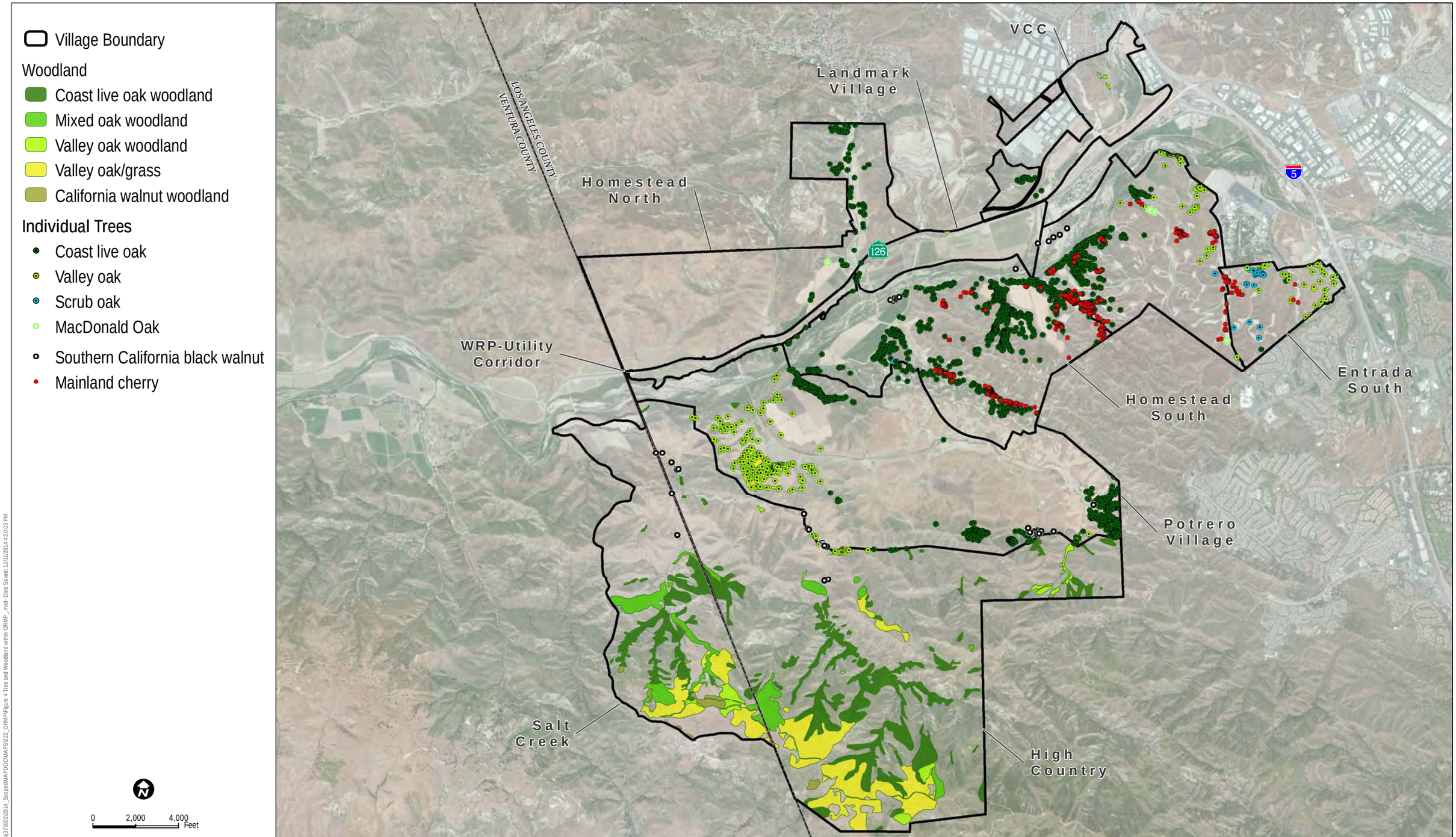
Table 4
Species Distribution for Oak Trees (Heritage Oaks in Parentheses)

Development Area	Species				
	Coast Live Oak	*Valley Oak*	*MacDonald Oak*	*Scrub Oak*	***Total***
Entrada South	3	36 (3)	0	31	**70 (3)**
Homestead North	94 (22)	1	1	0	**96 (22)**
Homestead South	1,348 (37)	2 (1)	0	11	**1,361 (38)**
Landmark Village	4 (1)	0	0	0	**4 (1)**
Magic Mountain Parkway Extension	0	10 (3)	2	1	**13 (3)**
Mission Village	482 (25)	83 (11)	3	25	**593 (36)**
Potrero Village	1,113 (93)	230 (46)	0	0	**1,343 (139)**
VCC	17 (1)	0	0	0	**17 (1)**
WRP-Utility Corridor	1	0	0	0	**1 (0)**
Total	**3,062 (179)**	**362 (64)**	**6 (0)**	**68 (0)**	**3,498 (243)**

VCC = Valencia Commerce Center; WRP = Water Reclamation Plant

3.1.2 High Country SMA and Salt Creek Area Tree Estimates

Tree populations within the High Country SMA and Salt Creek area were estimated in 2007 (Dudek 2007a) using a statistical regression analysis. A detailed description of the statistical methods used for estimating the number of trees is provided in the *High Country and Salt Creek Oak Woodland Sampling and Tree Population Estimation* (Dudek 2007a). The results of the regression analysis revealed a significant distinction between some areas with a lower density of coast live oaks and other areas with a higher density of coast live oaks. To improve the accuracy of the estimation, coast live oak woodland was divided into lower- and higher-density stands based on the digital signature of the aerial photograph augmented with site intelligence from numerous field visits. Lower-density coast live oak woodland has an average density of approximately 12.79 oak trees per acre within the ORMP study area. Higher-density coast live oak woodland, although still considered low compared to other non-disturbed woodlands, was estimated to have 27.41 oak trees per acre. Similar distinctions of lower- and higher-density oak trees in mixed oak woodland and valley oak woodland were not apparent in this study. Therefore, stands of mixed oak woodland and valley oak woodland were not divided up by lower and higher tree density in this analysis. Accordingly, mixed oak woodland has an average density of 18.91 oak trees per acre. Valley oak woodland has an estimated density of 16.33 oak trees per acre.



SOURCE: ESRI ArcGIS Online World Imagery Basemap

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FIGURE 4
Tree and Woodland Locations within ORMP Study Area

Draft Oak Resources Management Plan for the RMDP/SCP

\\DUDEK-FILES\GIS\Data\Projects\3738012014_Scopes\MAPDOC\MAPS\22_ORMP\Figure 4 Tree and Woodland within ORMP_.mxd- Date Saved: 12/11/2014 4:50:03 PM

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The total number of oak trees within oak woodland vegetation communities was estimated by extrapolating these calculated densities across all oak woodland vegetation communities within the ORMP study area where a GPS inventory was not conducted. Table 5 provides the quantity of oak trees using the density estimates for oak woodlands described above in combination with the aerial-photograph-derived estimate of oaks in valley oak/grass and individual oak trees mapped in non-oak vegetation communities.

Table 5
Tree Tally and Estimate for the High Country SMA and Salt Creek Area

Vegetation Community	Surveyed Acres	Censused Trees	Unsurveyed Acres	Estimated Trees	Confidence Interval (± Trees)	Total Trees
High Country SMA						
Low-density coast live oak woodland	48.33	508	91.46	1,170	32	1,678
High-density coast live oak woodland	46.41	1,269	256.39	7,028	121	8,297
Mixed oak woodland	25.36	513	48.87	924	57	1,437
Valley oak woodland	23.71	475	24.1	394	43	869
Valley oak/grass	—	1,451	0	—	—	1,451
Subtotal High Country SMA	*143.81*	*4,216*	*420.82*	*9,516*		*13,732*
Salt Creek Area						
Low-density coast live oak woodland	46.71	682	13.13	168	30	850
High-density coast live oak woodland	9.19	270	81.763	2,241	12	2,511
Mixed oak woodland	63.4	1,121	31.23	591	60	1,712
Valley oak woodland	20.98	244	2.95	48	54	292
Valley oak/grass	—	275	0	—	—	275
Subtotal Salt Creek Area	*140.28*	*2,592*	*129.07*	*3,048*		*5,640*
Total	**284.09**	**6,808**	**549.89**	**12,564**		**19,372**

3.1.3 Individual Tree Summary

As presented in this section, the majority of the trees throughout study area are coast live oaks. Valley oak trees are present at lower, but substantial, levels. The trees are scattered throughout the Newhall Ranch in areas consistent with the species' preferences: the coast live oaks are primarily associated with drainage bottoms, north-facing slopes, and along secondary drainages on non-north-facing slopes, while the valley oaks are strongly associated with open grassland

areas on gentler slopes and valley bottoms. Most of the sites' individual trees are part of larger woodland ecosystems.

3.1.4 Oak Tree Condition

This section focuses on the physical condition of existing trees rather than on the overall long-term health and natural regeneration of woodlands, which are addressed below. During GPS inventory efforts, arborists or biologists recorded overall tree condition for each assessed tree within the GPS inventory area. The health assessments are considered resource level and note general health and structural condition as observed from ground level and externally on each tree. Trees rated as having poor health display observable declining vigor, insect infestations, and/or disease. Trees rated as having fair or good health were generally free of observable insects and disease and exhibited good vigor.

Individual trees within the GPS inventory area are predominantly in at least fair condition. The trees include typical attributes of naturalized oaks. Many of the oaks have cavities with internal wood rot, poor branch structure, excessive leaning, lopsided and sparse canopies (due to suppression from larger overstory trees), and deadwood. These attributes are not considered a detriment in a natural setting; in fact, they provide many benefits to the wildlife that inhabits the area. These same attributes are problematic in an urban area, but for the purposes of this report, the trees were rated according to their "natural setting attributes," where, if occurring at normal levels, these trees of varying decline status may be part of a typical woodland system.

Many of the oak trees have experienced damage from wildfires occurring during their life spans, with the most recent large wildfire having occurred in 2007 (Magic Fire), although smaller fires have burned the Ranch more recently, including fires in 2013 (FRAP 2014). Burned trees often have scorched undersides of scaffold branches and occasional burned trunk cavities. Most of the fire-damaged oak trees exhibit signs of recovery, as is typical of the species following fire, but may now develop large cavities, which in turn may lead to decreased vigor and increased internal wood rot, insects, and diseases over time. Additionally, long-term livestock grazing, which has been ongoing for decades, has resulted in accumulated trunk wounds, grazing damage to lower tree branches, and soil compaction beneath canopies and along highly used trails. These fire- and livestock-caused wounds have contributed to internal decay, damaged roots, and potential susceptibility to insect and disease attack, resulting in premature tree decline for some of the trees.

3.2 Woodlands

Vegetation communities for the RMDP/SCP area were mapped and digitized, creating a GIS coverage (Dudek 2013). Vegetation community and land cover classifications generally follow the *Vegetation Classification and Mapping Program List of California Vegetation Alliances* and *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* system (CDFG 2007, 2003). Oak woodland is defined as areas with 20% to 50% cover by oak trees. Oak/grass includes areas where oak trees compose less than 20% of the total cover. Acreage of woodland by development area is provided in Table 6. Figure 4 presents the distribution of woodland areas within the ORMP study area.

Table 6
Oak Woodland Acreage by Development Area

Development Area	Coast Live Oak Woodland	Mixed Oak Woodland	Valley Oak Woodland	Valley Oak/Grass	Total
Entrada South	0.00	0.00	0.00	5.27	**5.27**
Homestead North	8.32	0.00	0.00	0.00	**8.32**
Homestead South	85.65	0.00	0.00	0.00	**85.65**
Landmark Village	0.03	0.00	0.00	0.00	**0.03**
Mission Village	31.35	0.00	2.34	1.53	**35.22**
Potrero Village	62.52	0.00	7.90	55.01	**125.43**
VCC	2.25	0.00	1.77	0.00	**4.02**
High Country SMA	450.37	73.72	35.94	303.13	**863.16**
Salt Creek Area	149.06	96.61	23.93	113.68	**383.28**
Total	**789.55**	**170.33**	**71.88**	**478.62**	**1,510.38**

VCC = Valencia Commerce Center; SMA = Special Management Area

Woodland Conditions

Most of the established and mature oak woodlands within the study area are within areas that will be preserved; however, many woodlands are exhibiting signs of stress. It is possible, and applicable to this site, to have individual trees that are in biologically fair or better condition, but to have unhealthy woodland systems. While individual trees may be thriving, the woodlands may be impaired and their longevity questionable. Overall, the trees within the study area represent aging oak woodlands with below-average age-class diversity and recruitment. These conditions are not ideal for long-term sustainability and are believed to result from grazing, extended drought, periodic yet high-intensity wildfire, and invasive plant establishment, all but eliminating recruitment of the future tree generations. Extended periods of drought during the 1990s and over the last several years have affected most oak woodlands

in southern California. Drought in the presence of heavy grazing lowers the recruitment of new trees at even higher rates (Steinberg 2002).

An important measure of oak woodland health is the capacity to regenerate and develop multi-aged strata. Substantial tree recruitment—in other words, high occurrence of germinating acorns and establishment of seedlings and saplings—is an indicator of healthy, naturally regenerating woodlands. The capacity of woodlands to productively regenerate is highly dependent on the terrain, microclimate, proximity to urban areas, wildfire occurrence, livestock grazing, and non-native species establishment.

Younger oaks are susceptible to competition from fast-growing annuals, such as non-native Mediterranean grasses, which can more effectively compete for limited moisture and sunlight in the oak woodland understory. The prevalence of these grasses may also result in more frequent wildfires that damage or kill more seedlings than would have normally occurred under a natural fire regime. The result is a decreasing regeneration rate of oaks and the resulting skewing of the oak population to older, less vigorous trees. Eventually, these less vigorous trees suffer declining productivity and the overall health of the woodland declines, as indicated by the evident lack of seedlings, saplings, and age diversity that would be characteristic of healthy, regenerating woodlands.

This understanding of oak woodland conditions on site informs the oak woodland enhancement mitigation component, as outlined in Section 5.1.

3.3 Other Native Tree Species

As discussed in Section 2, southern California black walnut and mainland cherry have been identified as oak resources requiring mitigation in accordance with the EIS/EIR. As with individual oak tree mapping, GPS surveys of individual trees were conducted within the villages in order to determine impact or preservation status. A summary of walnut and cherry tree populations is presented in Table 7. Figure 4 presents the locations of individually mapped trees within the ORMP study area.

Table 7
Species Distribution for Southern California Black Walnut and Mainland Cherry Trees

Development Area	Species		
	Southern California Black Walnut	*Mainland Cherry*	***Total***
Entrada South	0	4	**4**
Homestead South	8	234	**242**

Table 7
Species Distribution for Southern California Black Walnut and Mainland Cherry Trees

Development Area	Species		
	Southern California Black Walnut	*Mainland Cherry*	***Total***
Landmark Village	2	0	**2**
Mission Village	4	195	**199**
Potrero Village	27	0	**27**
Total	**41**	**433**	**474**

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4 OAK TREE AND WOODLAND IMPACT ANALYSIS

Tree and woodland impacts for the proposed projects are presented in this section and rely on data available at the time of this ORMP's preparation. Actual tree and woodland impacts may vary as efforts to reduce impacts are made throughout later stages of planning for some of the proposed projects.

4.1 Individual Trees

Impacts to individual trees are presented in this section and were determined by evaluating existing oak tree permit data (Mission Village and Magic Mountain Parkway) and previously conducted oak tree impact assessments (Homestead South), and by comparing GPS tree location data with the most current grading envelope/development area data for the RMDP/SCP area (remaining development areas) in a GIS. The assessment of individual tree impacts was conducted to determine the required mitigation under CLAOTO (including heritage and non-heritage trees) and additional mitigation under the RMDP/SCP EIS/EIR. The following sections provide greater detail regarding the impact evaluation for oaks and other tree species.

4.1.1 Oaks

4.1.1.1 Oak Tree Permit Evaluation

As noted, the oak tree permits for Mission Village and Magic Mountain Parkway were evaluated and summarized for the individual tree impact assessment conducted in support of this ORMP. The reviewed tree permits also included species and heritage tree designations, as defined in the CLAOTO. Subsequent to issuance of the oak tree permits, a re-evaluation of oak trees on the Mission Village site was conducted by Sean Brown in October 2014 (SB Horticulture 2014) to ensure oak tree impacts were properly characterized prior to impact realization, Trees were re-assessed for health and size and any oak trees that had grown into ordinance size since the original surveys were completed were added (in-growth).

4.1.1.2 Previously Conducted Assessments

Previously conducted assessments of tree impacts for the Homestead South development area (Hunsaker 2013) were also evaluated and summarized. This assessment also included species and heritage tree designations, as defined in the CLAOTO.

4.1.1.3 GIS-Based Assessments

For the remaining development areas not included in existing oak tree permits (Mission Village and Magic Mountain Parkway) or previously analyzed (Homestead South), individual tree

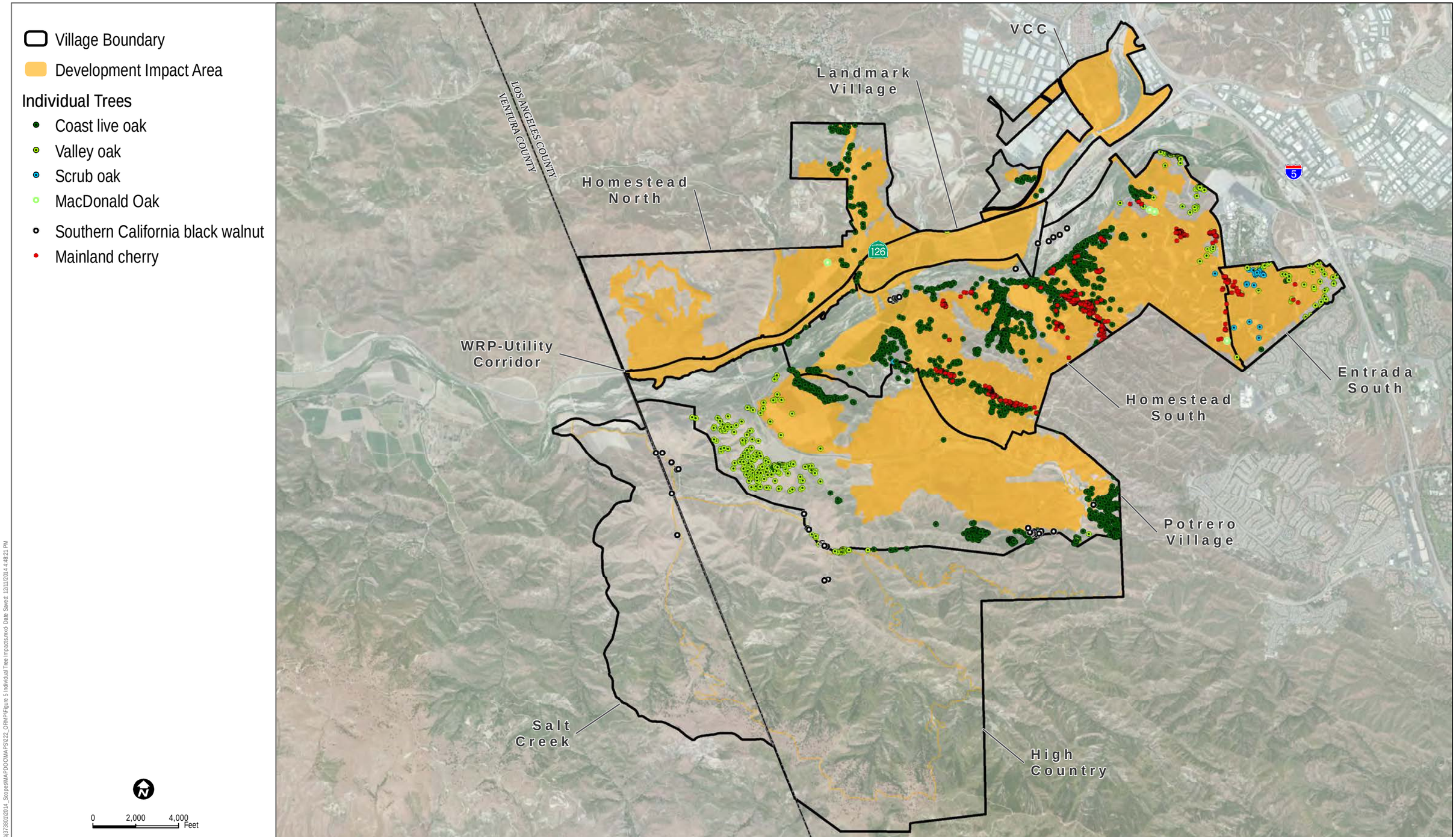
impacts were evaluated by comparing tree locations with the most current site planning and grading information available. Specifically, all trees not located within areas identified as natural open space were expected to require removal.

Oak tree impact totals presented below are based on development plans as of the date of this ORMP and are considered conservatively calculated, assuming more impacts than may actually occur. As such, the final number of trees that are subject to removal may be further reduced as the detailed site-planning process proceeds and is defined for each area, and as on-site grading activities occur and are refined. At the site-planning stage, it may be possible, and is encouraged, to preserve as many native trees as reasonably feasible through tree protection techniques. Typically, specific circumstances allow some trees to be preserved in place within or adjacent to the development envelope through footprint revisions or mitigation such as retaining walls, tree wells, or other measures. Trees on the periphery of a project's disturbance limits are initially considered impacted for the purposes of this ORMP. However, at the later stages of a project, after focused planning occurs, some trees may become preserved trees through protection efforts implemented to minimize or avoid impacts. Mitigation for impacts may be adjusted during site-specific planning associated with the subnotification process for each individual project.

Individual oak tree impacts for the proposed projects are presented in Table 8. As shown, most of the impacts will be to coast live oak trees, with a small proportion of the trees classified as heritage oaks (36 inches or more in diameter). Figure 5 displays the locations of impacted and non-impacted individually mapped trees.

Table 8
Oak Tree Impacts by Development Area and Species (Heritage Oaks in Parentheses)

Development Area	Species				
	Coast Live Oak	*Valley Oak*	*MacDonald Oak*	*Scrub Oak*	*Total*
Entrada South	2	22 (1)	0	31	55 (1)
Homestead North	67 (17)	1	1	0	69 (17)
Homestead South	366 (19)	0	0	1	367 (19)
Landmark Village	3 (1)	0	0	0	3 (1)
Magic Mountain Parkway Extension	0	8 (3)	2	1	11 (3)
Mission Village	123 (7)	13 (2)	3	2	141 (9)
Potrero Village	48 (12)	13 (1)	0	0	61 (13)
VCC	9	0	0	0	9 (0)
WRP-Utility Corridor	1	0	0	0	1 (0)
Total	**619 (56)**	**57 (7)**	**6 (0)**	**35 (0)**	**717 (63)**



SOURCE: ESRI ArcGIS Online World Imagery Basemap

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FIGURE 5
Individual Tree Impacts within ORMP Study Area

Draft Oak Resources Management Plan for the RMDP/SCP

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4.1.2 Other Tree Species

Impacts to non-oak species (southern California black walnut and mainland cherry) were determined by comparing GPS tree location data with the most current grading envelope data for the RMDP/SCP area in a GIS. Individual non-oak tree impacts for the proposed projects are presented in Table 9.

Table 9
Non-Oak Tree Impacts by Development Area and Species

Development Area	Species		
	Southern California Black Walnut	*Mainland Cherry*	***Total***
Entrada South	0	4	**4**
Homestead South	1	148	**149**
Mission Village	0	126	**126**
Potrero Village	6	0	**6**
Total	**7**	**278**	**285**

4.1.3 Potential Indirect Impacts

Potential indirect impacts to trees near proposed development include hydrologic and human-caused alterations. Indirect impacts to oak trees that result in mortality may require mitigation, as outlined in individual oak tree permits issued by the County of Los Angeles. As indirect impacts cannot be quantified at this stage of development planning, indirect impacts to oak trees will be evaluated and determined during site-specific planning associated with the subnotification process for each individual project. Oak trees that are not removed but are encroached upon within their protected zone (as defined by CLAOTO) due to site grading and development will be monitored for a period of time to be identified in the oak tree permit issued for each individual project. Oak trees that die during this monitoring period, as attributed to indirect impacts from the development, will be replaced in accordance with the oak tree permit or compensated with a monetary contribution to the County of Los Angeles Oak Forest Special Fund in accordance with CLAOTO.

4.2 Woodlands

Impacts to woodlands are presented in this section and were determined by comparing vegetation community data with the most current grading envelope/development area data for the RMDP/SCP area in a GIS. Woodland impacts were evaluated by comparing woodland

vegetation community boundaries with the most currently available site planning and grading information. Specifically, all woodlands (or portions thereof) not located within areas identified as natural open space were expected to require removal and are therefore considered impacted. In addition, the impacted woodland areas were evaluated in a GIS to determine which portion (if applicable) occurred within CDFW-jurisdictional areas (jurisdictional) and which did not (upland). The resulting data allowed for calculation of impacted woodland acreage (upland and jurisdictional) by development area, and was subsequently used to determine the required mitigation identified in the RMDP/SCP EIS/EIR.

Figure 6 displays the locations of impacted and non-impacted woodlands as well as designation of upland and jurisdictional woodlands. The non-impacted woodlands within permanent open space areas occur both within the project planning areas and as relatively large assemblages of wooded areas primarily in the High Country SMA and Salt Creek area. Table 10 summarizes the impacts to upland and jurisdictional woodlands.

Table 10
Impacted Woodland Acreages

Habitat Type	Upland Area Impacted (Acres)	CDFW-Jurisdictional Area Impacted (Acres)		
		Reach Value		
		High	*Medium*	*Low*
Entrada South				
Valley oak/grass	4.29	0.00	0.08	0.00
Subtotal	*4.29*	*0.00*	*0.08*	*0.00*
Homestead North				
Coast live oak woodland	6.28	0.00	0.30	0.00
Subtotal	*6.28*	*0.00*	*0.30*	*0.00*
Homestead South				
Coast live oak woodland	30.78	0.67	0.13	0.00
Subtotal	*30.78*	*0.67*	*0.13*	*0.00*
Mission Village				
Coast live oak woodland	3.90	0.24	0.00	0.00
Subtotal	*3.90*	*0.24*	*0.00*	*0.00*
Potrero Village				
Coast live oak woodland	7.15	0.00	0.00	0.00
Valley oak woodland	0.45	0.00	0.00	0.00
Subtotal	*7.60*	*0.00*	*0.00*	*0.00*
Valencia Commerce Center				
Coast live oak woodland	0.14	0.00	0.00	0.00
Valley oak woodland	1.77	0.00	0.00	0.00

Table 10
Impacted Woodland Acreages

Habitat Type	Upland Area Impacted (Acres)	CDFW-Jurisdictional Area Impacted (Acres)		
		Reach Value		
		High	*Medium*	*Low*
Subtotal	*1.91*	*0.00*	*0.00*	*0.00*
Total	**54.76**	**0.91**	**0.51**	**0.00**

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Village Boundary

Development Impact Area

Woodland Impacts

Non-Jurisdictional Impacts

Jurisdictional Impacts

Woodland

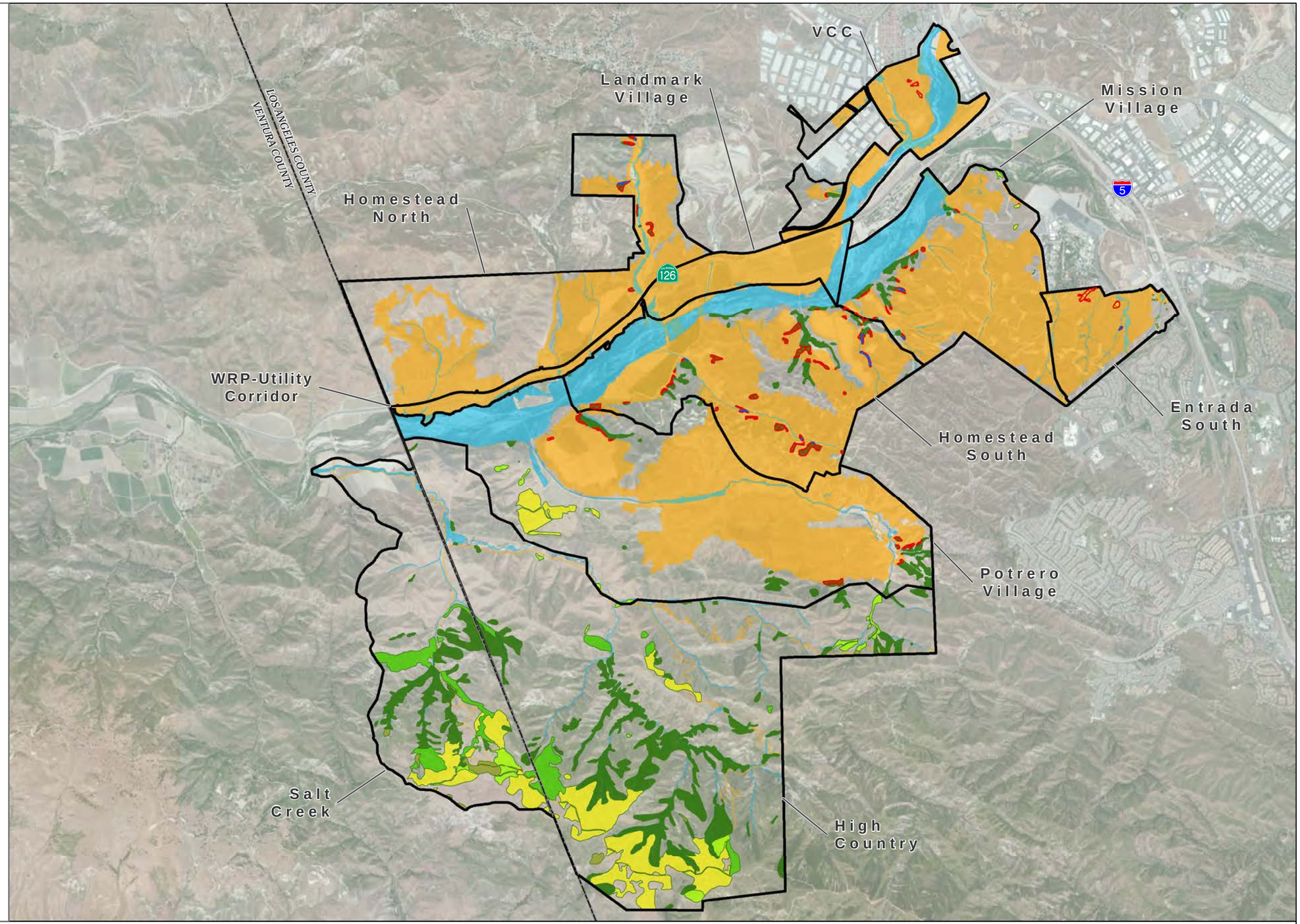
Coast live oak woodland

Mixed oak woodland

Valley oak woodland

Valley oak/grass

California walnut woodland



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SOURCE: ESRI ArcGIS Online World Imagery Basemap

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FIGURE 6
Woodland Impacts within ORMP Study Area

Draft Oak Resources Management Plan for the RMDP/SCP

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5 MITIGATION PROGRAM FRAMEWORK

The prior sections have analyzed direct impacts to individual trees and woodlands. The impact analysis has also examined the jurisdictional status of impacted woodlands and the general health of the woodlands on site, specifically the lack of natural long-term regeneration of the woodland systems. The latter considerations are the focus of much of the proposed mitigation program as further presented below.

The mitigation program detailed in this ORMP considers the multi-layered mitigation requirements outlined in the RMDP/SCP EIS/EIR, inclusive of CLAOTO requirements, the extent of the tree and woodland impacts, and the capacity of portions of the Newhall Ranch to support tree and woodland mitigation efforts. The ORMP mitigation program is designed to mitigate impacts to oak tree and oak woodland resources by providing the following:

- Preservation of large tracts of high-density and high-quality oak woodlands
- Creation of woodlands on suitable lands to enhance habitat functions and create live-in habitat for raptors and other species
- Enhancement of impaired preserved woodlands through active tree and understory planting
- Exclusion of cattle from portions of the mitigation area, which will allow for the restoration of the natural regeneration capabilities of the woodlands
- Enhancement of existing and created wildlife-movement corridors through tree planting
- Initiation of tree planting prior to realization of tree or woodland impacts ("pre-mitigation")
- Integration of site-sensitive landscaping with plantings of native vegetation on manufactured slopes in order to enhance biodiversity and habitat functions
- Implementation of a maintenance, monitoring, and reporting program, including an adaptive management component.

This mitigation program provides a framework for mitigating the loss of trees and oak woodland resources in a manner that emphasizes (1) creating new woodlands in ecologically appropriate areas that will enhance wildlife movement and habitat functions, (2) enhancing existing degraded woodlands through tree and understory planting in order to restore and improve forest diversity and value on a long-term basis, and (3) incorporating individual trees into open space areas and the post-development landscape. Thus, the proposed ORMP's mitigation plan is designed to provide an ecologically sensitive approach that addresses the unique restoration opportunities on the Newhall Ranch.

Finally, due to the long-term nature of the project, the ORMP will be followed by subsequent review and evaluation by the County, Corps, CDFW, and Regional Water Quality Control Board through the submittal of subnotifications that demonstrate individual project compliance with the overall RMDP-SCP project. This ORMP provides the comprehensive framework for oak resources mitigation. Specific oak tree reports for the individual proposed projects (as required under CLAOTO) will include project-specific mitigation plans that will provide site-specific details for oak mitigation. Further, a specific woodland creation and/or enhancement plan will be created for each project for submittal with the subnotifications that outlines the woodland creation and/or enhancement locations, acreages, and tree quantities associated with that project. All tree reports and plans will adhere to the standards identified in this ORMP.

5.1 Mitigation for Oak Resources Impacts

Mitigation for oak tree and oak woodland resources includes two main components: (1) mitigating for individual tree impacts and (2) mitigating for oak woodland habitat impacts. The following sections present the requirements for each component.

5.1.1 Individual Tree Mitigation

Mitigation for individual tree impacts has been calculated in accordance with CLAOTO, the requirements of the RMDP/SCP EIS/EIR, and the requirements of the Newhall Ranch Specific Plan Program EIR. Based on these requirements, replacement quantities have been calculated as follows:

- Combined 2.5:1 replacement ratio for non-heritage trees (2:1 under CLAOTO plus 0.5:1 under the RMDP/SCP EIS/EIR requirements). Non-heritage trees include oak trees of the sizes regulated under CLAOTO, southern California black walnut trees, mainland cherry trees, and mainland cherry shrubs.
- Combined 12:1 replacement ratio for heritage trees (10:1 for CLAOTO plus 2:1 under the RMDP/SCP EIS/EIR requirements).

Additionally, mitigation for non-oak species (mainland cherry and southern California black walnut) has been calculated in accordance with Mitigation Measure BIO-88 of the RMDP/SCP EIS/EIR. Based on these requirements, replacement of impacted trees at a 2:1 ratio has been calculated.

The trees requiring planting will be utilized as a component of the woodland mitigation efforts (discussed in the next section). Where target woodland densities preclude the planting of all

required trees in woodland mitigation areas, the remaining trees will be planted in the post-development landscape (e.g., manufactured slopes, manufactured open space, entry monuments, fuel modification zones).

Table 11 presents the required mitigation tree planting totals for oak trees by development area.

Table 11
Required Oak Tree Mitigation by Development Area and Species

Development Area	Species				
	Coast Live Oak	*Valley Oak*	*MacDonald Oak*	*Scrub Oak*	*Total*
Entrada South	5	65	0	78	148
Homestead North	329	3	3	0	335
Homestead South	1,096	0	0	3	1,099
Landmark Village	17	0	0	0	17
Magic Mountain Parkway Extension	0	54	5	3	62
Mission Village	374	52	8	5	439
Potrero Village	234	42	0	0	276
VCC	23	0	0	0	23
WRP-Utility Corridor	3	0	0	0	3
Total	**2,081**	**216**	**16**	**89**	**2,402**

VCC = Valencia Commerce Center; WRP = Water Reclamation Plant

Table 12 presents the required mitigation tree planting totals for non-oak trees by development area.

Table 12
Required Non-Oak Tree Mitigation by Development Area and Species

Development Area	Species		
	Southern California Black Walnut	*Mainland Cherry*	*Total*
Entrada South	0	8	8
Homestead South	2	296	298
Mission Village	0	252	252
Potrero Village	12	0	12
Total	**14**	**556**	**570**

5.1.2 Woodland Mitigation

5.1.2.1 Upland Woodlands

Mitigation for upland oak woodland impacts has been calculated in accordance with the requirements of the RMDP/SCP EIS/EIR. As identified in the RMDP/SCP EIS/EIR, oak woodland mitigation may occur through one of two options, or a combination thereof, including (1) creation of new oak woodlands at a 1:1 ratio or (2) enhancement, improvement, and management of existing degraded woodland areas at a 2:1 ratio. For the purposes of this ORMP, these mitigation options are considered to apply to upland woodland areas only (mitigation for jurisdictional woodland impacts is presented in the following section). The required upland mitigation acreage for each option is presented in Table 13. However, this ORMP proposes a combination of both options, as identified in Section 5.2.

Table 13
Mitigation Requirements for Oak Habitat Impacts (Upland Areas)

Development Area	Habitat Enhancement or Creation Area (Acres)					
	Coast Live Oak Woodland		*Valley Oak Woodland*		*Valley Oak/Grass*	
	Creation (1:1)	*Enhancement (2:1)*	*Creation (1:1)*	*Enhancement (2:1)*	*Creation (1:1)*	*Enhancement (2:1)*
Entrada South	0	0	0	0	4.29	8.58
Homestead North	6.28	12.56	0	0	0	0
Homestead South	30.78	61.56	0	0	0	0
Mission Village	3.90	7.80	0	0	0	0
Potrero Village	7.15	14.30	0.45	0.90	0	0
VCC	0.14	0.28	1.77	3.54	0	0
Total	**48.25**	**96.50**	**2.22**	**4.44**	**4.29**	**8.58**

VCC = Valencia Commerce Center

5.1.2.2 Jurisdictional Woodlands

Mitigation for jurisdictional oak woodlands impacts has been calculated in accordance with the requirements of the RMDP/SCP EIS/EIR. As identified in the RMDP/SCP EIS/EIR, jurisdictional oak woodland mitigation requires replacement at a ratio of 1:1 if low quality, 1.5:1 if medium quality, and 2:1 if high quality. For the purposes of this ORMP, these mitigation requirements are considered to apply to jurisdictional woodland areas only and are to consist of woodland creation. The required jurisdictional mitigation acreage is presented in Table 14. Additionally, the replacement (creation) woodland acreage identified for jurisdictional areas is

intended to occur in other on-site jurisdictional areas. The selection of planting areas considered this component, as described in Section 5.2.

Table 14
Mitigation Requirements for Oak Habitat Impacts (Jurisdictional Areas)

Development Area	Habitat Creation Area (Acres)	
	Coast Live Oak Woodland	*Valley Oak/Grass*
Entrada South	0	0.12
Homestead North	0.45	0
Homestead South	1.54	0
Mission Village	0.48	0
Potrero Village	0	0
Total	**2.47**	**0.12**

5.2 Mitigation Areas

Most of the required tree and woodland mitigation will occur in protected areas, including within the High Country SMA/SEA, the Salt Creek area, the River Corridor SMA/SEA, and designated Open Areas within village boundaries. These planting locations focus on woodland creation and enhancement and are consistent with the woodland density requirements identified in Mitigation Measure BIO-22 of the RMDP/SCP EIS/EIR. The identified woodland creation/enhancement areas will accommodate most of the individual tree planting requirements identified in CLAOTO and Mitigation Measure BIO-22. However, additional tree plantings outside of these areas are also needed to meet the individual tree mitigation requirements; these plantings will occur within the post-development landscape (e.g., manufactured slopes, manufactured open space, entry monuments, fuel modification zones). The following sections present the process for determination of woodland creation and enhancement sites, identification of woodland creation/ enhancement sites specific to development area impacts, identification of other additional planting areas for individual trees, and schedule requirements for implementing tree and woodland mitigation efforts.

5.2.1 Site Selection

Dudek analyzed the potential for oak mitigation within the ORMP study area through site evaluation and review of existing studies, such as the *Newhall Land Mitigation Feasibility Study* (Dudek 2007b). In general, potential woodland enhancement sites considered in this analysis were sites mapped as woodland communities (e.g., coast live oak woodland, valley oak

woodland, mixed oak woodland, or valley oak/grass) that are especially sparse and could support additional oak and understory plantings. Potential woodland creation sites considered in this analysis were disturbed areas (agricultural land, California annual grassland, or disturbed land) that could potentially support oak vegetation communities or individual oak trees and that were adjacent to existing woodland habitats. Only areas that were mapped as non-native habitats were considered for oak woodland habitat creation.

Dudek also considered soil type when identifying potential oak resource mitigation areas. Soil types most appropriate for planting oaks tend to be deep and have a high water-holding capacity for the trees to make use of during the dry season. Soil types with a high water-storage capacity that would be suitable for oaks include Metz loamy sand, Mocho loam, Yolo loam, and Zamora loam. These soils can store between 4 and 11 inches of water that can be available for the trees to draw on. Gazos clay loam is also suitable for oaks, but it tends to be shallower and only holds between 3 and 6 inches of water that would be available for the oaks to use. Alternatively, oaks may be planted in many other soil types if there is a water source nearby for the trees to use, such as a perched water table or stream. Areas with shallower soils and less water-holding capacity tend to support oaks at a lower density than deeper soils with greater water-storage capacity. Oak-dominated vegetation communities tend to occur in canyons and on north-facing slopes within the ORMP study area. Canyons and north-facing slopes tend to be more mesic (drier) than other areas due to decreased direct solar radiation.

In addition to considering soil and vegetation community types, Dudek also considered slope, aspect, vehicular access availability, water availability for irrigation, and adjacent native vegetation communities. Most of the proposed mitigation areas are easily accessible for planting, maintenance, and monitoring and were therefore prioritized for use as woodland creation or enhancement areas. Proximity to irrigation water sources was also considered in mitigation area selection. Finally, some of the areas considered suitable for woodland mitigation are also considered suitable for wetland mitigation. Woodland mitigation, particularly mitigation for impacts that occur in jurisdictional riparian or wetland locations, could be appropriately incorporated into this type of mitigation and completed in conjunction in some areas.

5.2.1.1 Woodland Creation

Degraded, non-native habitat areas (agricultural land, California annual grassland, or disturbed land) have been identified for oak woodland creation as mitigation for oak woodland habitat impacts. In these areas, oak woodland will be established through planting and seeding with appropriate woodland components. A portion of the oak woodland creation will also occur in riparian settings in Salt Creek, thereby meeting the requirements of BIO-2 from the RMDP/SCP

EIS/EIR. Creation of oak woodland constitutes the most active and aggressive oak mitigation component, as it will require the conversion of a disturbed, non-native vegetation community to a native, protected oak woodland. Newly established oak woodlands will qualify for both individual oak tree replacement (per CLAOTO and the RMDP/SCP EIS/EIR) and mitigation for oak woodland impacts (per the RMDP/SCP EIS/EIR) at the appropriate ratio.

5.2.1.2 Woodland Enhancement

Preserved woodlands are considerable within preserved areas of the Newhall Ranch, as discussed in this ORMP. Within degraded oak woodlands, individual oak trees would be planted to enhance the functions of the woodland community by introducing and encouraging a multi-aged tree structure. If the understory of the oak woodland is substantially degraded and the enhancement efforts are provided as mitigation credit for oak woodland habitat impacts, then in addition to oak trees, native species (shrubs and herbs) commonly found in oak woodlands would be planted or seeded to develop multi-structured and varied canopy layers. Oak trees planted in enhanced oak woodlands will qualify for both individual oak tree replacement (per CLAOTO and the RMDP/SCP EIS/EIR) and mitigation for oak woodland impacts (per the RMDP/SCP EIS/EIR) at the appropriate ratio.

5.2.1.3 Individual Tree Planting Areas

In addition to the woodland enhancement and creation areas, Dudek also identified undisturbed locations for planting individual trees required as mitigation under CLAOTO and the RMDP/SCP EIS/EIR. Specifically, portions of Potrero Canyon were identified as suitable planting locations for individual valley oak trees and are classified as non-native grassland. These areas are adjacent to existing valley oak/grass habitats and tree planting densities would be low (less than 20 trees/acre). Valley oak trees planted in these areas will qualify for individual oak tree replacement requirements per CLAOTO and the RMDP/SCP EIS/EIR.

5.2.2 Mitigation Areas by Proposed Project Site

The location of oak resource mitigation areas has been designated in this ORMP and within the *Draft Comprehensive Mitigation Implementation Plan for the Newhall Ranch – Resource Management and Development Plan and Spineflower Conservation Plan Study Area* (Dudek 2014). As the timing and sequence of development of the various project sites is not currently known, mitigation locations for specific projects may be adjusted as build-out progresses. However, although the locations of oak woodland creation, oak woodland enhancement, or tree planting areas may be adjusted, the availability of acreage has been

confirmed and documented in this ORMP. The areas identified for oak mitigation have been analyzed for each project site, based on that project site's mitigation requirements.

Woodland Creation/Enhancement and Individual Tree Planting Areas

Figure 7 presents the identified woodland creation/enhancement locations and individual tree planting areas, with identification numbers correlating to those included in Table 15. Table 15 summarizes the acreages of woodland creation/enhancement and oak tree planting areas identified for this ORMP. Based on the target density ratios included in Mitigation Measure BIO-22 of the RMDP/SCP EIS/EIR (coast live oak woodland (50 trees per acre), mixed oak woodland (40 trees per acre), and valley oak woodland (25 trees per acre)), the woodland creation and enhancement areas identified in this ORMP will provide enough area to mitigate woodland impacts. Specific locations for mitigation for each proposed project will be further refined in each project's subnotification package.

Table 15
Proposed Oak Woodland Creation and Enhancement Areas

Mitigation Type	Identified Area (Acres)	Total Trees Accommodated	Mitigation Area Identification Numbers
Oak Woodland Creation Areas			
Coast live oak woodland	148.23	7,411	1–27
Valley oak woodland	8.25	206	53
Oak Woodland Enhancement Areas			
Coast live oak woodland[1]	17.62	441	28–44
Oak Tree Planting Areas			
Valley oak/grass – creation[2]	125.26	3,131	46–52

[1] Assumes half of the density available for planting (25 trees per acre).
[2] Density of 20 trees per acre.

Table 16 summarizes the mitigation requirements by development area and tree species or woodland type.

Table 16
Mitigation Requirements Summary by Development Area

Species / Woodland Type	Oak Tree Plantings (CLAOTO)	Non-Oak Tree Plantings	Upland Woodland Creation (Acres)	Jurisdictional Woodland Creation (Acres)
Entrada South				
Coast live oak	5	0		
Valley oak	65	0		
Scrub oak	78	0		
Mainland cherry	0	8		
Valley oak/grass			4.29 (or 8.58 enhancement)	0.12
Homestead North				
Coast live oak	329	0		
Valley oak	3	0		
McDonald oak	3	0		
Coast live oak woodland			6.28 (or 12.56 enhancement)	0.45
Homestead South				
Coast live oak	1,096	0		
Scrub oak	3	0		
Southern California black walnut	0	2		
Mainland cherry	0	296		
Coast live oak woodland			30.78 (or 61.56 enhancement)	1.54
Landmark Village				
Coast live oak	17	0		
Magic Mountain Parkway Extension				
Valley oak	54	0		
MacDonald oak	5	0		
Scrub oak	3	0		
Mission Village				
Coast live oak	374			
Valley oak	52			
MacDonald oak	8			
Scrub oak	5			
Mainland cherry	0	252		
Coast live oak woodland			3.90 (or 7.80 enhancement)	0.48
Potrero Village				
Coast live oak	234	0		
Valley oak	42	0		

Table 16
Mitigation Requirements Summary by Development Area

Species / Woodland Type	Oak Tree Plantings (CLAOTO)	Non-Oak Tree Plantings	Upland Woodland Creation (Acres)	Jurisdictional Woodland Creation (Acres)
Southern California black walnut	0	12		
Coast live oak woodland			7.15 (or 14.30 enhancement)	0.00
Valley oak woodland			0.45 (or 0.90 enhancement)	0.00
VCC				
Coast live oak	23	0		
Coast live oak woodland			0.14 (or 0.28 enhancement)	0.00
Valley oak woodland			1.77 (or 3.54 enhancement)	0.00
WRP-Utility Corridor				
Coast live oak	3	0		
Totals				
Coast live oak	2,081	0		
Valley oak	216	0		
Scrub oak	89	0		
McDonald oak	16	0		
Mainland cherry	0	556		
Southern California black walnut	0	14		
Coast live oak woodland			48.25 (or 96.5 for enhancement)	2.47
Valley oak woodland			2.22 (or 4.44 for enhancement)	0.00
Valley oak/grass			4.29 (or 8.58 enhancement)	0.12

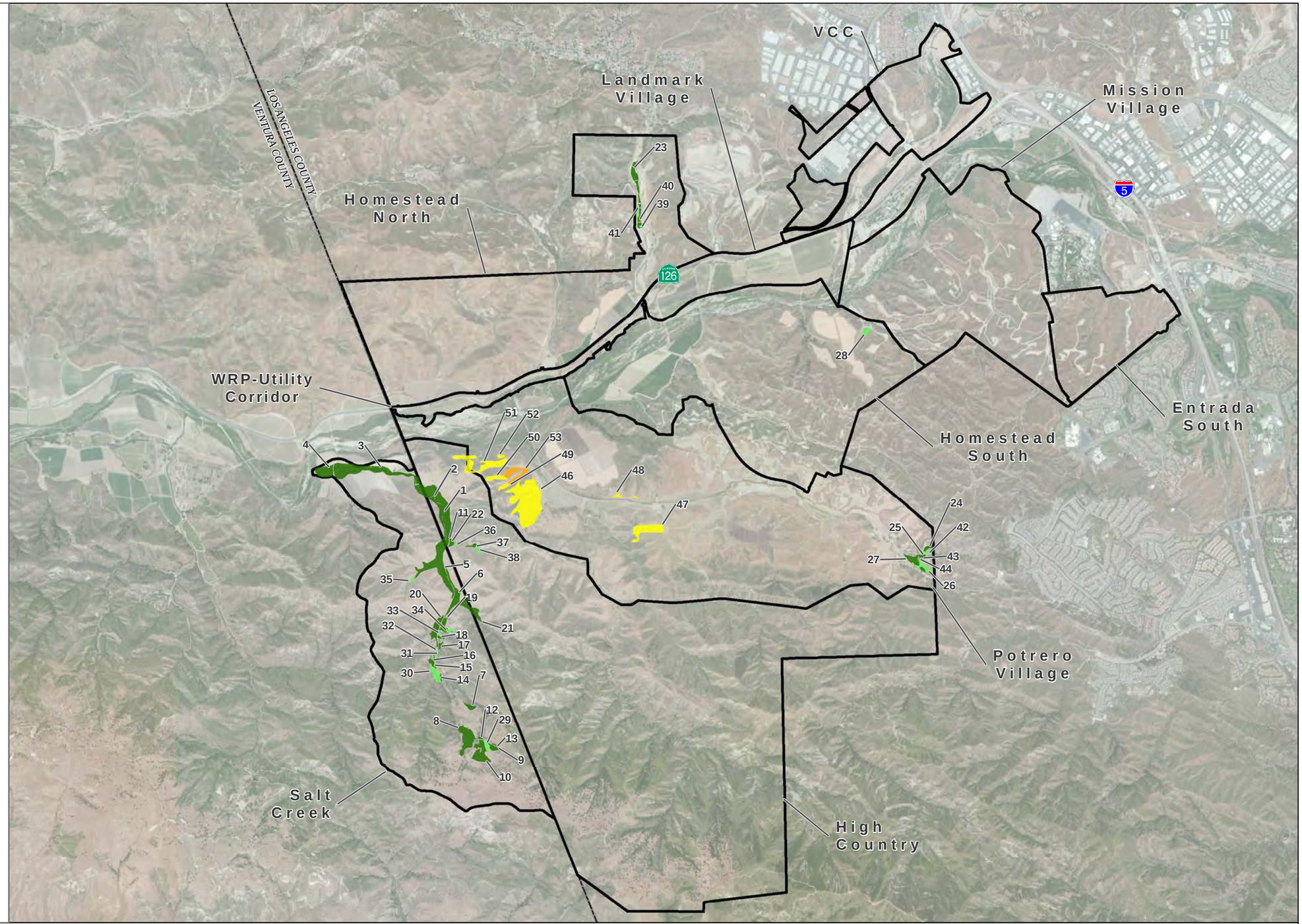
VCC = Valencia Commerce Center; WRP = Water Reclamation Plant
Note: Green-shaded rows present individual tree mitigation requirements while blue-shaded rows present woodland mitigation requirements.

As identified in Table 15, sufficient area has been identified to accommodate all necessary woodland mitigation and CLAOTO tree plantings. Specifically, 148.23 acres of coast live oak woodland creation area has been identified, well above the 50.72 acres necessary (upland plus jurisdictional), as presented in Table 16. A total of 8.25 acres of valley oak woodland creation area has been identified, exceeding the 2.22 acres necessary, and a total of 125.26 acres of valley oak/grass creation area has been identified, well above the 4.41 acres necessary. Additionally, 18.13 acres of coast live oak woodland enhancement area has been identified.

Village Boundary

Proposed Oak Woodland Creation and Enhancement

- Coast live oak woodland Creation Area
- Valley oak woodland Creation Area
- Coast live oak woodland Enhancement Area
- Oak Tree Planting Area/Valley oak grassland Creation Area



0 2,000 4,000 Feet

SOURCE: ESRI ArcGIS Online World Imagery Basemap

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FIGURE 7
Woodland Creation/Enhancement and Individual Tree Planting Areas

Draft Oak Resources Management Plan for the RMDP/SCP

\\DJ\DEK-FILES\GIS\Data\Projects\j2738\012014_Scripts\MAPDOC\MAPS\F22_ORMPF\Figure 7 Woodland Mitigation.mxd- Date Saved: 12/15/2014 4:24:37 PM

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Sufficient area has also been identified to accommodate required tree plantings. Specifically, the required coast live oak plantings (2,081 trees) would require 41.62 acres of creation area at the target density of 50 trees per acre, and 148.23 acres have been identified. For valley oak, 216 tree plantings would require 8.64 acres of valley oak woodland creation area at the target density of 25 trees per acre, or 10.80 acres of valley oak/grass creation area at a density of 20 trees per acre; 8.25 acres and 125.26 acres of available planting area have been identified, respectively. Required mitigation for MacDonald oak (16 trees) and scrub oak (89 trees) could also be accommodated within woodland creation areas or planted in additional tree planting areas (identified in Section 5.3). Finally, the required non-oak tree plantings (14 southern California black walnut and 556 mainland cherry) could be added as a component to woodland creation or enhancement areas or planted in additional tree planting areas.

5.3 Additional Planting Areas for Individual Trees

In addition to the tree planting locations identified for woodland creation and enhancement, planting of individual oak trees of any species may occur in the post-development landscape in order to meet the CLAOTO and RMDP/SCP EIS/EIR requirements. Mitigation to comply with these requirements will occur wherever oak trees are planted. As noted, Newhall Land may elect to plant individual oak trees outside woodland areas, including in the optional areas specified in this section. Specific locations for tree planting for each proposed project will be further refined in each project's subnotification package.

5.3.1 Fuel Modification Zone Tree Planting

Oak trees may be planted within fuel modification zones within the project footprint. Slopes targeted for tree planting should be north- and east-facing slopes, with priority given to slopes that are contiguous with existing and preserved natural woodland areas. Oak trees planted in these areas would count toward individual tree mitigation totals required under CLAOTO and the RMDP/SCP EIS/EIR for impacts to individual oak trees.

5.3.2 Landscape Tree Plantings

Oak trees may be planted within the community open space areas as landscaping components. These trees would likely be larger-sized trees that would provide aesthetic benefits and would receive more maintenance than trees in woodland creation/enhancement areas. Some of these trees may be relocated from project impact areas or other Newhall Land property in the area. These trees would provide a landscaping theme that is in harmony with the considerable preserved woodlands in the surrounding open space. Oak trees planted in these areas would

count toward individual tree mitigation totals required under CLAOTO and the RMDP/SCP EIS/EIR for impacts to individual oak trees.

5.3.3 Restored Canyon Drainage Systems

Several canyon drainage systems will be modified, reconstructed, or stabilized, including Chiquito Canyon, Lion Canyon, Long Canyon, Potrero Canyon, and San Martinez Grande Canyon. Riparian and wetland enhancement and restoration is proposed for these systems, which will include oak tree plantings as components of the native communities to be established. The restoration of these canyons will primarily consist of mitigation for impacts to jurisdictional waters, wetlands, and riparian habitat, and is addressed separately in mitigation plans for these resources. However, planting oak trees within these restored habitats would qualify as tree replacement in accordance with CLAOTO and RMDP/SCP EIS/EIR requirements as well as mitigation for oak woodland impacts in jurisdictional streambeds.

5.4 Mitigation Schedule

The specific implementation schedule for the various components of the oak mitigation program is not known at this stage of project planning. However, the general implementation framework is provided herein, as well as the projected timing of the project build-out.

Mitigation trees must be planted within 1 year of the permitted oak tree removals in accordance with CLAOTO. The initial oak mitigation may include pre-mitigation within portions of the High Country SMA, Salt Creek area, and other preserved portions of the RMDP/SCP area before impacts to oak trees and woodlands within the proposed development areas occur. The intent of pre-mitigation oak tree planting is to satisfy mitigation requirements for impacts to individual oak trees as described in CLAOTO, but planting in degraded woodlands or non-native habitat areas (creation) may occur and successful plantings would also be counted as a component of the RMDP/SCP oak woodland acreage mitigation requirements. Trees that are smaller than the 15-gallon and 1-inch diameter at breast height (dbh; approximately 4.5 feet above mean natural grade) size required by CLAOTO could be planted and monitored until they reach the required size, thereby reducing costs of plant materials and promoting naturally rooting trees, which may enhance long-term survival. The Los Angeles County Forester must approve the pre-mitigation concept prior to implementation. Monitoring, mapping, and reporting will also be critical components to the pre-mitigation oak planting efforts to successfully document and quantify viable mitigation plantings. Successfully established and County-verified oak tree plantings under this program will be counted toward the required mitigation totals as impacts are realized.

In general, mitigation will occur first in open space areas not subject to project-related impacts, and second in temporary impact areas associated with specific projects. Thus, mitigation for habitat impacts per the RMDP/SCP EIS/EIR would generally be provided first. Additional oak trees will be planted in temporary impact areas, Open Areas, parks, fuel modification zones, and appropriate streetscape areas to satisfy any remaining CLAOTO requirements.

The actual sequence of the build-out schedule is not established. However, the current status of tentative maps provides an indication of the potential sequence of projects. Within the Specific Plan area, five tentative maps will be submitted over a period of time: Landmark Village (currently approved), Mission Village (currently approved), Homestead Village South (in process), Homestead Village North (to be submitted in future), and Potrero Village (to be submitted in future). In addition, tentative maps will be submitted for Entrada South (in process) and VCC (to be submitted in future). Numerous infrastructure components may be proposed as part of tentative map submittals or as individual projects. Likewise, the tentative map areas may be subdivided into phases and submitted separately.

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6 PLANTING PLAN

This ORMP provides for planting oak trees, enhancing degraded oak woodlands, and establishing new oak woodlands. The planting recommendations presented in this document rely on proven methods to provide for a high likelihood of tree establishment, adaptation to the planting site, and continued growth into subsequent age classes. This section also provides details of the site preparation, planting methods, plant palettes, and source requirements.

6.1 Oak Tree Source Requirements and Size

In accordance with RMDP/SCP EIS/EIR Mitigation Measure BIO-22d, all plant materials and plant propagules (seed, nursery stock, cuttings) used for oak woodland enhancement or replacement shall be collected within a 5-mile radius and within 1,000 feet elevation of the restoration site. This requirement also supersedes the CLAOTO requirements for utilizing indigenous oak trees from Los Angeles or Ventura counties and will be the standard for this ORMP. Accordingly, site-specific collections will be necessary to develop the resources needed for tree planting. A seed collection and plant propagation program will be developed to orchestrate seed collection and nursery propagation to meet these parameters so that plant materials and plant propagules are available for the specific planting sites in accordance with these guidelines.

In addition to the source requirements, it is recommended that the following criteria for individual tree condition be met prior to planting:

- Trees shall be healthy, sound, vigorous, and free from disease, insects, or pests
- Trees shall not be root bound or exhibit girdling roots
- Trees shall be natural form
- Trees shall not have been topped.

The size of oak trees will vary, from young seedlings in tree pots to larger box specimens. For planting within natural open space, the oak tree sizes will vary between tree pots and 15-gallon size. Planting in natural open space will also use unpotted acorns. Larger specimen trees may be used within developed areas where there is a desire for quicker establishment for development of tree structure.

For more remote oak woodland creation or enhancement sites, there will be a higher reliance on smaller oak trees and acorns. Planting acorns and seedlings in the natural areas on the property

can be a simple, economical, and successful way of establishing healthy trees. Direct seeding of acorns is often discouraged because growers expect poor germination rates and a high loss of planted seeds to rodents. These problems are minimized with careful selection and storage of seed, sowing multiple seeds in the same planting hole and thinning later, and the use of tree protection to protect the seed and growing seedling in the ground from herbivory.

6.2 Oak Tree Planting Densities and Quantities

Planting densities naturally vary depending on site conditions (e.g., slope, aspect, soil type, water availability). However, on average, a target tree density has been established for each oak woodland type, as presented in Table 17 (adapted from Table 4.5-71 from the RMDP/SCP EIS/EIR). As required by the RMDP/SCP EIS/EIR, tree densities of surviving, healthy oak trees shall be within 5% of ORMP target density, by woodland type. Cover and species richness of other native shrubs shall reach 50% of the cover and species richness described for the target woodland. For valley oak/grass, a target tree density of 20 trees per acre is assumed.

The plant palettes provided herein for woodlands include container planted shrubs to facilitate development of a shrub layer, and a seed mix to introduce native herbs and grasses. The plant palettes for woodlands provide for an understory shrub cover of 50%, with the assumption that the remainder of the understory cover would be composed of herbs. In contrast, the plant palette for valley oak/grass contains only seed consisting of native herbs and grasses.

Table 17
Target Woodland Tree Densities by Oak Woodland Type

Woodland Type	Average Existing Woodland Density (Trees per Acre)	Target Density for Newhall Land (Trees per Acre)
Coast live oak woodland	22	50
Mixed oak woodland	19	40
Valley oak woodland	16	25

As several oak species will be impacted, mitigation totals must also represent an appropriate species distribution. With the exception of MacDonald oak, impacted oak trees will be replaced in kind. Valley oak trees will be planted to compensate for this hybrid variety.

In order to account for tree mortality of plantings over the 2-year monitoring period, a greater number (approximately 5%) of oak trees will be planted than is required (Table 18). Should mortality rates or actual tree impact totals exceed the totals used in determining the mitigation

quantities presented in this ORMP, additional planting efforts will be implemented using the guidelines discussed herein.

Table 18
Oak Tree Plantings by Species

Species	Trees Impacted	Trees Required	Total with Additional 5%
Coast live oak	619	2,081	2,185
Valley oak	57	216	227
Scrub oak	35	89	94
MacDonald oak*	6	16	17
Total	**717**	**2,402**	**2,523**

*Note, the hybrid variety, MacDonald oak, will be replaced with Valley oak

6.3 Identified Oak Tree Capacity

The planting totals in Table 18 are based on estimated impact numbers multiplied by the required replacement ratios, adjusted to account for mortality. The maximum tree capacities presented in Table 15 are derived strictly from available acreages within the planting areas multiplied by optimal tree densities, by species. As indicated by Table 15, the available tree planting capacity exceeds the recommended tree planting totals presented in Table 18.

6.4 Site Preparation

Site preparation activities for oak woodland creation areas may include minor surface contouring, soil decompaction, soil amending, weed/debris removal, irrigation system installation, and grow-and-kill weed control treatments. For individual tree planting sites, site preparation may not be necessary if planting areas are within developed areas, or minimal in natural areas where some minor weed/debris removal may be necessary.

6.4.1 Soil Decompaction and Surface Contouring

In areas where the land surface has been degraded or modified, soil decompaction and minor surface contouring may be recommended to alleviate compaction and return the surface to natural contours. Such instances include soil berms that may impede natural surface drainage; old, unused road cuts; erosion scars; or unused cattle watering ponds. Soil decompaction shall consist of cross-ripping to a depth of at least 12 inches.

6.4.2 Soil Amendments

Agricultural-suitability soil tests should be performed and analyzed before restoration is undertaken in any area to ensure that the soil chemistry is not a limiting factor for the growth of oak trees or other understory plant material. The test results may help verify that the soil is suitable and will help determine what soil amendments and/or fertilizers may be required, if any, for restoration to be successful in the allotted time frame.

If the soils are disturbed, soil amendments are more likely to be necessary to promote healthy plant establishment, such as in the developed areas where mass grading will occur. Natural areas are unlikely to need soil amendments, with the exception of some minor nutrient augmentation to initiate early plant establishment. Soil amendments should be incorporated into the topsoil or into the backfill for plant materials.

6.4.3 Weed/Debris Removal

Weeds and debris shall be removed from restoration areas and planting sites prior to seed application or planting. If the entire site is to be restored or enhanced, then the surface shall be cleared of any weeds or debris to allow seed contact with the soil. In areas where individual tree or understory shrub planting will occur, weed and debris removal is only necessary within a 3-foot radius of each planting hole.

6.4.4 Irrigation System Installation

A temporary irrigation system may be installed to provide supplemental irrigation to the native seed and container plants to help foster plant establishment within the oak woodland restoration areas. The irrigation system will only be used until the plants are established such that they can survive on their own from seasonal rainfall. The irrigation system will be installed as an aboveground system, so that irrigation equipment may be abandoned and removed once the system has been decommissioned. The irrigation system will use a water source located as close to the site as possible. All on-site irrigation will consist of polyvinyl chloride (PVC) pipe staked on grade at approximately 10 feet on-center and at all corners. An overhead system would be used for oak woodland restoration areas where establishing the understory is a component of the restoration. In other areas, a drip or bubbler irrigation system may be used to deep water the individual tree plantings until they become established. Check valves will be installed to eliminate low-head drainage where necessary.

6.4.5 Initial Weed Control

Prior to the installation of native seed and container plants in oak woodland restoration areas, a grow-and-kill weed eradication treatment will be conducted by activating the irrigation system over an approximately 2- to 4-week period to encourage non-native seedling germination. If the restoration areas do not have an overhead irrigation system, a grow-and-kill treatment should be conducted after the onset of rains encourage weed seed germination. When weeds have begun to grow, a foliar application of an appropriate systemic herbicide will be applied to kill the weeds. This procedure may be conducted multiple times to reduce the weed seed bank prior to planting.

6.5 Plant and Seed Installation

After site preparation activities are complete, plants will be installed. Container plants will include all species from the planting palettes for the target community.

Location. Dudek recommends a non-uniform or non-grid-type planting layout for all natural open space planting areas included in this ORMP. Specifically, planting locations within the planting areas should mimic natural oak and savanna distributions, with tree clusters and openings scattered randomly throughout the planting areas. Individual planting locations should be flagged in the field by a qualified forester, arborist, or restoration biologist prior to tree planting efforts, using the density and location information included in this ORMP.

Depth. The planting pit shall be excavated to a minimum of twice the diameter of the root ball, and to a depth adequate to allow the root ball to rest on firm soil. The sides and bottom of the planting pit shall be scarified prior to installation of the tree. The depth of the planting pit should be checked so that the top of the root ball extends 1 to 2 inches above grade. This allows for settling of the tree over time, and prevents the root ball from resting below grade where it is susceptible to moisture, fungal pathogens, and other soil organisms.

Container and roots. Remove the tree from the container and trim the root ball according to the following criteria: Locate any thick circling roots and either straighten them or cut them cleanly. Make three to four vertical cuts 0.5 inch deep around the root ball in order to thin the roots. Spread the bottom roots out, as necessary.

Tree placement and backfilling. Place the tree in the pit, making sure planting depth is appropriate. The native soil should be backfilled into the planting pit. If the timing is appropriate for the collection and sowing of acorns, one acorn, gathered from local sources and of the same species as the planted tree, shall be added to each pit and buried to a depth of 1.5 to 2 inches below the final backfill grade (McCreary 2001). A 4-inch-high by 24-inch-diameter soil watering

basin should be placed around each oak tree at planting. The trees should be thoroughly watered immediately following planting.

Timing. Trees should be planted in the fall of each year, soon after the first fall rains have moistened the soil. Preferably, containerized trees should be planted by mid-December (McCreary 2001).

6.6 Planting Plan

The planting plan will vary for each restoration area depending on site-specific conditions related to hydrology and soils. More detailed planting plans will be defined in each site-specific mitigation plan to be submitted with each construction subnotification package. Representative plant palettes are shown in Tables 19–22. Planting will follow site preparation activities.

The plant palettes have been designed to represent the composition of species that occur within the oak-dominated vegetation communities and to create additional appropriate native vegetation communities through a formulated composition of container stock and seed mix. The species included are important components of the revegetation program, and occur as components of existing oak woodlands and valley oak/grass habitats on site. Site-specific adjustments (e.g., seeding rates, species composition) to these generalized planting palettes may be made as deemed appropriate by a qualified forester, arborist, or restoration biologist.

Table 19
Southern Coast Live Oak Riparian Forest Plant Palette

Seed Mix			
Scientific Name	*Common Name*	*Minimum Percent Live Seed*	*Rate (Pounds/Acre)*
Ambrosia psilostachya	western ragweed	4.5	2
Amsinckia intermedia	common fiddleneck	49	1
Artemisia californica	California sagebrush	7.5	2
Artemisia douglasiana	mugwort	5	1
Artemisia dracunculus	tarragon	3	1
Artemisia tridentata	big sagebrush	6.5	1
Bromus carinatus	California brome	76	6
Clarkia purpurea	winecup clarkia	80	0.5
Collinsia heterophylla	purple chinese houses	88.2	1
Eriogonum fasciculatum	California buckwheat	6.5	10
Eriogonum gracile	slender buckwheat	0.75	1
Isocoma menziesii var. *vernonioides*	Menzies' goldenbush	15	3
Lasthenia californica	California goldfields	30	0.5

Table 19
Southern Coast Live Oak Riparian Forest Plant Palette

Seed Mix			
Scientific Name	*Common Name*	*Minimum Percent Live Seed*	*Rate (Pounds/Acre)*
Leymus triticoides	creeping wildrye	76	3
Mimulus aurantiacus puniceus	sticky monkeyflower	1.2	2
Nassella cernua	nodding needlegrass	40	3
Nemophila menziesii	baby blue-eyes	83.3	1
Phacelia cicutaria	caterpillar phacelia	47.5	1
		Total pounds/acre	**40.0**

Container Plants				
Scientific Name	*Common Name*	*Size*	*Spacing (Feet on Center)*	*Quantity per Acre*
Heteromeles arbutifolia	toyon	1 gallon	12	24
Juglans californica	black walnut	Varies*	20	5
Leymus condensatus	giant rye grass	1 gallon	6	61
Prunus ilicifolia	mainland cherry	Varies	12	9
Quercus agrifolia	Coast live oak	Varies	20	50
Rhus ovata	sugar bush	1 gallon	12	15
Rhus trilobata	squaw bush	1 gallon	6	97
Ribes californicum	California gooseberry	1 gallon	6	36
Ribes indecorum	white-flowered currant	1 gallon	6	36
Rosa californica	California rose	1 gallon	6	61
Sambucus mexicana	Mexican elderberry	Varies	12	15
			Total plants/acre	409

* Pot sizes for black walnut, mainland cherry, oaks, and elderberry will vary, and may include deep pots, tree pots, 5-gallon, and 15-gallon sizes.

Table 20
Coast Live Oak Woodland Plant Palette

Seed Mix			
Scientific Name	*Common Name*	*Minimum Percent Live Seed*	*Rate (Pounds/Acre)*
Amsinckia intermedia	common fiddleneck	25	1
Artemisia californica	California sagebrush	7.5	2
Baccharis pilularis	coyotebrush	0.8	1
Brickellia californica	California brickelbush	2	2
Clarkia purpurea	winecup clarkia	80	0.5
Collinsia heterophylla	purple Chinese houses	88.2	1
Elymus glaucus	blue wildrye	72	3
Eriogonum fasciculatum	California buckwheat	6.5	8
Eschscholzia californica	California poppy	73.5	1
Hazardia squarrosa	sawtooth goldenbush	2	4

Table 20
Coast Live Oak Woodland Plant Palette

Seed Mix			
Scientific Name	*Common Name*	*Minimum Percent Live Seed*	*Rate (Pounds/Acre)*
Isocoma menziesii var. *vernonioides*	Menzies' goldenbush	15	1
Lasthenia californica	California goldfields	30	0.5
Lessingia filaginifolia	sand aster	0.08	4
Melica imperfecta	coast melicgrass	54	2
Mimulus aurantiacus pubescens	hairy bush monkeyflower	1.2	2
Nemophila menziesii	baby blue-eyes	83.3	1
Phacelia cicutaria	caterpillar phacelia	80	1
Salvia leucophylla	purple sage	49	2
		Total pounds/acre	**40.0**

Container Plants				
Scientific Name	*Common Name*	*Size*	*Spacing (Feet on Center)*	*Quantity per Acre*
Heteromeles arbutifolia	toyon	1 gallon	12	30
Juglans californica	black walnut	Varies	20	9
Leymus condensatus	giant rye grass	1 gallon	6	121
Quercus agrifolia	Coast live oak	Varies	12	50
Quercus lobata	valley oak	Varies	20	25
Rhus ovata	sugar bush	1 gallon	12	15
Rhus trilobata	squaw bush	1 gallon	6	97
Ribes californicum	California gooseberry	1 gallon	6	36
Sambucus mexicana	Mexican elderberry	1 gallon	6	36
Umbellularia californica	California bay laurel	1 gallon	6	36
			Total plants/acre	**456**

Table 21
Valley Oak Savanna Seed Mix

Seed Mix			
Scientific Name	*Common Name*	*Minimum Percent Live Seed*	*Rate (Pounds/Acre)*
Amsinckia intermedia	common fiddleneck	25	2
Bromus carinatus	California brome	60	6
Clarkia purpurea	winecup clarkia	80	0.5
Collinsia heterophylla	purple Chinese houses	88.2	2
Elymus glaucus	blue wildrye	72	4
Eschscholzia californica	California poppy	73.5	2
Lasthenia californica	California goldfields	30	0.5
Lessingia filaginifolia	sand aster	0.08	5
Melica imperfecta	coast melicgrass	54	2

Table 21
Valley Oak Savanna Seed Mix

Seed Mix			
Scientific Name	*Common Name*	*Minimum Percent Live Seed*	*Rate (Pounds/Acre)*
Nemophila menziesii	baby blue-eyes	83.3	2
Phacelia cicutaria	caterpillar phacelia	80	1
Poa secunda	pine bluegrass	32	1
Stipa lepida	foothill needlegrass	54	4

Table 22
Valley Oak Woodland Plant Palette

Seed Mix			
Scientific Name	*Common Name*	*Minimum Percent Live Seed*	*Rate (Pounds/Acre)*
Amsinckia intermedia	common fiddleneck	25	1
Bromus carinatus	California brome	60	6
Clarkia purpurea	winecup clarkia	80	0.5
Collinsia heterophylla	purple Chinese houses	88.2	1
Elymus glaucus	blue wildrye	72	3
Eschscholzia californica	California poppy	73.5	1
Hazardia squarrosa	sawtooth goldenbush	2	4
Isocoma menziesii var. *vernonioides*	Menzies' goldenbush	15	1
Lasthenia californica	California goldfields	30	0.5
Lessingia filaginifolia	sand aster	0.08	4
Melica imperfecta	coast melicgrass	54	2
Mimulus aurantiacus pubescens	hairy bush monkeyflower	1.2	2
Nemophila menziesii	baby blue-eyes	83.3	1
Phacelia cicutaria	caterpillar phacelia	80	1
Poa secunda	pine bluegrass	32	1
Stipa lepida	foothill needlegrass	54	4
		Total pounds/acre	**33.0**

Container Plants				
Scientific Name	*Common Name*	*Size*	*Spacing (Feet on Center)*	*Quantity per Acre*
Heteromeles arbutifolia	toyon	1 gallon	12	24
Juglans californica	black walnut	Varies	20	5
Leymus condensatus	giant rye grass	1 gallon	6	121
Quercus lobata	valley oak	Varies	30	25
Rhus ovata	sugar bush	1 gallon	12	30
Rhus trilobata	squaw bush	1 gallon	6	121
Sambucus mexicana	Mexican elderberry	1 gallon	6	85
			Total plants/acre	**412**

6.7 Tree Tagging and Mapping

Following tree planting, the location of each individual mitigation tree in individual tree planting areas or within woodland creation or enhancement areas, will be mapped in the field with GPS and its location marked on a site map. Data collected for each mapped tree will include species, tree planting size, planting area, and planting date. Each tree will be assigned an identifying number that will be written on an "Aluma-boss" or other suitable marking tag attached to each tree in a visible location. Because the trees are small, tree tags shall be fastened to a tree limb, not the trunk, using wire or plastic ties. Tree tags should not be nailed into any part of the tree. Marking tags will be removed prior to termination of the appropriate monitoring period. All tree locations shall be kept in a spatial database, and tree numbers will be entered into a database to track data for each tree.

6.8 Fencing and Protection

Fencing and other protective measures are recommended to protect oaks from animal damage and may be critical in the overall survival of oak trees and success of restoration efforts. Damage associated with cattle and deer grazing is the primary concern addressed in this ORMP. Several options exist for oak seedling protection:

- **Vaca cages.** These cages are circular structures, each approximately 1.5 feet in diameter and 4 feet in height, created from 12-gauge wire fencing with 2- by 4-inch mesh. The cages are secured to the ground with a T-bar post with 14-gauge wire fastened to the top, middle, and bottom of the cage. These cages are effective against deer and cattle.
- **Cattle exclusion fencing.** If cattle are present, fencing around each planting area following the completion of planting efforts is intended to prevent access into the planting area by cattle and to minimize the potential for trampling or browsing of newly planted oaks and the irrigation system. Cattle exclusion fencing should be no less than 4 feet high, installed at the edge of planting areas. Fencing materials will consist of four-strand, four-point barbed wire, self-anchoring super stockman's braces, leg braces, stress posts, and earth anchors as necessary for the terrain. Cattle exclusion fencing alone is not effective against deer browsing. If deer browsing becomes problematic, then one of the other tree protection methods shall be used.
- **Tree shelters.** Tree shelters (e.g., Tubex) are plastic, translucent protectors that fit over seedlings. Four-foot shelters are recommended and should be attached to the manufacturer-provided stakes with wire, leaving the top of the post several inches below the lip of the shelter. Shelters have also proven to stimulate aboveground growth, limit

foliage exposure to herbicides, and make it easier to locate field plantings (McCreary 2001). Shelters should be left in place for at least 3 years after the trees have emerged from the tops.

All fencing, cages, or shelters should be maintained in place until trees reach the end of the 5-year monitoring period, or until otherwise noted by the project monitor.

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7 MAINTENANCE PLAN

Maintenance of the oak woodland restoration sites is required for a period of no less than 5 years total and no less than 2 years after removal of irrigation (if any). If trees are planted that are smaller than the required minimum size required by CLAOTO, then the 5-year maintenance period begins once the planted trees reach the required minimum size. During the maintenance period, maintenance measures will be provided to ensure that the oak trees become successfully established and are ultimately able to survive in natural conditions beyond the completion of the maintenance period.

7.1 General Habitat and Tree Maintenance Guidelines

7.1.1 Pest Management

An integrated pest management approach will be employed for any pest control measures that may be undertaken. Alternative methods to pesticides will be encouraged wherever feasible. Insects, disease, and other pests may require control measures if they pose a significant threat to plant health and vigor during the 5-year maintenance period. The landscape maintenance contractor shall consult with the biological monitor to determine whether control measures are warranted. The landscape maintenance contractor shall follow all applicable laws, regulations, label directions, and safety precautions when performing pest control activities.

7.1.2 Weed Control

Weeds are expected to be the primary pest problem in the mitigation areas during the first few years. Weeds shall be controlled so they do not prevent the establishment of the native species or invade adjacent areas. Weeds shall be controlled prior to setting seed. A combination of physical removal and appropriate herbicide treatments shall be used to control the non-native/invasive plant species. Properly timed, repeat herbicide applications will likely be required to effectively control these species.

Weeds and non-native grasses shall be controlled during the entire maintenance period so they are not a competitive threat to establishment of the desired native species. According to Condition 4 of Mitigation Measure BIO-22d, non-native grass cover shall not exceed the target woodland non-native grass cover, and other non-native species shall not exceed 10% cover at any time. Any non-native species listed on the California State Agricultural noxious weed list (3 CCR 4500) or the California Invasive Plant Council (Cal-IPC) list of high- or moderate-rated species (Cal-IPC 2014) will not be present on the revegetation site at the time that project

success is determined. Weed control efforts shall occur at a level that will keep the woodland restoration projects in conformance with these weed control goals.

Weeds and other plants will be removed within a 3-foot radius around each oak tree to minimize competition for water, nutrients, and light. Mulch in the watering basins will be replaced as needed to maintain a mulch layer around all trees and to help conserve water loss.

7.1.3 Irrigation System

If an irrigation system is established, it shall be checked regularly to ensure proper operation and adequate coverage of the restoration areas. Problems with the system shall be repaired immediately to reduce potential plant mortality. The frequency and duration of irrigation applications shall be adjusted seasonally by the maintenance contractor in coordination with the biological monitor to meet habitat needs. The intent of the irrigation program is to maximize healthy growth and maintain good vigor, while ultimately allowing the trees to transition to surviving in the natural site conditions. The irrigation system will be kept off to the maximum extent possible during the winter rainy season.

The irrigation system will be used as necessary during the first few years of the long-term maintenance and monitoring period, and will be terminated at least 3 years prior to the completion of the maintenance program. Watering on site will gradually be decreased prior to the irrigation system being abandoned to allow the plants to become acclimated to the site's natural hydrology.

7.1.4 Trash and Debris Removal

All trash and unnaturally occurring debris shall be removed by the maintenance contractor during each maintenance visit. Deadwood and leaf litter will be left in place to replenish soil nutrients and organic matter.

7.1.5 Tree Protection and Fencing and Signage Maintenance

Tree protection and fencing and signage maintenance shall be conducted as needed to protect the restoration areas. Significant damage from cattle to early restoration sites can occur in a short time. Exclusionary fencing maintenance and tree protection are critical to ensure the successful establishment of the oak woodland restoration areas.

7.1.6 Tree Care

In the oak woodland restoration areas, pruning will generally not be needed or permitted on the mitigation oak trees. Suckers may be removed and some minor pruning may be recommended by the biological monitor to provide for good branch structure and to repair any deficiencies in the trees or other damage that may occur. The oak trees will generally not be pruned to remove lower-growing branches or train the trees to a "standard" street tree form; instead, they will be encouraged to take on a natural form. Safety pruning to remove growth-impeding access along sidewalks, maintenance access roads, and/or streets may be permitted based on the recommendations of the biological monitor. Oak trees planted per CLAOTO requirements in the development areas may be pruned and trained as necessary.

Fertilization will generally not be necessary, particularly for the oak trees planted in natural open space areas. The restoration ecologist may recommend supplemental applications of fertilizer or other soil amendments during the maintenance and monitoring period if deemed necessary for healthy plant establishment. If the biological monitor recommends supplemental fertilizer applications, they will be applied during the fall through early spring months to correspond with the natural growth cycle of the trees.

7.2 Maintenance Schedule

Maintenance of restoration areas shall be conducted as needed to ensure success. Although the frequency of maintenance visits may be highly variable depending on conditions, the general guideline for maintenance is to provide maintenance visits monthly during the first year and quarterly thereafter. For individual oak trees, maintenance shall occur as needed, but a minimum of twice per year.

The schedule for maintenance will be flexible to allow for more visits during periods when greater maintenance needs are present and fewer maintenance visits during periods when maintenance needs are minimal. For instance, maintenance visits may be conducted monthly during the spring when weeds are actively growing and setting seed, but only every several months in the summer/fall when weeds are controlled or dead.

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8 MONITORING PLAN

8.1 Monitoring Principles

The following sections present guidelines for the monitoring of planted oaks and oak woodland restoration (creation and enhancement) areas. A detailed monitoring program will be established for each development area associated with the RMDP/SCP EIS/EIR and will be outlined in the submitted subnotifications, which will demonstrate individual project compliance with the criteria included in this ORMP. In addition to monitoring the tree planting and woodland restoration areas, the program will also include monitoring of retained oak trees where project-related grading or other site disturbance occurs within the encroachment zone (as identified in CLAOTO and encompassing the area within the dripline of an oak tree and extending therefrom to a point at least 5 feet outside the dripline, or 15 feet from the trunks of a tree, whichever distance is greater). Tree protection measures for retained trees adjacent to development activity will be included in the oak tree permits issued by the County for each development area.

The monitoring program for planted oaks and oak woodland restoration areas includes the following basic components:

- Performance standards
- Data collection standards
- Digital and on-site locations of data points / monitoring stations
- Monitoring schedule
- Observations
- Adaptive management
- Recommendations.

Monitoring efforts discussed in this section address individual oak tree establishment (per CLAOTO) and woodland enhancement/creation areas (per the RMDP/SCP EIS/EIR). Individual trees planted in woodland enhancement/creation areas will be counted both toward fulfilling CLAOTO requirements and as a component of the woodland mitigation required under the RMDP/SCP EIS/EIR, and will therefore be monitored with this understanding in mind.

Finally, for the purposes of this ORMP, a monitor is assumed to be a qualified arborist, forester, biologist, or oak restoration specialist with specific oak mitigation or restoration experience. The

monitor will coordinate all monitoring efforts, including those for individual tree plantings, oak woodland restoration areas, and retained tree health adjacent to construction activities. Monitoring of new plantings will continue until the required 5-year period ends.

8.2 Monitoring and Reporting Schedule

Monitoring will occur from planting through the establishment/maintenance period and will be of higher frequency during planting and for the 120 days following planting. The monitor should be on site to document tree and shrub planting, seeding, and irrigation installation and provide direction during the planting process. The monitor should also visit the site periodically each year throughout the establishment/maintenance period to track the progress of mitigation efforts. A consistent monitor should be employed over the course of the program to better implement the adaptive management process should tree decline or mortality occur at unusual levels.

8.2.1 Individual Trees

Monitoring of mitigation oaks shall be conducted for a minimum of 2 years after planting if the trees are 15-gallon size and 1 inch in diameter as measured 1 foot above the base (per CLAOTO), or for 2 years once they reach this minimum size. Additionally, if mitigation oak trees die during the 2-year monitoring period, they shall be replaced and monitored for 2 years, starting from the point when they meet the minimum CLAOTO size requirement. This monitoring schedule applies to all planted trees, including individual tree plantings and those within woodland creation or enhancement areas, for credit toward CLAOTO mitigation requirements. Monitoring should focus on tree health, mortality rates and causes, presence of pests or diseases, competition levels from non-native species, and other factors that may affect tree establishment or growth.

For tree planting areas, the monitor will perform monthly monitoring during the first 4 months, quarterly monitoring during the remainder of year 1, and then biannual site visits during year 2. Quarterly monitoring reports will be submitted to Newhall Land and will address the following:

- Tree survival/mortality totals
- General field observations related to tree health and survivability
- Recommended maintenance (as needed) to be completed by Newhall Land ranch management staff.

Annual reports will be required for submittal to the County of Los Angeles Fire Department and will include discussions of tree health and mortality, adaptation success of trees on the project

site, cultural practices affecting tree health, and overall success of tree establishment on site. The annual County of Los Angeles Fire Department report shall also document individual tree quantities reaching minimum size requirements, so that the 2-year monitoring period can commence. Annual reports should be completed prior to the end of the calendar year.

8.2.2 Woodlands

In addition to the monitoring required to satisfy CLAOTO requirements, monitoring of woodland creation or enhancement areas shall be conducted according to the criteria identified in Mitigation Measure BIO-22; specifically, for a period of no less than 5 years total and no less than 2 years after removal of irrigation (if any). It is possible that trees planted within woodland creation or enhancement areas could meet the 2-year CLAOTO monitoring and establishment criteria prior to the woodland criteria being met. In such cases, CLAOTO tree planting credit shall be documented and the woodlands shall continue to be monitored for any time remaining (between 3 and 5 years).

For woodland creation and enhancement areas, the monitor will perform monthly monitoring during the first 4 months, quarterly monitoring during the remainder of year 1, and then biannual site visits during years 2–5. Annual quantitative monitoring shall be conducted in the spring or early summer to document the status of the habitat development. Annual quantitative monitoring should be conducted at the same time of year each year to increase the strength of the year-to-year comparative analysis.

Monthly and quarterly monitoring reports (year 1) will be submitted to Newhall Land and will address the following:

- Tree survival/mortality totals
- General field observations related to tree health and survivability
- Recommended maintenance (as needed) to be completed by Newhall Land ranch management staff.

Annual reports will be required for submittal to the CDFW and will include discussions of tree health and mortality, adaptation success of trees on the project site, cultural practices affecting tree health, and overall success of mitigation efforts toward meeting performance standards. Annual reports should be completed prior to the end of the calendar year.

8.3 Monitoring Methods

8.3.1 Individual Trees

As identified in Section 6.7, individual trees will be mapped and tagged. At each monitoring visit, the monitor will inspect the trees for general health and vigor, noting any remedial maintenance issues that may be needed to address inadequacies in plant growth and development. The landscape maintenance contractor and owner will be given directions for any maintenance requirements following each monitoring visit.

Each tree will be measured for overall height and canopy spread and given a vigor assessment score. The trees will be given a vigor assessment score ranging from 0 to 4, with a 0 score given to a dead tree and 4 given to a healthy, vigorously growing tree with good color and no observable problems. A score of 1 will be given to trees in poor, declining condition, with noticeable leaf dieback or sparse, declining foliage. A score of 2 will be given to trees that are generally healthy, but show minimal growth and may exhibit some stress, pest, or non-fatal disease problems. A score of 3 will be given to trees of good health and vigor with minimal pest or non-fatal disease problems. A score of 4 will be given to trees of excellent health and vigor with no pest or non-fatal disease problems and showing vigorous new growth. Pest or disease problems will be described as part of the overall tree assessment, as will any vandalism or other problems observed.

8.3.2 Woodlands

The monitor will be responsible for monitoring establishment of woodland creation and enhancement areas. Monitoring oak woodlands habitat restoration, in contrast to monitoring individual oak trees, will include monitoring the establishment of the herb and shrub layer as well as the planted oak trees. The standards for the development of oak woodland habitat will be based on natural oak woodland habitat at reference sites.

An evaluation of native vegetation coverage, weed presence, and site progress will be collected during monitoring visits to be used in the annual monitoring report. Qualitative monitoring will be conducted to assess native plant vigor and development, seedling recruitment from native seed application and natural sources, soil moisture content, presence/absence of plant pests or diseases, erosion and/or drainage conditions on site, presence/absence of non-native or invasive plant species, trash or debris accumulation, and wildlife presence/absence. All qualitative monitoring visits to the restoration areas will be documented with a monitoring report. Any

project deficiencies will be noted in the monitoring report, with accompanying recommendations for maintenance or remedial actions.

In addition to qualitative monitoring, quantitative data will be collected annually to document restoration progress. Approximately one point-intercept transect will be placed for each 2 acres of habitat restoration. The beginning and endpoints of transects will be demarcated with a metal T-post and labeled for annual monitoring. Transects will be 50 meters (165 feet) long, with a species richness belt extending 2.5 meters (8 feet) out from each side of the transect line (total 5-meter (16-foot) width). At each 0.5-meter (1.6-foot) point along the transect, data will be recorded for plant species (if intercepted) or ground conditions (e.g., bare ground, rock, detritus). Transect data will be analyzed to determine percent native vegetative cover (by species), percent weed cover, percent invasive species cover, and species richness. Transect data will be analyzed annually and summarized in monitoring reports in the context of project goals and success criteria. Recommendations for maintenance efforts will be based on these site observations and will be summarized in each year-end monitoring report.

8.4 Performance Standards

Performance standards are a basic element of a restoration monitoring program. Performance standards are the thresholds for determining whether the project can be considered successful. The oak tree plantings in mitigation areas of the Newhall Land property shall be monitored for growth and survival, as these two factors typically provide the basis for determining the success of oak tree mitigation. In addition to monitoring oak tree growth and survival, oak woodlands creation and enhancement areas will be monitored to assess habitat development relative to project goals and requirements. The following standards will guide the success of the mitigation efforts.

8.4.1 Individual Trees

The success of mitigation for individual oak tree impacts shall be judged against the requirements from CLAOTO, the RMDP/SCP EIS/EIR, and specific project oak tree permits issued by the County. The overarching goal of this mitigation program is to increase the number of trees growing within planting areas and created/enhanced woodlands through planting, protection, and enhancement of natural recruitment to compensate for oak tree impacts associated with the implementation of the proposed projects identified in the EIS/EIR.

If oak trees are planted at the minimum size as required by CLAOTO (15-gallon and 1-inch diameter 1 foot above the base) or larger, they must survive for a period of at least 2 years. Any

planted oak seedlings used for mitigation that are less than the minimum size required by CLAOTO must survive for a period of at least 2 years after they have reached the minimum size (1-inch diameter 1 foot above the base). Free-form trees with multiple stems are permissible and the combined diameter of the two largest stems of such trees shall measure a minimum of 1-inch diameter 1 foot above the base to be considered to meet the minimum size criteria.

A greater number of oak trees may be planted to allow for some mortality over the course of the 2-year establishment and maintenance period. Oak trees that die during this period do not need to be replaced if an adequate number of live oak trees remain to meet the mitigation requirements. With planned maintenance and monitoring, tree survival is expected to be good. However, some tree mortality is expected. This ORMP recommends that at least 5% more than the required number of trees be planted to allow for up to 5% mortality. If the quantity of surviving oak trees falls below the required quantity, dead trees shall be replaced and monitored for an additional 2 years (once minimum size is attained) to ensure that the required quantity of surviving oak trees is reached.

Finally, utilization of natural oak recruitment within enhanced woodland areas is recommended. Where applicable, protection and monitoring of naturally occurring seedlings should occur as long as the seedlings meet the project goals and requirements. These trees will count toward required tree planting totals. This approach requires pre-approval from the County Forester.

8.4.2 Woodlands

The performance standards for oak woodlands creation or enhancement have been developed from the requirements identified in RMDP/SCP EIS/EIR Mitigation Measure BIO-22. The woodland creation or enhancement sites shall be monitored for oak tree survival and vigor and other habitat values, including species diversity and wildlife use. The general performance standards include the following:

1. Regardless of the date of initial woodland creation or enhancement, each site must have been without active manipulation by irrigation, planting, or re-seeding for a minimum of 3 years prior to evaluation for successful completion.
2. The percent cover and species richness of restored or enhanced native vegetation shall be evaluated based on target vegetation described in the woodland creation or enhancement plan.

3. Densities (numbers/acre) of surviving, healthy oak trees shall be within 5% of the plan target density. Cover and species richness of other native shrubs shall reach 50% of the cover and species richness described for the target woodland.
4. Non-native grass cover shall not exceed the target woodland non-native grass cover, and other non-native species shall not exceed 10% cover at any time. Any non-native species listed on the California State Agricultural noxious weed list (3 CCR 4500) or the California Invasive Plant Council (Cal-IPC) list of high- or moderate-rated species (Cal-IPC 2014) will not be present on the revegetation site at the time that project success is determined.

Table 23 summarizes the oak woodland creation and enhancement area performance standards for a 5-year period, which assumes 2 years of active maintenance and 3 years without maintenance. This time scale may be adjusted depending on the extent of active maintenance.

Table 23
Summary of Performance Standards for Oak Woodland Creation and Enhancement Sites

Criteria	Year 1	Year 2	Year 3	Year 4	Year 5
Percent native cover[1]	20%	35%	50%	65%	80%
Maximum non-native grass cover	Less than reference site	Less than reference site	Less than reference site	Less than reference site	Less than reference site
Maximum weed cover (non-grass)	<10%	<10%	<10%	<10%	<10%
Cal-IPC moderate- and high-rated species and CDFA noxious weed list species[2]	0%	0%	0%	0%	0%
Species richness[1]	10%	20%	30%	40%	50%
Oak tree density	Within 5% of target density for type	Within 5% of target density for type	Within 5% of target density for type	Within 5% of target density for type	Within 5% of target density for type

Cal-IPC = California Invasive Plant Council; CDFA = California Department of Food and Agriculture
1 Percent native cover and species richness performance standards are measured relative to reference sites for target woodland.
2 This requirement is exclusive on non-native grass cover, which has a separate performance standard.

8.5 Adaptive Management Program

Tracking and documenting the success rates of varying planting and management techniques will be a primary focus of the adaptive management/monitoring program. Through the adaptive management process, less-successful methods can be identified and discontinued as methods to be implemented in the overall mitigation effort. The adaptive management process will enable corrective management actions to be implemented when problems or issues arise. The most critical stage for the adaptive management process will be during the initial 1–2 years of the

monitoring program. During these periods, it is anticipated that establishment failures will occur, but they will be contained and corrected based on site-specific knowledge.

Oak woodland creation/enhancement and tree planting success is largely contingent on availability of precipitation, in the absence of supplemental irrigation. Drought years will very negatively impact the success of acorn germination and tree survival in locations not receiving supplemental irrigation. Dudek does not recommend planting trees larger than seedling size in non-maintained areas where there will be no irrigation. Even small, 1-gallon oaks will require some supplemental irrigation for an extended period following planting to optimize growing conditions, especially during drought conditions.

The adaptive management program will also be an important component of tree planting in woodland creation/enhancement areas. The adaptive management process will include the use of varying techniques and tree sizes on a small scale and documentation of success and failures through diligent monitoring. Corrective actions can be directed for future creation/enhancement area plantings such that methods resulting in the highest level of success become the standard for future oak plantings in these areas.

If the performance standards are not being met, measures may be necessary to correct tree establishment or growth issues. For example, as site-specific establishment and growth preferences are determined, or as technologies and scientific understanding advance, modifications can be made to help achieve the goals and reach performance standards. As a baseline for planting, principles from *Regenerating Rangeland Oaks in California* (McCreary 2001) will be used, as they represent repeatable standards that have proven effective in varying planting locations.

8.6 Preserved Tree and Woodland Monitoring

Preserved trees within or adjacent to active construction areas are sometimes damaged by incidental and unanticipated events, most notably via encroachment into a tree's Protected Zone. Monitoring of these tree resources effectively reduces the number of incidental occurrences of tree damage. Also, CLAOTO requires that any trees adjacent to construction that die as a result of encroachment damage shall be replaced per the requirements for removed trees. Consequently, similar to the monitoring program for CLAOTO tree plantings, the preserved trees and woodlands subject to encroachment will be monitored for a period of 2 years following the completion of site disturbance activity for each proposed project area.

The monitor will be responsible for monitoring oaks within and adjacent to the projects' areas of ground disturbance as well as monitoring water runoff and soil moisture levels near preserved trees and woodlands. The monitor will specifically address the following:

- The monitor will determine the general state of plant health, specifically looking for signs and symptoms of disease and/or injury, growth, and regeneration of the oak resources.
- Where construction practices or revised plans encroach on preserved trees or woodlands, the monitor will determine the actions necessary to mitigate encroachment activities.
- Where necessary, the monitor will track non-native plant proliferation. A specialist may be recommended for control or treatments.

8.7 Documentation

A key component to the success of the oak woodland mitigation program for the Newhall Land property will be database creation and management to allow for tracking of tree and woodland creation/enhancement area conditions and tree quantities. All data, including individual tree planting data and locations (in individual tree planting areas or creation/enhancement areas), monitoring activities, failures, lost trees, maintenance activities, pest issues, successful adaptive management techniques, and other pertinent information, shall be stored in a master database that is designed on a GIS-friendly platform. Spatial data shall be collected by GPS or through careful hand mapping and digitization but must be a component of the overall data management program.

This database will serve as the overall documentation and tracking device used to manage mitigation efforts, track project success, and quantify mitigation totals to satisfy CLAOTO and CDFW requirements. The following information should be recorded for each individual mitigation oak tree planted for conformance with CLAOTO requirements and updated during each monitoring visit:

- Tree tag number
- Species
- Planting date
- Planting area
- Monitoring visit dates
- Notes (indicating general health condition and other notable attributes)

- Date reaching minimum County size requirements
- Annual reporting dates following achievement of minimum size (Years 1 to 2)
- Final establishment date (end of Year 2)
- Project allocation (i.e., which development project mitigation credit is applied toward).

The following information should be recorded for each woodland creation/enhancement area and updated during each monitoring visit:

- Creation/enhancement area identification number
- Percent native cover
- Maximum non-native grass cover
- Maximum weed cover (non-grass)
- Cal-IPC moderate- and high-rated species and CDFA Noxious Weed list species present
- Species richness
- Oak tree density (trees per acre)
- Area establishment/final planting date
- Monitoring visit dates
- Notes (other notable site observations)
- Annual reporting dates during maintenance period (Years 1 to 2)
- Annual reporting dates during non-maintenance period (Years 3 to 5)
- Final establishment date (end of Year 5)
- Project allocation (i.e., which development project mitigation credit is applied toward).

The following information should be recorded for each preserved tree and woodland and updated during each monitoring visit:

- Tree tag number/woodland area
- Project area
- Species
- Monitoring visit dates

- Notes (indicating general health condition and other notable attributes)
- Management recommendations for promoting tree health/survivability.

8.8 Reporting

On an annual basis, the monitor will provide a complete summary of results of the monitoring activities completed in the prior year. The report will summarize the successes, failures, and observations of the previous year. In addition, the annual status report will outline a course of action for the coming monitoring year. The monitoring reports shall include the following information:

1. A diagram showing the exact number and locations of all mitigation trees planted and describing their health, planting dates, any mortality or replanting, and mitigation time frames relating to permit compliance
2. A list of names, titles, and companies of all persons who prepared the content of the annual report and participated in maintenance and monitoring activities
3. A copy of the resource agency permits, any special conditions, and any subsequent letters of modification
4. Prints of representative monitoring photographs from fixed viewpoints
5. Data summaries in tabular format
6. Summary of project performance relative to standards.

Annual monitoring reports shall be submitted to Newhall Land, CDFW, and the County Forester. Annual reports should be completed prior to the end of the calendar year.

8.9 Mitigation Program Completion

This ORMP provides for mitigation opportunities for multiple projects that will be built out over several years. Consequently, the mitigation program will have multiple stages of mitigation completion. Two main levels of mitigation completion will occur during ORMP implementation: (1) individual project mitigation completion (e.g., specific village impacts) and (2) overall EIS/EIR oak mitigation completion (combined EIS/EIR impacts). Additionally, completion of mitigation will be evaluated for two separate components, including (1) tree planting mitigation completion (per CLAOTO as outlined in the EIS/EIR) and (2) oak woodland restoration completion (per the EIS/EIR).

8.9.1 Individual Project Mitigation Completion

Individual project mitigation completion will be based on achievement of success criteria. Upon submitting the annual report for the final year of each individual mitigation project, Newhall Land will notify the County and CDFW of the degree to which final success criteria have been met and will request acceptance of the site, as appropriate. Completion of mitigation at individual sites will be supported by appropriate quantitative measures as described in the performance standards. Following receipt of the notification of completion, the regulating agencies may visit the site to confirm the completion of the mitigation effort and may issue formal letters of success upon acceptance. Removal of the irrigation system (if any), temporary fencing, and signage would occur prior to final sign-off. For woodland creation/enhancement areas, it is expected that multiple sign-off letters will be issued, one from the County stating that CLAOTO oak requirements have been met and one from the CDFW stating that woodland creation/enhancement standards have been met.

8.9.2 Overall ORMP Mitigation Program Completion

When all performance standards have been met for all projects included in the RMDP/SCP EIS/EIR, a final ORMP mitigation report will be prepared for submittal to the County and CDFW. The final ORMP mitigation report will summarize the successful mitigation efforts by development area, and will serve as a final ORMP project record.

8.10 Contingency Measures

In the event that the monitor determines that performance criteria are not on course for goal achievement for each individual project, steps to correct the failure will be implemented. The first consideration is for dead or dying trees to be replaced. Acorns, seedlings, or small-container oak trees will be planted, monitored, and maintained until the success criteria are achieved. As identified in this ORMP, it is advisable to overplant to allow for mortality, thereby potentially eliminating the need for replacement planting.

In the event of potential catastrophic destructive processes or agents, the monitor will recommend remedial actions. These actions may include the following:

- Increased monitoring efforts
- Focused insect control
- Weed control

- Tree pruning
- Tree removal
- Development of supplemental irrigation
- Soils enhancement
- Supplemental planting of acorns or oak seedlings.

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9 LONG-TERM MANAGEMENT PLAN

All mitigation oak trees planted as a condition of oak tree permits shall be protected in perpetuity by CLAOTO once they have survived the required 2-year maintenance period. Likewise, all mitigation for oak woodlands shall be protected and managed in perpetuity upon successful completion of the mitigation program. Provisions for conservation, public access, and long-term resource stewardship were incorporated as part of the Newhall Ranch Specific Plan approvals granted by the County in 2003, and RMDP approvals by the CDFG in 2010. The conservation mechanism includes a combination of conservation easements and deed restrictions.

Long-term management will be conducted in accordance with the RMDP. A qualified land manager shall provide management of the oak tree and oak woodlands mitigation as a component of the overall land management plan.

9.1 Management and Maintenance Responsibilities

Following successful completion of the ORMP mitigation program, the mitigation areas will be managed by an environmental land management entity/organization (Land Manager), such as the Center for Natural Lands Management, or an approved alternative, as agreed to by Newhall Land and the appropriate agencies.

9.2 Management Actions

Management actions shall be performed at the direction of the Land Manager. Management actions shall include invasive species control, removing accumulated trash, and repairing broken or damaged fences, gates, locks, signage, and other open space-related items as may be deemed necessary by the Land Manager.

9.3 Long-Term Monitoring

The long-term monitoring methodology for the mitigation areas will focus on the persistence of appropriate functions and values provided by the mitigation program by conducting regular qualitative monitoring visits. Specifically, the items addressed during monitoring visits shall include an evaluation of natural recruitment, presence/absence of plant pests or diseases, erosion and/or drainage conditions on site, presence/absence of non-native or invasive plant species, trash or debris accumulation, wildlife presence/absence, and project fencing/signage.

9.4 Reporting

Annual management reports shall be prepared documenting the status of the open space areas including jurisdictional areas in accordance with the RMDP. Long-term management and reporting may be phased. The annual report will be comprehensive in addressing all the managed areas by Land Manager. The annual report will contain a description of the management actions, monitoring, and adaptive management activities conducted in each of the management areas during the calendar year.

10 REFERENCES

3 CCR 4500. Noxious Weed Species. http://phpps.cdfa.ca.gov/PE/InteriorExclusion/pdf/CCR4500.pdf.

Allen-Diaz, B., R. Standiford, and R.D. Jackson. 2007. "Oak Woodlands and Forests." In *Terrestrial Vegetation of California*, edited by M.G. Barbour, T. Keeler-Wolf, and A.A. Schoenherr, 313–338. 3rd ed. Berkeley, California: University of California Press.

Boyd, S. 1999. "Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California." *Aliso* 18(2): 93–129.

California Public Resources Code, Sections 21000–21177. California Environmental Quality Act (CEQA), as amended.

Cal-IPC (California Invasive Plant Council). 2006. *California Invasive Plant Inventory*. Berkeley, California: Cal-IPC. February 2006. http://www.cal-ipc.org/ip/inventory/pdf/Inventory2006.pdf.

Cal-IPC. 2007. "New Weeds Added to Cal-IPC Inventory." *Cal-IPC News* Spring 2007:10. http://www.cal-ipc.org/ip/inventory/pdf/WebUpdate2007.pdf.

Cal-IPC. 2014. *California Invasive Plant Inventory*. Berkeley, California: Cal-IPC. May 2014. http://www.cal-ipc.org/paf/.

CDFA (California Department of Food and Agriculture). 2009. "Encycloweedia: Data Sheets." Accessed April 9, 2009. http://www.cdfa.ca.gov/phpps/IPC/weedinfo/winfo_list-synonyms.htm.

CDFG. 2003. *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database*. California Natural Diversity Database. Vegetation Classification and Mapping Program. September 2003.

CDFG. 2007. *Vegetation Classification and Mapping Program, List of California Vegetation Alliances*. Sacramento, California: CDFG.

CNPS (California Native Plant Society). 2007. *Inventory of Rare and Endangered Plants*. Online edition, version 7-07c. Revised July 9, 2007; accessed September 10 to November 1, 2007. http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi.

County of Los Angeles. 2003. *Newhall Ranch Specific Plan*. Project No. 94087, SCH No. 95011015. 2 vols. Prepared by Forma for the County of Los Angeles Department of Regional Planning. Irvine, California: Forma. May 27, 2003.

Dole, J.W., and B.B. Rose. 1996. *Shrubs and Trees of the Southern California Coastal Region and Mountains*. North Hills, California: Foot Loose Press.

Dudek. 2007a. *High Country and Salt Creek Oak Woodland Sampling and Tree Population Estimation*. Prepared for the Newhall Land and Farming Company.

Dudek. 2007b. *Newhall Ranch Mitigation Feasibility Report*. Revised draft. Prepared for the Newhall Land and Farming Company. Encinitas, California: Dudek. January 2007.

Dudek. 2013. "Vegetation mapping for the Newhall Ranch" [GIS data].

Dudek. 2014. *Draft Comprehensive Mitigation Implementation Plan for the Newhall Ranch – Resource Management and Development Plan and Spineflower Conservation Plan Study Area*. Prepared for the Newhall Land and Farming Company. Encinitas, California: Dudek. April 2014.

FRAP (Fire and Resource Assessment Program). 2014. *CAL FIRE Fire Resource and Assessment Program*. California Department of Forestry and Fire Protection. Accessed April 28, 2014. http://frap.cdf.ca.gov/.

Griffin, J.R. 1977. "Oak Woodland." In *Terrestrial Vegetation of California*, edited by M.G. Barbour and J. Major, 382–415. New York, New York: Wiley Interscience.

Griffin, J.R., and W.B. Critchfield. 1972. *The Distribution of Forest Trees in California*. U.S. Forest Service, Pacific Southwest Forest Range Experiment Station. Research Paper PSW-82.

Griggs, T. 1990. "Valley Oaks: Can They Be Saved?" *Fremontia* 18(3): 48–51.

Hickman, J.C. 1993. *The Jepson Manual: Higher Plants of California*. Berkeley, California: University of California Press.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program, California Department of Fish and Game*. October 1986.

Howard, J.L. 1992. "*Quercus lobata*." *Fire Effects Information System*. U.S. Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Accessed November 6, 2007. http://www.fs.fed.us/database/feis/.

Hunsaker (Hunsaker & Associates Los Angeles Inc.). 2013. "Tree impact assessment for the Homestead South development area" [Maps]. Valencia, California: Hunsaker.

Keeley, J.E., and F.W. Davis. 2007. "Chaparral." In *Terrestrial Vegetation of California*, edited by M.G. Barbour, T. Keeler-Wolf, and A.A. Schoenherr, 339–366. 3rd ed. Berkeley, California: University of California Press.

Los Angeles County Code, Section 22.56.2050–22.56. 2260. County of Los Angeles Oak Tree Ordinance.

McCreary, D.D. 2001. *Regenerating Rangeland Oaks in California*. University of California Agriculture and Natural Resources Publications No. 21601.

McMurray, N.E. 1990. "*Prunus ilicifolia*." *Fire Effects Information System*. U.S. Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Accessed December 11, 2007. http://www.fs.fed.us/database/feis/.

Minnich, R.A. 1987. "The Distribution of Forest Trees in Northern Baja California, Mexico." *Madroño* 34:98–127.

NatureServe. 2007. *NatureServe Explorer: An Online Encyclopedia of Life*. Version 6.2. Arlington, Virginia: NatureServe. Accessed October 28, 2007. http://www.natureserve.org/explorer.

Nixon, K.C., and C.H. Muller. 1997. "*Quercus* Linnaeus sect. *Quercus*; White Oaks." In *Flora of North America North of Mexico*, edited by Flora of North America Editorial Committee, 471–506. Volume 3: *Magnoliophyta: Magnoliidae and Hamamelidae*. New York, New York: Oxford University Press.

Pavlik, B.M., P.C. Muick, S. Johnson, and M. Popper. 1991. *Oaks of California*. Los Olivos, California: Cachuma Press.

Quinn, R.D. 1989. "The Status of Walnut Forests and Woodlands (*Juglans californica*) in Southern California." In *Proceedings of the 15th Annual Symposium of the Endangered Plant Communities of Southern California, California State University, Fullerton*, edited by A.A. Schoenherr, 42–54.

Roberts, F.M. 1995. *Illustrated Guide to the Oaks of the Southern Californian Floristic Province: The Oaks of Coastal Southern California and Northwestern Baja California, Mexico*. Encinitas, California: F.M. Roberts Publications.

SB Horticulture. 2014. *Impacted Oak Tree Status Update –March 2015 – Mission Village Development Project, OTP 2005-00032 and OTP2005-00043 County of Los Angeles, California*. December 4, 2014.

Steinberg, P.D. 2002. "*Quercus agrifolia*." *Fire Effects Information System*. U.S. Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Accessed May 5, 2014. http://www.fs.fed.us/database/feis/.

Steinberg, P.D., and J.L. Howard. 1992. *Fire Effects Information System*. U.S. Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Accessed December 2002. http://www.fs.fed.us/database/feis/.

Swanson, C.J. 1976. "The Ecology and Distribution of *Juglans californica* in Southern California." Master's thesis; California State University, Los Angeles.

Tirmenstein, D. 1989. "*Quercus wislizenii*." *Fire Effects Information System*. U.S. Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Accessed November 7, 2007. http://www.fs.fed.us/database/feis/.

White, S.D., and J.O. Sawyer, Jr. 1994. "Dynamics of *Quercus wislizenii* Forest and Shrubland in the San Bernardino Mountains, California." *Madroño* 41:302–315.

APPENDIX A

Representative Site Photographs

APPENDIX A
Representative Site Photographs

Photograph 1: View of coast live oaks in drainage (foreground) and on north-facing slope (background) in Homestead South. Drainage oak densities are much higher than in slope areas.

Photograph 2: View of understory in riparian-type coast live oak woodland. Note general lack of seedling- and sapling-sized trees.

Photograph 3: View of coast live oak woodland with lack of understory plants and no seedling- or sapling-sized oak trees.

Photograph 4: View of jurisdictional coast live oak woodland. Understory includes primarily non-native grasses, which outcompete seedlings and result in low tree recruitment.

Photograph 5: View of coast live oak with a large trunk diameter. This tree occurs as an individual tree and shows signs of livestock use beneath the canopy.

Photograph 6: View of steep hillsides in Homestead South area dotted with coast live oak trees. In the foreground, smaller-statured coast live oak trees are located along a drainage where they take advantage of higher soil-moisture availability.

Photograph 7: View of High Country SMA drainage with semi-mature coast live oaks and evidence of wildfire damage.

Photograph 8: View of mixed oak woodland featuring coast live oak, valley oak, and walnut woodland on a relatively steep slope in the High Country SMA.

Photograph 9: View of steep slopes in the High Country SMA. Coast live oaks are at the bottom of the canyon, advantageously located where higher soil moisture is available.

Photograph 10: View of hillside with higher-density mixed oak woodland and chaparral on the far slope and non-native grasses on the near slope and beneath the oak canopy.

Photograph 11: View of the High Country SMA valley with scattered valley oaks among coast live oak. Grazing occurs throughout this area and limits tree recruitment.

Photograph 12: View of the same valley pictured in Photograph 11, with cattle at bottom (red arrow).

Photograph 13: View of valley oak/grass on a gentle slope in the High Country SMA.

Photograph 14: Well-grazed valley oak/grass located in the High Country SMA.

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APPENDIX E

Southern Steelhead and Downstream Indirect Effects Related to Entrada South Project

MEMORANDUM

To: Alex Herrell
From: Sherri Miller, Phil Behrends, Dudek
Subject: Southern Steelhead and Downstream Indirect Effects Related to Entrada South Project
Date: March 24, 2014

INTRODUCTION

This memorandum addresses the potential downstream effects of the Entrada South project on the federally listed endangered southern steelhead (*Oncorhynchus mykiss*), which occupies downstream reaches of the Santa Clara River and its tributaries (Titus et al. n.d.; Stoeker and Kelly 2005). Discharges from the Entrada South may reach downstream areas of the river occupied by southern steelhead during large storm events when surface water flows bridge the "Dry Gap" downstream of the project site. Such discharges may contain substances that are toxic to southern steelhead, such as dissolved copper, as discussed fully in this memorandum. Much of the information provided in this memorandum is taken directly from the Geosyntec (2014) *Entrada South Water Quality Technical Report* currently being prepared.

STATUS OF SOUTHERN STEELHEAD ON PROJECT SITE

The southern steelhead is not expected to occur in the reach of the Santa Clara River within the Entrada South project area. There is no historical record of steelhead use of the Santa Clara River or tributaries upstream of Piru Creek and the "Dry Gap" (discussed below); however, southern steelhead is known to occur in the lower Santa Clara River and some tributaries (Titus et al. n.d.; Stoeker and Kelly 2005). Adult steelhead have been observed in the lower Santa Clara River and a subset of Ventura County tributaries in February, March, and early April (U.S. Army Corps of Engineers (Corps) and California Department of Fish and Game (CDFG) 2010). Downstream migration of juveniles usually occurs between March and June (Shapovalov and Taft 1954). In southern California, steelhead typically migrate to the ocean as 1- or 2-year olds (Corps and CDFG 2010). Out-migrating steelhead in the Santa Clara River have been observed from January through early June, but the majority of steelhead smolt emigrate during the period from March through early May, and the timing of migration strongly depends on stream flows (ENTRIX 2000).

A recognized, natural barrier to fish migration within the Santa Clara River, referred to as the "Dry Gap," exists downstream of the Entrada South project and upstream of the Piru Creek confluence. The Dry Gap is an ephemeral reach of the river that consists of an area downstream of the Los Angeles County/Ventura County line where surface flows in the river are lost to the Piru groundwater basin. However, surface runoff during major storm events, which would include future discharges from the Entrada South project, provides temporary surface water connections that periodically allow flows to directly reach downstream occupied southern steelhead habitat. Therefore, there is a potential for constituents of the runoff to reach aquatic habitat occupied by the steelhead.

POTENTIAL INDIRECT EFFECTS ON SOUTHERN STEELHEAD

Short-term construction-related effects include hydrologic and water quality effects, such as sedimentation and increased turbidity, temperature changes, and pollutants (e.g., petroleum products). It is unlikely that these short-term impacts could affect southern steelhead in the Santa Clara River in downstream populations. Most construction is likely to occur during periods when the surface flow underground in the Dry Gap. During storm flows, sedimentation and turbidity effects likely would be a minor contribution to temporary high-volume flows. In addition, the recommended mitigation measures to protect water quality during construction, including Mitigation Measure ES-10 (prevention of mud and pollutants from entering streams and storm flows), would further reduce downstream effects related to sedimentation, increased turbidity, and temperature changes.

Implementation of the Newhall Resources Management and Development Plan (RMDP) and build-out of the Specific Plan, Valencia Commerce Center (VCC), and Entrada planning areas could result in both short-term secondary effects during construction and long-term effects due to use of RMDP facilities and build-out of the project area (Corps and CDFG 2010). Because steelhead are not expected to be present within the project reach of the Santa Clara River, it is unlikely that short- or long-term secondary impacts would occur. In addition, these impacts are unlikely to affect the downstream populations of steelhead within the Santa Clara River basin. Implementation of the Spineflower Conservation Plan (SCP), approved in conjunction with the RMDP in the joint RMDP/SCP EIS/EIR, would not result in secondary impacts to this species (Corps and CDFG 2010).

Short-term construction-related effects include hydrologic and water quality effects, such as sedimentation, increased turbidity or temperature, or the introduction of other pollutants. It is unlikely that these short-term impacts could affect steelhead in the Santa Clara River in downstream populations.

Potential long-term indirect impacts from Entrada South that could affect downstream habitat for southern steelhead include physical changes in the river and increased discharges that could alter base flows; timing and duration of flood flows; biochemistry; condition and composition of the substrate and aquatic and riparian vegetation (including exotic species); and water temperatures, as well as increased pollutants from irrigation runoff and increased runoff from roadways.

With regard to physical changes, the Flood Hydraulics Impacts Assessment (PACE 2009) found that there would be no significant impacts to water flows, velocities, depth, sedimentation, or floodplain and channel conditions downstream of the RMDP project area over the long term as a result of the proposed RMDP improvements. Therefore, channel morphology and substrate composition conditions downstream that support steelhead migration in Ventura County will not be affected. These hydrologic effects were also found to be insufficient to alter the amount, location, and nature of aquatic and riparian habitats within the RMDP area and downstream into Ventura County. The PACE (2009) study determined that the river would still retain sufficient width to allow natural fluvial processes to continue. As a result, the mosaic of habitats in downstream portions of the river that support the southern steelhead would not be substantially affected.

As described above, southern steelhead are not expected to occur in the project area. There is no historical record of steelhead use of the Santa Clara River or tributaries upstream of Piru Creek and the "Dry Gap" (discussed below); however, southern steelhead is known to occur in the lower Santa Clara River and some tributaries (Titus et al. n.d.; Stoeker and Kelly 2005). Steelhead do not use or reside in the project area because (1) the Dry Gap prevents back-and-forth migration between the site and the ocean, which is an integral phase of the steelhead's life history, and (2) the Santa Clara River, at and near the project site, does not provide adequate spawning and rearing habitat for the species.

However, adult steelhead have been observed in the lower Santa Clara River and a subset of Ventura County tributaries in February, March, and early April (Corps and CDFG 2010). In southern California, steelhead typically migrate to the ocean as one- or two-year olds – sometimes referred to as "juveniles" or "smolt." (Corps and CDFG 2010). Juveniles usually migrate downstream between March and June (Shapovalov and Taft 1954), with the majority emigrating from March through early May, although the precise timing of migration strongly depends on stream flows (ENTRIX 2000).

As mentioned above, the Dry Gap is a natural barrier to fish migration within the Santa Clara River. It is located downstream of the Entrada South project and upstream of the Piru Creek confluence. The Dry Gap is an ephemeral reach of the River downstream of the Los Angeles

County/Ventura County line where surface flows in the River are lost to the Piru groundwater basin. It is the Dry Gap which prevents steelhead from migrating and spawning in the upstream reaches of the Santa Clara River, including the reach adjacent to the Entrada South project site. However, surface runoff during major storm events, which would include future discharges from the Entrada South project, periodically breaches the Dry Gap and provides a temporary surface water connection between the middle and lower reaches of the river, thus allowing flows to reach downstream habitat occupied southern steelhead. Therefore, there is a potential for constituents of the runoff to reach aquatic habitat occupied by the steelhead.

One of the constituents that may flow downstream during high flow periods is dissolved copper. Studies have indicated that an increase in the in-stream dissolved copper concentration may have deleterious effects on the smolts, as discussed in the 2007 National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum *An Overview of Sensory Effects on Juvenile Salmonids Exposed to Dissolved Copper: Applying a Benchmark Concentration Approach to Evaluate Sublethal Neurobehavioral Toxicity* (the "NOAA Technical Memorandum") prepared by Hecht et al. 2007, (as cited in Geosyntec 2014). The NOAA Technical Memorandum (2007, as cited in Geosyntec 2014) examined the sublethal effects of dissolved copper on juvenile salmonids, specifically on juvenile Coho salmon (less than 10 months old), and then extrapolated the results to other juvenile anadromous species (including southern steelhead). The NOAA Technical Memorandum states that salmonid behavior, including predator avoidance, can be disrupted at concentrations of dissolved copper that are at or slightly above ambient background concentrations, which the memorandum defined as surface waters with less than 3 µg/L of dissolved copper. To examine the effects of dissolved copper on juvenile salmonid olfactory function and predator avoidance, the NOAA Technical Memorandum used a benchmark concentration (BMC) analysis. The NOAA scientists calculated BMCs using an EPA (1995; as cited in Geosyntec 2014) method that estimates toxicological effects thresholds for dissolved copper in surface waters. The BMC approach takes into account the full range of a dose-response dataset by fitting the dataset with an appropriate regression equation to identify the "no observable adverse effect level" (NOAEL). The NOAA Technical Memorandum used a dataset from Sandahl et al. (2007; as cited in Geosyntec 2014) for juvenile coho salmon to estimate the thresholds for dissolved copper's sublethal effects on the chemosensory physiology and predator avoidance behaviors of the juvenile coho salmon. Using this dataset, the NOAA Technical Memorandum reported that a dissolved copper concentration of 2.1 µg/L corresponds to diminished predator avoidance behavior (alarm reaction) of approximately 8% to 57% (set as the BMC_{50}). Combining this with the background level of 3 µg/L, the BMC threshold for deleterious effects on juvenile salmon was set at 5.1 µg/L. The NOAA Technical Memorandum also reported other datasets

of BMC_{50} ranging between 3.6 µg/L and 10.7 µg/L, but concluded that the Sandahl et al. (2007; as cited in Geosyntec 2014) dataset was more relevant.

Generally, average concentrations of dissolved copper in the Santa Clara River are not predicted to increase as a result of the project over existing conditions or to be generally toxic to aquatic life. According to Geosyntec (2014), the average annual concentration in stormwater runoff in the Santa Clara River, including discharges from the project, is predicted to be **7.1 µg/L**, which is well below the benchmark California Toxics Rule (CTR) water quality criteria for aquatic life protection.[1] Under the CTR, the acute (one hour average concentration) criterion for dissolved copper at the average observed hardness of 198 mg/L is **26 µg/L**, and the chronic (four day average concentration) is **16 µg/L**. Also, the predicted average annual dissolved copper concentration in stormwater runoff is less than the observed average concentration in the Santa Clara River (see Table 7-16 in Geosyntec 2014). Geosyntec (2014) therefore concluded that project runoff is not expected to affect the concentration of dissolved copper in the Santa Clara River (see Section 7.1.7, Geosyntec 2014).

While the predicted average annual dissolved copper concentration would be well below the CTR water quality criteria for aquatic life protection, it would exceed the BMC of 5.1 µg/L reported by the NOAA Technical Memorandum for deleterious effects on juvenile salmon. For this reason, Geosyntec (2014) analyzed NOAA's findings with respect to potential downstream effects on juvenile steelhead in the Santa Clara River, while also considering environmental factors that tend to reduce dissolved copper toxicity. These factors include (a) homeostatic mechanisms, and (b) the effects of dissolved organic carbon (DOC) and dissolved metal speciation, both of which can diminish the amount of dissolved copper that is "bioavailable" to fish. The following discussion and conclusions are based on Geosyntec's (2014) analysis.

Homeostatic Mechanisms

Homeostatic mechanisms are mechanisms, such as uptake and elimination processes, which can reduce copper's toxic effects and may result in acclimation. Fish may tolerate certain dissolved

[1] The California Toxics Rule (40 CFR § 131.38) is a federal regulation issued by the Federal Environmental Protection Agency (EPA). It provides water quality criteria for toxic pollutants in waters with human health or aquatic life designated uses in California. The CTR criteria are the product of an extensive rule-making process, as required under the federal Clean Water Act. (65 Fed.Reg. 31682; 68 Fed.Reg. 62744.) EPA adopted the CTR in 2000 to create "legally applicable [water quality criteria] in the State of California for inland surface waters, enclosed bays and estuaries for all purposes and programs under the Clean Water Act." (*Baykeeper v. Kramer Metals, Inc.* (C.D. Cal. 2009 619 F.Supp.2d 914, 926. The CTR levels are lower than EPA's benchmark levels; and for some of the priority toxic pollutants, the CTR levels are at concentrations below EPA's current analytical detection limits.

copper exposures without showing overt toxicological responses. At higher exposure levels, however, these mechanisms could fail. For these reasons, the NOAA Technical Memorandum states that homeostatic mechanisms are not expected to alleviate chemosensory impairments caused by exposure to dissolved copper. Therefore, this BTR does not assume that homeostatic mechanisms reduce the potential deleterious effects of dissolved copper on steelhead in downstream reaches of the Santa Clara River.

Bioavailability of Dissolved Copper

Biovailability refers to the degree to which a substance can be absorbed into a living system or is available at the site of physiological activity. Benchmark concentrations (BMCs) – and exceedances thereof – are relevant to fish toxicity only to the extent the pollutant in question is bioavailable to the species. The NOAA Technical Memorandum based its analysis on a BMC derived from experiments that used a single freshwater source (i.e., dechlorinated, soft municipal water). The NOAA Technical Memorandum noted that hardness, alkalinity, and dissolved organic carbon (DOC) are each known to alter the bioavailability of dissolved copper in surface waters. While hardness and alkalinity provided little amelioration of olfactory effects in juvenile salmonids, increases in DOC showed greater protection against dissolved copper (NOAA Technical Memorandum 2007; as cited in Geosyntec 2014). A more recent study conducted with juvenile Chinook salmon (Kennedy et al. 2012; as cited in Geosyntec 2014) showed that increasing DOC linearly decreased copper-induced olfactory inhibition. In this study, at DOC concentrations of 5 mg/L, median concentrations of total copper found to inhibit olfactory function by half (the IC50) were found to be 30 µg/L for acute (4-day) exposures and 21.5 µg/L for sub-chronic (14-day) exposures. The presence of other metals, specifically iron, was shown to slightly decrease this protective effect; however, the decrease was not found to be significant.

According to the NOAA Technical Memorandum, 29% of USGS surface water samples from West Coast basins had a DOC concentration sufficient to limit olfactory impairment to 50% or less and 6% of all samples had a DOC concentration sufficient to completely protect the olfactory responses of juvenile coho salmon from the toxic effect of 20 µg/L dissolved copper (i.e., well above the predicted 7.1 µg/L for the Santa Clara River). This information shows the critical importance of incorporating DOC data into the toxicity analysis of dissolved copper in a natural system. Although there are no recent DOC data available for the Santa Clara River, as a West Coast watershed, it is possible that the Santa Clara River may have a DOC concentration sufficient to either limit or completely protect the olfactory response of juvenile steelhead from the effect of dissolved copper at the concentration predicted in the project's discharges. Data collected during the 1997-1998 water year in the Santa Clara River Estuary, which had DOC concentrations ranging from 3.8 to 11.3 mg/L (Masiello 2001; as cited in Geosyntec 2014),

support this possibility. What is clear, however, is that in the absence of DOC data specific to the Santa Clara River in the project area, the findings from the NOAA Technical Memorandum cannot be applied directly or without qualification to the anticipated impacts of the Entrada South project for purposes of a CEQA analysis.

Speciation of Dissolved Copper

The extent to which the NOAA Technical Memorandum findings apply to this project is further complicated by the Memorandum's failure to present data concerning "speciation" of the dissolved copper doses in a manner that represents actual storm runoff conditions in an urban or suburban environment. That is, there is substantial uncertainty as to how the NOAA Technical Memorandum and/or the studies it relied on developed the 5.1 µg/L dissolved copper BMC for salmonid toxicity. Specifically, the studies cited by NOAA added a speciation of dissolved copper that is not representative of urban runoff or natural stream conditions and therefore potentially over-predicts by a substantial margin the effects of dissolved copper on juvenile salmonids.[2]

The standard laboratory method for measuring dissolved copper is to filter a sample through a 0.45 micron filter. The remaining copper in solution that is considered "dissolved" is actually composed of both "free" (truly dissolved) copper and copper that is complexed with organic molecules, very small particles, or colloidal material (not truly dissolved) that passed through the filter. The free or truly dissolved form of dissolved copper is the most toxic, while most complexed forms are not toxic because they are generally not biologically available (Nason et al. 2011; as cited in Geosyntec 2014).

Nason et al. (2011; as cited in Geosyntec 2014) conducted a study for the Oregon Department of Transportation and the Federal Highway Administration on the speciation of copper in highway stormwater runoff in Oregon and found that very little of the copper in the runoff was bioavailable to salmon. Nason et al. (2011; as cited in Geosyntec 2014) evaluated particulate-bound and dissolved copper concentrations, as well as two sub-categories of dissolved copper: "free copper" (Cu^{2+}_{Free}) and complexed copper. They found that dissolved copper complexed with organic matter typically comprised more than 99.9% of the reported dissolved copper; this complexed copper is typically not bioavailable. As indicated above, the toxicity of copper directly depends on its bioavailability to organisms, and, in general, bioavailability is limited to Cu^{2+}_{Free} and weakly complexed copper (Brooks et al. 2007; Luider et al. 2004; Sigg and Behra 2005; EPA 2007; all as cited in Geosyntec 2014). Nason et al. (2011; as cited in Geosyntec 2014) concluded that very little

[2] Speciation of metals such as copper refers to the physical and chemical forms of the metal and is a critical factor in assessing uptake by organisms and toxicity.

of the copper in the highway stormwater runoff (less than one-tenth of one percent) was bioavailable and that the concentrations of Cu^{2+}_{Free} were generally several orders of magnitude below levels found to inhibit juvenile salmonid olfactory function and predator avoidance. A more recent study by Nason et al. (2012; as cited in Geosyntec 2014) on stormwater runoff in Oregon similarly found free ionic copper concentrations no greater than 6.3 nanograms per liter (ng/L), again, several orders of magnitude below the inhibitory levels found by Sandahl et al. (2007; as cited in Geosyntec 2014) and cited in the NOAA Technical Memorandum.

To summarize, the NOAA Technical Memorandum relied on a number of the studies that added free copper (Cu^{2+}_{Free}) in the laboratory to draw the conclusion that as little as 2.1 µg/L of additional dissolved copper could have deleterious effects on juvenile salmon. Given that Nason et al. (2011; as cited in Geosyntec 2014) found that more than 99% the dissolved copper in highway stormwater runoff in Oregon was complexed and not "free" copper, the methods employed in the toxicity studies used by the NOAA Technical Memorandum may have substantially over-predicted real world impacts. It is likely that, due to the dosing method used, Cu^{2+}_{Free} was significantly higher in the studies cited by the NOAA Technical Memorandum than would be expected in highway or urban runoff. Nason et al. (2011; as cited in Geosyntec 2014) recommend adding copper speciation techniques and characterizing natural organic matter in toxicity studies to provide a more robust quantification of potential toxicity and/or behavior effects of dissolved copper concentrations for salmonids under different water quality conditions.

Effect of Low Impact Development (LID) and Treatment Best Management Practices (BMPs)

In Nason et al. (2011), almost all of the highway monitoring data showed much less than 2.1 µg/L Cu^{2+}_{Free} in stormwater, even without the benefit of LID or treatment BMPs. Given that the project's site runoff would be treated in LID BMPs that provide significant contact time with organic materials, the stormwater eventually discharged to the Santa Clara River would likely contain even less Cu^{2+}_{Free} than was observed in the stormwater monitored by Nason et al. (2011; as cited in Geosyntec 2014). As a result, the amount of bioavailable dissolved copper would be less as well.

Based on (1) a review of these studies, (2) the project's anticipated discharges into the Santa Clara River, and (3) the predicted dissolved copper concentrations in those discharges, Geosyntec (2014) drew the following conclusions:

- The average annual concentration of dissolved copper in stormwater runoff from the project is predicted to be well below the benchmark CTR water quality criteria for

aquatic life protection in general and is not expected to significantly affect the concentration of dissolved copper in the Santa Clara River. The Santa Clara River, as a West Coast watershed, may have a DOC concentration sufficient to either limit or completely protect the olfactory response of juvenile steelhead from the effect of dissolved copper at the concentration predicted in the project's discharge.

- To develop its 5.1 µg/L BMC for dissolved copper, the NOAA Technical Memorandum appears to have relied on studies that did not use stormwater with a realistic speciation of dissolved copper capable of representing treated urban runoff mixed with receiving waters. Because the studies used a copper dosing method that likely resulted in Cu^{2+}_{Free} levels which are not representative of, nor typically observed in, urban runoff or receiving waters, this BTR should not rely on those studies when determining the project's potential toxicity impacts to juvenile steelhead in the Santa Clara River.

Based on the foregoing analysis conducted by Geosyntec (2014), this memorandum concludes that the Entrada South project would not have a significant effect – lethal or sublethal – on southern steelhead, including juveniles, in the downstream reaches of the Santa Clara River.

LITERATURE CITED

Corps and CDFG 2010. *Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan Joint Environmental Impact Statement and Environmental Impact Report*. Final. SCH no. 2000011025. Los Angeles, California: Corps and CDFG. June 2010.

ENTRIX Inc. 2000. *Results of Fish Passage Monitoring at the Vern Freeman Diversion Facility, Santa Clara River, 1994–1998*. Final Report. Prepared for United Water Conservation District, Santa Paula, California. March 14, 2000.

Geosyntec. 2014. *Entrada South Water Quality Technical Report*. Prepared by Geosyntec Consultants for Newhall Land. In preparation.

PACE (Pacific Advanced Civil Engineering, Inc). 2009. *Newhall Ranch Resource Management Development Plan Floodplain Hydraulics Impacts Assessment – Santa Clara River*. Prepared for Newhall Land. Fountain Valley, California: PACE.

Shapovalov, L., and A.C. Taft. 1954. *The Life Histories of the Steelhead Trout (*Salmo gairdneri*) and Silver Salmon (*Oncorhynchus kisutch*) with Special Reference to Waddell Creek, California, and Recommendation Regarding their Management*. CDFG Fish Bulletin No. 98.

Stoeker, M., and E. Kelly. 2005. *Santa Clara River Steelhead Trout: Assessment and Recovery Opportunities*. Prepared for The Nature Conservancy and The Santa Clara River Trustee Council.

Titus, R.G., D.C. Erman, and W.M. Snider. n.d. "History and Status of Steelhead in California Coastal Drainages South of San Francisco Bay." In preparation. Draft Manuscript April 22, 2011.

APPENDIX F

RMDP/SCP EIS/EIR Mitigation Measures Not Applicable to the Entrada South Project

APPENDIX F
RMDP/SCP EIS/EIR Mitigation Measures Not Applicable to the Entrada South Project

In 2010, CDFG adopted the mitigation measures set forth below (along with the mitigation measures from the RMDP/SCP EIS/EIR that have been determined to be applicable to the Entrada South Project, which are provided in the Biota Report) to minimize impacts to biological resources in connection with its adoption of the Newhall Ranch RMDP/SCP EIS/EIR. The measures included in this document have been determined not to be applicable to the Entrada South Project. A brief rationale for the determination is given in italics at the end of each mitigation measure.

MM RMDP/SCP BIO-13: The mitigation program shall incorporate applicable principles in the interagency Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks (60 FR 58605–58614) to the extent feasible and appropriate, particularly the guidance on administration and accounting. Nothing in the section 404 or section 2081 Permit or section 1605 agreement shall preclude the applicant from selling mitigation credits to other parties wishing to use those permits or that agreement for a project and/or maintenance activity included in the permits/agreement. (*This measure does not apply to Entrada South, as there are no mitigation banks within the open space areas of RMDP/SCP.*)

MM RMDP/SCP BIO-14: Temporary impacts from construction activities in the riverbed shall be restricted to the following areas of disturbance: (1) an 85-foot-wide zone that extends into the river from the base of the rip-rap or gunite bank protection where it intercepts the river bottom; (2) 100 feet on either side of the outer edge of a new bridge or bridge to be modified; (3) a 60-foot-wide corridor for utility lines; (4) 20-foot-wide temporary access ramps; and (5) 60-foot roadway width temporary construction haul routes. The locations of these temporary construction sites and the routes of all access roads shall be shown on maps submitted with the subnotification letter submitted to the Corps and CDFG for individual project approval. Any variation from these limits shall be submitted, with a justification for a variation for Corps and CDFG approval. The construction plans should indicate what type of vegetation, if any, would be temporarily disturbed or removed and the post-construction activities to facilitate revegetation of the temporarily impacted areas. The boundaries of the construction site and any temporary access roads within the riverbed shall be marked in the field with stakes and flagging. No construction activities, vehicular access, equipment storage, stockpiling, or significant human intrusion shall occur outside the work area and access roads. (*This measure does not apply to Entrada South as no work*

would take place within the riverbed and the above-described construction activities would not occur as a part of the Project.)

MM RMDP/SCP BIO-18: Conduct focused surveys for California red-legged frogs. Prior to initiating construction for the installation of bridges, storm drain outlets, utility lines, bank protection, trails, and/or other construction activities, all construction sites and access roads within the riverbed as well as all riverbed areas within 1,000 feet of construction sites and access roads shall be surveyed at the appropriate season for California red-legged frogs. The applicant shall contract with a qualified biologist to conduct focused surveys for California red-legged frogs. If detected in or adjacent to the Project area, no work will be authorized within 500 feet of occupied habitat until the applicant provides concurrence from the USFWS to CDFG and Corps. If present, the applicant shall implement measures required by the USFWS Biological Opinion for California red-legged frog that either supplement or supercede these measures. If present, the applicant shall develop and implement a monitoring plan that includes the following measures in consultation with the USFWS and CDFG:

1. The applicant shall retain a qualified biologist with demonstrated expertise with California red-legged frogs to monitor all construction activities in potential red-legged frog habitat and assist the applicant in the implementation of the monitoring program. This person will be approved by the USFWS prior to the onset of ground-disturbing activities. This biologist will be referred to as the authorized biologist hereafter. The authorized biologist will be present during all activities immediately adjacent to or within habitat that supports populations of California red-legged frogs.
2. Prior to the onset of construction activities, the applicant shall provide all personnel who will be present on work areas within or adjacent to the Project area the following information:
    a. A detailed description of the California red-legged frogs, including color photographs;
    b. The protection the California red-legged frog receives under the Endangered Species Act and possible legal action that may be incurred for violation of the Act;
    c. The protective measures being implemented to conserve the California red-legged frogs and other species during construction activities associated with the proposed Project; and

d. A point of contact if California red-legged frogs are observed.

3. All trash that may attract predators of the California red-legged frogs will be removed from work sites or completely secured at the end of each work day.

4. Prior to the onset of any construction activities, the applicant shall meet on site with staff from the USFWS and the authorized biologist. The applicant shall provide information on the general location of construction activities within habitat of the California red-legged frogs and the actions taken to reduce impacts to this species. Because California red-legged frogs may occur in various locations during different seasons of the year, the applicant, USFWS, and authorized biologist will, at this preliminary meeting, determine the seasons when specific construction activities would have the least adverse effect on California red-legged frogs. The goal of this effort is to reduce the level of mortality of California red-legged frogs during construction.

5. Work areas will be fenced in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. The authorized biologist will assist in determining the boundaries of the area to be fenced in consultation with the USFWS/CDFG. All workers will be advised that equipment and vehicles must remain within the fenced work areas.

6. The authorized biologist will direct the installation of the fence and conduct a minimum of three nocturnal surveys to move any California red-legged frogs from within the fenced area to suitable habitat outside of the fence. If California red-legged frogs are observed on the final survey or during subsequent checks, the authorized biologist will conduct additional nocturnal surveys if he or she determines that they are necessary in concurrence with the USFWS/CDFG.

7. Fencing to exclude California red-legged frogs will be at least 24 inches in height.

8. The type of fencing must be approved by the authorized biologist and the USFWS/CDFG.

9. Construction activities that may occur immediately adjacent to breeding pools or other areas where large numbers of California red-legged frogs may congregate will be conducted during times of the year (fall/winter) when individuals have dispersed from these areas. The authorized biologist will assist the applicant in scheduling its work activities accordingly.

10. If California red-legged frogs are found within an area that has been fenced to exclude California red-legged frogs, activities will cease until the authorized biologist moves the California red-legged frog(s).
11. If California red-legged frogs are found in a construction area where fencing was deemed unnecessary, work will cease until the authorized biologist moves the California red-legged frogs. The authorized biologist in consultation with USFWS/CDFG will then determine whether additional surveys or fencing are needed. Work may resume while this determination is being made, if deemed appropriate by the authorized biologist and USFWS.
12. Any California red-legged frogs found during clearance surveys or otherwise removed from work areas will be placed in nearby suitable, undisturbed habitat. The authorized biologist will determine the best location for their release, based on the condition of the vegetation, access to deep perennial pools, soil, and other habitat features and the proximity to human activities. Clearance surveys shall occur on a daily basis in the work area.
13. The authorized biologist will have the authority to stop all activities until appropriate corrective measures have been completed.
14. Staging areas for all construction activities will be located on previously disturbed upland areas, if possible, designated for this purpose. All staging areas will be fenced.
15. To ensure that diseases are not conveyed between work sites by the authorized biologist or his or her assistants, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force (DAPTF 2009) will be followed at all times.

(*This measure does not apply to Entrada South because California red-legged frog has a very low potential to occur at or near the Project Site due to lack of suitable habitat and because numerous surveys in the Santa Clara River have resulted in no observations of this species.*)

MM RMDP/SCP BIO-19: The 1,518-acre Salt Creek area shall be offered for dedication to the public pursuant to Condition 42 of the approved Specific Plan using a "rough step" land dedication approach. Irrevocable offers of dedication will be provided to CDFG for identified impact offsets in accordance with the Plan (MM ES 5.4-1/ RMDP/SCP BIO-1). The Salt Creek area includes approximately 629 acres of coastal scrub communities within both Ventura and Los Angeles counties. This

land dedication shall be managed in conjunction with the 4,205-acre High Country SMA (containing 1,314 acres of coastal scrub communities).

a. To facilitate wildlife movement between the north side of SR-126 and the Salt Creek area, enhancements will be made to the existing agricultural undercrossing and to the agricultural land at the base of Salt Creek as discussed in MM RMDP/SCP BIO-59. A Wildlife Movement Enhancement Plan shall be submitted to the Corps and CDFG for approval prior to implementation. The plan shall include at the minimum the following:

    i. A portion of the agricultural field on the north side of SR-126 will be dedicated to wildlife movement. Trees and/or scrubs will be planted in the agricultural field to guide wildlife into the existing undercrossing.

    ii. On the south side of SR-126 two rows of trees/scrubs will be planted to guide wildlife to the Santa Clara River.

    iii. A wildlife corridor will be created through the agricultural fields at the base of Salt Creek Canyon.

(*This measure does not apply to Entrada South because the Project is located outside the Specific Plan area*.)

MM RMDP/SCP BIO-21: Supplemental restoration of coastal scrub shall be conducted as an adaptive management measure pursuant to ES 5.4-16/RMDP-SCP BIO-20. Eight areas were identified in the Draft Newhall Ranch Mitigation Feasibility Report in the High Country SMA, Salt Creek area, and River Corridor SMA (Dudek 2007A) for coastal scrub restoration. In the event that coastal scrub restoration is required pursuant to ES 5.4-16/RMDP-SCP BIO-20, the applicant shall develop a Coastal Scrub Restoration Plan, subject to the approval of CDFG. The plan shall specify, at a minimum, the following: (1) the location of mitigation sites to be selected from suitable mitigation land in the High Country and Salt Creek areas identified in the Feasibility Study; (2) a description of "target" vegetation (native shrubland) to include estimated cover and abundance of native shrubs; (3) site preparation measures to include topsoil treatment, soil decompaction, erosion control, temporary irrigation systems, or other measures as appropriate; (4) methods for the removal of non-native plants (*e.g*., mowing, weeding, raking, herbicide application, or burning); (5) the source of all plant propagules (*e.g.*, seed, potted nursery stock, *etc*. collected from within five miles of the restoration

site), the quantity and species of seed or potted stock of all plants to be introduced or planted into the restoration/enhancement areas; (6) a schedule and action plan to maintain and monitor the enhancement/restoration areas, to include at minimum, qualitative annual monitoring for revegetation success and site degradation due to erosion, trespass, or animal damage for a period no less than two years; (7) as needed where sites are near trails or other access points, measures such as fencing, signage, or security patrols to exclude unauthorized entry into the restoration/enhancement areas; and (8) contingency measures such as replanting, weed control, or erosion control to be implemented if habitat improvement/restoration efforts are not successful.

Habitat restoration/enhancement will be judged successful when: (1) percent cover and species richness of native species reach 50% of cover and species richness at reference sites; and (2) the replacement vegetation has persisted at least one summer without irrigation.

Annual monitoring reports will be prepared and submitted to CDFG and will be made available to the public to guide future mitigation planning. Monitoring reports will describe all restoration/enhancement measures taken in the preceding year; describe success and completion of those efforts and other pertinent site conditions (erosion, trespass, animal damage) in qualitative terms; and describe vegetation survival or establishment in quantitative terms.

(*This measure does not apply to Entrada South, as the Project will not require supplemental restoration of coastal scrub*.)

MM RMDP/SCP BIO-43: Prior to initiating construction for the installation of bridges, storm drain outlets, utility lines, bank protection, trails, and/or other construction activities that result in any disturbance to the banks or wetted channel, aquatic habitats within construction sites and access roads, as well as all aquatic habitats within 300 feet of construction sites and access roads, shall be surveyed by a qualified biologist for the presence of the unarmored threespine stickleback, arroyo chub, and Santa Ana sucker. The Corps and CDFG shall be notified at least 14 days prior to the survey and shall have the option of attending. The biologist shall file a written report of the survey with both agencies within 14 days of the survey and no later than 10 days prior to any construction work in the riverbed. If there is evidence that fish spawn has occurred in the survey area, then surveys shall cease unless otherwise authorized by USFWS. If surveys determine that gravid fish are present, that spawning has recently occurred, or that juvenile fish are present in the proposed construction areas, all activities within aquatic

habitat will be suspended. Construction within aquatic habitats shall only occur when it is determined that juvenile fish are not present within the Project area. (*This measure does not apply to Entrada South, as construction-related activities would not disturb banks or wetted channels that provide habitat for fish species at any time.*)

MM RMDP/SCP BIO-44: Temporary bridges, culvert crossings, or other feasible methods of providing access across the river shall be constructed outside of the winter season and not during periods when spawning is occurring. Prior to the construction of any temporary or permanent crossing of the Santa Clara River, the applicant shall develop a Stream Crossing and Diversion Plan. The plan shall include the following elements: the timing and methods for pre-construction aquatic species surveys; a detailed description of the diversion methods (e.g., berms shall be constructed of on-site alluvium materials of low silt content, inflatable dams, sand bags, or other approved materials); special-status species relocation; fish exclusion techniques, including the use of block netting and fish relocation; methods to maintain fish passage during construction; channel habitat enhancement, including the placement of vegetation, rocks, and boulders to produce riffle habitat; fish stranding surveys; and the techniques for the removal of crossings prior to winter storm flows. The Plan shall be submitted to the USFWS and CDFG for approval at least 30 days prior to implementation.

If adult special-status fishes are present and spawning has not occurred, they shall be relocated prior to the diversion or crossing. Block nets of 1/8-inch woven mesh will be set upstream and downstream. On days with possible high temperature or low humidity (temperatures in excess of 80°F), work will be done in the early morning hours, as soon as sufficient light is available, to avoid exposing fishes to high temperatures and/or low humidity. If high temperatures are present, the fishes will be herded to downstream areas past the block net. Once the fishes have been excluded by herding, a USFWS staff member or his or her agents shall inspect the site for remaining or stranded fish. A USFWS staff member or his or her agents shall relocate the fish to suitable habitat outside the Project area (including those areas potentially subject to high turbidity). During the diversion/ relocation of fishes, the USFWS or his or her agents shall be present at all times.

(*This measure does not apply to Entrada South, as no work would take place within the riverbed and the above-described construction activities would not occur as a part of the Project.*)

MM RMDP/SCP BIO-45:

a. Stream diversion bypass channels:

Stream diversion bypass channels will be constructed when the active wetted channel is within the work zone. Diversion bypass channels will be built in accordance with MM RMDP/SCP BIO-44 and in consultation with CDFG/USFWS. Equipment shall not be operated in areas of ponded or flowing water unless authorized by CDFG/USFWS.

The diversion channel shall be of a width and depth comparable to the natural river channel. In all cases where flowing water is diverted from a segment of the stream channel, the bypass channel will be constructed prior to the diversion of the active stream. The bypass channel will be constructed prior to diverting the stream, beginning in the downstream area and continuing in an upstream direction. Where feasible and in consultation with CDFG/USFWS, the configuration of the diversion channel will be curved (sinuous) with multiple sets of obstructions (i.e., boulders, large logs, or other CDFG/USFWS-approved materials) placed in the channel at the point of each curve (i.e., on alternating sides of the channel). If emergent aquatic vegetation is present in the original channel, the applicant will transplant suitable vegetation into the diversion channel and on the banks prior to or at the time of the water diversion. A qualified restoration ecologist will supervise the construction of the diversion channels on site. The integrity of the channel and diversion shall be maintained throughout the intended diversion period. Channel bank or barrier construction shall be adequate to prevent seepage into or from the work area.

Construction of diversion channels shall not occur if surveys determine that gravid fish are present, spawning has recently occurred, or juvenile fish are present in the proposed construction areas.

At the conclusion of the diversion, either at the commencement of the winter season, or the completion of construction, the applicant will coordinate with CDFG/USFWS to determine if the diversion should be left in place or the stream returned to the original channel. If CDFG/USFWS determine the stream should be diverted to the original channel, the original channel will be modified prior to re-diversion (i.e., while dry) to construct curves (sinuosity) into that channel, including the placement of obstructions (i.e., boulders, large logs, or other CDFG/USFWS-approved materials). The original channel will be replanted with

emergent vegetation as the diversion channel was planted. If the diversion channel is abandoned, the boulders will remain in place.

b. Dewatering:

Construction dewatering in close proximity to stream flow shall implement the following:

- Assess local stream and groundwater conditions, including flow depths, groundwater elevations, and anticipated dewatering cone of influence (radius of draw down).
- Assess surface water elevations upstream, adjacent to, and downstream of the extraction points, to assess any critical flow regimes susceptible to excessive draw down and therefore fish stranding issues.
- Assess surface water elevations downstream of the discharge locations (if discharge is proposed to the flowing stream) to assess any flow regimes and overbank areas that may be susceptible to flooding and therefore fish stranding at the cessation of discharge. Discharge locations shall also be assessed for potential channel bed erosion from dewatering discharge, and appropriate BMPs must be implemented to prevent excessive erosion or turbidity in the discharge.
- The information above shall be summarized and provided in a plan approved by CDFG and Corps.
- Fish shall be excluded from any artificial flowing channels from dewatering discharge. Methods to ensure separation may include, but are not limited to: block netting at the confluence; creation of a physical drop greater than four inches at the confluence; or maintaining a velocity range unsuitable for fish passage, such as a berm at the confluence with small diameter pipes for discharge.

(*This measure does not apply to Entrada South, as no work would take place within the riverbed and the above-described construction activities would not occur as a part of the Project.*)

MM RMDP/SCP BIO-46: During any stream diversion or culvert installation activity, a qualified biologist(s) shall be present and shall patrol the areas within, upstream, and downstream of the work area. The biologists shall inspect the diversion and

inspect for stranded fish or other aquatic organisms. Under no circumstances shall the unarmored threespine stickleback be collected or relocated, unless USFWS personnel or their agents implement this measure. Any event involving stranded fish shall be recorded and reported to CDFG and USFWS within 24 hours. (*This measure does not apply to Entrada South, as no work would take place within the riverbed and the above-described construction activities would not occur as a part of the Project.*)

MM RMDP/SCP BIO-47: Slow moving water habitats shall be constructed upstream and downstream of any river crossing or bridge construction area to provide refuge for special-status fishes during construction. Where feasible and in consultation with CDFG and USFWS, the applicant shall enhance slow moving water habitats for each linear foot disturbed by hand-excavating shallow side channels and placing multiple sets of obstructions (e.g., boulders, large logs, or other CDFG- and USFWS-approved materials) in the channel. (*This measure does not apply to Entrada South, as no work would take place within the riverbed and the above-described construction activities would not occur as a part of the Project.*)

MM RMDP/SCP BIO-48: Installation of bridges, culverts, or other structures shall not impair the movement of fish and aquatic life. Bottoms of temporary culverts shall be placed at or below channel grade. Bottoms of permanent culverts shall be placed below channel grade. Culvert crossings shall include provisions for a low flow channel where velocities are less than two feet per second to allow fish passage. (*This measure does not apply to Entrada South, as no work would take place within the riverbed and the above-described construction activities would not occur as a part of the Project.*)

MM RMDP/SCP BIO-51: Bridges over the Santa Clara River shall be designed to minimize impacts to natural areas and riparian resources from associated lighting and stormwater runoff. All lighting will be designed to be directed away from natural areas (pursuant to SP-4.6-56) using shielded lights, low sodium-vapor lights, bollard lights, or other available light and glare minimization methods. Bridges will be designed to minimize normal vehicular lighting from trespassing into natural areas using side walls a minimum of 24 inches high. All stormwater from the bridges will be directed to water treatment facilities for water quality treatment. (*This measure does not apply to Entrada South, as the Project does not include construction of bridges in the vicinity of riparian resources or other natural areas. Lighting directed away from natural areas is covered by ES 5.4-60.*)

MM RMDP/SCP BIO-55:

a. As a supplement to ES 5.4-1/RMDP/SCP BIO-1 through ES 5.4-14/RMDP/SCP BIO-16, additional habitat mitigation through replacement or enhancement of nesting/foraging habitat for least Bell's vireo will be provided for certain key habitat zones at higher ratios (identified as "key population areas" in Figure 4.5-86, Alternative 2 Impacts to Least Bell's Vireo Habitat). Southern willow scrub, southern cottonwood–willow riparian, arrow weed scrub, mulefat scrub, and Mexican elderberry scrub and woodland that provide nesting/foraging habitat for least Bell's vireo in "key population areas" shall be replaced or enhanced. All permanent loss to nesting/foraging habitat in key population areas shall be mitigated at a 5:1 ratio unless otherwise authorized by CDFG or USFWS. Temporary habitat loss of foraging/nesting habitat in key population areas shall be mitigated at a 2:1 ratio. The requirements for replacing habitat by either creating new habitat or removing exotic species from existing habitat shall follow the procedures outlined in ES 5.4-1/RMDP/SCP BIO-1 through ES 5.4-14/RMDP/SCP BIO-16. To replace the lost functions of habitat located adjacent to the Santa Clara River due to noise impacts, all nesting/foraging habitat within the 60 dBA sound contour (associated with development site roadway improvements) shall be considered degraded. Nesting/foraging habitat within this area shall be mitigated at a ratio of 2:1.

b. The loss of documented occupied nesting habitat for coastal California gnatcatcher shall be mitigated. If the coastal California gnatcatcher is identified nesting on site, the applicant will acquire or preserve nesting coastal California gnatcatcher habitat at a 3:1 ratio for impacts to documented occupied habitat, or by the ratio specified in ES 5.4-2/RMDP/SCP BIO-2, whichever is greater. Mitigation acquisition shall occur at an agreed-upon location as approved by the USFWS upon consultation. The applicant shall enter into a binding legal agreement regarding the preservation of occupied habitat describing the terms of the acquisition, enhancement, and management of those lands.

(*This measure does not apply to Entrada South, as the Project would not cause impacts to primary constituent elements of least Bell's vireo habitat*.)

MM RMDP/SCP BIO-59: Road undercrossings will be built in accordance with accepted design criteria to allow the passage of mountain lions and mule deer. The applicant shall prepare a Wildlife Movement Corridor Plan that specifically

addresses wildlife movement corridors at San Martinez Grande, Chiquito Canyon, and Castaic Creek, which shall be monitored for one year prior to construction of the SR-126 widenings. The Plan shall address current movement that is occurring, the methods that will be implemented to provide for passage, including lighting, fencing, vegetation planting, the installation of bubblers to encourage wildlife usage, and the size of the passage. The applicant shall install motion cameras at these locations in consultation with CDFG and monitor these passages for a period of two years subsequent to constructing improvements. A report of the wildlife documented to utilize these crossings shall be provided to CDFG annually. In addition, the Salt Creek crossing west of the Project area will be enhanced prior to initiation of construction in Long Canyon (southern portion of the Homestead Village). This crossing will be monitored for one year at the initiation of RMDP development, for two years at the time the crossing is enhanced, and then for three years after Project build-out. Prior to the construction of adjacent developments, signs will be placed along the roads indicating potential wildlife crossings where mountain lions and mule deer are likely to cross. (*This measure does not apply to Entrada South, as impacts to wildlife corridors would be less than significant, and the movement corridors at San Martinez Grande, Chiquito Canyon, and Castaic Creek all are west of the Project Site.*)

MM RMDP/SCP BIO-62: At least 1,900 acres of Open Area within the Specific Plan area shall be offered for dedication to an NLMO in fee and/or by conservation easement. These 1,900 acres of the Open Area will be left as natural vegetation. Dedication of open areas lands shall be reported annually to CDFG. (*This measure does not apply to Entrada South, as the Project is outside the Specific Plan area.*)

MM RMDP/SCP BIO-65: Pre-construction surveys for San Emigdio blue butterfly shall occur in all areas containing host plants in sufficient density to support this species. A qualified Lepidoptera biologist shall conduct focused surveys at a time of year and during weather conditions when the detection of eggs, larvae, or adults is possible. All occupied habitat shall be mapped and the locations provided to CDFG. Should the removal of quail brush or other documented host plants from occupied San Emigdio blue butterfly habitat in Potrero Canyon or other areas be required, the plants shall be removed when eggs and larvae are not present (*i.e.*, mid-September to March). Removal of quail brush plants from the documented habitat in Potrero Canyon may only be conducted from April through early September if it is determined by a qualified biologist that eggs and/or larvae are not present on the plants to be removed. (*This measure does not apply to Entrada*

South, as no direct impacts to habitat for San Emigdio blue butterfly host plant habitat are anticipated.)

MM RMDP/SCP BIO-66: The removal of quail brush or other documented host plants from any occupied San Emigdio blue butterfly habitat in Potrero Canyon or other areas shall be replaced at a minimum of a 1.5:1 ratio. The replacement plants shall be planted contiguous to the existing quail brush plants associated with the San Emigdio blue butterfly habitat. The success of the replanting shall be monitored for survival and vigor consistent with survivorship requirements of MM ES 5.4-6/RMDP/SCP BIO-6 and MM ES 5.4-7/RMDP/SCP BIO-7. (*This measure does not apply to Entrada South, as no direct impacts to habitat for San Emigdio blue butterfly host plant habitat are anticipated.*)

MM RMDP/SCP BIO-69: The Newhall Ranch JPA will have overall responsibility for recreation within and conservation of the High Country. The Newhall Ranch JPA and NLMO shall develop and implement a conservation education and citizen awareness program for the High Country SMA informing the public of the special-status resources present within the High Country SMA and providing information on common threats posed by the presence of people and pets to those resources. The NLMO shall install trailhead and trail signage indicating the High Country SMA is a biological conservation area and advising that people and their animals must stay on existing trails at all times and that violators may be cited. The NLMO shall provide quarterly maintenance patrols to remove litter and monitor trail expansion and fire hazards within the High Country SMA, funded by the JPA. (*This measure does not apply to Entrada South, as the Project is located outside the Specific Plan area.*)

MM RMDP/SCP BIO-73: Permanent fencing shall be installed along all River Corridor SMA trails adjacent to the Santa Clara River, or other sensitive resources, in order to minimize impacts associated with increased human presence on protected vegetation communities and special-status plant and wildlife species. The fencing will be split rail to avoid inhibiting wildlife movement. Viewing platforms will be located in land covers currently mapped as agriculture, disturbed land, or developed land. (*This measure does not apply to Entrada South, as the project does not include trails along the Santa Clara River SMA/SEA (River Corridor SMA). See also these mitigation measures from the Entrada South EIR biota section that address fencing for open space: MM ES 5.4-22/RMDP/-SCP BIO-27, MM ES 5.4-24/RMDP/-SCP BIO-29, MM ES 5.4-26/RMDP/-SCP BIO-31, MM ES 5.4-28/RMDP/-SCP BIO-33, MM ES 5.4-31/RMDP/-SCP BIO-36, MM ES 5.4-37/RMDP/-SCP BIO-42, MM ES 5.4-63.*)

MM RMDP/SCP BIO-74: To protect Middle Canyon Spring and to reduce potential direct impacts to any special-status species that may be located within the spring complex due to unrestricted access, the Project applicant or its designee shall avoid all construction-related activities within the Middle Canyon Spring complex and erect and maintain temporary orange fencing and prohibitive signage around the Middle Canyon Spring prior to and during all phases of construction within 200 feet of the spring and, if applicable, around the Middle Canyon drainage within 100 feet of flowing water. A qualified biologist will be present to monitor construction activities within 200 feet of the spring and, if applicable, around the Middle Canyon drainage within 100 feet of flowing water. The areas behind the temporary fencing shall not be used for the storage of any equipment, materials, construction debris, or anything associated with construction activities. Any upslope runoff from construction areas will be directed away from the Middle Canyon Spring.

Following the final phase of construction of any Newhall Ranch subdivision tract adjacent to Middle Canyon Spring, the Project applicant or its designee shall install and maintain permanent fencing along the subdivision tract bordering the spring. Permanent signage shall be installed on the fencing along the spring boundary to indicate that the fenced area is a biological preserve that contains protected species and habitat. No trail shall be constructed that passes within 100 feet of the Middle Canyon Spring.

a. As described in MM RMDP/SCP BIO-51, the Commerce Center Drive Bridge will be designed to minimize secondary impacts associated with lighting and water quality impacts through the installation of indirect and downcast lighting, and routing of stormwater to water quality treatment facilities.

(*This measure does not apply to Entrada South, as Middle Canyon Spring is not located within the Project Site.*)

MM RMDP/SCP BIO-75: Focused surveys for the undescribed species of everlasting (a special-status plant species) shall be conducted by a qualified botanist prior to the commencement of grading/construction activities wherever suitable habitat (primarily river terraces) could be affected by direct, indirect, or secondary construction impacts. The surveys shall be conducted no more than one year prior to commencement of construction activities within suitable habitat, and the surveys shall be conducted at a time of year when the plants can be located and identified. Should the species be documented within the Project boundary, avoidance measures shall be implemented to minimize impacts to individual

plants wherever feasible. These measures shall include minor adjustments to the boundaries/location of haul routes and other Project features. If, due to Project design constraints, avoidance of all plants is not possible, then further measures, described in RMDP/SCP BIO-76, shall be implemented to salvage seeds and/or transplant individual plants. All seed collection and/or transplantation methods, as well as the location of the receptor site for seeds/plants (assumed to be within preserved open space areas of Newhall Ranch along the Santa Clara River), shall be coordinated with CDFG prior to impacting known occurrences of the undescribed everlasting. (*This measure does not apply to Entrada South, as the undescribed species of everlasting has not been observed on site despite regular botanical surveys since 2002 and last conducted in 2012.*)

MM RMDP-SCP BIO-76: For any individual project, or any phase of an individual project, to be located where undescribed everlasting plants may occur (*i.e.*, the sites identified in this EIS/EIR and any new sites discovered by preconstruction surveys, per RMDP/SCP BIO-75, or other future field surveys), Newhall Land shall prepare and implement an Undescribed Everlasting Mitigation and Monitoring Plan prior to the issuance of grading permits.

The Plan shall provide for replacement of individual plants to be removed at a minimum 1:1 ratio, within suitable habitat at a site where no future construction-related disturbance will occur. The plan shall specify the following: (1) the location of the mitigation site in protected/preserved areas within the Specific Plan site; (2) methods for harvesting seeds or salvaging and transplantation of individual plants to be impacted; (3) measures for propagating plants (from seed or cuttings) or transferring living specimens from the salvage site to the introduction site; (4) site preparation procedures for the mitigation site; (5) a schedule and action plan to maintain and monitor the mitigation area; (6) the list of criteria and performance standards by which to measure the success of the mitigation site (below); (7) measures to exclude unauthorized entry into the mitigation areas; and (8) contingency measures such as erosion control, replanting, or weeding to implement in the event that mitigation efforts are not successful. The performance standards for the Undescribed Everlasting Mitigation and Monitoring Plan shall be the following:

Within four years after reintroducing the undescribed everlasting to the mitigation site, the extent of occupied acreage and the number of established, reproductive plants will be no smaller than at the site lost for project construction.

Non-native species cover will be no more than 5% absolute cover through the term of the restoration.

Giant reed (*Arundo donax*), tamarisk (*Tamarix ramosissima*), perennial pepperweed (*Lepidium latifolium*), tree of heaven (*Ailanthus altissimus*), pampas grass (*Cortaderia selloana*), and any species listed on the California State Agricultural list (CDFA 2009) or Cal-IPC list of noxious weeds (Cal-IPC 2006, 2007) will not be present on the revegetation site as of the date of completion approval.

(*This measure does not apply to Entrada South, as the undescribed species of everlasting has not been observed on site despite regular botanical surveys since 2002.*)

MM RMDP/SCP BIO-77: A Middle Canyon Spring Habitat Management Plan will be developed that details the measures to be implemented to maintain the populations of the spring snail (*Pyrgulopsis castaicensis* n. sp.) and Newhall sunflower species. The plan shall be subject to the approval of CDFG and implemented by Newhall Land prior to disturbance within 100 feet of flowing water in Middle Canyon Creek and/or 200 feet of Middle Canyon Spring. The plan shall include the following elements: (1) collection of data on existing site conditions; (2) construction monitoring program and a post-development monitoring program; (3) threshold parameters that activate adaptive management measures across a series of potential future scenarios, including water quality and water quantity scenarios, including the potential use of infiltration wells, if these should become necessary to ensure water quantity; (4) measures to exclude unauthorized entry into the spring; and (5) contingency measures in the event that management efforts are not successful. Plan elements are further described below:

Pre-development data collection

Upon approval of the proposed Project, data collection for Middle Canyon Spring and its biotic community will be initiated. Site assessments will be completed by biologists and, as needed, with surveyors, engineers, geologists, and hydrogeologists to collect the following data, subject to limitations on disturbances: (1) inventory of plant species within and adjacent to the spring; (2) percent native and non-native plant cover and percent bare ground within and adjacent to the spring using the relevé method, a visual estimation technique to classify and map large vegetation areas in a limited amount of time (see below); (3) structural description of vegetation communities within each relevé plot; (4) GPS mapping of all trees within core spring area and adjacent 100 feet; (5) GPS

mapping of special-status sunflower; (6) census special-status sunflower stem numbers; (7) description of any disturbances to the spring area; (8) establishment of permanent photo points; (9) photo documentation of seasonal changes in the spring; (10) survey and mapping of hydrologic and topographic features in the area adjacent to the spring; (11) population data on the *Pyrgulopsis castaicensis* n. sp., including distribution, abundance, density, size classes and seasonal activity, and microhabitat descriptions; (12) invertebrates survey; (13) amphibian survey; (14) characterization of algal and microbial components; (15) survey of spring inlet and outlets for comparison to piezometer water elevations from monitoring points P-1MS, P-2MS, and P-8B; (16) flow rates of spring outlets at a frequency to record diurnal fluctuations; (17) approximate evapotranspiration rates of the vegetation community; (18) piezometer water elevation data from P-1MS, P-2MS, and P-8B collected at a frequency suitable to determine seasonal variations in groundwater elevations; (19) continuously recorded surface water temperature and depth profile at a spring monitoring location and piezometers P-1MS and P-2MS; (20) water quality/chemistry data in the spring and the three nearby piezometers (P-1MS, P-2MS, and P-8B) (dissolved oxygen [DO, spring only], salinity, pH and alkalinity, nitrates, sulfates, relevant cations and anions [bicarbonate, calcium, chloride, magnesium, nitrate as NO_3, potassium, sodium], total dissolved solids [TDS], turbidity [spring only], and suspended solids [spring only]); (21) soil samples along the margin of the spring to determine soil classification types; and (22) as available, compilation of a record of historical photographs and aerial photographs of the spring and adjacent areas.

Vegetation data will be collected using a non-invasive monitoring method and analyzed in accordance with the California Native Plant Society (CNPS) *Relevé Protocol* (2004), which provides for a visual assessment of vegetation communities instead of the more intrusive point-intercept transect methods. This will ensure that collection of vegetation data will limit damage to the spring vegetation and limit the establishment of trails during monitoring visits.

Additionally, for two years following approval of the proposed Project, the applicant, in consultation with CDFG, shall provide for the collection of seed from the Newhall sunflower species by a qualified research institution for long-term seed bank preservation or other conservation purposes. Further, to facilitate additional research of the species, applicant shall allow CDFG access to the spring complex for future conservation purposes.

Prior to establishing the post-development long-term thresholds discussed below, hydrologic and biologic data will be evaluated, and any increase or decrease

greater than 10% in monitoring parameters 2, 11 through 16, and 18 through 20, described above, will serve as an interim threshold and will trigger adaptive management measures, such as those described below. Should these thresholds be triggered, CDFG will be notified within 24 hours to determine what actions, if necessary, will be implemented. Biological data collection will contribute to the establishment of habitat criteria necessary for sustaining the *Pyrgulopsis castaicensis* n. sp. and the Newhall sunflower.

Construction monitoring program and data collection

Data collection described above will continue during construction near the spring complex (Commerce Center Drive Bridge and development of Middle Canyon (Mission Village planning area)). Monitors will be on site daily when work is conducted within 100 feet of flowing water in Middle Canyon Creek and/or 200 feet of the spring complex, and weekly during mass grading of Middle Canyon, to observe and report on construction activities. Monitors will ensure that appropriate avoidance and minimization measures are implemented, such as the installation and maintenance of perimeter construction fencing and storm water controls, silt fences, and sand bags. During any period where dewatering occurs within 100 feet of flowing water in Middle Canyon Creek and/or 200 feet of the spring complex, biological and hydrologic parameters will be monitored daily. No dewatering activities shall occur in the spring complex. Discharge of any dewatering waters, nuisance irrigation flows, water quality basin, subdrain, backdrain, or toe drain flows shall be directed away from the spring.

Post-development data collection

Biological and hydrologic monitoring will continue post-development. For the first two years after build-out of Middle Canyon (Mission Village), post-construction monitoring will be as frequent as during the pre-construction period. After the two-year period, data collected and the frequency of monitoring may be adjusted, in consultation with CDFG. The post-development monitoring program will continue to collect data on trends and changes in the populations of the *Pyrgulopsis castaicensis* n. sp. and Newhall sunflower and document any shift in spring habitat composition or any changes in conditions that would potentially impact the spring system, as detailed above. Analysis and comparison of collected data will establish long-term thresholds. These thresholds will serve to trigger adaptive management measures during the post-development period.

Adaptive management

As dictated by the thresholds discussed above, the following measures may be implemented after consultation with CDFG in the event a threshold is exceeded. These actions may include, but are not limited to: (1) the addition of supplemental water via an existing deep Saugus well in Middle Canyon; (2) removal of infiltration water by diverting flow from upstream water quality features; (3) implementing invasive species control; and (4) implementing additional controls to prevent unauthorized access to the spring complex.

Monitoring report

Annual monitoring reports will be prepared to summarize the status of the *Pyrgulopsis castaicensis* n. sp. and Newhall sunflower and hydrology within Middle Canyon Spring. These reports will be used to evaluate the significance of impacts and the efficacy of mitigation measures. Reports will include results of biological surveys, flow data, groundwater modeling results, water quality data, mapping of the spring features and biota, photo-documentation from permanent photo points, analysis of field and lab data, conclusions based on ongoing monitoring efforts, and recommendations for future management actions. Annual monitoring reports will be submitted to CDFG and Corps.

(*This measure does not apply to Entrada South, as Middle Canyon Spring is not located within the Project Site.*)

MM RMDP/SCP BIO-79: The status of the Potrero Canyon San Emigdio blue butterfly colony shall be monitored by a qualified biologist for a period of five years after Potrero Canyon Road construction completion/operation commencement to evaluate whether the operation of the road may be contributing to a population decline in the colony. Should it be determined that a population decline is occurring, habitat creation for the San Emigdio blue butterfly shall be implemented in suitable locations contiguous to the habitat but away from the road. A habitat creation plan will be prepared that details the location and methods for creating habitat, that specifies success criteria, and that describes measures that will be implemented in the event that the habitat creation does not stabilize the San Emigdio blue butterfly population. (*This measure does not apply to Entrada South, as the Potrero Canyon San Emigdio blue butterfly colony is not located within the Project Site.*)

MM RMDP/SCP BIO-81: The installation of new, or relocation of existing, utility poles and phone and cell towers shall be coordinated with CDFG where located in the High Country SMA and Salt Creek area. The applicant or SCE shall install utility poles, phone, and cell towers in conformance with APLIC standards for collision-reducing techniques as outlined in Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006). (*This measure does not apply to Entrada South, as the High Country SMA/SEA and Salt Creek area are not located within or near the Project Site. Moreover, Entrada South is outside the Specific Plan area.*)

MM RMDP/SCP BIO-82:

a. All surfaces on new antennae and phone/utility towers shall be designed and operated with anti-perching devices in conformance with APLIC standards to deter California condors and other raptors from perching. During construction the area shall be kept clean of debris, such as cable, trash, and construction materials. The applicant shall collect all microtrash and litter (anything shiny, such as broken glass), vehicle fluids, and food waste from the Project area on a daily basis. Workers will be trained on the issue of microtrash: what constitutes microtrash, its potential effects on California condors, and how to avoid the deposition of microtrash.

b. The applicant shall retain a qualified biologist with knowledge of California condors to monitor construction activities within the Project area. The resumes of the proposed biologist(s) will be provided to CDFG for concurrence. This biologist(s) will be referred to as the authorized biologist hereafter. During clearing and grubbing of construction areas, the qualified biologist shall be present at all times. During mass grading, construction sites shall be monitored on a daily basis. The authorized biologist will have the authority to stop all activities until appropriate corrective measures have been completed. If condors are observed landing in the Project area, the applicant shall avoid further construction within 500 feet of the sighting until the animals have left the area, or as otherwise authorized by CDFG and USFWS. All condor sightings in the Project area will be reported to CDFG and USFWS within 24 hours of the sighting. Should condors be found roosting within 0.5 mile of the construction area, no construction activity shall occur between one hour before sunset to one hour after sunrise, or until the condors leave the area, or as otherwise directed by USFWS. Should condors be found nesting within 1.5 miles of the construction area, no construction activity will occur until further authorization occurs from CDFG and USFWS.

c. To further protect California condor potentially foraging in the Project area over the long term from negative interactions with humans and/or artificial structures, the applicant or the JPA or the NLMO shall remove dead cattle that are found or reported within 1,000 feet of a residential or commercial development boundary. Dead cattle shall be relocated to a predetermined location within the High Country SMA or Salt Creek area. The locations where carcasses shall be placed shall be a minimum of 1,000 feet from a development area boundary. Appropriate locations for transfer of carcasses include open grasslands and oak/grassland areas where condors can readily detect carcasses and easily land and take off without encountering physical obstacles such as powerlines and other utility structures. The proposed locations would be selected and approved by the CDFG and USFWS. Pursuant to this measure, a telephone number for reporting dead cattle shall be provided and actively maintained. Any cattle carcasses transferred to the relocation areas shall be reported to the USFWS Condor group.

(*No new utility poles or towers are proposed as part of the project. In addition, this measure does not apply to Entrada South, as California condors have not been recorded on or flying over the Project Site and potential Project impacts to California condors are considered less than significant.*)

MM RMDP/SCP BIO-83: Thirty days prior to construction activities, a qualified biologist shall conduct a preconstruction survey for ringtail. The survey area shall include suitable riparian and woodland habitat (southern coast live oak riparian forest, southern cottonwood–willow riparian forest, southern willow scrub, coast live oak woodland, valley oak woodland, and mixed oak woodland) within the construction disturbance zone and a 300-foot buffer around the construction site. Should the ringtail be observed in the breeding and rearing period of February 1 through August 31, no construction-related activities shall occur within 300 feet of the occupied area for the period of February 1 through August 31 or until the ringtail has been determined by a qualified biologist (in consultation with CDFG) to no longer occupy areas within 300 feet of the construction zone and/or that construction activities would not adversely affect the successful rearing of young. If the ringtail is observed within the construction disturbance zone or in the 300-foot buffer around the construction site in the nonbreeding/rearing period of September 1 through January 31, and avoidance is not possible, denning ringtail shall be safely evicted under the direction of a qualified biologist (as determined by a Memorandum of Understanding with CDFG). All activities that involve the ringtail shall be documented and reported to CDFG. (*This measure does not apply*

to Entrada South, as this species has not been detected on the site. In addition, this species is not expected to use or reside at the Project because the site lacks suitable habitat and is located near development and human activity. Also, ringtail was not detected in the Project vicinity during surveys in 2004, and has never been detected on the Project site, despite numerous studies performed along the Santa Clara River and its tributaries.)

MM RMDP/SCP BIO-84: Bridge and culvert designs, where practicable, shall provide roosting habitat for bats. A qualified biologist shall work with the Project engineer in identifying and incorporating structures into the design that provide suitable roosting habitat for bat species occurring in the Project area. The final design of the roosting structures would be chosen in consultation with CDFG. (*This measure does not apply to Entrada South, as potential Project impacts to roosting bats are considered less than significant. No new utility poles or towers are proposed as part of the project.*)

MM RMDP/SCP BIO-86: Requires focused surveys for the spring snail (*Pyrgulopsis castaicensis* n. sp.) by a qualified biologist prior to the commencement of grading/construction activities in any drainage area supporting perennial flow. Any individuals of the *Pyrgulopsis castaicensis* n. sp. found within the Middle Canyon drainage shall be relocated to appropriate habitat within Middle Canyon Spring. If *Pyrgulopsis castaicensis* n. sp. are discovered during aquatic and semi-aquatic pre-construction surveys in any other perennial flowing water, the applicant shall consult with CDFG prior to initiating disturbance of the area. A report documenting the number of *Pyrgulopsis castaicensis* n. sp. located, the conditions of the area, and where the species has been relocated to, if applicable, shall be submitted to CDFG within 60 days following the relocation. (*This measure does not apply to Entrada South, as the Project would impact no springs or drainage areas supporting perennial flow.*)

MM RMDP/SCP BIO-89: Prior to initiating construction for the installation of bridges, storm drain outlets, utility lines, bank protection, trails, and/or other construction activities, all construction sites and access roads within the riverbed as well as all riverbed areas within 300 feet of construction sites and access roads shall be surveyed at the appropriate season for two-striped garter snake and south coast garter snake. Focused surveys shall consist of a minimum of four daytime surveys, to be completed between April 1 and September 1. The survey schedule may be adjusted in consultation with CDFG to reflect the existing weather or stream conditions. If located, the species will be relocated to suitable pre-

approved locations identified in the two-striped garter snake and/or south coast garter snake Relocation Plan.

The applicant shall develop a Plan to address the relocation of two-striped garter snake and south coast garter snake. The Plan shall include but not be limited to the timing and location of the surveys that would be conducted for each species, identify the locations where more intensive efforts should be conducted, identify the habitat and conditions in the proposed relocation site(s), identify the methods that would be utilized for trapping and relocating the individual species, and provide for the documentation/recordation of the species and number of animals relocated. The Plan shall be submitted to CDFG for approval 60 days prior to any ground-disturbing activities, within potentially occupied habitat.

The qualified biologist shall be present during all activities immediately adjacent to or within habitat that supports populations of two-striped garter snake and/or south coast garter snake. Clearance surveys for garter snakes shall be conducted within 200 feet of potential habitat by the authorized biologist prior to the initiation of construction each day. The resume of the proposed biologists will be provided to CDFG for approval prior to conducting the surveys.

(*This measure does not apply to Entrada South, as two-striped gartersnake and south coast gartersnake are not expected to occur on the Project Site, due to the lack of suitable habitat*.)

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APPENDIX G

Upper Santa Clara River Watershed Study

FINAL

UPPER SANTA CLARA RIVER WATERSHED STUDY

Prepared for:

The Newhall Land and Farming Company
23823 Valencia Boulevard
Valencia, California 91355
Contact: Matt Carpenter
Phone: 661.255.4259

Prepared by:

DUDEK
853 Lincoln Way, Suite 105
Auburn, California 95603
Contact: Sherri Miller
Phone: 530.863.4655

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1 INTRODUCTION

1.1 Purpose of Watershed Study

The Upper Santa Clara River Watershed (USCRW) Study analyzes the cumulative impacts of development—including past projects, current land use classifications, and future approved and planned projects—on biological resources and ecological functions and processes within the U.S. Geological Survey (USGS) hydrologic unit code (HUC)[1] 10, watersheds Numbers 2 through 5 (hereafter referred to as "watersheds" or "study area").[2] These four watersheds and five others that are not part of the study area[3] compose the 1,037,092-acre HUC 8 Santa Clara Subbasin (Figure 1). The four watersheds that are analyzed in this study comprise 425,507 acres, or 41%, of the HUC 8 Santa Clara Subbasin (Figure 2). While the vast majority of the USCRW study area is composed of natural lands, some parts of the Santa Clara River Valley and adjacent foothills have been converted to agriculture and residential, commercial, and industrial urban uses; substantial future development is planned for the study area as well.

The USCRW Study describes existing and potential future development in the study area. It relies on available data regarding current land use classifications, approved and planned projects, existing vegetation and land use cover types, soils, geology, elevation and slopes, special-status biological resources and modeled regional wildlife corridors and habitat linkages in the study area. These data establish the current baseline conditions within the study area and help to describe how those conditions will change in the future with buildout of approved and planned projects. The proposed projects of the Newhall Land and Farming Company (Newhall Land) are then analyzed in the context of overall cumulative impacts to the ecological functions of the watersheds within the study area. This analysis demonstrates that the Newhall Land projects will not make a "cumulatively considerable" contribution to the overall impacts within the USCRW, and that Newhall Land's impacts will be substantially less than what could occur under current land use classifications.

1.2 Scientific and Regulatory Justification for Watershed Study

The USCRW Study analyzes the anticipated cumulative biological impacts of development within HUC 10 watersheds 2, 3, 4, and 5 (totaling 425,507 acres), taking into consideration the

[1] Hydrologic unit codes (HUC) are a way to classify divisions of watersheds—the largest and most inclusive category, HUC 2, covers large areas of the United States like the Great Basin or the Pacific Northwest. The most exclusive HUC classification is HUC 12, the subwatershed. The HUCs investigated in this study are all HUC 10 watersheds.

[2] Watershed 2 is known as "Headwaters Santa Clara River." Watershed 3 is known as "Bouquet Canyon." Watershed 4 is known as "Castaic Creek." Watershed 5 is known as "Upper Santa Clara River."

[3] HUC 10 watersheds within the Santa Clara Subbasin that are not part of the study area are Upper Piru Creek (6), Sespe Creek (18), Lower Piru Creek (19), Middle Santa Clara River (20), and Lower Santa Clara River (21).

location of Newhall Land development projects, current land use designations, other approved and planned development in the study area, designated significant ecological areas, and wildlife movement patterns. The analysis focuses specifically on development impacts to the ecological functions of the four watersheds identified above. Each of the four HUC 10 watersheds in the study area is well-defined and supports a variety of plants, animals, and natural communities and other man-made land covers (e.g., agriculture, development). They do, however, drain to a common point. These four watersheds were selected because, when compared to the downstream watersheds, they are more likely to be developed and sustain effects from the Newhall Land projects. As explained further in Section 1.2.2, project-specific and cumulative impacts to downstream watersheds are expected to be minimal due to (a) the higher flows in the mainstem Santa Clara River in these locations, and (b) the large proportion of lands designated for non-developed uses in downstream watersheds. The USCRW study area is also consistent with the conservation area delineated in the Santa Clara River Upper Watershed Conservation Plan (TNC 2006), with the exception that the USCRW Study excludes HUC 10 Watershed 19 (Lower Piru Creek), which was included in the TNC study. The HUC 10 Watershed 19 is excluded from the USCRW Study because it is downstream of Newhall Land property (Figure 2).

1.2.1 Use of a Watershed-Scale Study Area

The use of a watershed-scale study area to identify project-specific and cumulative effects on biological resources is endorsed by federal agencies such as the Bureau of Land Management (BLM 2001), the U.S. Forest Service (Reid 1993), the U.S. Fish and Wildlife Service (USFWS 2008), and the U.S. Environmental Protection Agency (EPA 2014).

Watershed-Scale Studies Assist Water Quality Analyses. Resource management agencies consider watersheds an appropriate spatial unit for assessing human-generated impacts on the quality and quantity of water at specific points in particular water bodies, such as the Santa Clara River. Because they integrate the surface and subsurface flow of water upgradient from the point at which measurements are made, watershed studies allow one to make drainage basin-specific accountings of point and nonpoint source pollutants, whose transport is associated with the movement of water. Where watersheds are relevant and can be defined, they have long been recognized as a convenient and appropriate boundary for studying the relationship between water quality and natural and anthropogenic (caused by or related to human use) phenomena, as well as for providing a spatial unit for reference areas within ecoregions at all scales (e.g., Van Dyne 1969; O'Sullivan 1979; Shilling et al. 2005).

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FIGURE 1

Regional Map

Upper Santa Clara River Watershed Study

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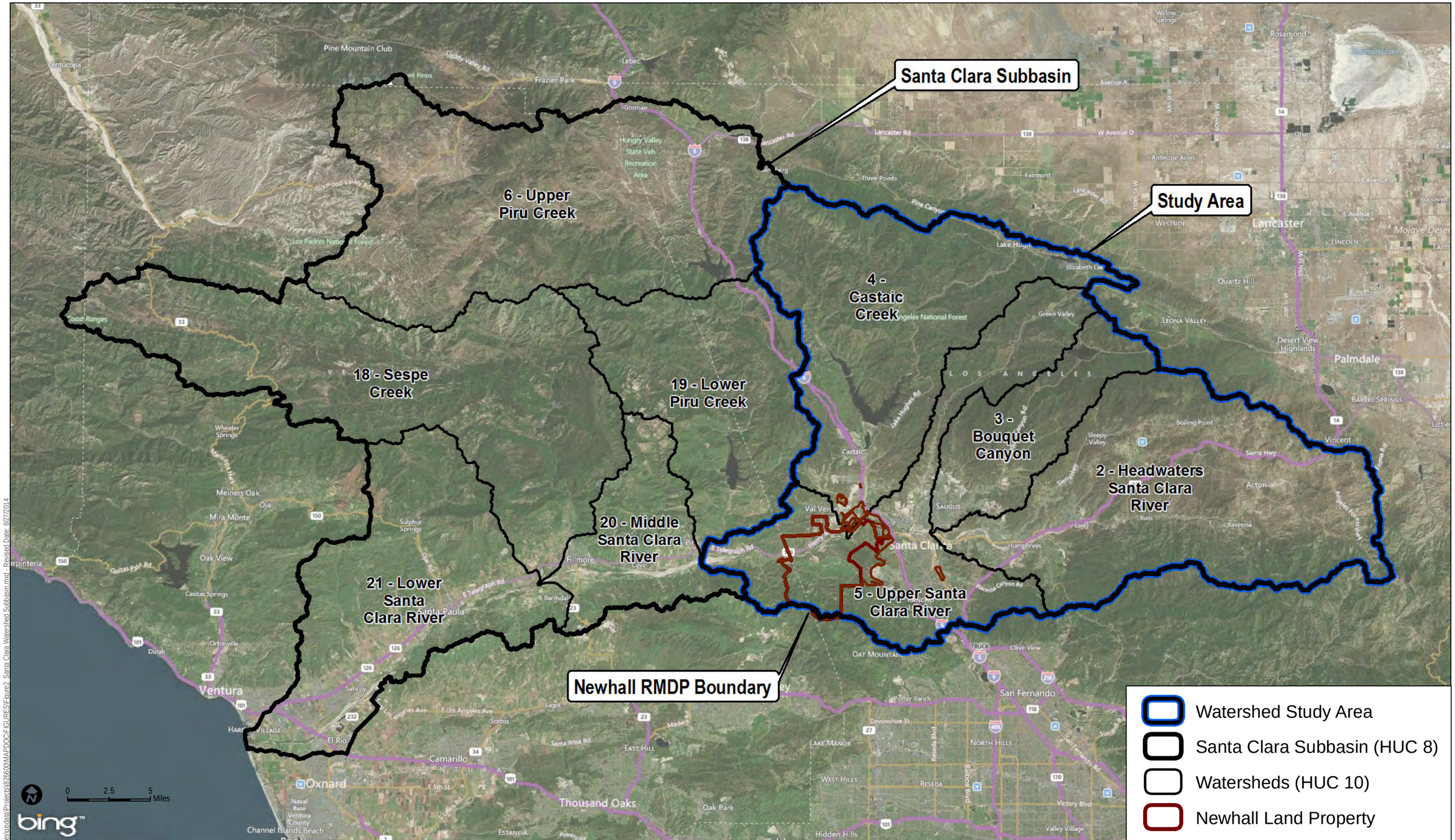

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U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
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FIGURE 2
Watersheds within Santa Clara Subbasin

Upper Santa Clara River Watershed Study

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Resource management agencies also recognize the utility of restricting the cumulative effects study area to watersheds or subwatersheds that are relevant to project effects. Per the California Manual for Watershed Assessment (Shilling et al. 2005): "if you wish to study the effect of local land-use changes, you may wish to assess several small watersheds where these changes will have a more noticeable impact on the local stream (simply because they occupy a greater proportion of the watershed area)."

Watershed-Scale Studies Are Consistent with Regional Planning Efforts. Examining cumulative impacts at a watershed or comparable scale (e.g., a set of HUC 10 watersheds as in this USCRW Study) is consistent with large regional planning efforts that have included the study area, including Newhall Land projects. For example, One Valley One Vision (OVOV; http://planning.lacounty.gov/ovov) is a joint effort between the County of Los Angeles ("County"), the City of Santa Clarita ("City"), and Santa Clara River Valley ("Valley") residents and businesses to create a single vision and guidelines for the future growth of the Valley and the preservation of natural resources. The planning area for OVOV, all of which is within the USCRW study area, includes the City and its four communities: Canyon Country, Newhall, Saugus, and Valencia, as well as the County communities of Stevenson Ranch, Castaic, Val Verde, Agua Dulce, and the future Newhall Ranch. The OVOV effort has resulted in a revised General Plan for the City and a new Santa Clarita Valley Area Plan incorporated by the County as a component of the County General Plan.

The Santa Clarita Valley Area Plan accounts for several existing specific plans in the area, including Newhall Ranch, Northlake (3,623 residential units on 1,330 acres near Castaic), Canyon Park (4,763 multiple-family units and 637 single-family units on 308 acres), Porta Bella (1,244 single-family units, 1,667 multiple-family units, and 96 acres of commercial/office on 989 acres of the Whittaker Bermite site), Downtown Newhall, and Valencia.

Watershed-Scale Studies Are Appropriate for Assessing Cumulative Biological Resource Impacts. Resource agencies often develop conservation plans or effects analyses for biological resources at the watershed scale. Many mobile wildlife species and birds move across large areas within a watershed or subbasin. At the watershed scale, individual species are typically grouped into "guilds" based on their habitat needs or life history. The species within a guild are subject to similar effects from water quality, habitat loss or degradation, loss of habitat connectivity, and other watershed-scale impacts.

1.2.2 Selection of the Study Area Watersheds

Planned development on Newhall Land property would not directly affect the majority of the HUC 10 Santa Clara Subbasin. There are nine watersheds within the Santa Clara Subbasin, of which five would not contain proposed Newhall Land development: Upper Piru Creek, Sespe Creek, Middle Santa Clara River, Lower Santa Clara River, and Lower Piru Creek (see

Figure 2). These five watersheds have a combined total of 612,396 acres, which is 59% of the Santa Clara Subbasin.

The Middle Santa Clara River and Lower Santa Clara River watersheds are directly downgradient from the four HUC 10 watersheds in the USCRW study area that could be directly affected by Newhall Land development (Figure 2). The remaining three watersheds outside the study area (Upper Piru Creek (6), Sespe Creek (18), and Lower Piru Creek (19)) drain to the Middle Santa Clara River and Lower Santa Clara River watersheds (Figure 2). Although the two downgradient watersheds (Middle Santa Clara River and Lower Santa Clara River) may sustain localized temporary increases in turbidity or long-term incremental increases in runoff from impermeable surfaces located in the upstream watersheds, the impacts would be minimal given the high water volumes carried by the downgradient watersheds. For example, Castaic Creek, which drains 37 square miles within Watershed 4, (Castaic Creek), has an average winter flow of 3.5 cubic feet per second (County of Los Angeles 2010), while typical winter flows in the lower mainstem Santa Clara River are approximately 3,500 cubic feet per second (Stillwater Sciences 2011). In addition, a "Dry Gap" exists downstream of the Los Angeles County/Ventura County that is an ephemeral reach of the Santa Clara River where surface flows in the river are lost to the Piru groundwater basin during dry periods. Surface runoff breaches the Dry Gap during major storm events and provides temporary surface water connections that periodically allow flows to directly reach downstream areas.

The study area excludes all but a fraction of an acre of the Ventura County portion of the Santa Clara Subbasin. Development in rural and agricultural areas of Ventura County is essentially under a moratorium as a result of several "Save Our Agricultural Resources" (SOAR) ordinances and initiatives. The Ventura County SOAR ordinance, extended through 2020, requires County-wide voter approval of any change to the County General Plan involving the "Agricultural," "Open Space," or "Rural" land use map designations, or any change to a General Plan goal or policy related to those land use designations. The City of Ventura has two measures: (1) its original SOAR measure, which requires voter approval of any change to the General Plan involving the "Agriculture" designation and has been extended through 2030, and (2) the Hillside Voter Participation Act, which requires voter approval of any urban development within the Hillside Voter Participation Act line. SOAR ordinances have also been adopted for the cities of Camarillo, Fillmore, Moorpark, Oxnard, Santa Paula, Simi Valley, and Thousand Oaks.

Ultimately, watersheds 2 through 5 of HUC 10 were selected as the study area for the USCRW Study based on the following factors:

- The location of significant ecological areas
- Reasonably accurate information for the location and extent of proposed development activities

- The existence and nature of sensitive downstream water-related natural features, uses, conditions or hazards
- Ranges of special-status and other key species using the watershed, linkages between populations, and wildlife movement patterns
- Available watershed plans specifying watersheds for study.

1.2.3 Key Landscape-Level Ecological Functions of the USCRW

At the watershed level, several ecological functions are susceptible to disruption. These include the following:

- Habitat availability – determined by presence of appropriate vegetation, appropriate geological type and/or soil type, elevation of habitat, and the slopes
- Habitat quality – determined by size of the habitat area, quantity and health of suitable vegetation, quantity and quality of water, and proximity to development
- Habitat connectivity – determined by the presence and appropriate size of movement corridors between habitat areas
- Water availability and quality – determined by flow quantities and durations, maintenance of hydrological connectivity, erosion and sediment loads, and contaminant levels.

The determinants of ecological functions with respect to the USCRW Study are assessed and discussed in Sections 3 and 4 for baseline conditions, future conditions with buildout under general plan land use classifications, and future conditions with Newhall Land projects.

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2 METHODS

2.1 Assemblage of Baseline Data

Baseline data for the analyses presented here were compiled from several sources:

- Current land use classifications and existing public lands and Open Space areas based on county and city general plans from the Southern California Association of Governments (SCAG) (2008)
- General Information for Newhall Land Projects: RMDP/SCP Final EIS/EIR (Corps and CDFG 2010).
- Watershed data: USGS Watershed Boundary Database (USGS 2013)
- Vegetation and Land Cover Types: USGS National Gap Analysis Program (GAP) version 2 (2012)
- Soils: National Resources Conservation Service Soil Survey Geographic database (NRCS 2013)
- Elevation and slope: USGS National Elevation Data (2007)
- Hydrology and water quality:
    - Geomorphic Assessment of the Santa Clara River Watershed, Synthesis of the Lower and Upper Watershed Studies – Ventura and Los Angeles Counties, California (Stillwater Sciences 2011)
    - Focused Special-Status Fish Species Habitat Assessment—Santa Clara River and Tributary Drainages, Newhall Ranch, Los Angeles County, California (ENTRIX 2009)
    - State of the Watershed—Report on Surface Water Quality: The Santa Clara River Watershed (Birosik 2006)
- Biological resource information for the watersheds:
    - Santa Clara River Watershed Amphibian and Macroinvertebrate Bioassessment Project (Hovore et al. 2008)
    - Santa Clara River Upper Watershed Conservation Plan (TNC 2006)
    - Conservation Plan for the Lower Santa Clara River Watershed and Surrounding Areas (TNC 2008)
    - Ecological Impact Assessment of Urban Development on the Santa Clara River Watershed, California (CBI 2005, as cited in TNC 2006)

  - Santa Clara River Enhancement and Management Plan (AMEC 2005)
  - Riparian Vegetation Mapping and Preliminary Classification of the Lower Santa Clara River and Major Tributaries, Ventura County, California, Volume I (Stillwater Sciences & URS Corporation 2007)
  - California Natural Diversity Database (CNDDB) (CDFW 2014)
- Regional wildlife corridors and habitat linkages:
  - South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion (South Coast Wildlands 2008)
  - South Coast Missing Linkages Project: A Linkage Design for the Santa Monica–Sierra Madre Connection (SCMLP) (Penrod et al. 2006)
  - Missing Linkages: Restoring Connectivity to the California Landscape (Penrod 2000).

Estimates of potential development include land classified as "Development" and "Specific Plan." It should be noted that the study area for a qualitative analysis of wildlife corridors and habitat linkages is expanded beyond the defined Upper Santa Clara River watershed to include areas to the west. This is because Penrod et al. (2006) identified regional wildlife corridors west of Newhall Land projects and east of anthropogenic land uses (agriculture and development) in eastern Ventura County.

Generally speaking, ecological functions and values are complexly related to biological and physical features (e.g., geology, hydrology, chemistry). As a result, preserving a substantial representation of the diversity of each is important for healthy watersheds even if there is a relatively poor understanding of the dynamics of these complex relationships. For example, it is important to have representation of resources at all elevation ranges in the watersheds. There is no established threshold for what percentage of watershed protection is considered adequate to maintain ecological functions and values. Effective watershed protection can be a function of several factors, including acreage, location, and type of resource protected. Impacts to these kinds of biological and physical features under the current land use classifications are a worst-case assessment, and, in terms of overall impacts, development acreages likely will be substantially reduced at the project level.

2.2 Impacts from Approved and Planned Projects

As noted in Subsection 2.1, current land use classification information was obtained from SCAG (2008). However, because this dataset is based on county and city general plans, the actual approved and planned projects in an area may be quite different from what is designated in the general plans; general plan amendments and zone changes are common as land planning

becomes more detailed and specific to a project. For example, it is relatively common for specific plan and individual project-level, on-the-ground impacts to be substantially less than what would be allowed under original general plan land use designations.

To provide a more accurate portrayal of future development and Open Space planning in the study area, available data for approved and planned projects were obtained from the City and the County.

2.3 Impacts of Proposed Newhall Land Development

Future Newhall Land projects are compared to the current land use classifications with regard to future impacts in the study area. Newhall Land projects were classified as development or as "non-developed lands." The non-developed lands fall within the following categories: Conservation Easement, High Country Special Management Area / Significant Ecological Area (SMA/SEA), Salt Creek area, Santa Clara River SMA/SEA, and Open Area. Open Area includes areas that will not be developed, but are not specifically designated as reserves or conservation easements. With regard to watershed function, non-developed lands would retain pervious surfaces, most in a natural state, but with some tributary areas reengineered to elevations above their current condition.

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3 RESULTS

This section presents the results of the analyses conducted for this study.

- Subsection 3.1 presents the baseline information for the study area as derived from current land use classifications, vegetation, geologic types, soils, elevations, and slopes.
- Subsection 3.2 shows the expected impacts on watershed-level ecological function from approved and planned projects in the study area, and describes how these impacts relate to those anticipated under the current land use classification baseline data presented in Subsection 3.1. This analysis demonstrates that approved and planned projects would result in fewer and/or less severe impacts to watershed-level ecological function in the study area when compared to those that could occur under the current general plan land use classifications.
- Subsection 3.3 takes the Subsection 3.2 analysis to the level of Newhall Land projects. It compares impacts from those projects to the impacts expected under the current general plan land use classifications. This analysis reveals whether and how the proposed Newhall Land projects will create fewer and/or less severe impacts to watershed-level ecological function in the study area compared to what could occur under current land use classifications.

For ease and clarity, the data in the tables presented in the main body of this document have been simplified to illustrate the main points of the analyses. The following tables show Classified Developed, Open Space, and Specific Plan designations. Appendix A to this document presents comprehensive tables that show breakdowns for these different development classifications—Commercial, Residential, and Mixed Use—and their densities (Very Low, Low, Medium, and High) where applicable, and Open Space designations: Open Space and Urban Reserve.

3.1 Baseline Data

3.1.1 Current Land Use and Land Use Classifications

The study area drains approximately 425,507 acres (665 square miles) of natural and urban areas (Figure 1). Table 1 summarizes the total acres for each of the four HUC 10 watersheds (Watersheds 2 through 5, hereafter referred to as “watersheds” or “study area”) and the grand total for the study area. The four watersheds, shown on Figure 2, range in size from 46,572 acres in Bouquet Canyon (11% of study area) to 150,611 acres in Headwaters Santa Clara River (35% of study area).

Because of inherent topography, historical land uses, and ownership patterns, existing and classified land uses are variable among the watersheds. Table 1 provides the baseline data for the currently

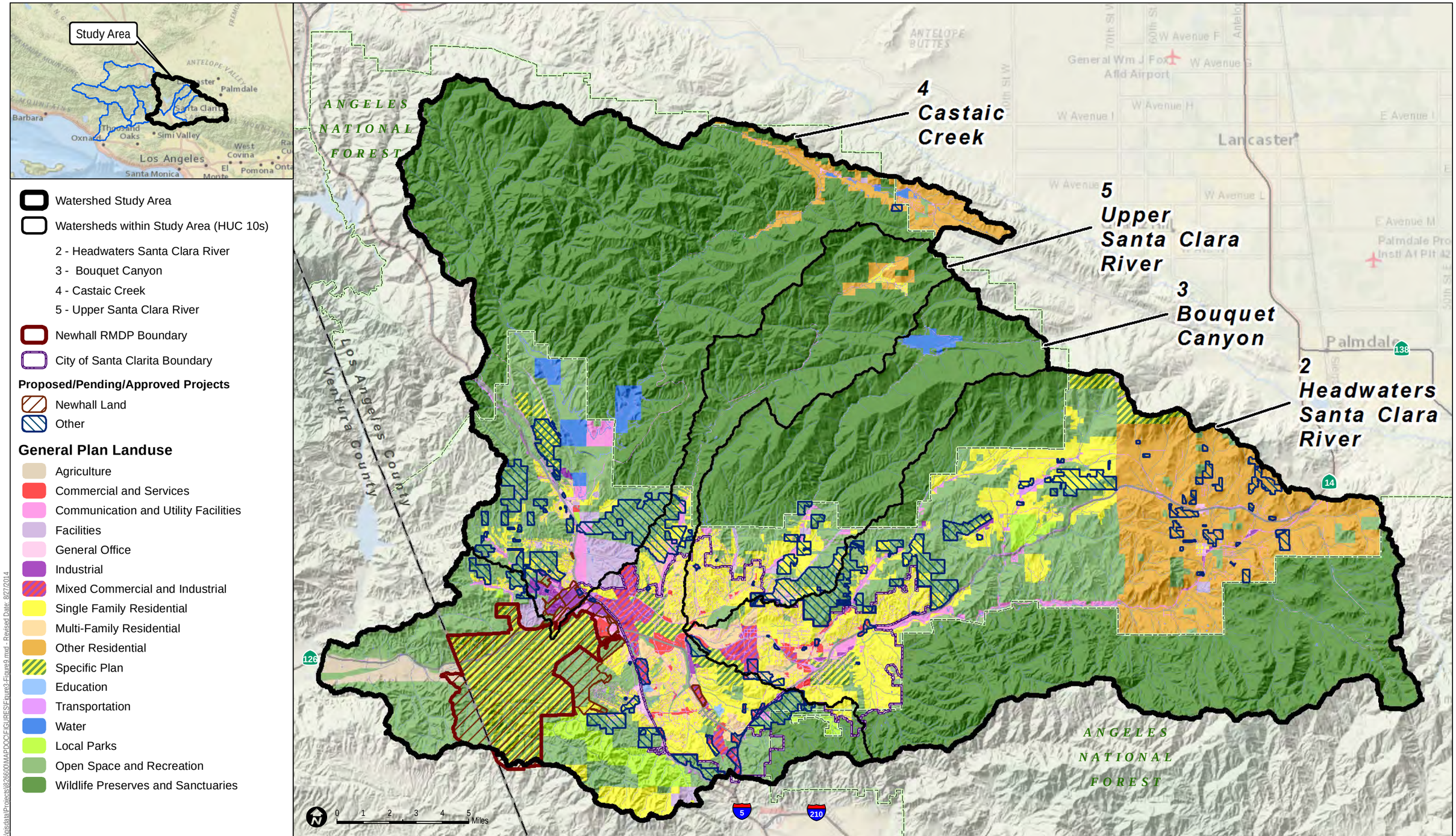
classified land uses in the HUC 10 watersheds.[4] It includes the total acres of the watersheds and the grand total for the study area, and the acres and percentages of current Classified Developed, Open Space, and Specific Plan areas for each watershed. Open space includes urban reserve lands (SCAG 2008). General Plan land use classifications are shown in Figure 3. The reader is directed to Table A-1 of Appendix A for the specific breakout of these categories.

Overall, 71% of the study area is designated as Open Space, with the remaining 29% designated as Classified Developed or Specific Plan area (which includes an unknown future mixture of development and disturbed Open Space area). Classified Open Space is in the 60%–63% range for the Headwaters of Santa Clara River (Watershed 2) and Upper Santa Clara River (Watershed 5), and is in the 83%–87% range for Bouquet Canyon (Watershed 3) and Castaic Creek (Watershed 4), the latter two of which are dominated by existing public lands (Angeles National Forest, Castaic Lake State Recreation Area).

Table 2 summarizes the amount of land within the study area that has actually been converted for agricultural and development uses as of 2012, the last update of the USGS National GAP land use dataset (USGS 2012). Existing GAP land cover classifications are shown in Figure 4. Approximately 57,500 acres (13.5%) of the study area has been converted to agriculture (4,755 acres (1.1%)) or some type of developed or disturbed land cover (52,749 acres (12.4%)), and 17,744 acres (4%) was classified as Specific Plan (Table 1).

In terms of the total percentage of area converted, the Upper Santa Clara River watershed (which contains most of the City of Santa Clarita) has the highest percentage of land conversion at 21.6% of the watershed (more than 21,320 acres) (Figure 4). The Headwaters Santa Clara River watershed has the most total area converted of the four watersheds in the study area, at approximately 22,420 acres, although a smaller overall percentage (14.9%) of this watershed has been converted compared to the Upper Santa Clara River watershed (21.6%). Proportionally, the Bouquet Canyon watershed has a similar, but slightly smaller, percentage of land conversion (13.2%) compared to the Headwaters Santa Clara River watershed; however, 83% of the Bouquet Canyon watershed is classified as Open Space, so relatively little additional large-scale land conversion can occur in this watershed. The Castaic Creek watershed (the second largest watershed in the study area), which is mostly composed of public lands (Angeles National Forest, Castaic Lake State Recreation Area), has experienced the smallest percentage of conversion at 5.9% (approximately 7,590 acres) (Figure 4). In this watershed, where 87% of the area is classified as Open Space, relatively little additional large-scale land conversion can occur in the future.

[4] The current land use classifications refer to general plan designations only and do not reflect whether the land has actually been developed or not. For example, an area classified as developed may currently support undeveloped or agricultural land uses. The acreages of land use classifications cannot be directly compared to existing acreages of current land uses.



DUDEK

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
GENERAL PLAN LAND USE: Southern California Association of Governments (SCAG), 2008

FIGURE 3
General Plan Land Use Classifications

Upper Santa Clara River Watershed Study

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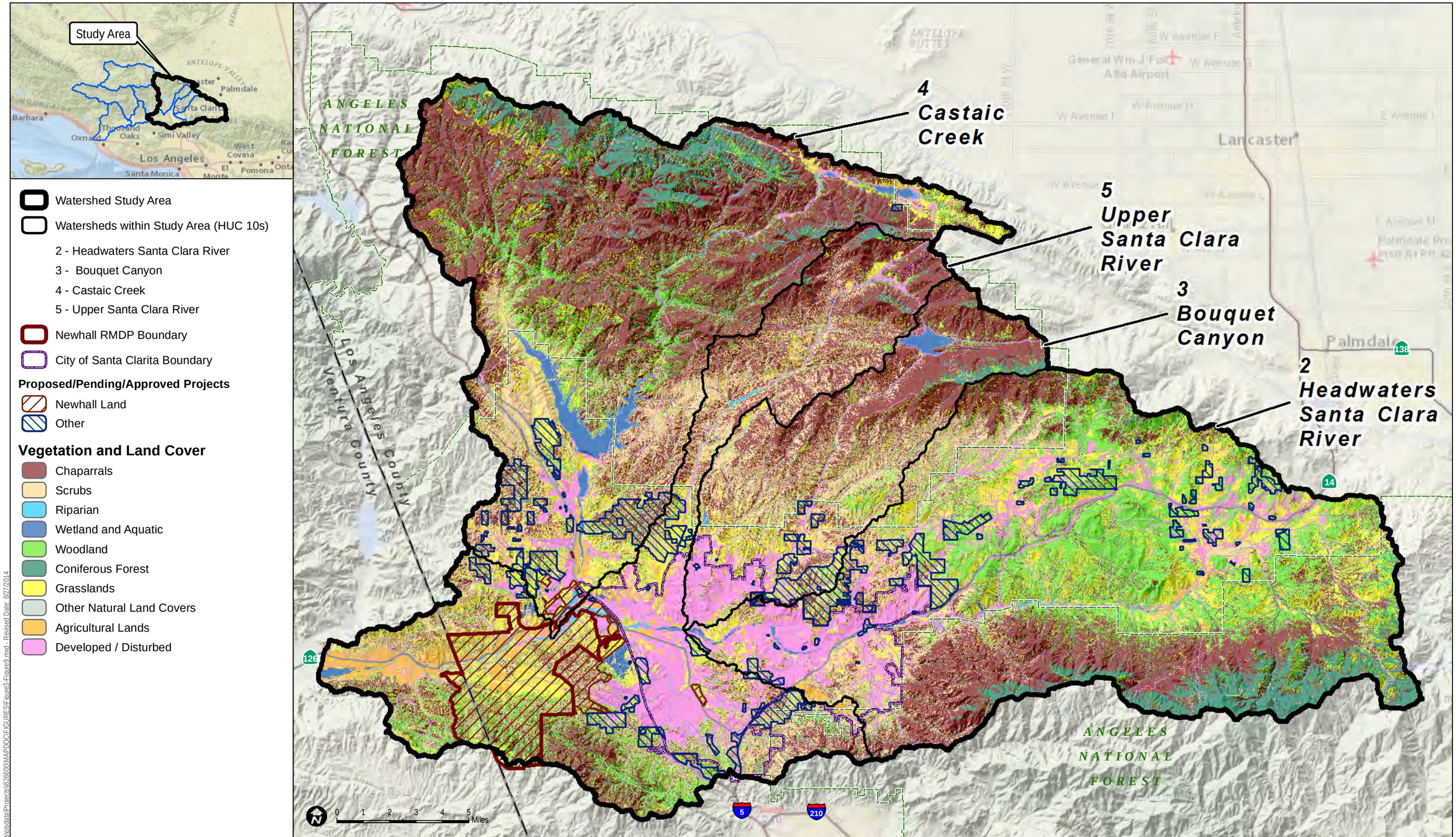

DUDEK

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
LAND COVER: USGS National GAP Analysis Program (GAP) version 2, updated 2012

FIGURE 4
Existing Vegetation and Land Cover Types

Upper Santa Clara River Watershed Study

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Table 1
Current Land Use Classifications in the Study Area

HUC 10 Watershed	Total Watershed Area		Land Use Classifications (Acres)			Land Use Classifications (Percentages)		
	Acres	*Percent of Total*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
2 – Headwaters Santa Clara River	150,611	35%	57,816	89,981	2,815	38%	60%	1.9%
3 – Bouquet Canyon	46,572	11%	7,927	38,611	34	17%	83%	0.07%
4 – Castaic Creek	129,433	30%	15,051	113,003	1,379	12%	87%	1.0%
5 – Upper Santa Clara River	98,890	23%	22,930	62,445	13,516	23%	63%	14%
Total Study Area	**425,507**	**100%**	**103,724**	**304,039**	**17,744**	**24%**	**71%**	**4.2%**

Table 2
Conversion of Lands for Agriculture and Urban Uses in the Study Area

HUC 10 Watershed	Watershed Totals	Agricultural Lands			Developed/Disturbed Lands						Total Acres Converted (%)
		Cultivated Cropland	*Pasture/ Hay*	*Total Agriculture (%)*	*Developed Low Intensity*	*Developed Medium Intensity*	*Developed High Intensity*	*Developed Open Space*	*Recently Burned Shrubland*	*Total Developed (%)*	
2 – Headwaters Santa Clara River	150,611	34	344	378 (0.25%)	5,024	2,478	43	14,251	251	22,047 (14.6%)	22,425 (14.9%)
3 – Bouquet Canyon	46,572	48	56	104 (0.22%)	1,790	1,313	7.3	2,949	0	6,059 (13.0%)	6,163 (13.2%)
4 – Castaic Creek	129,433	178	551	729 (0.56%)	1,263	775	35	4,790	0	6,863 (5.3%)	7,592 (5.9%)
5 – Upper Santa Clara River	98,890	1,839	1,705	3,544 (3.6%)	4,913	3,467	141	8,700	559	17,780 (18.0%)	21,324 (21.6%)
Total Study Area	**425,507**	**2,099**	**2,657**	**4,755 (1.1%)**	**12,990**	**8,033**	**226**	**30,690**	**810**	**52,749 (12.4%)**	**57,504 (13.5%)**

3.1.2 Vegetation and Land Cover Types

Table 3 summarizes the vegetation and land cover types in the study area in regard to total acreages and percentages of the watershed and identifies the current land use classifications for each. As described in the Section 2, Methods, these data are from USGS GAP Version 2 (USGS 2012) and follow the CNDDB vegetation classification system (FGDC 2008) at the Ecological System Level (the most detailed available in GAP data). It is important to understand that these data reflect regional landscape mapping and may differ from project-level vegetation mapping. However, they are useful for watershed-level analyses.

The study area supports a total of 41 vegetation and land cover types (Figure 4). Table 3 organizes these 41 types into 10 general communities and cover types: chaparrals, scrubs, riparian, wetland and aquatic, woodland, coniferous forest, grasslands, other natural land covers, agricultural lands, and developed/disturbed lands. Chaparrals are the largest cover component in the study area, composing 32% of the study area, and they dominate the landscape in the rugged hills north of the Santa Clara River (Figure 4). Almost all (98%) of the chaparral in the study area is classified as southern California dry-mesic chaparral, with the other four types all at less than 1% of the total. The next most common vegetation covers are scrubs (18% of the study area) and woodland (17% of the study area). The scrubs dominate the lower foothills along the river valley; the woodlands primarily occur at the higher elevations. Southern California coastal scrub composes 89% of the scrubs, with three desert scrub types—Sonora–Mojave creosotebush–white bursage desert scrub, Mojave mid-elevation mixed desert scrub, Sonora–Mojave mixed salt desert scrub—accounting for about 10% of the total scrubs. A desert woodland type—Great Basin pinyon–juniper woodland—dominates the eastern portion of the study that transitions to the Mojave Desert and California coastal live oak woodland and savanna dominates the woodlands in the more mesic portions of the study area. Finally, grasslands compose 12% of the study area. These four most common natural vegetation cover types—chaparrals, scrubs, woodlands, and grassland—together compose almost 79% of the study area. Agricultural lands and developed/disturbed lands (including Classified Developed/Open Space) compose about 14% of the study area. The vast majority of existing agriculture is located along the Valley and adjacent foothills and the developed lands are concentrated in the City of Santa Clarita and communities of Val Verde, Castaic, Valencia, and Acton.

As shown in Table 3, about 121,470 acres (28%) of the study area are classified for development (including Specific Plan). In terms of acreage, current land use classifications would result in the greatest impacts to grasslands (approximately 25,170 acres developed, or about 50% of the total grassland within the study area). A large amount of woodland (approximately 22,800 acres) could also be converted under existing land use classifications, but that would compose a smaller percentage (about 32%) of the total existing woodland. Other notable potential conversions of less common or sensitive vegetation communities that would be allowed under current land use

classifications include 1,692 acres (33%) of wetland and aquatic and approximately 947 acres (41%) of riparian. However, state and federal "no net loss" policies would dramatically constrain the amount of jurisdictional riparian/wetland communities that could actually be converted to development uses (see Section 1600 of the California Fish and Game Code and Section 404 of the federal Clean Water Act). Therefore, land use classifications alone are not a good predictor of the amount of riparian/wetland communities that would actually be affected by development.

Two broadly distributed vegetation communities that would remain largely undeveloped in the study area under existing land use classifications are scrubs and chaparrals; approximately 81% of scrubs and 91% of chaparrals are in Open Space designations.

3.1.3 Geologic Types

Geologic types are important factors in watershed function because they determine much of the topography of an area (e.g., formation of cliffs, bluffs, watercourses), as well as the rate and type of soil formation. Some plant species are endemic to specific geologic types, either because they require certain chemistry or because they rely on structural characteristics such as cracking. In the context of watershed analysis, the emphasis is on maintaining a diversity of geologic types as undeveloped Open Space and avoiding disproportionate impacts to any one geologic type.

Table 4 summarizes the geologic types in the study area. The study area is geologically quite diverse, with 17 different geologic types, including a mapping for water (Table 4 and Figure 5). No one geologic type dominates the study area, but 6 of the 17 types account for about 56% of the total acreage. The most prevalent geologic type—Precambrian rocks, undivided—accounts for 14.3% of the study area, with the other five most common types being Mesozoic granitic, Precambrian granitic, Schist, Plio-Pleistocene nonmarine and Pliocene nonmarine, and Precambrian rocks, undivided. The remaining 44% of the study area is underlain by the other 12 types at percentages ranging from 0.1% (Tertiary marine, undivided) to 7.7% (Miocene nonmarine).

Table 3
Vegetation Communities and Land Cover Types in the Upper Santa Clara River Watershed

Vegetation and Land Cover Type[a]	Vegetation Totals		Land Use Totals			Percent of Vegetation and Land Cover Type		
	Acres	*Percent of Study Area*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
Chaparrals								
Southern California dry-mesic chaparral	137,999	32%	9,255	126,267	2,478	6.7%	92%	1.8%
California mesic chaparral	1,922	0.5%	386	1,466	70	20%	76%	3.6%
Sonora-Mojave semi-desert chaparral	779	0.2%	202	556	21	26%	71%	2.7%
Mediterranean California mesic serpentine woodland and chaparral	313	0.1%	75	199	39	24%	64%	13%
California montane woodland and chaparral	85	0.02%	0.03	85	0	0.04%	99%	0%
Subtotal	*141,098*	*33%*	*9,918*	*128,573*	*2,608*	*7.0%*	*91%*	*1.8%*
Scrubs								
Southern California coastal scrub	69,263	16%	7,736	57,552	3,975	11%	83%	5.7%
Sonora-Mojave creosotebush-white bursage desert scrub	5,015	1.2%	1,183	3,742	89	24%	75%	1.8%
Mojave mid-elevation mixed desert scrub	2,653	0.6%	1,413	1,238	1.7	53%	47%	0.06%
Sonora-Mojave mixed salt desert scrub	442	0.1%	397	44	1.9	90%	10%	0.4%
Mediterranean California southern coastal dune	90	0.02%	25	64	1.4	27%	71%	1.6%
Inter-mountain basins big sagebrush shrubland	41	0.01%	23	17	0.3	56%	43%	0.8
Inter-mountain basins mixed salt desert scrub	32	0.01%	20	13	0	61%	39%	0%
North American warm desert active and stabilized dune	2.4	0.001%	1.8	0.5	0.1	74%	20%	5.2%
Subtotal	*77,538*	*18%*	*10,799*	*62,671*	*4,069*	*14%*	*81%*	*5.2%*
Riparian								
Mediterranean California foothill and lower montane riparian woodland	2,121	0.5%	671	1,215	234	32%	57%	11%
North American warm desert riparian woodland and shrubland	148	0.03%	38	108	1.6	26%	73%	1.1%

Table 3
Vegetation Communities and Land Cover Types in the Upper Santa Clara River Watershed

Vegetation and Land Cover Type[a]	Vegetation Totals		Land Use Totals			Percent of Vegetation and Land Cover Type		
	Acres	*Percent of Study Area*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
California Central Valley riparian woodland and shrubland	7.6	0.002%	2.2	5.0	0.4	29%	66%	5.0%
Subtotal	2,277	0.5%	711	1,328	236	31%	58%	10%
Wetland and Aquatic								
Open water (fresh)	3,282	0.8%	469	2813	0	14%	86%	0%
Temperate Pacific freshwater mudflat	1,319	0.3%	811	474	34	61%	36%	2.6%
Temperate Pacific freshwater emergent marsh	509	0.1%	313	131	65	61%	26%	13%
Subtotal	*5,110*	*1.2%*	*1,593*	*3,418*	*99*	*31%*	*67%*	*1.9%*
Woodland								
Great Basin pinyon–juniper woodland	44,223	10%	16,507	27,040	676	37%	61%	1.5%
California coastal live oak woodland and savanna	19,504	4.6%	1,769	15,646	2,089	9.1%	80%	11%
California Central Valley mixed oak savanna	4,460	1.0%	833	3,420	207	19%	77%	4.6%
Central and southern California mixed evergreen woodland	1,547	0.4%	8.2	1,479	60	0.5%	96%	3.9%
California lower montane blue oak–foothill pine woodland and savanna	1,486	0.3%	366	1,018	102	25%	69%	6.9%
Southern California oak woodland and savanna	516	0.1%	157	292	67	30%	57%	13%
Mediterranean California mixed evergreen forest	84	0.02%	2.1	82	0	2.4%	98%	0%
Subtotal	71,820	17%	19,642	48,977	3,201	27%	68%	4.5%
Coniferous Forest								
Mediterranean California dry-mesic mixed conifer forest and woodland	17,734	4.2%	120	17,559	55	0.7%	99%	0.3%
California montane Jeffrey pine–(Ponderosa pine) woodland	1,315	0.3%	36	1,176	103	2.7%	89%	7.9%

Table 3
Vegetation Communities and Land Cover Types in the Upper Santa Clara River Watershed

Vegetation and Land Cover Type[a]	Vegetation Totals		Land Use Totals			Percent of Vegetation and Land Cover Type		
	Acres	*Percent of Study Area*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
California coastal redwood forest	90	0.02%	29	51	9.6	32%	57%	11%
Subtotal	*19,139*	*4.5%*	*185*	*18,786*	*168*	*1.0%*	*98%*	*0.9%*
Grasslands								
California Central Valley and southern coastal grassland	50,143	12%	21,039	24,970	4,132	42%	50%	8.2%
California mesic serpentine grassland	26.7	0.01%	1.85	25	0	6.9%	93%	0%
Subtotal	*50,170*	*12%*	*21,041*	*24,995*	*4,132*	*42%*	*50%*	*8.2%*
Other Natural Land Covers								
Southern California Coast Ranges cliff and canyon	433	0.1%	203	230	0	47%	53%	0%
North American warm desert bedrock cliff and outcrop	386	0.1%	214	157	15	55%	41%	3.9%
North American warm desert pavement	32	0.01%	26	4.1	2.1	81%	13%	6.4%
Subtotal	*851*	*0.2%*	*443*	*391*	*17*	*52%*	*46%*	*2.0%*
Agricultural Lands								
Pasture/hay	2,657	0.6%	1274	658	725	48%	25%	27%
Cultivated cropland	2,099	0.5%	284	1538	277	14%	73%	13%
Recently burned shrubland	810	0.2%	368	313	129	45%	39%	16%
Subtotal	*5,566*	*1.3%*	*1,926*	*2,509*	*1,131*	*35%*	*45%*	*20%*
Developed/Disturbed Lands								
Developed, Open Space	30,691	7.2%	18328	10842	1521	60%	35%	5.0%
Developed, low intensity	12,990	3.1%	11416	1225	349	88%	9.4%	2.7%
Developed, medium intensity	8,033	1.9%	7500	324	209	93%	4.0%	2.6%
Developed, high intensity	226	0.1%	221	0.6	4.0	98%	0.3%	1.8%
Subtotal	*51,940*	*12%*	*37,465*	*12,392*	*2,083*	*72%*	*24%*	*4.0%*
Total	**425,507**	***100%***	**103,724**	**304,039**	**17,744**	**24%**	**71%**	**4.2%**

Table 4
Geologic Types in the Study Area in Relation to Current Land Use Classifications

Geologic Type	Geologic Totals		Land Use Totals			Percent of Geologic Type		
	Acres	*Percent of Study Area*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
Precambrian rocks, undivided	61,053	14.3%	8,129	52,924	0	13%	87%	0%
Plio-Pleistocene nonmarine, Pliocene nonmarine	52,010	12.2%	21,277	27,661	3,073	41%	53%	6%
Mesozoic granitic rocks	46,210	10.9%	14,866	31,345	0	32%	68%	0%
Precambrian granitic rocks	38,965	9.2%	8,095	30,869	0	21%	79%	0%
Schist (metasedimentary or metavolcanic)	38,873	9.1%	3,684	33,552	1,637	9%	86%	4%
Miocene nonmarine	32,592	7.7%	14,137	17,937	518	43%	55%	2%
Pliocene marine	32,574	7.7%	3,847	21,014	7,713	12%	65%	24%
Miocene marine	26,482	6.2%	3,972	20,831	1,679	15%	79%	6%
Alluvium (Quaternary nonmarine and marine)	24,375	5.7%	15,593	5,658	3,125	64%	23%	13%
Paleocene marine	22,989	5.4%	82	22,908	0	0.4%	99.6%	0%
Paleozoic and Permo-Triassic granitic rocks	16,383	3.9%	177	16,207	0	1%	99%	0%
Oligocene nonmarine	14,699	3.5%	1,982	12,717	0	13%	87%	0%
Tertiary volcanic flow rocks	9,784	2.3%	6,404	3,381	0	65%	35%	0%
Granitic and metamorphic rocks, pre-Cenozoic	3,666	0.9%	1,392	2,273	0	38%	62%	0%
Oligocene marine	3,508	0.8%	60	3,448	0	2%	98%	0%
Water	751	0.2%	27	724	0	4%	96%	0%
Tertiary nonmarine, undivided	591	0.1%	0	591	0	0%	100%	0%
Total	**425,507**	***100%***	**103,724**	**304,039**	**17,744**	**24%**	**71%**	**4.2%**

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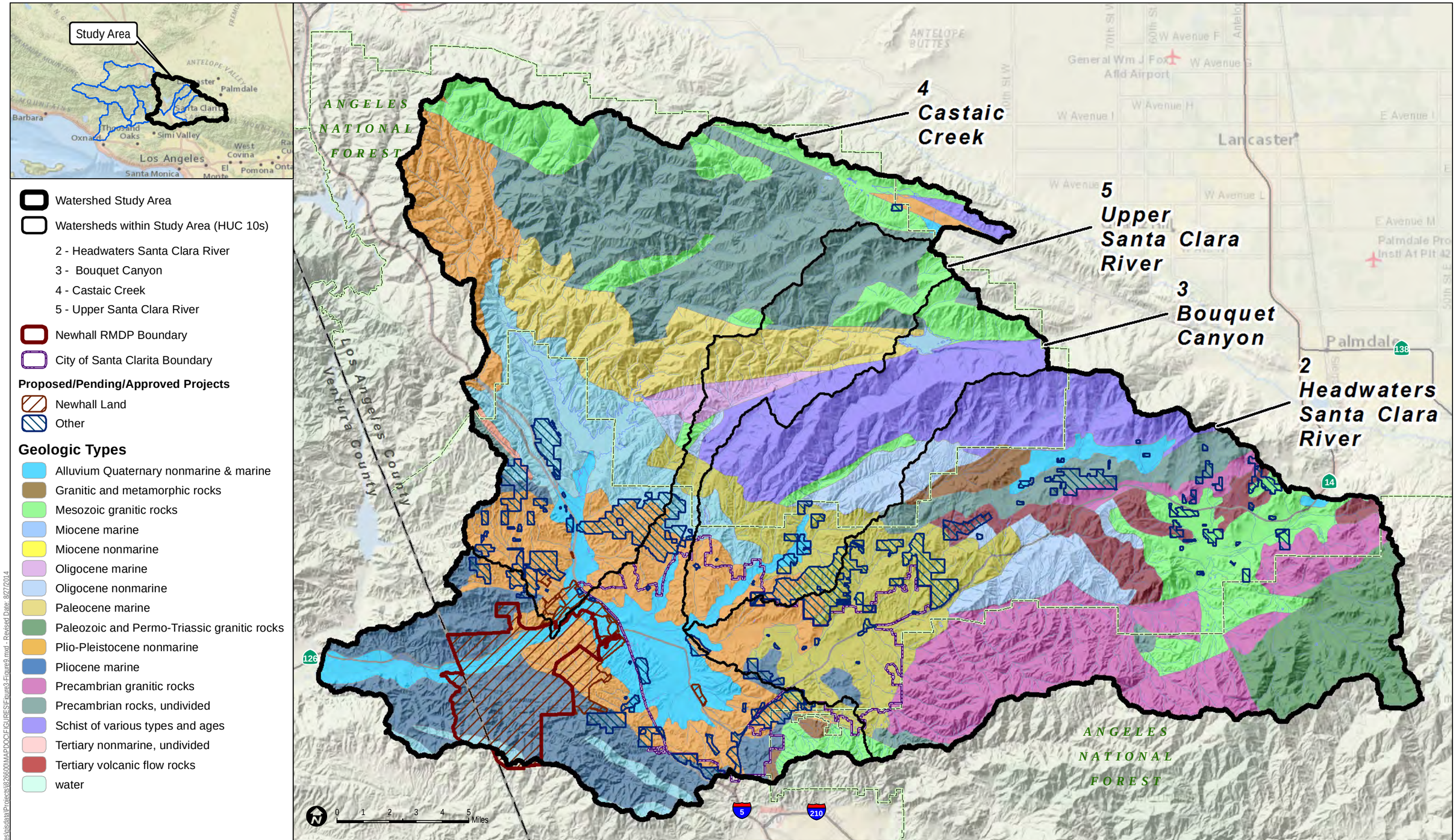

DUDEK

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
GEOLOGY: USGS California Geologic Map, 2008

FIGURE 5
Existing Geologic Types

Upper Santa Clara River Watershed Study

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Under current land use classifications, all 17 geologic types except Tertiary nonmarine would be affected by potential development, variously ranging from 1% of upper Paleozoic and Permo-Triassic granitic rocks to 77% of alluvium (Quaternary nonmarine and marine), which is located along the Valley (Table 4 and Figure 5). About 45% of Miocene nonmarine, which composes much of the Valley (but 3% of the total watershed), also could be developed under current land use classifications. Large areas of geologic types that dominate the rugged terrain at higher elevations would remain in Open Space, including Paleocene marine (99.6% in Open Space), Oligocene marine (98% in Open Space), Precambrian rocks (87% in Open Space), and Schist (metasedimentary or metavolcanic) (86% in Open Space). Of the geologic types that might support sensitive resources, the greatest proportional impact would be to tertiary volcanic flow rocks (65% impacted under current land use classifications).

3.1.4 Soil Types

Soil types, similar to geologic types, are also important factors in watershed ecological function in several ways. Some vegetation communities and special-status plants will only occur in certain soil types. Unusual or rare soil conditions are often important for highly localized endemic species (e.g., certain clay or carbonate soils). Sometimes these soil types are also important mineral resources (e.g., limestone) and thus associated vegetation and plant species are vulnerable to anthropogenic effects. Soil type also restricts where fossorial mammals can burrow, which in turn limits the distribution of species that depend on those mammals as prey (e.g., most raptors) and that use their burrows (e.g., burrowing owl). In addition, soil types also affect the potential for erosion and loss of sediment into the watershed.

Table 5 summarizes the soil types in the study area, sorted by acreage total in the study area, and Figure 6 shows their distribution. As with geologic types, the study area is highly diverse, with more than 100 soil types. Also, as with geologic types, there is no clearly dominant soil type in the study area, with Saugus loam as the most common type, but only composing 7.9% (approximately 33,550 acres) of the total study area.

Twenty-four of these soil types, accounting for approximately 27,220 acres of the study area (6.4% of the study area) would not be impacted under the current land use classifications. Of the 10 soil types that compose approximately 50% of the watershed, a total of about 30,640 acres (15%) would be impacted under current land use classifications. Soils types that would be most impacted and compose significant areas include Hanford coarse sandy loam (97%), Hanford sandy loam (89% impacted), Yolo loam (85% impacted), sandy alluvial land (83% impacted), and Vista coarse sandy loam (82% impacted).

3.1.5 Elevations

Elevation is important in an ecological context because it is a primary limiting factor on the distribution of many plant and animal species. Generally, species abundance is greater at lower elevations; however, many special-status species are restricted to higher elevations or narrow elevation ranges associated with climate or other habitat factors (e.g., a restricted elevation-related life zone). Further, with projected climate change, some species may need to migrate to higher elevations to offset the effects of warming temperatures and shifting vegetation communities. To avoid impacts to ecological function over the long term, therefore, it is best to not disproportionately impact any one elevation. In practice, however, lower and middle elevations are most heavily developed.

Table 6 shows the elevations in the study area at 500-foot intervals and Figure 7 shows their distribution. Elevations in the study area range from 500 to over 6,500 feet above mean sea level (amsl). Over 99% of the study area is between 500 and 5,500 feet amsl and about 88% is between 1,000 and 4,000 feet amsl.

Some level of development could occur at all study area elevations under current land use classifications, but the large majority of development would occur at elevations between 500 and 4,000 feet amsl. Of the approximately 121,470 acres of potential development, about 117,930 acres (97%) would occur between 500 and 4,000 feet amsl, accounting for 31% of the approximately 381,020 acres between 500 and 4,000 feet amsl. A total of about 65,570 acres of development would occur at between 500 and 2,000 feet amsl, accounting for 48% of the approximately 136,980 acres between 500 and 2,000 feet amsl. The elevation range with the greatest proportion of potential development is 1,000–1,500 feet amsl, with 71% potentially developed. Generally, at elevations between 1,500 and 4,500 feet amsl, the relative proportion of very low-density residential to other development categories increases with elevation, reflecting more challenging and expensive development costs associated with mass grading (see Table A-5 of Appendix A).

Table 5
Soil Types in the Study Area in Relation to Current Land Use Classifications

Soil Type	Soil Totals		Land Use Totals			Percentage of Soil Type		
	Acres	*Percent*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
Saugus loam	33,552	7.9%	15,155	16,925	1,473	45%	50%	4.4%
Trigo, granitic substratum-Exchequer families-Rock outcrop complex	32,462	7.6%	464	31,999	0	1.4%	99%	0%
Lodo-Modesto families complex	28,540	6.7%	87	28,453	0.2	0.3%	99.7%	0.001%
Castaic-Balcom silty clay loams	22,442	5.3%	5,386	11,547	5,509	24%	52%	24%
Stonyford-Millsholm families complex	20,741	4.9%	118	20,623	0	0.6%	99%	0%
Caperton-Capistrano families complex	17,976	4.2%	10	17,967	0	0.1%	99.9%	0%
Pismo family-Rock outcrop complex	15,332	3.6%	0	15,332	0	0%	100%	0%
Pismo-Trigo, dry-Exchequer, dry families complex	13,977	3.3%	54	13,923	0	0.4%	99.6%	0%
Caperton-Trigo, granitic substratum-Lodo families complex	13,872	3.3%	21	13,851	0	0.2%	99.8%	0%
Castaic and Saugus soils	11,795	2.8%	878	9,430	1,487	7.4%	80%	13%
Vista coarse sandy loam	10,970	2.6%	8,994	1,976	0	82%	18%	0%
Ojai loam	10,306	2.4%	5,289	3,112	675	51%	30%	6.5%
Hanford sandy loam	10,201	2.4%	8,542	1,191	469	84%	12%	4.6%
Las Posas-Toomes rocky loams	8,625	2.0%	5,395	3,230	0	63%	37%	0%
Amargosa rocky coarse sandy loam	8,113	1.9%	4,370	3,744	0	54%	46%	0%
Millsholm rocky loam	8,096	1.9%	1,352	6,425	319	17%	79%	3.9%
Trigo-Calleguas families-Haploxeralfs complex	8,043	1.9%	111	7,933	0	1.4%	99%	0%
Modesto, moderately deep-Trigo families complex	7,413	1.7%	49	7,364	0	0.7%	99%	0%
Gaviota rocky sandy loam	7,097	1.7%	1,213	4,244	1,640	17%	60%	23%
Agua Dulce stony loam	6,557	1.5%	1,334	5,223	0	20%	80%	0%
Yolo loam	6,472	1.5%	4,390	985	1,097	68%	15%	17%
Exchequer family	6,204	1.5%	26	6,179	0	0.4%	99.6%	0%
Hanford coarse sandy loam	5,854	1.4%	5,680	173	0	97%	3.0%	0%
Trigo-Calleguas families-Rock outcrop complex	4,731	1.1%	12	4,719	0	0.3%	99.7%	0%
Hanford family	4,594	1.1%	181	4,414	0	3.9%	96%	0%

Table 5
Soil Types in the Study Area in Relation to Current Land Use Classifications

Soil Type	Soil Totals		Land Use Totals			Percentage of Soil Type		
	Acres	*Percent*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
Sandy alluvial land	4,493	1.1%	2,777	762	954	62%	17%	21%
Tollhouse-Knutsen-Stukel families complex	4,460	1.0%	0.3	4,459	0	0.01%	99.99%	0%
Godde rocky loam	4,326	1.0%	1,395	1,816	1,115	32%	42%	26%
Tujunga-Pismo families association	4,172	1.0%	0	4,172	0	0%	100%	0%
Riverwash	4,169	1.0%	2,012	1,616	542	48%	39%	13%
Caperton-San Andreas-Modesto families complex	4,037	0.95%	362	3,675	0	9.0%	91%	0%
Water	3,847	0.90%	516	3,331	0	13%	87%	0%
Greenfield sandy loam	3,770	0.89%	3,564	207	0	94%	5.5%	0%
Caperton-Baywood families complex	3,416	0.80%	432	2,984	0	13%	87%	0%
Trigo family-Calcixerollic Xerochrepts-Vista family complex	3,359	0.79%	74	3,285	0	2.2%	98%	0%
Tujunga-Capistrano families association	3,242	0.76%	1,998	1,245	0	62%	38%	0%
Metz loamy sand	2,964	0.70%	2,412	367	185	81%	12%	6.2%
Trigo-Millsholm families-Rock outcrop complex	2,938	0.69%	0	2,938	0	0%	100%	0%
Calcixerollic Xerochrepts-Calleguas family-Modesto family	2,921	0.69%	4.6	2,916	0	0.2%	99.8%	0%
Terrace escarpments	2,902	0.68%	1,842	668	392	63%	23%	14%
Wyman gravelly loam	2,848	0.67%	2,623	224	1.4	92%	7.9%	0.05%
Trigo, granitic substratum-Pismo families complex	2,809	0.66%	420	2,389	0	15%	85%	0%
Pacifico family-Xerothents complex	2,798	0.66%	9.1	2,789	0	0.3%	99.7%	0%
Ramona coarse sandy loam	2,579	0.61%	2,415	165	0	94%	6.4%	0%
Cortina sandy loam	2,247	0.53%	1,804	290	153	80%	13%	6.8%
Typic Haploxeralfs	1,947	0.46%	3.6	1,944	0	0.2%	99.8%	0%
Badland	1,881	0.44%	0.8	1,880	0	0.04%	99.9%	0%
Sorrento loam	1,753	0.41%	861	519	374	49%	30%	21%
Gazos clay loam	1,660	0.39%	1,156	220	284	70%	13%	17%
Osito-Trigo families complex	1,608	0.38%	130	1,478	0	8.1%	92%	0%

Table 5
Soil Types in the Study Area in Relation to Current Land Use Classifications

Soil Type	Soil Totals		Land Use Totals			Percentage of Soil Type		
	Acres	*Percent*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
Gazos silty clay loam	1,342	0.32%	261	1,081	0.4	19%	81%	0.03%
Trigo-Modesto-San Andreas families association	1,288	0.30%	22	1,266	0	1.7%	98%	0%
Ojai-Zamora loams	1,225	0.29%	929	295	0	76%	24%	0%
Lodo family-Mollic Haploxeralfs association	1,206	0.28%	0.02	1,206	0	0.002%	99.99%	0%
Castaic-Balcom complex	1,036	0.24%	5.3	1,022	8.4	0.5%	99%	0.8%
Mocho loam	1,008	0.24%	850	136	22	84%	13.5%	2.2%
Trigo-Lodo families-Haploxerolls, warm complex	977	0.23%	6.1	971	0	0.6%	99%	0%
Ramona gravelly sandy loam	971	0.23%	887	85	0	91%	8.8%	0%
Zamora loam	843	0.20%	190	195	458	23%	23%	54%
Vista-Trigo, granitic substratum-Modesto families complex	808	0.19%	0	808	0	0%	100%	0%
Mollic Haploxeralfs	805	0.19%	0	805	0	0%	100%	0%
Wyman cobbly loam	788	0.19%	749	38	0	95%	4.8%	0%
Lodo-Tujunga families association	786	0.18%	30	755	0	3.8%	96%	0%
Metz loam	710	0.17%	579	107	24	82%	15%	3.4%
Ramona sandy loam	698	0.16%	588	110	0	84%	16%	0%
Cortina cobbly sandy loam	661	0.16%	301	360	0	46%	54%	0%
Rock outcrop-Chilao family-Haploxerolls, warm association	654	0.15%	0	654	0	0%	100%	0%
Las Posas loam	599	0.14%	486	112	0	81%	19%	0%
Tollhouse-Stukel-Wrentham families complex	595	0.14%	0.003	595	0	0.001%	99.999%	0%
Oak Glen family	503	0.12%	0	503	0	0%	100%	0%
Rock outcrop	430	0.10%	0	430	0	0%	100%	0%
Castaic silty clay loam	353	0.08%	155	198	0	44%	56%	0%
Garretson loam	347	0.08%	0	347	0	0%	100%	0%
Anaverde rocky loam	342	0.08%	50	19	273	15%	5.6%	80%
Chino loam	316	0.07%	206	71	39	65%	22%	12%

Table 5
Soil Types in the Study Area in Relation to Current Land Use Classifications

Soil Type	Soil Totals		Land Use Totals			Percentage of Soil Type		
	Acres	*Percent*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
Sorrento silty clay loam	315	0.07%	16	299	0	5.1%	95%	0%
Corralitos loamy sand	275	0.06%	4.3	271	0	1.6%	98%	0%
Mocho sandy loam	265	0.06%	265	0	0	100%	0.0%	0%
Anacapa sandy loam	251	0.06%	0.1	250	0.5	0.04%	99.6%	0.2%
Anaverde loam	244	0.06%	26	2.3	216	11%	0.9%	88%
Vista family	238	0.06%	85	154	0	36%	65%	0%
Mocho gravelly loam	238	0.06%	21	217	0	8.8%	91%	0%
Hanford gravelly sandy loam	230	0.05%	230	0.03	0	100%	0%	0%
Haploxerolls, shallow-Trigo family, dry-Haploxeralfs complex	223	0.05%	0	223	0	0%	100%	0%
Oak Glen-Tollhouse families complex	202	0.05%	0	202	0	0%	100%	0%
Sedimentary rock land	201	0.05%	0	201	0	0%	100%	0%
Ramona loam	183	0.04%	108	75	0	59%	41%	0%
Rock land	181	0.04%	54	127	0	30%	70%	0%
Anacapa gravelly sandy loam	178	0.04%	9.1	169	0	5.1%	95%	0%
San Benito clay loam	174	0.04%	0	174	0	0%	100%	0%
Lodo-Modjeska-Botella families association	159	0.04%	99	59	0	62%	37%	0%
Olete-Kilburn-Etsel families complex	158	0.04%	0	158	0	0.0%	100%	0%
Mocho clay loam	149	0.04%	7.8	141	0	5.2%	95%	0%
Temescal-Rock land complex	140	0.03%	138	1.4	0	99%	1.0%	0%
Oak Glen gravelly sandy loam	133	0.03%	89	44	0	67%	33%	0%
Vertic Xerochrepts	127	0.03%	28	99	0	22%	78%	0%
Pacifico-Preston families complex	91	0.02%	3.0	88	0	3.3%	97%	0%
Oak Glen sandy loam	88	0.02%	83	4.6	0	94%	5.2%	0%
Vernalis loam	77	0.02%	61	16	0	79%	21%	0%
Dams	74	0.02%	0	74	0	0%	100%	0%

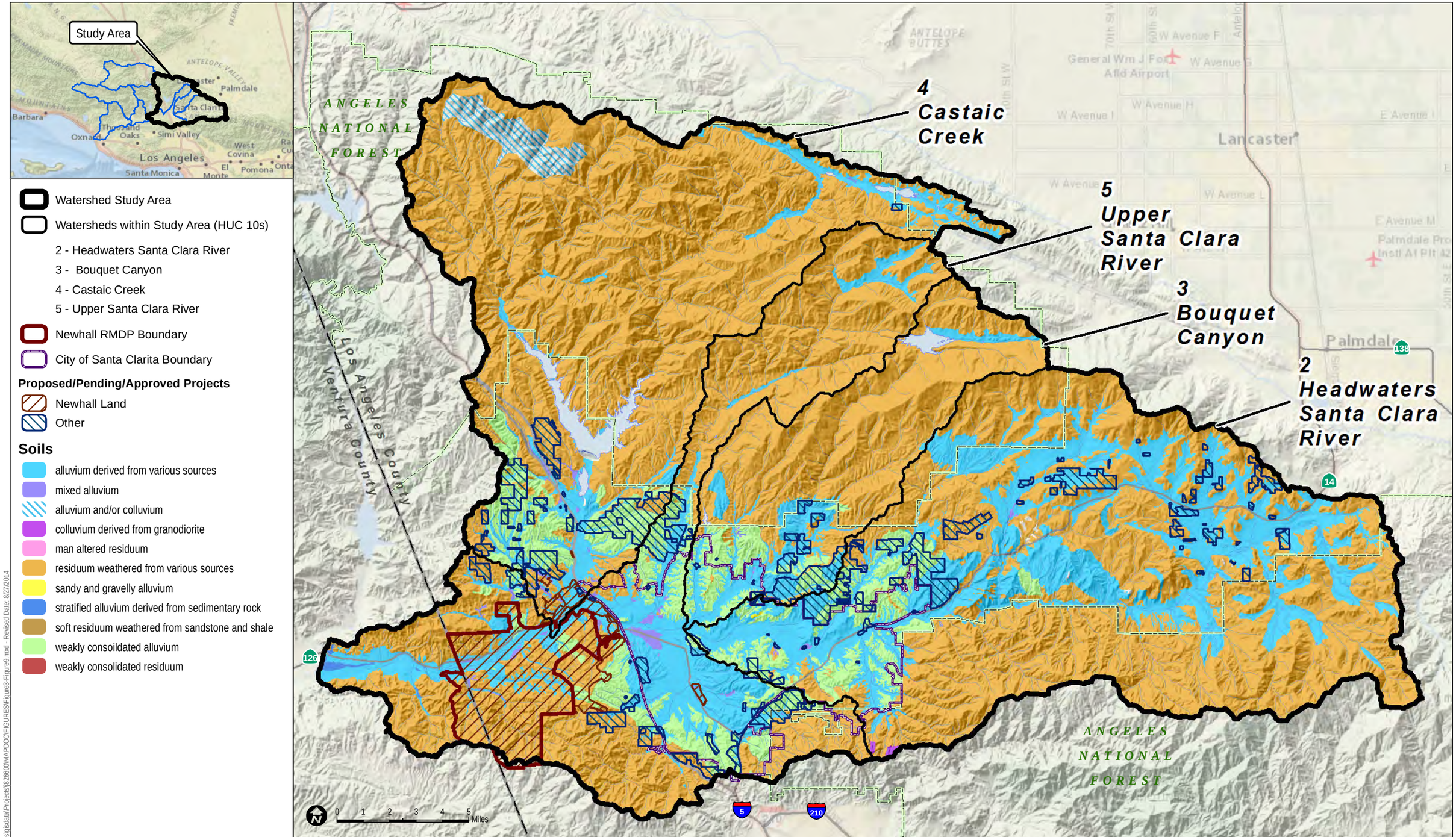
Table 5
Soil Types in the Study Area in Relation to Current Land Use Classifications

Soil Type	Soil Totals		Land Use Totals			Percentage of Soil Type		
	Acres	*Percent*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
Millsholm loam	73	0.02%	11	61	0	15%	84%	0%
Chilao-Trigo, granitic substratum-Lodo families complex	69	0.02%	0	69	0	0%	100%	0%
Gravel pits	45	0.010%	32	13	0	71%	29%	0%
Lopez shaly clay loam	42	0.010%	42	0	0	100%	0%	0%
Rincon silty clay loam	37	0.009%	0	37	0	0%	100%	0%
Oak Glen loam	34	0.008%	34	0.02	0	100%	0.1%	0%
Godde loam	32	0.007%	0	0	32	0%	0%	100%
Pico sandy loam	24	0.006%	0	24	0	0%	100%	0%
Pismo-Chilao-Shortcut families complex	23	0.005%	0.009	23	0	0.0%	100%	0%
Cajon loamy sand	23	0.005%	23	0	0	100%	0%	0%
Vernalis clay loam	15	0.003%	15	0	0	100%	0%	0%
Rough broken land	14	0.003%	10	3.9	0	71%	28%	0%
Garretson gravelly loam	14	0.003%	0	14	0	0%	100%	0%
Haploxerols, shallow-Lithic Xerorthents, warm complex	13	0.003%	0	13	0	0%	100%	0%
Gaviota sandy loam	12	0.003%	2.7	9.2	0	22%	76.7%	0%
Friant fine sandy loam	8.1	0.002%	0	8.1	0	0%	100%	0%
Xerorthents-Urban land-Saugus complex	7.1	0.002%	2.8	4.3	0	40%	61%	0%
Haploxerolls, warm-Vista family association	7.1	0.002%	0.9	6.2	0	13%	87%	0%
Zamora clay loam	5.1	0.001%	5.1	0	0	100%	0%	0%
Waterman-Springdale-Pacifico families complex	4.3	0.001%	0	4.3	0	0%	100%	0%
Chilao family	3.1	0.001%	0	3.1	0	0%	100%	0%
Total	**425,507**	**100%**	**103,724**	**304,039**	**17,744**	**24%**	**71%**	**4.2%**

Table 6
Study Area Elevations in Relation to Current Land Use Classifications

Elevation (feet amsl)	Elevation Totals		Land Use Totals			Land Use Percentages		
	Acres	*Percent*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
0 to 500	0	0%	N/A	N/A	N/A	N/A	N/A	N/A
500 to 1,000	7,154	1.7%	521	4,557	2,076	7.3%	64%	29%
1,000 to 1,500	56,052	13.2%	30,761	16,508	8,782	55%	29%	16%
1,500 to 2,000	73,771	17.3%	19,692	50,339	3,740	27%	68%	5.1%
2,000 to 2,500	53,373	12.5%	5,798	46,576	999	11%	87%	1.9%
2,500 to 3,000	71,580	16.8%	16,695	54,414	472	23%	76%	0.7%
3,000 to 3,500	73,614	17.3%	20,458	53,122	34	28%	72%	0.05%
3,500 to 4,000	45,479	10.7%	7,825	37,577	76	17%	83%	0.2%
4,000 to 4,500	23,113	5.4%	1,643	20,977	492	7.1%	91%	2.1%
4,500 to 5,000	12,100	2.8%	296	10,935	869	2.4%	86%	7.2%
5,000 to 5,500	6,869	1.6%	34	6,633	202	0.5%	97%	2.9%
5,500 to 6,000	2,045	0.5%	0.2	2,044	0	<0.001%	100%	0%
6,000 to 6,500	336	0.08%	0.1	336	0	0.02%	99%	0%
6,500 to 7,000	21	0.005%	0	21	0	0%	100%	0%
Total	**425,507**	**100%**	**103,724**	**304,039**	**17,744**	**24%**	**71%**	**4.2%**

Notes: amsl = above mean sea level; N/A = not applicable.



DUDEK

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
SOILS: USDA NRCS Ssurgo Soil Survey 2014

FIGURE 6
Existing Soil Types

Upper Santa Clara River Watershed Study

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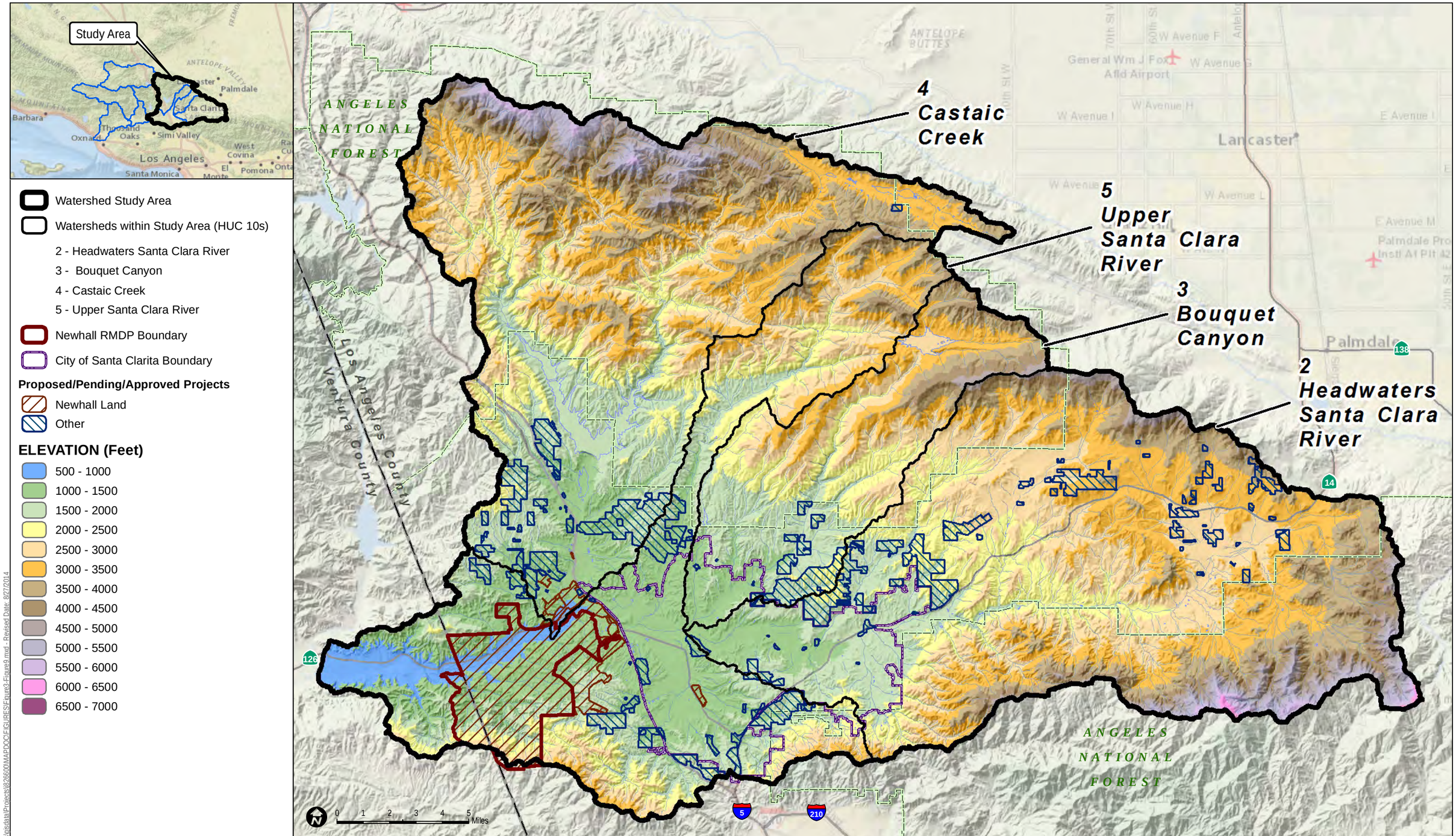

DUDEK

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
ELEVATION: USGS National Elevation Data (NED) 10-meter DEM

FIGURE 7
Existing Elevations

Upper Santa Clara River Watershed Study

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3.1.6 Slopes

Slopes are an important factor for watershed ecological function because they can affect species movement and distribution, and also because development on steep slopes can result in greater impacts. Development on less severe slopes reduces the need for grading (e.g., especially remedial grading associated with unstable geological conditions) and the attendant increase in erosion and disturbance. However, depending on site conditions, areas with shallower slopes may also have the greatest habitat value. Many plant and animal species are unable to establish viable populations on steep slopes due to factors such as inadequate water availability, lack of suitable soils, or constraints on locomotion of ground-dwelling species such as small rodents. Steep slopes can also act as barriers to large animal movement corridors; due to the difficulty and higher energy costs of traversing rugged terrain, development of gentle and flat terrain is more likely to interfere with established corridors. However, some species such as mule deer (*Odocoileus hemionus*), bighorn sheep (*Ovis canadensis*), and mountain goats (*Oreamnos americanus*) use steep slopes as escape routes from predators such as mountain lions (*Puma concolor*). Therefore, from an ecological perspective, maintaining a representative diversity of slopes will help conserve natural resources in a watershed.

Table 7 shows slopes in the study area at 20% intervals and Figure 8 shows their distribution. More than 70% of the study area has slopes less than 40%. The greatest concentration of gentle slopes is associated with the Santa Clara River Valley; however, some of these gentler slopes are in the northern portions of the study area. Slopes greater than 40% are primarily located in the central portions of the study area.

Table 7
Slopes in the Study Area in Relation to Current Land Use Classifications

Slope	Slope Category Totals		Land Use Totals			Land Use Percentages		
	Acres	*Percent*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
0% to 20%	143,535	34%	68,418	67,577	7,540	48%	47%	5.3%
20% to 40%	162,814	38%	28,099	128,515	6,198	17%	79%	3.8%
>40%	119,159	28%	7,207	107,947	4,005	6.0%	91%	3.4%
Total	**425,507**	**100%**	**103,724**	**304,039**	**17,744**	**24%**	**71%**	**4.2%**

Under current classifications, although slope intervals are fairly evenly distributed, development within the study area would primarily occur on slopes less than 20% relative to steeper slopes. Slopes less than 20% compose 34% of the study area, but account for 53% (75,960 acres) of potential development. In addition, the type of development varies in relation to slope. While a moderate amount of development (21%) could occur at slopes between 20% and 40%, most

would be low-density or very low-density residential (see Table A-6 of Appendix A). Only 9% of slopes greater than 40% could be developed.

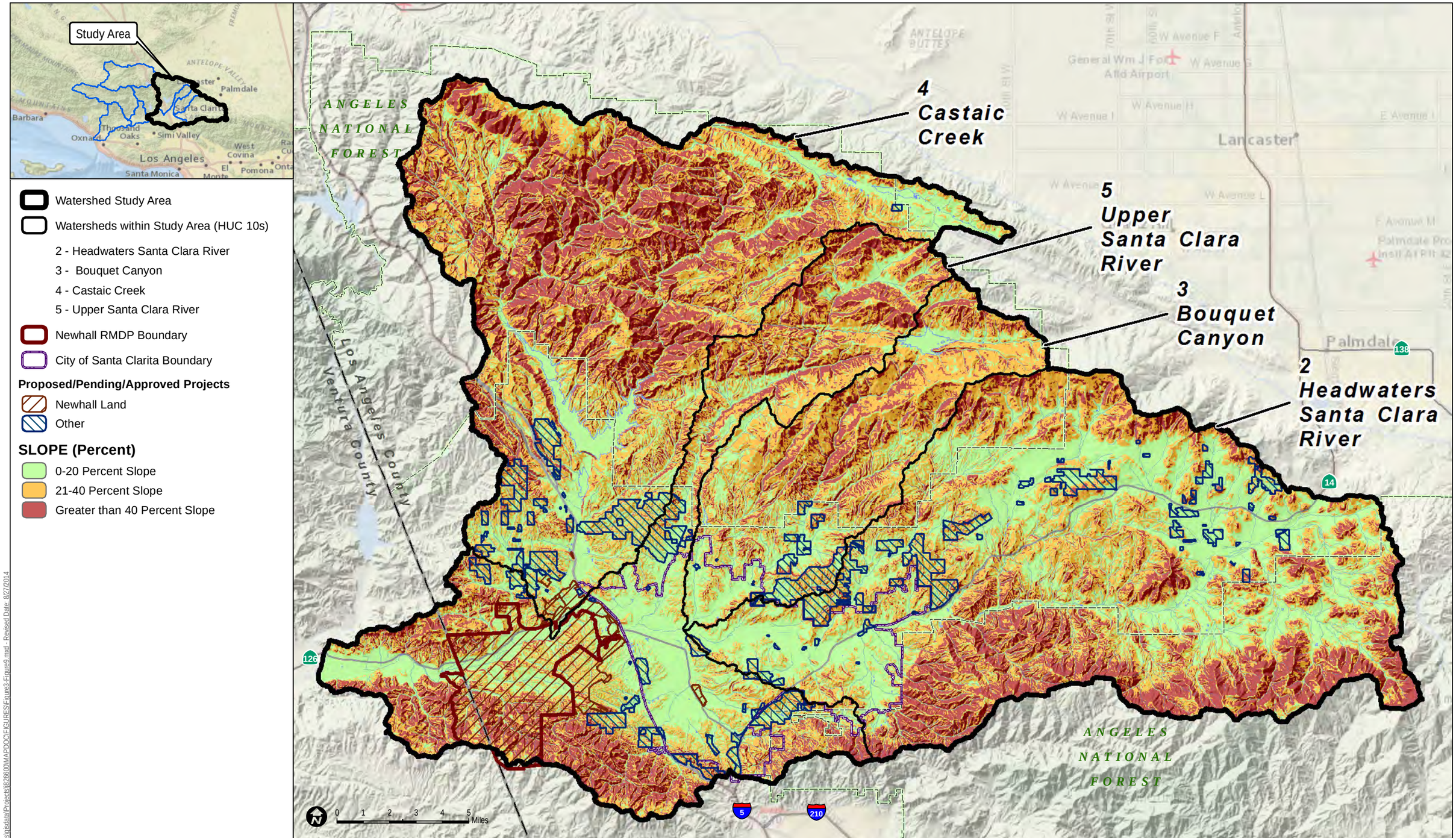
Consistent with the pattern of potential development concentrated in more level terrain, the percentage of Open Space increases as slopes increase, ranging from 47% on slopes less than 20% to 91% on slopes greater than 40%.

3.1.7 Existing Public Lands and Open Space Areas

Approximately 225,290 acres (52.9%) of the study area is in public ownership, as summarized in Table 8 and shown in Figure 9. National Forest accounts for 94% of the public land. National Forest is also directly connected to the north and west and southeast and east of the study area. The approximately 225,290 acres of existing public lands account for 74% of the approximately 304,040 total acres of classified Open Space depicted in Figure 9. While not all public lands are "conserved" for their natural resources values and some commercial- and recreation-related activities are permitted, including grazing, energy production, and resource extraction on federal public lands, hardscape development impacts on public lands generally are small in area and generally have limited watershed-level impacts. Exceptions may occur where larger-scale permitted activities have the potential to alter drainage patterns and processes that may impact hydrologic and geomorphic functions in a watershed (e.g., mining or logging activities).

Table 8
Existing Public Lands and Open Space Areas

Owner/Manager	Acres	Percent of Total Preserved Lands	Percent of Total Study Area
U.S. Forest Service	210,771	94%	50%
Regional Conservancies	6,879	3.1%	1.6%
Bureau of Land Management	5,192	2.3%	1.2%
County Parks	1,491	0.7%	0.3%
California Department of Parks and Recreation	354	0.2%	0.08%
Nature Conservancy	298	0.1%	0.07%
State Lands Commission	191	0.08%	0.04%
City Parks	149	0.07%	0.03%
Total	**225,288**	**100%**	**53%**



DUDEK

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
SLOPE: USGS National Elevation Data (NED) 10-meter DEM

FIGURE 8
Existing Slopes

Upper Santa Clara River Watershed Study

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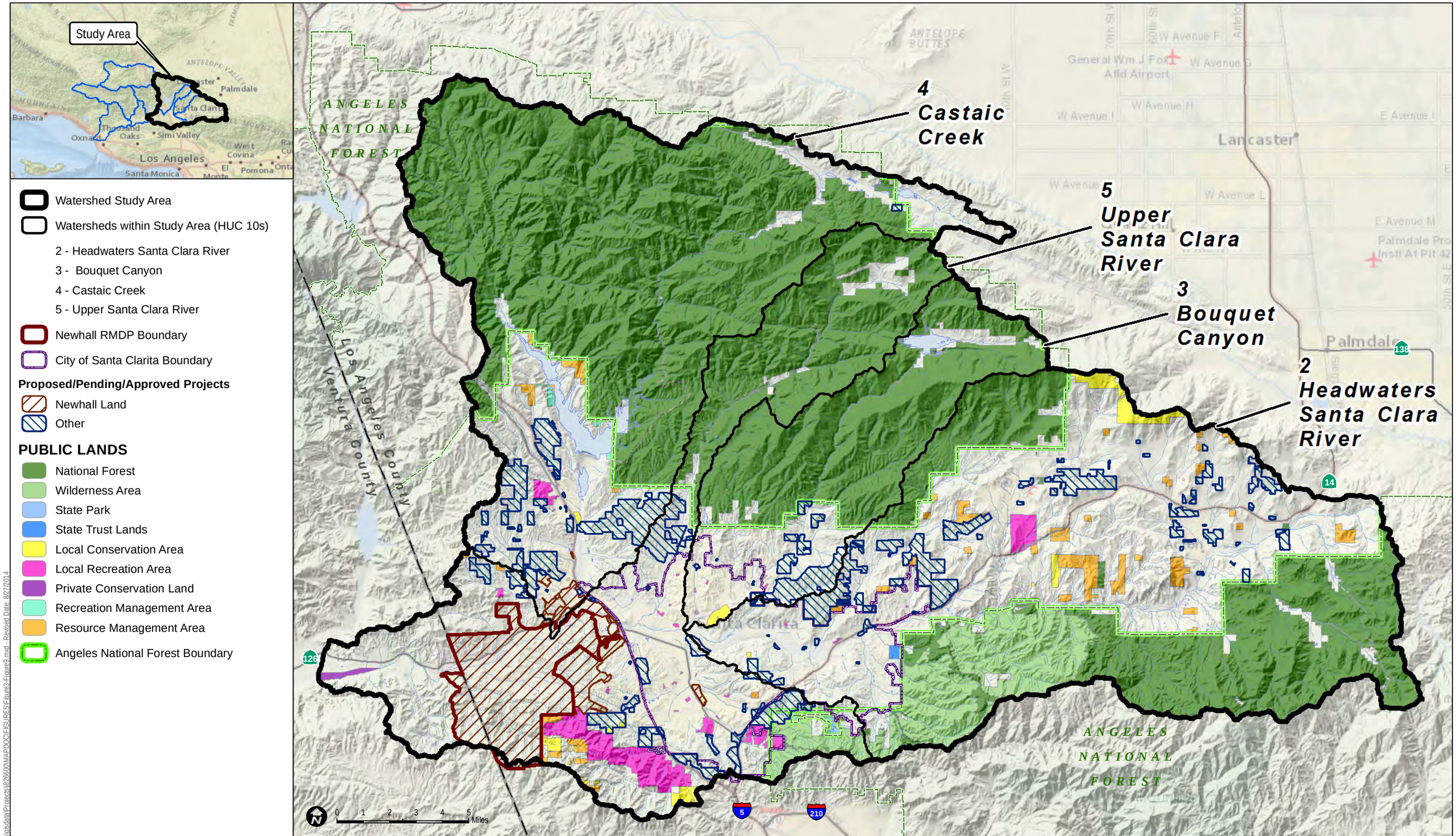

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DUDEK

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
PROTECTED LAND: USGS Protected Areas Database (PADUS), 2013

FIGURE 9
Existing Public Lands and Open Space Areas

Upper Santa Clara River Watershed Study

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3.1.8 Ecological Functions of the USCRW

Existing Habitat Types

Existing habitat types within the USCRW are generally described by the dominant vegetation (refer to Table 3 for detailed acreages for each vegetation type):

- Riparian – California Central Valley riparian woodland and shrubland, Mediterranean California foothill and lower montane riparian woodland, North American warm desert riparian woodland and shrubland. Includes sensitive cottonwood–willow riparian forest.
    - Important to riparian-dependent bird species (e.g., least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*)), semi-aquatic reptiles (e.g., western pond turtle (*Actinemys marmorata*), two-striped gartersnake (*Thamnophis hammondii*)), and amphibians (e.g., arroyo toad (*Anaxyrus californicus*)).
- Grasslands – California Central Valley and southern coastal grassland, California mesic serpentine grassland.
    - Important to range of wildflowers, special-status plants (e.g., California Orcutt grass (*Orcuttia californica*), spreading navarretia (*Navarretia fossalis*)), and grassland-dependent bird species (e.g., California horned lark (*Eremophila alpestris actia*), grasshopper sparrow (*Ammodramus savannarum*), and several foraging raptors).
- Scrub – Various desert scrubs, inter-mountain basins big sagebrush shrubland, southern California coastal scrub, Mediterranean California southern coastal dune.
    - Important to special-status plants (e.g., San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), slender-horned spineflower (*Dodecahema leptoceras*)), scrub-dependent bird species (e.g., southern California rufous-crowned sparrow (*Aimophila ruficeps*), coastal California gnatcatcher (*Polioptila californica californica*)), and scrub-dependent reptiles (Blainville's horned lizard (*Phrynosoma blainvillii*) and coastal whiptail (*Aspidoscelis tigris stejnegeri*)).
- Woodlands – Various oak woodlands and savannah, California lower montane blue oak–foothill pine woodland savannah, Central and southern California mixed evergreen woodland, Mediterranean California mixed evergreen forest, Great Basin pinyon–juniper woodland.
    - Important to woodland-dependent bird species (e.g., Cooper's hawk (*Accipiter cooperii*) and oak titmouse (*Baeolophus inornatus*)).
- Coniferous Forest – California montane Jeffrey pine–(Ponderosa pine) woodland, Mediterranean California dry-mesic mixed conifer forest and woodland, California coastal redwood forest.

- Important to forest-dependent bird species (nesting California condor (*Gymnogyps californianus*) and California spotted owl (*Strix occidentalis*)).

- Chaparrals – California mesic chaparral, Mediterranean California mesic serpentine woodland and chaparral, Southern California dry-mesic chaparral, Sonora–Mojave semi-desert chaparral, California montane woodland and chaparral.
  - Important to chaparral plants (e.g., island mountain-mahogany (*Cercocarpus betuloides var. blancheae*), Ross' pitcher sage (*Lepechinia rossii*)), chaparral-dependent bird species (Bell's sage sparrow (*Artemisiospiza belli belli*)), and chaparral-dependent reptiles (e.g., rosy boa (*Lichanura trivirgata*)).
- Wetland and Aquatic – Temperate Pacific freshwater emergent marsh, temperate Pacific freshwater mudflat, open water (fresh).
  - Important to aquatic-dependent species (unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*), Santa Ana sucker (*Catostomus santaanae*), arroyo chub (*Gila orcuttii*), western pond turtle, two-striped gartersnake, and arroyo toad).

Existing Habitat Quality

Habitat quality for each of the above communities was assessed in the Santa Clara River Upper Watershed Conservation Plan prepared by TNC (2006) (note: the TNC 2006 plan included the Lower Piru Creek watershed, which was excluded from this USCRW Study). TNC identified key ecological attributes relative to habitat quality, which are consistent with those identified for this study: (1) size of the habitat; (2) condition of the habitat (e.g., the vegetation composition, structure, and biotic interactions within the habitat); and (3) landscape context (e.g., availability of ecological processes that allow the community to function, availability of movement corridors). Table 9 summarizes the habitat quality TNC identified for each habitat type. While individual attributes for the habitats ranged from "very good" to "poor," the overall current condition of all habitats is "fair."

Table 9
Existing Habitat Quality in the USCRW

Habitat Type	Ecological Attribute			Overall Quality
	Size	*Condition*	*Landscape Context*	
Riparian	Fair	Good	Fair	Fair
Grasslands	Poor	Fair	Fair	Fair
Scrubs	Fair	Good	Poor	Fair
Woodlands	Fair	Fair	Good	Fair
Coniferous Forest	Very Good	Good	Poor	Fair

Table 9
Existing Habitat Quality in the USCRW

Habitat Type	Ecological Attribute			Overall Quality
	Size	*Condition*	*Landscape Context*	
Chaparrals	Very Good	Good	Poor	Fair
Aquatic Communities	Fair	Good	Fair	Fair

Source: TNC 2006.
Notes:
Very Good = the habitat is naturally functioning and requires little human intervention.
Good = the habitat is functioning within its range of acceptable variation; it may require some human intervention.
Fair = the habitat lies outside its range of acceptable variation and requires human intervention. If unchecked, the habitat will be vulnerable to serious degradation.
Poor = allowing the habitat to remain in this condition for an extended period will make restoration or preventing species extirpation practically impossible (Low 2003).

The preparers of the Upper Santa Clara Watershed Conservation Plan (TNC 2006) weighted the rankings shown in Table 9 according to the sensitivity of each habitat type. As a result, some of the attribute rankings assigned by TNC are counterintuitive at first inspection; for example, 93% of chaparral is in open space but is assigned a landscape context of "poor," while 54% of grassland is in open space but is assigned a landscape context of "fair." To arrive at this conclusion, the preparers assumed that ecological processes necessary for proper function of grassland habitat types were much less sensitive to disruption than those depended on by chaparral, and were particularly concerned with the potential for major wildland fire effects on chaparral communities.

Existing Habitat Connectivity

Habitat connectivity is of critical importance to the persistence of wide-ranging terrestrial vertebrates of the study area, including mountain lion, mule deer, and American badger (*Taxidea taxus*). The Santa Clara River corridor within the study area, as well as the river corridor downstream of the study area, is identified as an important regional habitat linkage and wildlife corridor in *Missing Linkages: Restoring Connectivity to the California Landscape* (Penrod 2000) and the South Coast Missing Linkages Project (SCMLP) (Penrod et al. 2006).[5]

Within the study area as a whole, the SCMLP (Penrod et al. 2006) identifies 15 priority linkages in the South Coast Ecoregion (shown in Figure 2 of Penrod et al. 2006). Two of these linkages compose the north–south Santa Monica–Sierra Madre connection, of which the eastern linkage crosses a portion of Newhall Land property at its western boundary on the Ventura/Los Angeles County line. The eastern linkage also intersects the western portion of the Upper Santa Clara River

[5] The SCMLP is produced by South Coast Wildlands, a non-profit organization that brings together various agencies, scientists, and consultants to address conservation issues in the South Coast Ecoregion.

watershed west of the Newhall Land Resource Management and Development Plan (RMDP) boundary (see Figure 10).

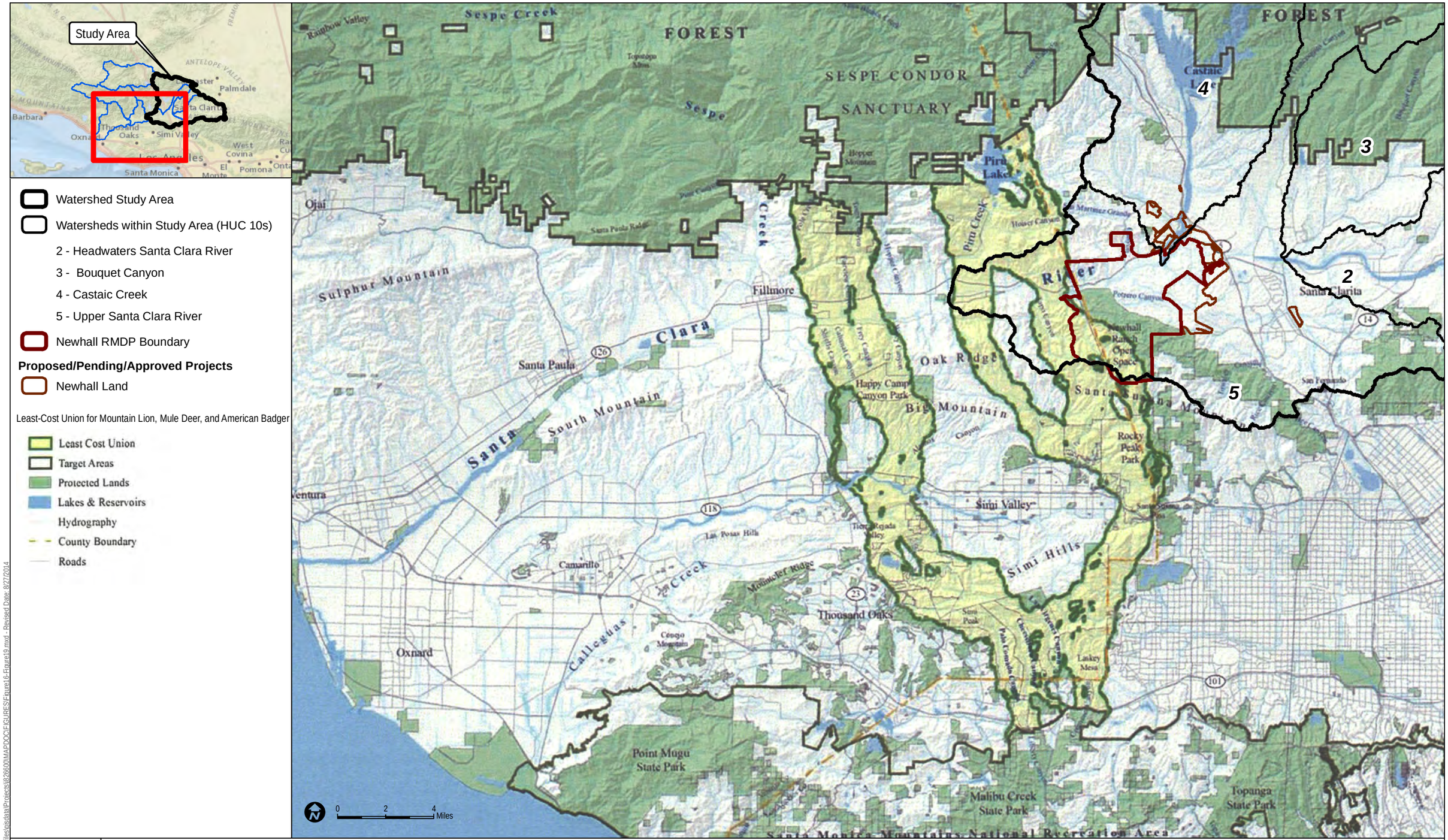
For the purpose of identifying suitable linkages, the SCMLP went through four steps:

1. A "Landscape Permeability Analysis" was conducted for mountain lion, mule deer, and American badger. This is a model of relative cost for species to move between large core habitat areas based on how the species is affected by habitat characteristics such as slope, elevation, vegetation, and road density.

   Based on the model results, the least-cost corridor (LCC) was identified as the area modeled to include the top 1% of the LCC function for each of the three species.[6] The LCC output was combined to generate the least-cost union (LCU), which is defined by the SCMLP as "the zone within which all three modeled species would encounter the least energy expenditure (i.e., preferred travel route) and most favorable habitat as they move between targeted protected areas" (Penrod et al. 2006, p. 12).
2. A patch size and configuration analysis was conducted to determine whether suitable habitat within the LCU zone is large enough to support viable populations and whether patches are close enough to allow for inter-patch dispersal.
3. A minimum linkage width of 2 kilometers (1.2 miles) was assumed—a very conservative assumption that accommodates virtually all potential edge effects and climate change.
4. Field investigations were conducted to ground-truth existing habitat conditions, existing barriers, and potential passageways and identify restoration opportunities.

Figures 10 through 13 overlay the results of the SCMLP on the study area. Figure 10, which combines the results for mountain lion, mule deer, and American badger, shows that the easternmost branch of the LCU area for mule deer, mountain lion, and American badger is located along the Ventura County / Los Angeles County boundary and overlaps with the High Country SMA/SEA and Salt Creek area south of State Route 126 (SR-126) within the Upper Santa Clara River watershed. North of SR-126, the LCU is located almost entirely in Ventura County in proximity to Newhall Land property and extends into Hoiser Canyon, upper San Martinez Grande Canyon, and the Piru Creek watershed outside the study area.

[6] The LCC function is a geographic information system (GIS)-based analytic technique that "evaluates the 'cost' of moving between two designated source areas by calculating for each cell [in a grid], the cumulative weighted distance between the cell and the two sources. The LCC analysis results in a map that shows the relative linkage value across the landscape (i.e., which routes through the landscape encounter more or fewer landscape barriers) between the two source areas" (Singleton et al. 2002, p. 6).



Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
IMAGE SOURCE: South Coast Wildlands SCMLP Figure 9

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FIGURE 10
Least-Cost Union for Mountain Lion, Mule Deer, and American Badger

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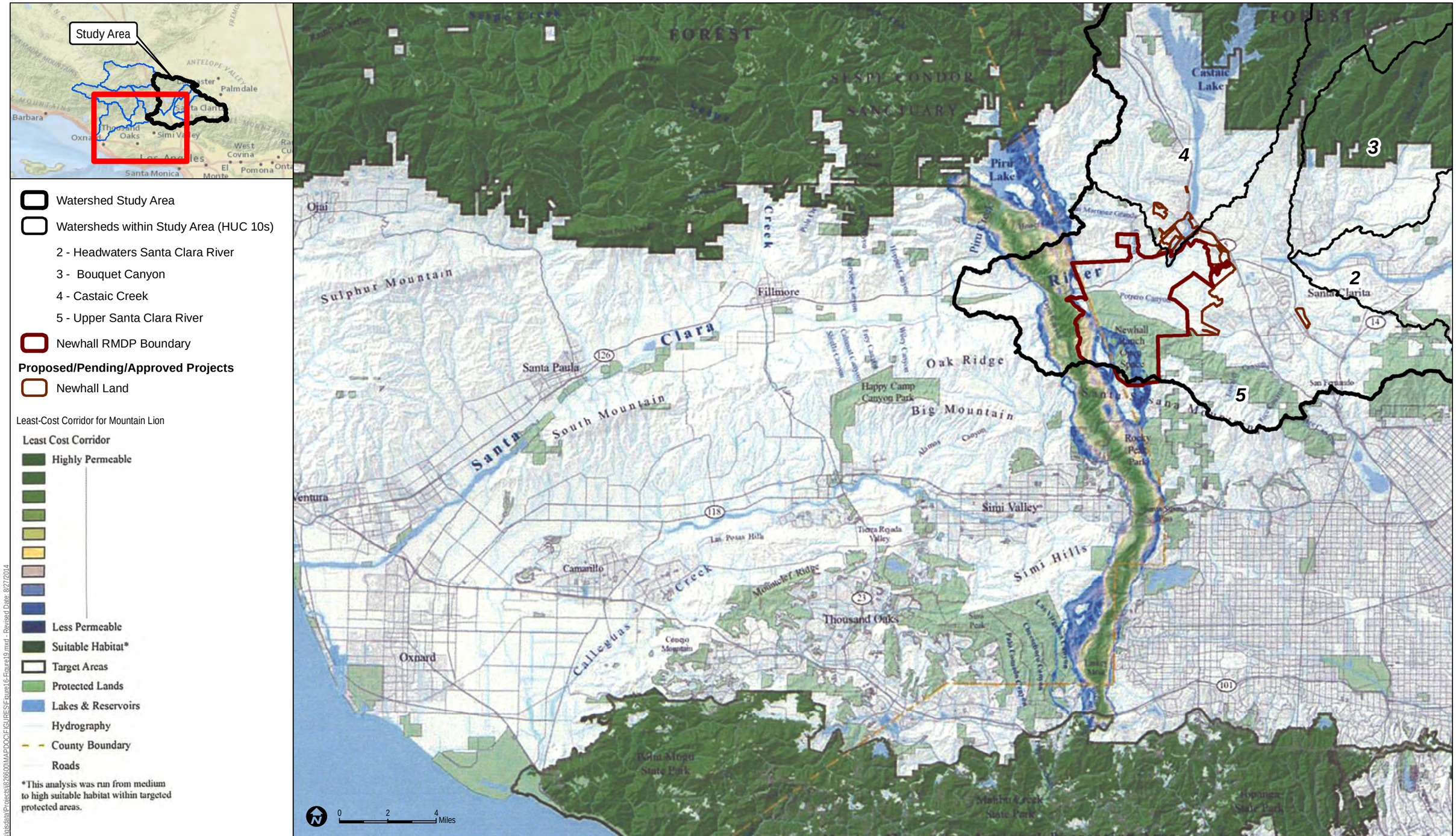

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
IMAGE SOURCE: South Coast Wildlands SCMLP Figure 10

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FIGURE 11
Least-Cost Corridor for Mountain Lion

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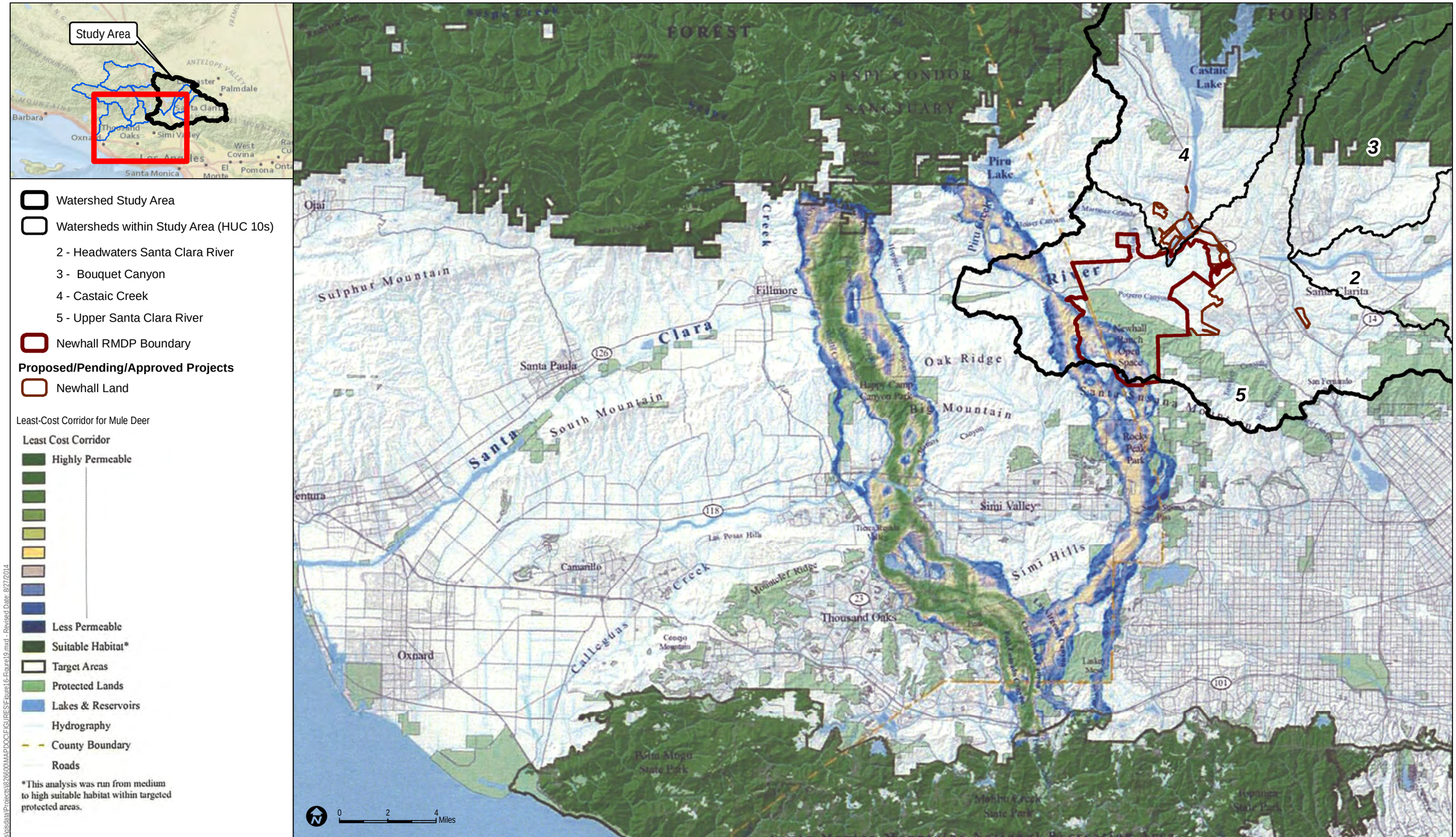

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
IMAGE SOURCE: South Coast Wildlands SCMLP Figure 11

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FIGURE 12
Least-Cost Corridor for Mule Deer

Upper Santa Clara River Watershed Study

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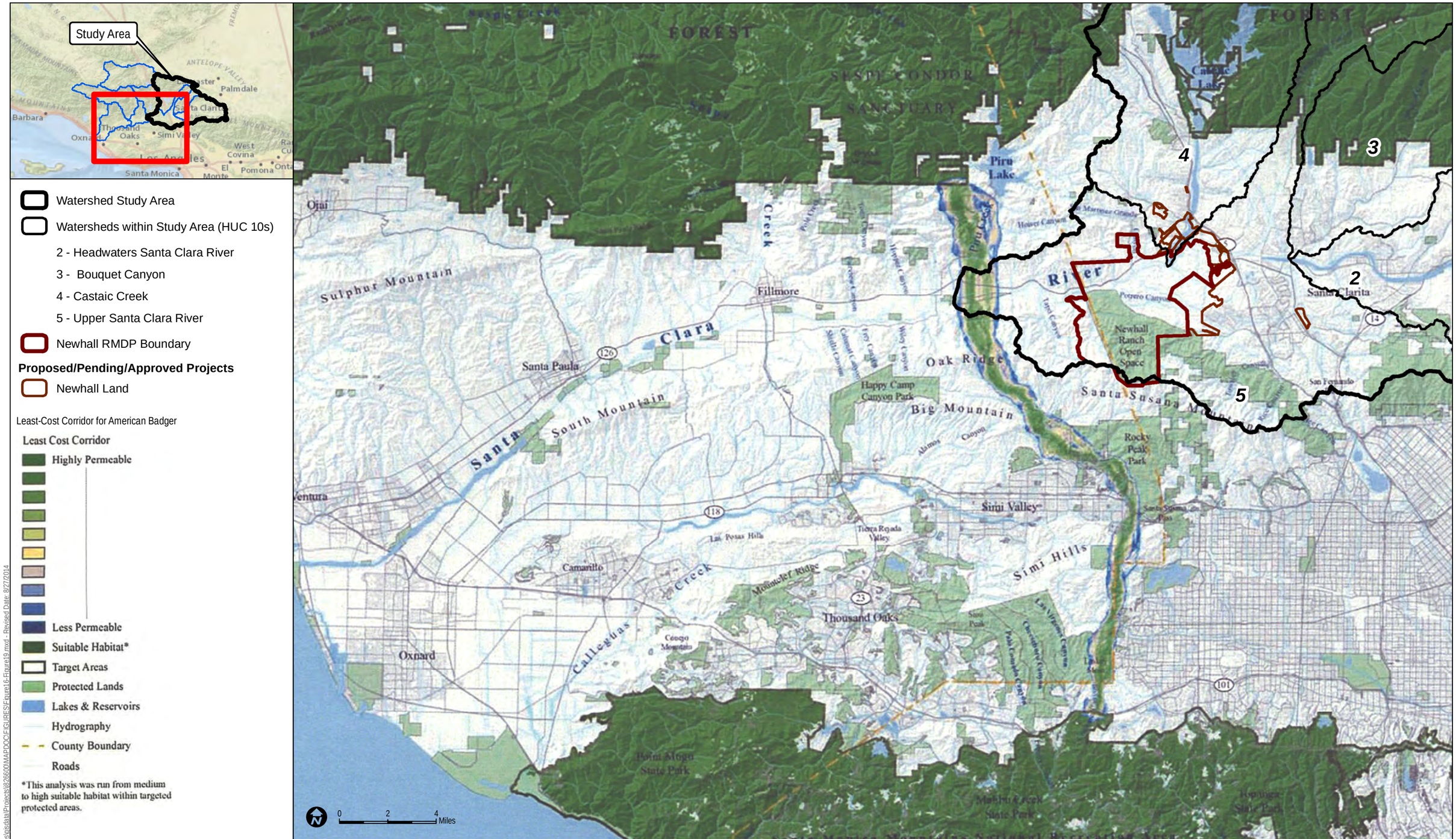

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
IMAGE SOURCE: South Coast Wildlands SCMLP Figure 12

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FIGURE 13
Least-Cost Corridor for American Badger

Upper Santa Clara River Watershed Study

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Existing Water Quality and Availability

While portions of the upper Santa Clara River have perennial flows, most are dry in the absence of storms (TNC 2006). Perennial flows in the Santa Clara River occur west of the Bouquet Creek confluence, largely due to discharges from the Valencia and Saugus wastewater reclamation plants. The dry segment near the confluence of Bouquet Canyon is essential to the genetic isolation of the unarmored threespine stickleback in the upper watershed, keeping it from interbreeding with its related subspecies, the partially armored threespine stickleback, found downstream. Tributaries within the study area generally flow only in winter and during storms.

Although water quality in the Santa Clara River is generally regarded as good (CBI 2005, as cited in TNC 2006), issues with nitrates and chloride have been noted in the upper watershed. Concentrations of nitrates have been detected in wells in Mint Canyon and they are thought to be derived from the reliance on septic waste disposal systems (Birosek 2006). Elevated chloride concentrations that have been detected coming from Valencia and Saugus wastewater reclamation plants are due to domestic use of water softeners (Birosek 2006). Concentrations of total suspended solids in the Santa Clara River are sometimes very high due to the highly erodible, easily transportable, sandy alluvial soils and sediments, and average concentrations are much higher for larger storms than for smaller storms (Corps and CDFG 2010). Copper concentrations in wet weather flows have been measured as exceeding the acute criteria, but lead and zinc concentrations are consistently below acute criteria (Corps and CDFG 2010). Fecal coliform and total coliform levels at tributaries to the Santa Clara River consistently measure at high levels, often exceeding Basin Plan objectives (Corps and CDFG 2010).

3.1.9 Special-Status Species and Sensitive Vegetation Types in the Study Area

Special-status species that have been documented in the study area based on CNDDB records are presented in Table 10. This watershed study uses the CNDDB because site-specific surveys—such as those conducted on Newhall Land properties—have not been performed throughout the entire study area. The CNDDB, while coarse, nevertheless allows one to draw general conclusions regarding cumulative, watershed-wide impacts to special-status species and sensitive vegetation types.

Species are considered special status if they are listed as (1) threatened, endangered or a candidate under the federal or state endangered species act; (2) protected by the bald and golden eagle protection act; (3) listed as a fully protected species under the California fish and game code; (4) designated as California rare plant rank (CRPR) 1b, 2, or 3 by the California Native Plant Society; (5) designated as a species of special concern by the California department of fish and wildlife; or (6) protected under a county ordinance. Given the size of the study area, plants with similar habitat requirements and wildlife species with similar life histories and behaviors

are assigned to one of 18 species guilds. Species that fall within each guild are expected to be similarly affected by direct and indirect impacts in the study area, as they rely on the same type of habitat (e.g., riparian) or rely on the same ecosystem function (e.g., water quality, movement corridors).

Table 10
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Plants				
San Fernando Valley spineflower *Chorizanthe parryi* var. *fernandina*	SE/ FC/ 1B.1/ LA County	Castaic Creek = 18 Upper Santa Clara River = 119	Coastal scrub, sandy soils	Plant – Chaparral/ Scrub
Slender-horned spineflower *Dodecahema leptoceras*	FE/SE/ 1B.1 LA County	Headwaters Santa Clara River = 48 Upper Santa Clara River = 376	Alluvial scrub on sandy substrate	Plant – Alluvial Scrub
Parry's spineflower *Chorizanthe parryi* var. *parryi*	1B.1	Bouquet Canyon = 4	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland/sandy or rocky, openings	Plant – Chaparral/ Scrub
Slender mariposa-lily *Calochortus clavatus* var. *gracilis*	1B.2, LA County	Headwaters Santa Clara River = 37 Bouquet Canyon =38 Castaic Creek = 103 Upper Santa Clara River = 460	Chaparral and coastal scrub	Plant – Chaparral/ Scrub
Late-flowered mariposa-lily *Calochortus fimbriatus*	1B.3	Upper Santa Clara River = 5	Chaparral, cismontane and riparian woodland	Plant - Generalist
Plummer's mariposa-lily *Calochortus plummerae*	LA County	Headwaters Santa Clara River = 23 Upper Santa Clara River = 15	Chaparral, coastal scrub, cismontane woodland, grasslands on rocky granitic substrate	Plant – Chaparral/ Scrub
Newhall sunflower *Helianthus inexpectatus*	1B.1	Upper Santa Clara River = 2	Marshes and swamps, riparian woodland/ freshwater, seep	Plant – Wetland
Davidson's bush-mallow *Malacothamnus davidsonii*	1B.2, LA County	Upper Santa Clara River = 2	Chaparral, coastal scrub, riparian woodland/ deciduous scrub/	Plant – Chaparral/ Scrub

Table 10
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
California Orcutt grass *Orcuttia californica*	FE/SE/1B.1	Headwaters Santa Clara River = 39 Bouquet Canyon =15 Upper Santa Clara River = 376	Vernal pools	Plant – Vernal Pool
Chaparral ragwort *Senecio aphanactis*	2B.2/ LA County	Headwaters Santa Clara River = 2 Bouquet Canyon = 1 Upper Santa Clara River = 14	Chaparral, coastal scrub, cismontane woodland on alkaline substrate	Plant – Chaparral/ Scrub
Greata's aster *Symphyotrichum greatae*	1B.3	Headwaters Santa Clara River = 3 Castaic Creek = 8	Broadleafed upland forest, chaparral, cismontane woodland, lower montane and coniferous forest, riparian woodland/mesic	Plant – Forest and Woodland
Island mountain-mahogany *Cercocarpus betuloides* var. *blancheae*	LA County	Observed within the Homestead South, Mission Village, and Entrada South Project areas in 2012.	Chaparral, closed-cone coniferous forest	Plant – Chaparral/Scrub
Mason's neststraw *Stylocline masonii*	1B.1	Headwaters Santa Clara River = 1	Dry, open sandy places, within shadscale/ chenopod scrub and pinyon–juniper woodland communities; 100–400 meters amsl	Plant – Chaparral/Scrub
Mt. Gleason paintbrush *Castilleja gleasoni*	1B.2	Headwaters Santa Clara River = 7 Castaic Creek = 2	Coniferous forest above 5,000 feet amsl, granitic soils	Plant – Forest and Woodland
Nevin's barberry *Berberis nevinii*	FE/SE/ LA County	Upper Santa Clara River = 21	Chaparral, coastal scrub, riparian scrub, cismontane woodland on sandy or gravelly substrate	Plant – Chaparral/ Scrub
Ojai navarretia *Navarretia ojaiensis*	1B.1	Upper Santa Clara River = 5	Chaparral (openings), coastal scrub (openings), valley and foothill grassland	Plant - Grassland

Table 10
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Piute Mountains navarretia *Navarretia setiloba*	1B.1	Headwaters Santa Clara River = 3 Bouquet Canyon = 4	Cismontane woodland, pinyon and juniper woodland, valley and foothill grassland/ clay or gravelly loam	Plant – Woodland/ Grassland
Southern California black walnut *Juglans californica*	LA County	Incidentally observed in RMDP/SCP area in 2002-2005, and mapped in 2012-2013	Chaparral, cismontane woodland, coastal scrub, alluvial scrub	Plant – Chaparral/ Scrub
Spreading navarretia *Navarretia fossalis*	FT, 1B.1	Bouquet Canyon = 8	Chenopod scrub, marshes and swamps (assorted shallow freshwater), playas, vernal pools	Plant – Wetland
Peirson's morning-glory *Calystegia peirsonii*	LA County	Headwaters Santa Clara River = 2 Bouquet Canyon =13 Castaic Creek = 44 Upper Santa Clara River = 16	Chaparral, coastal scrub, cismontane woodland, grassland	Plant – Generalist
Ross' pitcher sage *Lepechinia rossii*	1B.2	Castaic Creek = 2 Upper Santa Clara River = 1	Chaparral/ perennial shrub	Plant – Chaparral/ Scrub
Round-leaved filaree *California macrophylla*	1B.1/ LA County	Castaic Creek = 10	Cismontane woodland and grasslands on clay substrate	Plant – Woodland/ Grassland
San Gabriel bedstraw *Galium grande*	1B.2	Castaic Creek = 3	Broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest	Plant – Forest and Woodland
San Gabriel linanthus *Linanthus concinnus*	1B.2	Headwaters Santa Clara River = 1	Lower montane coniferous forest, upper montane coniferous forest, rocky soils.	Plant – Forest and Woodland
San Gabriel manzanita *Arctostaphylos gabrielensis*	1B.2	Headwaters Santa Clara River = 13	Shrubland/chaparral, rocky outcrops	Plant – Chaparral/ Scrub
Short-joint beavertail *Opuntia basilaris* var. *brachyclada*	1B.2/ LA County	Headwaters Santa Clara River = 42 Bouquet Canyon = 7 Castaic Creek = 2 Upper Santa Clara River = 5	Chaparral, Joshua tree woodland, Mojavean desert scrub	Plant – Chaparral/ Scrub

Table 10
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Fish				
Unarmored threespine stickleback *Gasterosteus aculeatus williamsoni*	FE/SE,FP/LA County	Headwaters Santa Clara River = 54 Bouquet Canyon = 8 Castaic Creek = 5 Upper Santa Clara River = 175	Slow-moving and backwater areas	Fish
Santa Ana sucker *Catostomus santaanae*	FT (only for its natural historical range which excludes the Santa Clara River)/CSC/LA County	Headwaters Santa Clara River = 63 Castaic Creek = 9 Upper Santa Clara River = 125	Small, shallow, cool, clear streams; substrates are generally coarse gravel, rubble and boulder	Fish
Arroyo chub *Gila orcuttii*	None/CSC/LA County	Headwaters Santa Clara River = 7 Castaic Creek = 2 Upper Santa Clara River = 114	Warm, fluctuating streams with slow-moving, or backwater sections of warm to cool streams; substrates of sand or mud	Fish
Reptiles				
Rosy boa *Charina trivirgata*	SA/LA County	Headwaters Santa Clara River = 2 Upper Santa Clara River = 3	Desert and chaparral habitats with rocky soils in coastal canyons and hillsides, desert canyons, washes and mountains	Reptile – Low Mobility
Coastal whiptail *Aspidoscelis tigris stejnegeri*	SA/LA County	Headwaters Santa Clara River = 2 Bouquet Canyon = 9 Castaic Creek = 23 Upper Santa Clara River = 16	Open areas in semiarid grasslands, scrublands, and woodlands	Reptile – Low Mobility
Silvery legless lizard *Anniella pulchra pulchra*	CSC/LA County	Headwaters Santa Clara River = 2 Bouquet Canyon = 4	Stabilized dunes, beaches, dry washes, chaparral, scrubs, pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils	Reptile – Low Mobility

Table 10
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Western pond turtle *Actinemys marmorata*	CSC	Headwaters Santa Clara River = 2 Castaic Creek = 7 Upper Santa Clara River = 90	Slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter	Reptile and Amphibian – Semi-Aquatic
Two-striped gartersnake *Thamnophis hammondii*	CSC/LA County	Headwaters Santa Clara River = 5 Bouquet Canyon = 1 Castaic Creek = 10 Upper Santa Clara River = 31	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Reptile and Amphibian – Semi-Aquatic
Blainville's horned lizard *Phrynosoma blainvillii*	CSC/LA County	Headwaters Santa Clara River = 50 Bouquet Canyon = 1 Castaic Creek = 10 Upper Santa Clara River = 36	Exposed gravelly-sandy soils with minimal shrubs, riparian woodland clearings, dry chamise chaparral, and annual grasslands with scattered seepweed or saltbush	Reptile – Low Mobility
Amphibians				
Western spadefoot *Spea hammondi*	CSC/LA County	Headwaters Santa Clara River = 13 Bouquet Canyon = 5 Castaic Creek = 5 Upper Santa Clara River = 12	Open areas in lowland grasslands, chaparral and pine–oak woodlands; requires temporary rain pools that last approximately 3 weeks	Reptile and Amphibian – Semi-Aquatic
Arroyo toad *Anaxyrus californicus*	FE/CSC/LA County	Headwaters Santa Clara River = 10 Castaic Creek = 10 Upper Santa Clara River = 14	Stream channels for breeding (typically 3rd order); adjacent stream terraces and uplands for foraging and wintering	Reptile and Amphibian – Semi-Aquatic
California red-legged frog *Rana draytonii*	FT/CSC/LA County	Headwaters Santa Clara River = 8 Upper Santa Clara River = 19	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	Reptile and Amphibian – Semi-Aquatic

Table 10
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Birds				
Bald eagle *Haliaeetus leucocephalus*	BCC, BAGEPA, FD/SE, FP/LA County (nesting and wintering)	Castaic Creek = 1	Seacoasts, rivers, swamps, large lakes; winters at large bodies of water in lowlands and mountains	Bird – Nesting/ Foraging Raptor
Burrowing owl *Athene cunicularia*	BCC/CSC/LA County (burrow sites and some wintering sites)	Headwaters Santa Clara River = 1 Bouquet Canyon = 0 Castaic Creek = 13 Upper Santa Clara River = 2	Grasslands, open scrub, and agriculture, particularly with ground squirrel burrows	Bird – Nesting/ Foraging Raptor
Cooper's hawk *Accipiter cooperii*	WL/LA County (nesting)	Upper Santa Clara River = 46	Dense stands of live oak, riparian woodlands, or other woodland habitats near water	Bird – Nesting/ Foraging Raptor
Golden eagle *Aquila chrysaetos*	BCC/BAGEPA/ FP/WL/ LA County (nesting and wintering)	Headwaters Santa Clara River = 4	Open country, especially hilly and mountainous regions; grassland, coastal sage scrub, chaparral, oak savannas, open coniferous forest	Bird – Nesting/ Foraging Raptor
Loggerhead shrike *Lanius ludovicianus*	BCC/CSC/LA County (nesting)	Bouquet Canyon = 2 Castaic Creek = 10 Upper Santa Clara River = 3	Grasslands, open shrublands with scattered shrubs, trees, fences, or other perches, riparian, and woodlands	Bird – Nesting/ Foraging Raptor
Prairie falcon *Falco mexicanus*	BCC/WL/LA County (nesting)	Headwaters Santa Clara River = 195 Castaic Creek = 112	Grassland, savannas, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs	Bird – Nesting/ Foraging Raptor
Swainson's hawk *Buteo swainsoni*	BCC/ST/LA County (nesting)	Upper Santa Clara River = 5	Open grassland, shrublands, croplands	Bird – Nesting/ Foraging Raptor

Table 10
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
White-tailed kite *Elanus leucurus*	FP/LA County (nesting)	Upper Santa Clara River = 4	Herbaceous and open stages of most habitats, common in cismontane; nests near top of dense oak, willow, or other tree stand; nests near open foraging area	Bird – Nesting/ Foraging Raptor
California condor *Gymnogyps californianus*	FE/SE, FP/LA County	Castaic Creek = 24	Forages over wide areas of open rangelands, roosts on cliffs and in large trees and snags	Bird – Foraging Raptor
Least Bell's vireo *Vireo bellii pusillus*	FE/CE/ LA County (nesting)	Bouquet Canyon = 2 Castaic Creek = 11 Upper Santa Clara River = 142	Riparian vegetation with extensive willows below 2,000 feet amsl	Bird – Riparian
Southwestern willow flycatcher *Empidonax traillii extimus*	FE/SE /LA County (nesting)	Headwaters Santa Clara River = 7	Riparian woodlands along streams and rivers with mature, dense stands of willows or alders; may nest in thickets dominated by tamarisk	Bird – Riparian
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	PT (western DPS),BCC/SE/ LA County (nesting)	Upper Santa Clara River = 43	Dense, wide riparian woodlands and forest with well-developed understories	Bird – Riparian
Yellow-breasted chat *Icteria virens*	CSC/LA County	Upper Santa Clara River = 43	Dense, relatively wide riparian woodlands and thickets of willows, vine tangles and dense brush	Bird – Riparian
Yellow warbler *Setophaga (Dendroica) petechia brewsteri*	BCC/CSC/LA County	Upper Santa Clara River = 43	Riparian thickets and woodlands	Bird – Riparian
Bell's sage sparrow *Artemisiospiza (Amphispiza) belli belli*	BCC/WL/LA County	Headwaters Santa Clara River = 21 Bouquet Canyon = 6 Castaic Creek = 22 Upper Santa Clara River = 5	Coastal scrub and chaparral	Bird –Scrub and Chaparral

Table 10
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Coastal California gnatcatcher *Polioptila californica californica*	FT/CSC/LA County	Headwaters Santa Clara River = 9 Bouquet Canyon = 1 Upper Santa Clara River = 2	Various sage scrub communities, often dominated by California sage and buckwheat; generally avoids nesting in areas with a slope of greater than 40%, and typically less than 820 feet amsl	Bird –Scrub and Chaparral
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	WL/LA County	Headwaters Santa Clara River = 22 Bouquet Canyon = 2	Coastal scrub and chaparral	Bird – Scrub and Chaparral
California horned lark *Eremophila alpestris actia*	WL/LA County	Castaic Creek = 22 Upper Santa Clara River = 5	Grasslands, disturbed areas, agriculture fields, and beach areas	Bird – Upland Grassland/Agriculture
Grasshopper sparrow *Ammodramus savannarum*	CSC (nesting)	Castaic Creek = 6	Dense, dry or well-drained annual and native grasslands with mix of grasses and forbs; may occur in fallow agricultural fields, especially those periodically planted in oats and barley	Bird – Upland Grassland/Agriculture
Mammals				
American badger *Taxidea taxus*	CSC	Castaic Creek = 1	Grasslands, agriculture, drier open stages of shrub, forest, and herbaceous habitats with friable soils	Mammal – Moderate Mobility
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	CSC/LA County	Castaic Creek = 2	Arid habitats with open ground; grasslands, coastal scrub, agriculture, disturbed areas, rangelands	Mammal – Moderate Mobility
San Diego desert woodrat *Neotoma lepida intermedia*	CSC/LA County	Upper Santa Clara River = 1	Open chaparral, coastal scrub, cactus patches and the understory of tree thickets	Mammal – Low Mobility

Table 10
CNDDB Element Occurrences for Special-Status Species in the Study Area

Species	Status	Number of Element Occurrences in Each Watershed	Habitat Association	Assigned Guild
Pallid bat *Antrozous pallidus*	CSC/LA County	Headwaters Santa Clara River = 14 Castaic Creek = 5	Arid habitats, including grasslands, shrublands, woodlands and forests; for roosting, prefers rocky outcrops, cliffs and crevices with access to open habitats for foraging	Mammal – Bat
Spotted bat *Euderma maculata*	CSC/LA County	Castaic Creek = 18 Upper Santa Clara River = 1	Foothills, mountains, desert regions of southern California, including arid deserts, grasslands, and mixed conifer forests; roosts in rock crevices and cliffs; feeds over water and along washes	Mammal – Bat
Townsend's big-eared bat *Corynorhinus townsendii*	CESA Candidate, CSC/LA County	Headwaters Santa Clara River = 31 Castaic Creek = 3	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, also man-made structures and tunnels	Mammal – Bat
Western mastiff bat *Eumops perotis californicus*	CSC/LA County	Upper Santa Clara River = 12	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees and tunnels	Mammal – Bat

Source: CDFW 2014.

Sensitive Vegetation Communities

In addition to the special-status species in the CNDDB listed in Table 10, the California Department of Fish and Wildlife designates sensitive vegetation communities. The following sensitive vegetation communities occur within the study area (CDFW 2014):

- California Walnut Woodland – 37 occurrences, all in Headwaters Santa Clara River watershed
- Mainland Cherry Forest – 5 occurrences, all in Castaic Creek watershed
- Riversidean Alluvial Fan Sage Scrub – 2 occurrences in Bouquet Canyon watershed, 5 in Castaic Creek watershed, 17 in Headwaters Santa Clara River watershed
- Southern California Threespine Stickleback Stream – 2 occurrences in Castaic Creek watershed, 50 in Headwaters Santa Clara River watershed, 147 in Upper Santa Clara River watershed
- Southern Coast Live Oak Riparian Forest – 28 occurrences in Bouquet Canyon watershed, 15 in Castaic Creek watershed, 15 in Headwaters Santa Clara River watershed, 24 in Upper Santa Clara River watershed
- Southern Cottonwood Willow Riparian Forest – 5 occurrences in Bouquet Canyon watershed, 63 in Castaic Creek watershed, 56 in Headwaters Santa Clara River watershed, 84 in Upper Santa Clara River watershed
- Southern Mixed Riparian Forest – 3 occurrences in Castaic Creek watershed
- Southern Riparian Forest – 1 occurrence in Castaic Creek watershed
- Southern Riparian Scrub – 24 occurrences in Bouquet Canyon watershed, 3 in Castaic Creek watershed, 88 in Headwaters Santa Clara River watershed, 9 in Upper Santa Clara watershed
- Southern Sycamore Alder Riparian Woodland – 7 occurrences in Bouquet Canyon watershed, 33 in Castaic Creek watershed, 38 in Headwaters Santa Clara River watershed, 26 in Upper Santa Clara watershed
- Southern Willow Scrub – 4 occurrences in Bouquet Canyon watershed, 9 in Castaic Creek watershed, 6 in Headwaters Santa Clara River watershed, 17 in Upper Santa Clara watershed
- Valley Oak Woodland – 15 occurrences all in Upper Santa Clara River watershed.

3.2 Impacts of Approved and Planned Projects in the Study Area

3.2.1 Relationships to Current Land Use Classifications

This subsection examines the relationship between current land use classifications described in Section 3.1 and actual approved and planned projects.[7] As specific plans and projects are refined and result in amendments to general plan and classifications, a reduction in project footprints (or densities and/or uses) often occurs at the tentative tract and final design levels. Thus, an impact analysis based on current land use classifications is considered a worst-case assessment that ultimately is not likely to occur. It is also important to understand that a Classified Developed land use designation does not mean that the entire area will become impervious surface with buildout. The Classified Developed designation only indicates the designation of the area for development, and the area's Classified Developed acreage is not equivalent to the amount of impervious surface that would be created if development occurred there. For example, reduced density or more park uses would result in less impervious surface.

Table 11 breaks out current land use classifications for the Los Angeles County and Ventura County portions of the study area. About 97% of the study area is located in Los Angeles County. Within this portion of the study area, about 121,380 acres (29%) are classified for development. However, as discussed above, this is an overestimate of the amount of development that will actually occur. In Los Angeles County, planning efforts such as OVOV will constrain how much of this 121,380 acres will actually be converted to development uses. The small portion of the study area that falls in Ventura County is almost entirely classified for Open Space, with only 89 acres classified for development (0.7% of the study area within Ventura County). As shown on Figure 3, the vast majority of the Classified Developed area in Ventura County is along the Valley.

Table 11
Current Land Use Classifications by County

	County Totals		Land Use Totals			Land Use Percentages		
County	*Acres*	*Percent*	*Classified Developed*	*Open Space*	*Specific Plan*	*Classified Developed*	*Open Space*	*Specific Plan*
Los Angeles	412,966	97%	103,635	291,587	17,744	25%	71%	4.2%
Ventura	12,541	2.9%	89	12,452	0.04	0.7%	99%	<0.001%
Total Study Area	**425,507**	**100%**	**103,724**	**304,039**	**17,744**	**24%**	**71%**	**4.2%**

[7] Technically, once a project is approved, its "current" classifications are the same as its "approved" classifications. However, the purpose of this analysis is to compare what the study area buildout would be under the preexisting classifications compared to projected development based on approved and planned projects. For example, on Newhall Land property, much less land will be developed than what would be allowed under current land use classifications.

3.2.2 Impacts on Watersheds

Table 12 summarizes the acreages and percentages of approved and planned projects in the four watersheds in the study area. Overall, approved and planned projects compose approximately 9% of the study area, ranging from 4.9% in the Castaic Creek watershed to 21% of the Upper Santa Clara River watershed, which includes the City of Santa Clarita. As shown in Figure 4, the approved and planned projects are concentrated in the lower-elevation portions of the watershed in proximity to existing urban development, as discussed in more detail in Section 3.2.6.

Table 12
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County

HUC 10 Watershed	Watershed Area	Approved/Planned			
		City of Santa Clarita	*Los Angeles County*	*Ventura County*	*Total Acres Approved/Planned (%)*
2 – Headwaters Santa Clara River	150,611	1,243	7,988	0	9,231 (6.1%)
3 – Bouquet Canyon	46,572	41	2,424	0	2,465 (5.3%)
4 – Castaic Creek	129,433	0	6,389	0	6,389 (4.9%)
5 – Upper Santa Clara River	98,890	1,048	19,507	0.04	20,555 (21%)
Total	**425,507**	**2,332**	**36,308**	**0.04**	**38,640 (9.1%)**

Note: Newhall Land property is included in the Los Angeles County totals.

3.2.3 Impacts on Vegetation and Land Cover Types

Table 13 summarizes the impacts of approved and planned projects in Los Angeles County, the City of Santa Clarita, and Ventura County on vegetation communities and land cover types.

Of the 42 distinct vegetation and land cover types, 34 would be impacted; however, for 6 of those impacted, less than 2% of that vegetation or land cover type available within the study area would be affected. Natural vegetation communities that would have no impacts or impacts less than 2% of the total tend to be uncommon in the study area (ranging from just a few acres to less than 1,550 total acres). The exception is higher-elevation Mediterranean California dry-mesic mixed conifer forest and woodland, which accounts for 4.2% (approximately 17,730 acres) of the study area.

Of the vegetation communities with substantial acreage in the study area, coniferous forest as a group would have the smallest area and percentage of impacts, at just 19 acres (0.1%). Other widespread major vegetation communities with relatively low impacts are chaparral, at 4.3% (6,034 acres), and woodland, at 8.2% (5,876 acres). However, ultimate impacts to oak woodland communities—which are a subset of woodlands generally—would likely be substantially smaller than the estimates in Table 13 (approximately 3,860 acres) because impacts to oak trees in Los Angeles County are regulated and restricted under the County of Los Angeles Oak Tree Ordinance (CLAOTO; codified at Los Angeles County Code Chapter 22.56, Part 16) and unavoidable impacts typically are mitigated with substantial replacement requirements.

Table 13
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Vegetation Communities and Land Cover Types

Vegetation and Land Cover Type	Vegetation Totals		Approved and Planned Development				
	Acres	*Percent of Study Area*	*Los Angeles County*	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
Chaparrals							
Southern California dry-mesic chaparral	137,999	32%	5,811	84	0.02	5,895	4.3%
California mesic chaparral	1,922	0.5%	80	0.48	0.0006	80.8	4.2%
Sonora-Mojave semi-desert chaparral	779	0.2%	14	0	0	14	1.8%
Mediterranean California mesic serpentine woodland and chaparral	313	0.1%	45	0	0	45	14%
California montane woodland and chaparral	85	0.02%	0	0	0	0	0%
Subtotal	*141,098*	*33%*	*5,950*	*84*	*0.02*	*6,034*	*4.3%*
Scrubs							
Southern California coastal scrub	69,263	16%	8,889	320	0	9,209	13%
Sonora–Mojave creosotebush–white bursage desert scrub	5,015	1.2%	625	31	0	656	13%
Mojave mid-elevation mixed desert scrub	2,653	0.6%	95	1.5	0	96.5	3.6%
Sonora–Mojave mixed salt desert scrub	442	0.1%	3.6	3.5	0	7.1	1.6%
Mediterranean California southern coastal dune	90	0.02%	0	0.26	0	0.26	0.3%
Inter-mountain basins big sagebrush shrubland	41	0.01%	1.9	0	0	1.9	4.6%
Inter-mountain basins mixed salt desert scrub	32	0.01%	0	0	0	0	0%
North American warm desert active and stabilized dune	2.4	0.001%	0	0	0	0	0%
Subtotal	*77,538*	*1.8%*	*9,615*	*356*	*0*	*9,971*	*13%*
Riparian							
Mediterranean California foothill and lower montane Riparian woodland	2,121	0.5%	412	8.5	0	421	20%

Table 13
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Vegetation Communities and Land Cover Types

Vegetation and Land Cover Type	Vegetation Totals		Approved and Planned Development				
	Acres	*Percent of Study Area*	*Los Angeles County*	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
North American warm desert riparian woodland and shrubland	148	0.03%	16	1.5	0	17.5	12%
California Central Valley riparian woodland and shrubland	7.6	0.002%	1.6	0	0	1.6	21%
Subtotal	2,277	0.5%	430	10	0	440	19%
Wetland and Aquatic							
Open water (fresh)	3,282	0.8%	0	0	0	0	0%
Temperate Pacific freshwater mudflat	1,319	0.3%	458	95	0	553	42%
Temperate Pacific freshwater emergent marsh	509	0.1%	65	33	0	98	19%
Subtotal	*5,110*	*1.2%*	*523*	*128*	*0*	*651*	*13%*
Woodland							
Great Basin pinyon–juniper woodland	44,223	10%	2,019	0.22	0	2,019	4.6%
California coastal live oak woodland and savanna	19,504	4.6%	2,816	63	0.01	2,879	15%
California Central Valley mixed oak savanna	4,460	1.0%	483	69	0	552	12%
Central and southern California mixed evergreen woodland	1,547	0.4%	0	0	0	0	0%
California lower montane blue oak–foothill pine woodland and savanna	1,486	0.3%	297	14	0	311	21%
Southern California oak woodland and savanna	516	0.1%	99	16	0	115	22%
Mediterranean California mixed evergreen forest	84	0.02%	0	0	0	0	0%
Subtotal	71,820	17%	5,714	162	0	5,876	8.2%

Table 13
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Vegetation Communities and Land Cover Types

Vegetation and Land Cover Type	Vegetation Totals		Approved and Planned Development				
	Acres	*Percent of Study Area*	*Los Angeles County*	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
Coniferous Forest							
Mediterranean California dry-mesic mixed conifer forest and woodland	17,734	4.2%	8.4	0.29	0.0002	8.7	0.05%
California montane Jeffrey pine–(Ponderosa pine) woodland	1,315	0.3%	0	0	0	0	0%
California coastal redwood forest	90	0.02%	10	0	0	10	11%
Subtotal	*19,139*	*4.5%*	*18*	*0.3*	*0*	*19*	*0.1%*
Grasslands							
California Central Valley and southern coastal grassland	50,143	12%	8,143	560	0.005	8,703	17%
California mesic serpentine grassland	26.7	0.01%	4.7	0	0	27	18%
Subtotal	*50,170*	*12%*	*8,148*	*560*	*0.005*	*8,708*	*17%*
Other Natural Land Covers							
Southern California Coast Ranges cliff and canyon	433	0.1%	13	0	0	13	3.0%
North American warm desert bedrock cliff and outcrop	386	0.1%	72	38	0	110	29%
North American warm desert pavement	32	0.01%	13	0.67	0	14	43%
Subtotal	*851*	*0.2%*	*98*	*39*	*0*	*137*	*16%*
Agricultural Lands							
Pasture/hay	2,657	0.6%	853	40	0	893	34%
Cultivated cropland	2,099	0.5%	314	0	0	314	15%
Recently burned shrubland	810	0.2%	132	<0.001	0	132	16%
Subtotal	*5,566*	*1.3%*	*1,299*	*40*	*0*	*1,339*	*24%*

Table 13
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Vegetation Communities and Land Cover Types

Vegetation and Land Cover Type	Vegetation Totals		Approved and Planned Development				
	Acres	*Percent of Study Area*	*Los Angeles County*	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
Developed/Disturbed Lands							
Developed, Open Space	30,691	7.2%	2,909	652	0.001	3,561	12%
Developed, low intensity	12,990	3.1%	322	196	0	518	4.0%
Developed, medium intensity	8,033	1.9%	39	102	0	141	1.8%
Developed, high intensity	226	0.1%	1.8	0	0	1.8	0.8%
Subtotal	*51,940*	*12%*	*3,272*	*950*	*0.001*	*4,222*	*8.1%*
Total	**425,507**	***100%***	**35,066**	**2,331**	**0.036**	**37,396**	**8.8%**

The medium-elevation southern California coastal scrub (approximately 69,260 acres) and California Central Valley and southern coastal grassland communities (approximately 50,140 acres) represent 32% of the total natural vegetation communities and land covers in the study area (i.e., excluding more than 50,500 acres of agricultural lands and developed/disturbed lands). These two vegetation communities would sustain the largest absolute impacts in the study area from approved and planned development, at approximately 9,210 acres (13%) and 8,700 acres (17%), respectively. The impacts to coastal scrub and grasslands represent 55% of total impacts in the study area from approved and planned projects; therefore, impacts to these two communities are relatively greater than their representation (32%) in the study area.

Based on the footprints of approved and planned projects, substantial impacts could occur to wetland and aquatic communities (approximately 650 acres, 13% of the total in the study area) and riparian communities (440 acres, 19% of the total in the study area). However, as noted in Section 3.1.2, impacts to jurisdictional riparian/wetland communities would be constrained by the "no net loss" requirements set forth in state and federal statutes and regulations. These requirements mandate that impacts to riparian/wetland areas be avoided, minimized, and mitigated to avoid any net loss of riparian/wetland area and/or function.

3.2.4 Impacts on Geologic Types

Table 14 summarizes the impacts of approved and planned projects in Los Angeles County, the City of Santa Clarita, and Ventura County on geologic types. Of the 16 geologic types (excluding water) in the study area, 12 would be impacted, with a range from 4.2 acres of granitic and metamorphic rocks to approximately 12,890 acres (25%) of Plio-Pleistocene nonmarine/Pliocene nonmarine. Other geologic types with substantial impacts include alluvium (approximately 5,250 acres), Miocene marine (approximately 2,300 acres), Miocene nonmarine (approximately 4,800 acres), Pliocene marine (approximately 8,830 acres), and Precambrian rocks (approximately 1,010 acres). In terms of percentages, Pliocene marine would have the largest impact, with 27% of its total in the study area developed. The nonmarine types are relatively stable and resistant to erosion; however, alluvium and marine types are highly erodible. Development on these geologic types is more likely to lead to increased risk of erosion and sedimentation of waterways during construction and potentially over the long term, depending on how soils are stabilized. Increased erosion and sedimentation on waterways can have various adverse effects on riparian and aquatic/wetland vegetation communities, including affecting surface flows (volumes and timing) and scour and deposition patterns. These flows and patterns are important for maintaining habitat composition and structure for special-status species such as the endangered least Bell's vireo, which uses mid-successional willow riparian rather than early-successional communities such as climax cottonwood with little understory that form in areas of more frequent disturbance, and the endangered unarmored threespine stickleback, which requires slow-moving and standing water habitats.

3.2.5 Impacts on Soil Types

Table 15 summarizes the impacts of approved and planned projects in Los Angeles County, the City of Santa Clarita, and Ventura County on soil types. Of the 121 soil types in the study area, 49 could be impacted by approved and planned projects. The soil type impacts are related to the soil distribution (Figure 6). Of the common soil types (those covering more than 10,000 acres in the study area), the greatest impacts in acreage and percentage would occur to Saugus loam (approximately 9,780 acres impacted, or 29% of the total in the study area) and Castaic–Balcom silty clay loams (approximately 7,790 acres impacted, or 35%). Some other notable types include Castaic and Saugus soils (approximately 3,370 acres impacted, or 29%) and Ojai loam (approximately 2,580 acres impacted, or 25%).

Generally, the soils that would be disproportionately impacted occur at lower elevations and on gentler slopes: Hanford coarse sandy loam, Hanford sandy loam, Yolo loam, sandy alluvial land, and Vista coarse sandy loam. Related to their geological substrates, discussed above, these soil types are also more prone to erosion and resulting sedimentation of the watershed than non-alluvial soils, resulting in the same kind of impacts to riparian and aquatic and wetland communities and species. However, the fact that these soils also tend to occur on gentler slopes mitigates to some extent the risk of severe erosion during construction and over the long term.

Table 14
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Geologic Types

Geologic Type	Total Acres	Approved/ Planned				
		Los Angeles County	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
Precambrian rocks, undivided	61,053	1,009	0	0	1,009	1.7%
Plio-Pleistocene nonmarine, Pliocene nonmarine	52,010	11,709	1,189	0	12,899	25%
Mesozoic granitic rocks	46,210	969	0	0	969	2.1%
Precambrian granitic rocks	38,965	473	0	0	473	1.2%
Schist (metasedimentary or metavolcanic)	38,873	10	0	0	10	0.03%
Miocene nonmarine	32,592	4,631	168	0	4,799	15%
Pliocene marine	32,574	8,465	367	0.02	8,832	27%
Miocene marine	26,482	2,297	0	0.01	2,297	8.7%
Alluvium (Quaternary nonmarine and marine)	24,375	4,648	607	0	5,255	22%
Paleocene marine	22,989	0	0	0	0	0%
Paleozoic and Permo-Triassic granitic rocks	16,383	0	0	0	0	0%
Oligocene nonmarine	14,699	82	0	0	82	0.6%
Tertiary volcanic flow rocks	9,784	698	0	0	698	7.1%
Granitic and metamorphic rocks, pre-Cenozoic	3,666	4.2	0	0	4.2	0.1%
Oligocene marine	3,508	0	0	0	0	0%
Water	751	0	0	0	0	0%
Tertiary nonmarine, undivided	591	69	0	0	69	12%
Total	**425,507**	**35,066**	**2331**	**0.036**	**37,396**	**8.8%**

Note: Newhall Land property is included in the Los Angeles County totals.

Table 15
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Soil Types

Soil Type	Total Soil Acres	Approved/Planned				
		Los Angeles County	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
Saugus loam	33,552	8,927	854	0	9,781	29%
Trigo, granitic substratum-Exchequer families-Rock outcrop complex	32,462	0	0	0	0	0%
Lodo-Modesto families complex	28,540	0	0	0	0	0%
Castaic-Balcom silty clay loams	22,442	7,773	17	0	7,790	35%
Stonyford-Millsholm families complex	20,741	0	0	0	0	0%
Caperton-Capistrano families complex	17,976	0	0	0	0	0%
Pismo family-Rock outcrop complex	15,332	0	0	0	0	0%
Pismo-Trigo, dry-Exchequer, dry families complex	13,977	0.6	0	0	0.6	0%
Caperton-Trigo, granitic substratum-Lodo families complex	13,872	39	0	0	39	0.3%
Castaic and Saugus soils	11,795	3,366	0.04	0	3,366	29%
Vista coarse sandy loam	10,970	897	0	0	897	8.2%
Ojai loam	10,306	2,169	414	0	2,583	25%
Hanford sandy loam	10,204	1,268	224	0	1,492	15%
Las Posas-Toomes rocky loams	8,625	606	0	0	606	7.0%
Amargosa rocky coarse sandy loam	8,113	70	0	0	70	0.9%
Millsholm rocky loam	8,096	304	0	0	304	3.8%
Trigo-Calleguas families-Haploxeralfs complex	8,043	0	0	0	0	0%
Modesto, moderately deep-Trigo families complex	7,413	0	0	0	0	0%
Gaviota rocky sandy loam	7,097	1,660	1.5	0.03	1,662	23%
Agua Dulce stony loam	6,557	161	0	0	161	2.5%
Yolo loam	6,472	1,367	141	0	1,508	23%
Exchequer family	6,204	0	0	0	0	0%
Hanford coarse sandy loam	5,854	363	0	0	363	6.2%

Table 15
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Soil Types

Soil Type	Total Soil Acres	Approved/Planned				
		Los Angeles County	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
Trigo-Calleguas families-Rock outcrop complex	4,731	0	0	0	0	0%
Hanford family	4,594	128	0	0	128	2.8%
Sandy alluvial land	4,493	1,166	241	0	1,407	31%
Tollhouse-Knutsen-Stukel families complex	4,460	0	0	0	0	0%
Godde rocky loam	4,326	7.9	0	0	7.9	0.2%
Tujunga-Pismo families association	4,172	0	0	0	0	0%
Riverwash	4,169	637	136	0	773	19%
Caperton-San Andreas-Modesto families complex	4,037	23	0	0	23	0.6%
Water	3,847	0	0	0	0	0%
Greenfield sandy loam	3,770	288	0	0	288	7.6%
Caperton-Baywood families complex	3,416	0	0	0	0	0%
Trigo family-Calcixerollic Xerochrepts-Vista family complex	3,359	33	0	0	33	1.0%
Tujunga-Capistrano families association	3,242	0	0	0	0	0%
Metz loamy sand	2,964	395	41	0	436	15%
Trigo-Millsholm families-Rock outcrop complex	2,938	0	0	0	0	0%
Calcixerollic Xerochrepts-Calleguas family-Modesto family	2,921	0	0	0	0	0%
Terrace escarpments	2,902	457	0	0	457	16%
Wyman gravelly loam	2,848	274	0	0	274	9.6%
Trigo, granitic substratum-Pismo families complex	2,809	0	0	0	0	0%
Pacifico family-Xerothents complex	2,798	0	0	0	0	0%
Ramona coarse sandy loam	2,579	115	0	0	115	4.5%
Cortina sandy loam	2,247	416	41	0	457	20%
Typic Haploxeralfs	1,947	0	0	0	0	0%

Table 15
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Soil Types

Soil Type	Total Soil Acres	Approved/Planned				
		Los Angeles County	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
Badland	1,881	0	0	0	0	0%
Sorrento loam	1,753	320	23	0	343	20%
Gazos clay loam	1,660	284	0	0	284	17%
Osito-Trigo families complex	1,608	0	0	0	0	0%
Gazos silty clay loam	1,342	0.4	0	0.005	0.4	0%
Trigo-Modesto-San Andreas families association	1,288	13	<0.001	0	13	1.0%
Ojai-Zamora loams	1,225	210	181	0	391	32%
Lodo family-Mollic Haploxeralfs association	1,206	0	0	0	0	0%
Castaic-Balcom complex	1,036	2.9	0	0	2.9	0.3%
Mocho loam	1,008	208	0	0	208	21%
Trigo-Lodo families-Haploxerolls, warm complex	977	0	0	0	0	0%
Ramona gravelly sandy loam	971	149	0	0	149	15%
Zamora loam	843	517	1.2	0	518	61%
Vista-Trigo, granitic substratum-Modesto families complex	808	0	0	0	0	0%
Mollic Haploxeralfs	805	0	0	0	0	0%
Wyman cobbly loam	788	16	0	0	16	2.0%
Lodo-Tujunga families association	786	0	0	0	0	0%
Metz loam	710	34	14	0	48	6.8%
Ramona sandy loam	698	119	0	0	119	17%
Cortina cobbly sandy loam	661	86	0	0	86	13%
Rock outcrop-Chilao family-Haploxerolls, warm association	654	0	0	0	0	0%
Las Posas loam	599	20	0	0	20	3.3%
Tollhouse-Stukel-Wrentham families complex	595	0	0	0	0	0%

Table 15
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Soil Types

Soil Type	Total Soil Acres	Approved/Planned				
		Los Angeles County	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
Oak Glen family	503	0	0	0	0	0%
Rock outcrop	430	0	0	0	0	0%
Castaic silty clay loam	353	39	0	0	39	11%
Garretson loam	347	0	0	0	0	0%
Anaverde rocky loam	342	0	0	0	0	0%
Chino loam	316	39	0	0	39	12%
Sorrento silty clay loam	315	0	0	0	0	0%
Corralitos loamy sand	275	0	0	0	0	0%
Mocho sandy loam	265	21	0	0	21	7.9%
Anacapa sandy loam	251	0.5	0	0	0.5	0.2%
Anaverde loam	244	0	0	0	0	0%
Vista family	238	0	0	0	0	0%
Mocho gravelly loam	238	0	0	0	0	0%
Hanford gravelly sandy loam	230	28	0	0	28	12%
Haploxerolls, shallow-Trigo family, dry-Haploxeralfs complex	223	0	0	0	0	0%
Oak Glen-Tollhouse families complex	202	0	0	0	0	0%
Sedimentary rock land	201	0	0	0	0	0%
Ramona loam	183	0	0	0	0	0%
Rock land	181	7.4	0	0	7.4	4.1%
Anacapa gravelly sandy loam	178	0	0	0	0	0%
San Benito clay loam	174	0	0	0	0	0%
Lodo-Modjeska-Botella families association	159	0	0	0	0	0%
Olete-Kilburn-Etsel families complex	158	0	0	0	0	0%

Table 15
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Soil Types

Soil Type	Total Soil Acres	Approved/Planned				
		Los Angeles County	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
Mocho clay loam	149	0	0	0	0	0%
Temescal-Rock land complex	140	16	0	0	16	11%
Oak Glen gravelly sandy loam	133	0	0	0	0	0%
Vertic Xerochrepts	127	0	0	0	0	0%
Pacifico-Preston families complex	91	0	0	0	0	0%
Oak Glen sandy loam	88	0	0	0	0	0%
Vernalis loam	77	0.5	0	0	0.5	0.6%
Dams	74	0	0	0	0	0%
Millsholm loam	73	0	0	0	0	0%
Chilao-Trigo, granitic substratum-Lodo families complex	69	0	0	0	0	0%
Gravel pits	45	13	0	0	13	29%
Lopez shaly clay loam	42	0	0	0	0	0%
Rincon silty clay loam	37	0	0	0	0	0%
Oak Glen loam	34	0	0	0	0	0%
Godde loam	32	0	0	0	0	0%
Pico sandy loam	24	0	0	0	0	0%
Pismo-Chilao-Shortcut families complex	23	0	0	0	0	0%
Cajon loamy sand	23	0	0	0	0	0%
Vernalis clay loam	15	11	0	0	11	73%
Rough broken land	14	0	0	0	0	0%
Garretson gravelly loam	14	0	0	0	0	0%
Haploxerols, shallow-Lithic Xerorthents, warm complex	13	0	0	0	0	0%
Gaviota sandy loam	12	0	0	0	0	0%

Table 15
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Soil Types

Soil Type	Total Soil Acres	Approved/Planned				
		Los Angeles County	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
Friant fine sandy loam	8.1	0	0	0	0	0%
Xerorthents-Urban land-Saugus complex	7.1	0	0	0	0	0%
Haploxerolls, warm-Vista family association	7.1	0	0	0	0	0%
Zamora clay loam	5.1	0	0	0	0	0%
Waterman-Springdale-Pacifico families complex	4.3	0	0	0	0	0%
Chilao family	3.1	0	0	0	0	0%
Total	**425,507**	**35,065**	**2,331**	**0.04**	**37,397**	**8.8%**

Note: Newhall Land property is included in the Los Angeles County totals.

3.2.6 Impacts on Elevations

Table 16 summarizes the impacts of approved and planned projects in Los Angeles County, the City of Santa Clarita, and Ventura County at different elevations, and Figure 7 shows their distribution. Approved and planned projects tend to be concentrated at elevations between 1,000 and 2,000 feet amsl, with this range accounting for approximately 28,380 acres, or 76% of the total development. While 79% of the study area is below 3,500 feet amsl, 99% of the approved and planned projects are below this elevation. Based on the information from Los Angeles County, the City of Santa Clarita, and Ventura County, 57 acres would be developed above 4,000 feet amsl, and no development is planned or approved for elevations above 5,000 feet amsl. Restricting development to lower-elevation portions of the watershed would prevent impacts to upper watershed areas. This reduces effects on watershed ecological function, especially from runoff and sedimentation from developed areas. However, lower-elevation areas in the study area generally host a greater abundance and diversity of species, especially in the coastal scrub, riparian, wetland/aquatic, and oak woodland communities. Many of the special-status species recorded within the study area, listed in Table 10, are limited to these habitats at the lower and middle elevations. The fact that many of the special-status species in the study area are associated with the lower and middle elevations also reflects the substantial loss of riparian, wetland/aquatic, and coastal scrub communities in the Southern Ecoregion of California to urban and agricultural development in recent decades.

Table 16
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Elevation

Elevation (feet amsl)	Total Acres	Approved/Planned				
		Los Angeles County	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
0 to 500	0	0	0	0	0	0%
500 to 1,000	7,154	2,175	0	0	2,175	30%
1,000 to 1,500	56,052	14,143	1,662	0	15,805	28%
1,500 to 2,000	73,767	11,906	669	0.004	12,575	17%
2,000 to 2,500	53,373	3,280	0.07	0.02	3,280	6.1%
2,500 to 3,000	71,580	1,701	0	0.01	1,701	2.4%
3,000 to 3,500	73,614	1,388	0	0	1,388	1.9%
3,500 to 4,000	45,479	411	0	0	411	0.9%
4,000 to 4,500	23,113	52	0	0	52	0.2%
4,500 to 5,000	12,100	5.2	0.25	<0.001	5.5	0.05%
5,000 to 5,500	6,869	0	0	0	0	0%

Table 16
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Elevation

Elevation (feet amsl)	Total Acres	Approved/Planned				
		Los Angeles County	*City of Santa Clarita*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
5,500 to 6,000	2,045	0	0	0	0	0%
6,000 to 6,500	336	0	0	0	0	0%
6,500 to 7,000	21	0	0	0	0	0%
Total	**425,507**	**35,061**	**2,331**	**0.04**	**37,393**	**8.8%**

Note: Newhall Land property is included in the Los Angeles County totals.

3.2.7 Impacts on Slopes

Table 17 summarizes the impacts of approved and planned projects in Los Angeles County, the City of Santa Clarita, and Ventura County at slopes in 20% increment intervals, and Figure 8 shows their distribution. While lands with slopes less than 40% account for about 72% of the land in the study area, 86% of all approved and planned projects would be built on these lands. Development on less severe slopes reduces the need for grading (especially remedial grading associated with unstable geological conditions) and the attendant increase in erosion and disturbance. However, depending on site conditions, areas with shallower slopes may also have the greatest habitat value and contribute substantial habitat value to ecosystem function because these slopes tend to support riparian, coastal scrub, and grassland communities that support high species diversity and a large number of special-status species (see Table 10).

Table 17
Approved and Planned Projects in Los Angeles County, the City of Santa Clarita, and Ventura County in Relation to Slopes

Slope	Total Acres	Approved/Planned				
		City of Santa Clarita	*Los Angeles County*	*Ventura County*	*Total Approved/ Planned Acres*	*Percent Approved/ Planned*
0% to 20%	143,535	16,746	1,712	0.002	18,458	13%
20% to 40%	162,813	13,241	582	0.02	13,823	8.5%
>40%	119,159	5,075	37	0.02	5,112	4.3%
Total	**425,507**	**35,061**	**2,331**	**0.04**	**37,393**	**8.8%**

Note: Newhall Land property is included in the Los Angeles County totals.

3.2.8 Impacts on Ecological Functions of the USCRW

Habitat Availability

Development of planned and approved projects within the study area would affect habitat availability through direct conversion of existing vegetation communities to development (see Table 13). The vegetation communities that would be most affected by planned and approved projects include the following:

- Temperate Pacific mudflat, with 553 of 1,319 acres developed (42%).
- Southern California coastal scrub, with 9,209 of 69,263 acres developed (13%).
- California Central Valley and southern coastal grassland, with 8,703 of 50,143 acres developed (17%).

Habitat Quality

Development of planned and approved projects within the study area would reduce available habitat area; however, the remaining habitat area would generally be located in sizable contiguous parcels (see Figure 3). Some vegetation would be disproportionately impacted, as discussed in Section 3.2.3 (i.e., coastal scrubs and grassland), but the health of remaining suitable vegetation in undeveloped areas would not be substantially impacted. Development would not be expected to substantially alter flow quantities within watershed tributaries, as project compliance with state and federal regulations, Regional Water Quality Control Board requirements, and local permit conditions for project design features, construction best management practices (BMPs), and avoidance and minimization measures would ensure that infiltration remains adequate to minimize runoff from impermeable surfaces. By concentrating development and allowing for large undeveloped open space habitat areas, as opposed to wildlife scattered by "postage size" development, edge effects on habitat quality and function would be minimized.

Habitat Connectivity

The regional north–south habitat connectivity areas described in Section 3.1.8 are located at the west end of the study area, and outside the study area to the west. East–west movement through the study area is primarily along the Santa Clara River, which will remain an undeveloped open space feature in the study area. Development of planned and approved projects would be mostly outside this area, and the limited amount of planned and approved development within this area would not alter habitat connectivity to a substantial degree.

Water Availability and Quality

Development of approved and planned projects in the study area could indirectly impact water quality and availability by changing flow rates and patterns in streams and rivers, and construction dewatering may affect adjacent and downstream aquatic, wetland, and riparian vegetation communities. Project compliance with state and federal regulations, Regional Water Quality Control Board requirements, and local permit conditions for project design features, construction BMPs, and avoidance and minimization measures would mitigate these potential impacts to water availability and quality.

3.2.9 Impacts on Special-Status Species

Special-status species in the Reptile and Amphibian – Semi-Aquatic guild listed in Table 10 could be directly affected by planned and approved development during all phases of their life histories. For example, impacts to riparian and wetland areas could adversely affect these species during the reproductive season and impacts to upland areas could adversely affect species dispersal, aestivation, and nesting (e.g., arroyo toad, western pond turtle). Based on the distribution of planned and approved projects, about 15% of riparian, wetland, and aquatic habitats could be impacted. However, impacts would be reduced through compliance with state and federal regulations (e.g., Endangered Species Act, Clean Water Act). Protection of these species would also include project-level measures requiring preservation, enhancement, restoration, and management to establish upland habitat open space.

Birds in the Upland Grassland/Agriculture, Scrub and Chaparral, Nesting/Foraging Raptor, and Foraging Raptor guilds would experience disturbance of foraging activity and potentially in nesting activity within the study area from planned and approved development. Species in the Nesting/Foraging Raptor and Foraging Raptor guilds could forage virtually anywhere within the study area where prey are available, although species such as the special-status raptors tend to forage in more open habitats such as grasslands and agricultural areas. It is expected that permanent loss of suitable habitat for the Nesting/Foraging Raptor and Foraging Raptor species within the study area will be mitigated on a project-by-project basis via measures requiring preservation, enhancement and restoration, and management that will result in a large, permanent open space system that will provide suitable nesting and foraging habitat to support these species.

Species in the Mammal – Bat guild may forage in virtually all of the non-developed land covers on Newhall Land property where insect prey is present. As a group, all of the natural habitats, agriculture, and disturbed lands on Newhall Land property provide potential foraging habitat for these species. Potential roosting habitat for western mastiff bat includes oak and riparian woodland and forest; other bat species tend not to roost in trees. Because western mastiff bats may roost in Newhall Land areas, roosting activities could be disrupted, especially during the breeding season if maternity roosts were established on site. However, the potential for maternity

roosts of any of these bat species is low because they tend to establish maternity roosts in caves, cliffs, crevices, and buildings.

Species in the Mammal – Moderate Mobility guild (e.g., San Diego black-tailed jackrabbits and American badgers) would be able to move between habitat areas following development, provided that habitat connectivity and patches of suitable habitat are maintained. At the watershed scale, it is most important to maintain upland habitat that is adjacent to riparian corridors. This provides consistent access to water, connectivity between habitats, and foraging areas. Permanent loss of suitable habitat for the Mammal – Moderate Mobility guild species would typically be mitigated by measures requiring preservation, enhancement and restoration, and management that will result in a large, permanent open space system connected to riparian habitats that will provide suitable habitat to support these species.

3.3 Analysis of Newhall Land Project Area

The previous section summarized the impacts of approved and planned projects in Los Angeles County, the City of Santa Clarita, and Ventura County in the study area in relation to current land use classifications, watersheds, vegetation community and land cover types, geology, soils, elevations, slopes, and ecological functions of the USCRW, as well as special-status species guilds. This section analyzes the proposed impacts of Newhall Land projects within this same context.

As shown in Figure 2, the Newhall Land properties compose a relatively small portion of the study area, totaling about 16,720 acres (3.9%) concentrated in the southwest corner of the study area and almost entirely (95%) in the Upper Santa Clara River watershed (Watershed 5). Figure 2 also shows that most of Newhall Land's property is in the lower-elevation portions of the study area. Overall, of the approximately 16,720 acres of Newhall Land properties, approximately 6,594 acres (39%) would be developed and approximately 10,125 acres (61%) would be in Open Space (Table 17). The 6,594 acres of development compose 1.5% of the overall study area. The 10,125 acres of Open Space includes the High Country SMA/SEA (approximately 3,885 acres), Salt Creek area (approximately 1,510 acres), the Santa Clara River SMA/SEA (approximately 1,230 acres), other Open Area (approximately 3,237 acres), and eight Spineflower Conservation Easement areas (totaling approximately 263 acres).[8]

3.3.1 Impacts on Current Land Use Classifications

Table 18 summarizes the relationship between land development by Newhall Land and current land use classifications, and Figure 14 shows the distribution of Newhall Land development and Open Space in relation to land use classifications.

[8] Note that Santa Clara River SMA/SEA overlaps the Spineflower Conservation Easement area.

Table 18
Approved and Planned Development on Newhall Land Property in Relation to Current Land Use Classifications

Current Land Use Classifications	Study Area Acres	Newhall Land Property				
		Total Acres of Current Land Use Class	*Acres Approved/ Planned Developed*	*Percent of Land Use Classification*	*Acres Approved// Planned Undeveloped*	*Percent of Land Use Classification*
Developed						
Single-Family Residential	36,994	174	6.9	4.0%	167	96%
Specific Plan	17,744	11,653	4,372	38%	7,281	62%
Transportation	10,308	125	112	90%	12	10%
Communication and Utility Services	5,121	337	157	47%	180	53%
Local Parks	4,937	0.1	N/A	N/A	0.1	100%
Facilities	4,120	0.6	0.003	0.5%	0.6	99%
Multiple-Family Residential	3,736	0	N/A	N/A	N/A	N/A
Mixed Commercial and Industrial	3,473	99	99	100%%	0	0%
Agriculture	2,518	137	1.5	1.1%	135	99%
Commercial and Services	1,797	0.07	0.002	2.9%	0.06	97%
Industrial	1,576	464	329	71%	135	29%
General Office	579	56	52	92%	4.8	8.6%
Education	131	0	N/A	N/A	N/A	N/A
Total Developed	**128,922**	**13,045**	**6,594**	**51%**	**7,917**	**49%**
Undeveloped						
Wildlife Preserves and Sanctuaries	216,823	0	N/A	N/A	N/A	N/A
Open Space and Recreation	76,474	3,675	1,466	40%	2,209	60%
Water	3,287	0	N/A	N/A	N/A	N/A
Total Undeveloped	**296,584**	**3,675**	**1,466**	**40%**	**2,209**	**60%**

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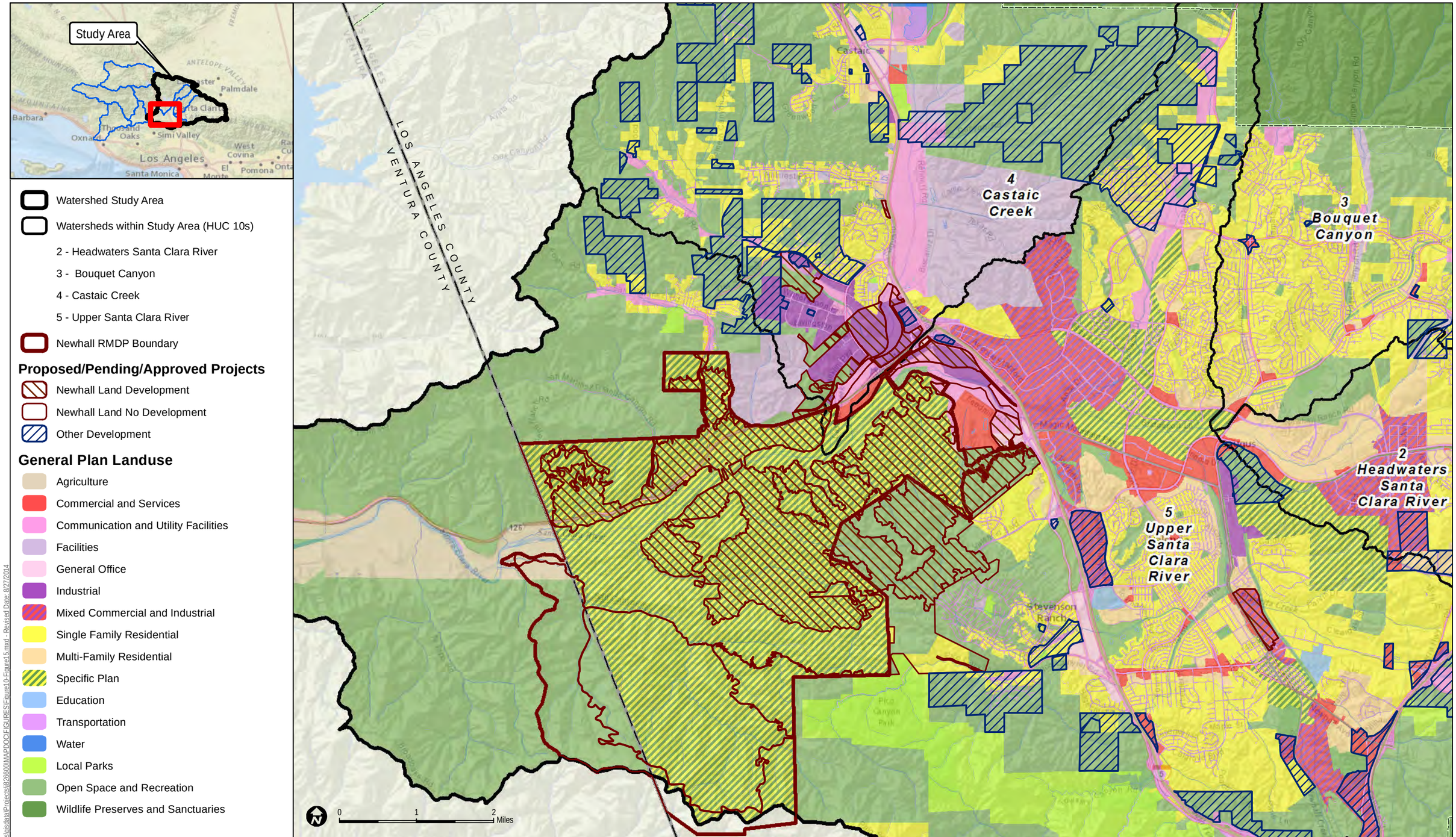

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Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
GENERAL PLAN LAND USE: Southern California Association of Governments (SCAG), 2008

FIGURE 14

General Plan Land Use Classifications in Relation to Newhall Land Projects

Upper Santa Clara River Watershed Study

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3.3.2 Impacts on Watersheds

This subsection analyzes approved and planned Newhall Land development in the context of the study area watersheds (Table 19).

Newhall Land property accounts for about 18% of the Upper Santa Clara River watershed and less than 1% of the Castaic Creek watershed; no Newhall Land property would be developed in the other two watersheds in the study area (Table 19). Overall, 93% of the Newhall Land planned development is in the Upper Santa Clara River watershed.

Approved and planned development on Newhall Land property accounts for 1.5% of the study area (i.e., approximately 6,594 acres of the total 425,507 acres). Newhall Land's approved and planned development would impact about 6.2% of the Upper Santa Clara River watershed and approximately 0.2% of the Castaic Creek watershed.

Table 19
Approved and Planned Development on Newhall Land Property in Relation to the Study Area

HUC10 Watershed	Study Area Acres	Newhall Land Property				
		Newhall Land Acres	*Acres Preserved*	*Acres Developed*	*Percent of Newhall Land Property in Watershed Developed*	*Percent of Overall Study Area Developed*
2 – Headwaters Santa Clara River	150,611	0	0	0	N/A%	00%
3 – Bouquet Canyon	46,572	0	0	0	N/A%	0%
4 – Castaic Creek	129,433	767	286	481	63%	0.2%
5 – Upper Santa Clara River	98,890	15,953	9,840	6,113	38%	6.2%
Total	**425,507**	**16,720**	**10,125**	**6,594**	**39%**	**1.5%**

3.3.3 Impacts on Vegetation and Land Cover Types

Table 20 summarizes Newhall Land approved and planned development in relation to vegetation and land cover types. Figure 15 shows their distribution in relation to their occurrence on Newhall Land property and within the entire study area. According to the GAP data (USGS 2012), Newhall Land property is mostly composed of four general vegetation types—chaparral, scrub, grassland, and woodland and forest—with the chaparral composed mostly of southern California dry-mesic chaparral, the scrub composed mostly of southern California coastal scrub, the woodland and forest

composed mostly of California Coastal live oak woodland and savannah, and the grassland composed mostly of California Central Valley and southern coastal grassland.[9]

Overall, 29 of the 41 land cover types in the study area occur on Newhall Land property, and 27 of the 29 land cover types on Newhall Land property are approved and planned for at least some development. Most of the impacts from Newhall Land's projects would be sustained by (1) medium-elevation California Central Valley and southern coastal grassland communities (2,117 acres disturbed) and (2) southern California coastal scrub (1,456 acres disturbed). Combined, these two vegetation communities represent 55% of the total natural vegetation and land covers on Newhall Land property (i.e., excluding agricultural lands and developed/disturbed lands). The impacts to grasslands and coastal scrub represent 72% of total impacts to natural vegetation communities and land covers on Newhall Land property; therefore, impacts to these two communities are higher relative to their representation (55%) on Newhall Land property.

Impacts to chaparral, woodland, riparian, and wetland/aquatic land cover types represent 14%, 12%, 8.5%, and 0.8%, respectively, of the total impacts to natural vegetation communities and land covers on Newhall Land property. The relatively small impacts to riparian and wetland/ aquatic land cover types will also be subject to state and federal "no net loss" policies, which will require Newhall to mitigate these impacts by restoring and/or creating wetlands either on site or elsewhere. Further, because impacts to oak woodlands are regulated and restricted under CLAOTO and unavoidable impacts typically are mitigated with substantial replacement requirements, impacts to oak woodlands would be less than substantial.

From a watershed ecosystem function perspective, therefore, the main impacts of concern are primarily the upland communities of coastal scrub and grasslands and, to a lesser extent, chaparral. It is assumed that impacts to woodland, riparian, and wetland/aquatic communities will be largely avoided, and unavoidable impacts will be mitigated to the extent that their ecological functions in the watershed will not be significantly diminished.

3.3.4 Impacts on Geologic Types

Table 21 summarizes approved and planned development of geologic types. Figure 16 shows their distribution in relation to their occurrence on Newhall Land property and within the entire study area. Newhall Land property occurs on 4 of the 19 geologic types that occur in the study area, of which 3 constitute 96% of the total on Newhall: alluvium, Pliocene marine, and Plio-Pleistocene nonmarine /Pliocene nonmarine. Two of the four types would be heavily impacted:

[9] It is important to note that the California GAP data are based on a generalized vegetation database last updated in 2012 and are different from the project-level mapping conducted on Newhall Land property over the past few years that includes substantial areas of agriculture, disturbed lands, and developed lands. However, for comparative purposes, the watershed-scale analysis must rely on the California GAP data.

76% of Plio-Pleistocene nonmarine / Pliocene nonmarine and 53% of alluvium. These types would be heavily impacted because they are located in more easily developed lower-elevation areas near the Santa Clara River. The nonmarine types are relatively stable and resistant to erosion, whereas the alluvium and marine types are highly erodible. With a substantial amount of development on nonmarine types, the amount of potential erosion and sedimentation would be reduced. However, these relatively stable geologic types can be overlaid by less stable soils that can still affect the likelihood and extent of erosion and sedimentation, as discussed in Section 3.3.5.

Table 20
Approved and Planned Development on Newhall Land Property in Relation to Vegetation and Land Cover Types

Land Cover Type	Total Study Area Acres	Newhall Land Property				
		Newhall Land Acres	*Acres Preserved*	*Acres Developed*	*Percent of Newhall Land Property Developed*	*Percent of Overall Study Area Developed*
Chaparrals						
Southern California dry-mesic chaparral	137,999	2,584	1,905	679	26%	0.5%
California mesic chaparral	1,922	79	71	8.1	10%	0.4%
Sonora-Mojave semi-desert chaparral	779	0	—	—	—	—
Mediterranean California mesic serpentine woodland and chaparral	313	44	21	24	54%	8.0%
California montane woodland and chaparral	85	0	—	—	—	—
Subtotal	*141,098*	*2,707*	*1,997*	*711*	*28%*	*0.5%*
Scrubs						
Southern California coastal scrub	69,262	3,914	2,458	1,456	37%	2.1%
Sonora–Mojave creosotebush–white bursage desert scrub	5,013	13	5.5	7.3	57%	0.1%
Mojave mid-elevation mixed desert scrub	2,653	0	—	—	—	—
Sonora–Mojave mixed salt desert scrub	442	0.2	0.2	0	—	—
Mediterranean California southern coastal dune	90	0	—	—	—	—
Inter-mountain basins big sagebrush shrubland	41	0.2	0	0.2	100%	0.5%
Inter-mountain basins mixed salt desert scrub	32	0	—	—	—	—
North American warm desert active and stabilized dune	2.4	0	—	—	—	—
Subtotal	*77,538*	*3,927*	*2,464*	*1,463*	*37%*	*1.9%*
Riparian						
Mediterranean California foothill and lower montane riparian woodland	2,121	410	375	35	8.5%	1.7%

Table 20
Approved and Planned Development on Newhall Land Property in Relation to Vegetation and Land Cover Types

Land Cover Type	Total Study Area Acres	Newhall Land Property				
		Newhall Land Acres	*Acres Preserved*	*Acres Developed*	*Percent of Newhall Land Property Developed*	*Percent of Overall Study Area Developed*
North American warm desert riparian woodland and shrubland	148	1.7	1.7	0	0%	0%
California Central Valley riparian woodland and shrubland	7.6	0.2	0.2	0	0%	0%
Subtotal	*2,277*	*412*	*377*	*35*	*8.5%*	*1.5%*
Wetland and Aquatic						
Open water (fresh)	3,282	0	—	—	—	—
Temperate Pacific freshwater mudflat	1,319	41	21	20	49%	1.5%
Temperate Pacific freshwater emergent marsh	509	30	9.8	20	68%	3.9%
Subtotal	*5,110*	*71*	*31*	*40*	*56%*	*0.8%*
Woodland						
Great Basin pinyon–juniper woodland	44,223	35	32	2.5	7.1%	0.01%
California Coastal live oak woodland and savanna	19,504	2,860	2,408	452	16%	2.3%
California Central Valley mixed oak savanna	4,460	115	51	64	55%	1.4%
Central and southern California mixed evergreen woodland	1,547	0	—	—	—	—
California lower montane blue oak–foothill pine woodland and savanna	1,486	99	49	51	51%	3.4%
Southern California oak woodland and savanna	516	45	23	23	50%	4.5%
Mediterranean California mixed evergreen forest	84	0	—	—	—	—
Subtotal	*71,820*	*3,154*	*2,563*	*593*	*19%*	*0.8%*
Coniferous Forest						
Mediterranean California dry-mesic mixed conifer forest and woodland	17,734	5.0	5.0	0	0%	0.0%
California montane Jeffrey pine–(Ponderosa pine) woodland	1,315	0	—	—	—	—
California coastal redwood forest	90	10	10	0.09	0.9%	0.1%
Subtotal	*19,139*	*15*	*15*	*0.09*	*0.6%*	*<0.001%*
Grasslands						
California Central Valley and southern coastal grassland	50,143	3,919	1,801	2,117	54%	4.2%
California mesic serpentine grassland	27	0	—	—	—	—
Subtotal	*50,170*	*3,919*	*1,801*	*2,117*	*54%*	*4.2%*

Table 20
Approved and Planned Development on Newhall Land Property in Relation to Vegetation and Land Cover Types

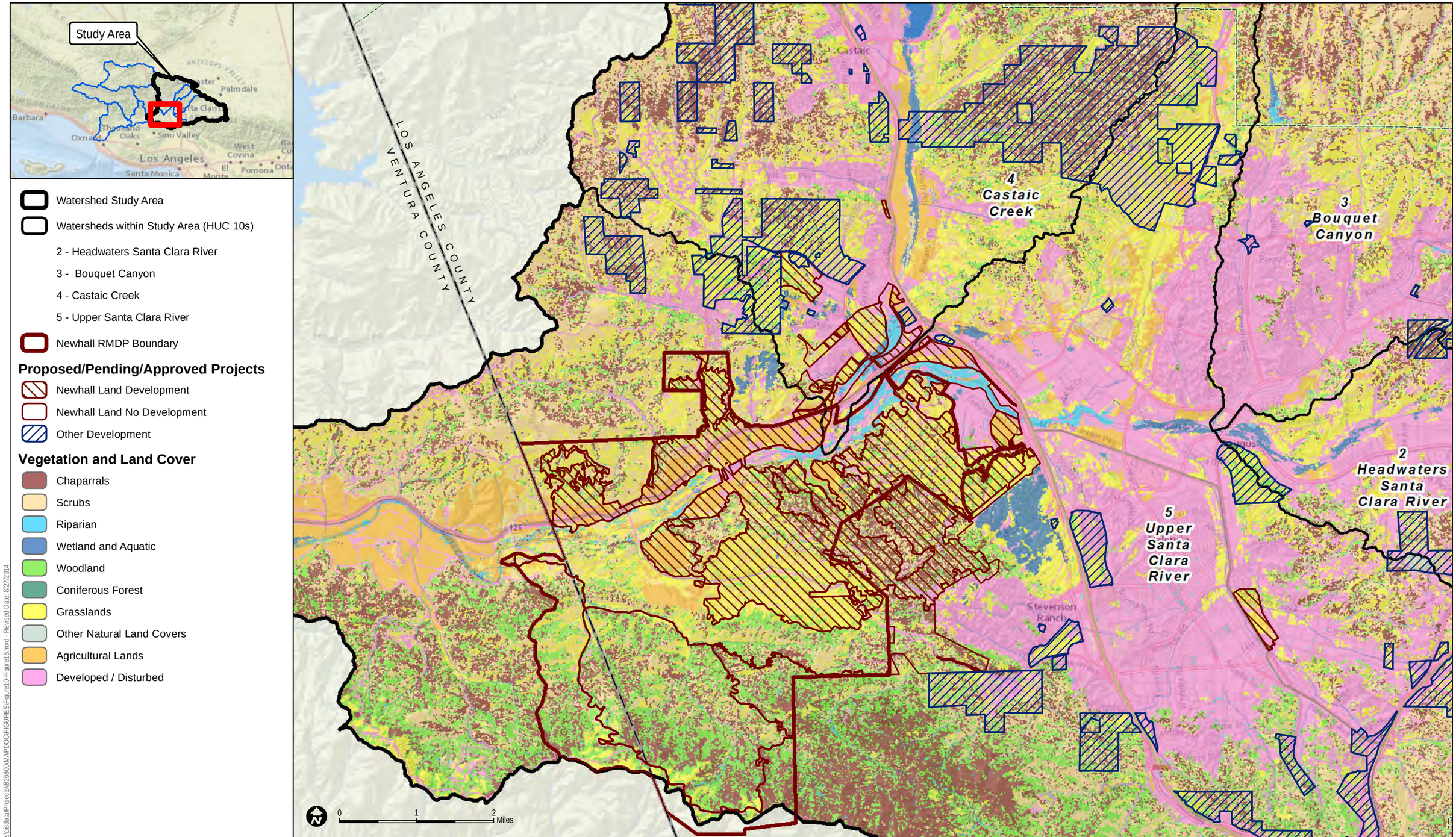
Land Cover Type	Total Study Area Acres	Newhall Land Property				
		Newhall Land Acres	*Acres Preserved*	*Acres Developed*	*Percent of Newhall Land Property Developed*	*Percent of Overall Study Area Developed*
Other Natural Land Covers						
Southern California Coast Ranges cliff and canyon	433	0	—	—	—	—
North American warm desert bedrock cliff and outcrop	386	2.0	2.0	0	0%	0%
North American warm desert pavement	32	1.3	1.3	0.01	1.0%	0.04%
Subtotal	*851*	*3.3*	*3.3*	*0.01*	*0.4%*	*0.02%*
Agricultural Lands						
Pasture/hay	2,657	658	65	593	90%	22%
Cultivated cropland	2,099	325	118	207	64%	9.9%
Recently burned shrubland	810	129	127	1.5	1.2%	0.2%
Subtotal	*5,566*	*1,112*	*310*	*802*	*72%*	*14%*
Developed Lands						
Developed, open space	30,690	1,201	495	706	59%	2.3%
Developed, low intensity	12,990	169	67	102	60%	0.8%
Developed, medium intensity	8,033	28	2.5	25	91%	0.3%
Developed, high intensity	226	0	—	—	—	—
Subtotal	*51,940*	*1,398*	*564*	*833*	*60%*	*1.6%*
Total	**425,507**	**16,720**	**10,126**	**6,594**	**39%**	**1.5%**

Table 21
Approved and Planned Development on Newhall Land Property in Relation to Geologic Types

Geologic type	Total Study Area Acres	Newhall Land Property				
		Newhall Land Acres	*Acres Preserved*	*Acres Developed*	*Percent of Geologic Type on Newhall Land Property Developed*	*Percent of Overall Study Area Geologic Type Developed*
Plio-Pleistocene nonmarine, Pliocene nonmarine	52,010	3,788	898	2,890	76%	5.6%
Pliocene marine	32,574	8,920	6,989	1,931	22%	5.9%

Table 21
Approved and Planned Development on Newhall Land Property in Relation to Geologic Types

Geologic type	Total Study Area Acres	Newhall Land Property				
		Newhall Land Acres	*Acres Preserved*	*Acres Developed*	*Percent of Geologic Type on Newhall Land Property Developed*	*Percent of Overall Study Area Geologic Type Developed*
Alluvium (mostly Quaternary)	24,375	3,360	1,591	1,769	53%	7.3%
Miocene marine	26,482	652	648	4.2	0.6%	0.02%
Total	**135,441**	**16,720**	**10,126**	**6,594**	**39%**	**2.7%**



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Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
LAND COVER: USGS National GAP Analysis Program (GAP) version 2, updated 2012

FIGURE 15

Existing Vegetation and Land Cover Types in Relation to Newhall Land Projects

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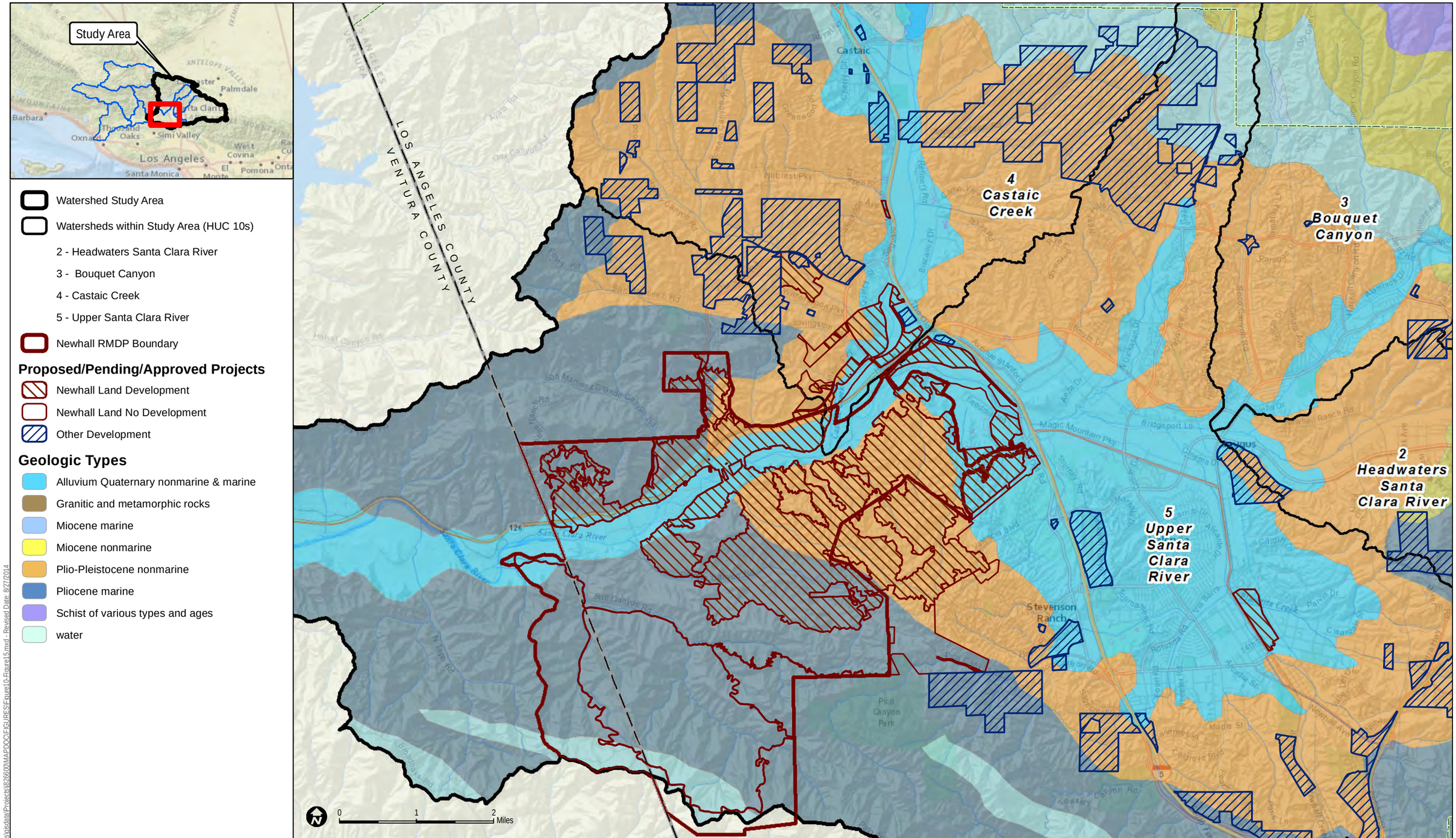

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Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
GEOLOGY: USGS California Geologic Map, 2008

FIGURE 16
Existing Geologic Types in Relation to Newhall Land Projects

Upper Santa Clara River Watershed Study

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3.3.5 Impacts on Soil Types

Table 22 summarizes approved and planned development of soil types, and Figure 17 shows their distribution in relation to their occurrence on Newhall Land property and within the entire study area. Newhall Land property occurs on 25 soil types, and development would occur on 21 of those soil types. The majority of development (62%) would occur on three soil types: Castaic-Balcom silty clay loams, Yolo loam, and Castaic and Saugus soils. The majority of the following soil types on Newhall Land property would be developed: 100% of Mocho sandy loam (21 acres), 93% of Metz loam (27 acres), 88% of Zamora loam (458 acres), 74% of Mocho loam (94 acres), 58% of Saugus loam (507 acres), 92% of Metz loamy sand (138 acres), 77% of Yolo loam (701 acres), 89% of Hanford sandy loam (373 acres), and 51% of Sorrento loam (212 acres). With the exception of Zamora loam, at 54% of the total in the study area, overall development of these soil types in the study area would be relatively small, ranging from <1% for several soil types to 12% for Sorrento loam.

Generally, the soils that would be disproportionately impacted by Newhall Land development occur at lower elevations and on gentler slopes: loams, sandy loams, and alluvial soils. These soil types are also more prone to erosion and resulting sedimentation of the watershed than non-alluvial soils. As discussed in Section 3.2.3, erosion and sedimentation can have substantial adverse effects on riparian and wetland/aquatic communities and associated special-status species.

3.3.6 Impacts on Elevations

Table 23 summarizes approved and planned development of different elevations, and Figure 18 shows their distribution in relation to their occurrence on Newhall Land property and within the entire study area. Virtually all (99.8%) of Newhall Land property is below 3,000 feet amsl, with approximately 62% of the property in the 1,000–1,500 feet amsl elevation range.

Approved and planned development on Newhall Land property is concentrated at the lower elevations of 500–1,500 feet amsl. While these elevation ranges account for 72% of the Newhall Land property, they support 94% of the approved and planned development. Lower-elevation preservation is primarily in the Santa Clara River SMA/SEA, while preserved lands at elevations greater than 1,500 feet amsl are primarily in the Salt Creek area and High Country SMA/SEA.

Restricting development to lower-elevation portions of the watershed would prevent impacts to upper watershed areas. This reduces effects on watershed ecological function, especially from runoff and sedimentation from developed areas. However, lower-elevation areas generally host a greater abundance and diversity of species, and many of the special-status species recorded within the study area are limited to lower elevations.

Table 22
Approved and Planned Development on Newhall Land Property in Relation to Soils

Soil Type	Total Study Area Acres	Newhall Land Property				
		Newhall Land Acres	*Acres Preserved*	*Acres Developed*	*Percent of Newhall Land Property Developed*	*Percent of Overall Study Area Developed*
Saugus loam	33,552	879	372	507	58%	1.5%
Castaic–Balcom silty clay loams	22,442	5,439	3,334	2,105	39%	9%
Castaic and Saugus soils	11,795	2,808	1,556	1,252	45%	11%
Hanford sandy loam	10,201	419	46	373	89%	3.7%
Gaviota rocky sandy loam	7,097	1,809	1,806	3.1	0.2%	0%
Yolo loam	6,472	910	209	701	77%	11%
Sandy alluvial land	4,493	919	568	351	38%	7.8%
Riverwash	4,169	532	451	81	15%	1.9%
Metz loamy sand	2,964	153	15	138	90%	4.7%
Terrace escarpments	2,902	373	200	173	46%	6.0%
Cortina sandy loam	2,247	156	89	67	43%	3.0%
Badland	1,881	379	379	0.2	0.05%	0.01%
Sorrento loam	1,753	429	212	217	51%	12%
Gazos clay loam	1,660	284	282	2.5	0.9%	0.2%
Gazos silty clay loam	1,342	346	343	2.9	0.8%	0.2%
Castaic–Balcom complex	1,036	80	80	0.1	0.1%	0.01%
Mocho loam	1,008	127	33	94	74%	9.3%
Zamora loam	843	521	63	458	88%	54%
Metz loam	710	29	1.9	27	93%	3.8%
Garretson loam	347	0.002	0.002	0	0%	0%
Chino Loam	316	39	39	0	0%	0%
Mocho sandy loam	265	21	0.004	21	100%	7.9%
Anacapa sandy loam	251	33	33	0.1	0.3%	0.04%
Garretson gravelly loam	14	14	14	0	0%	0%
Landslides	0.3	0.3	0.3	0	0%	0%
Total	**119,760**	**16,720**	**10,126**	**6,594**	**39%**	**5.5%**

Table 23
Approved and Planned Development on Newhall Land Property in Relation to Elevation

Elevation (feet amsl)	Total Study Area Acres	Newhall Land Property				
		Newhall Land Acres	*Acres Preserved*	*Acres Developed*	*Percent of Newhall Land Property Developed*	*Percent of Study Area Elevation Developed*
500 to 1,000	7,154	2,542	1,373	1,169	46%	16%
1,000 to 1,500	56,052	9,466	4,404	5,062	53%	9.0%
1,500 to 2,000	73,771	3,056	2,701	355	12%	0.5%
2,000 to 2,500	53,373	989	986	3.7	0.4%	0.007%
2,500 to 3,000	71,580	628	624	4.4	0.7%	0.006%
3,000 to 3,500	73,614	34	34	0	0%	0%
4,500 to 5,000	12,100	4	4.3	0	0%	0%
Total	**347,644**	**16,720**	**10,126**	**6,594**	**39%**	**2.6%**

3.3.7 Impacts on Slopes

Table 24 summarizes Newhall Land approved and planned development in relation to slopes in the study area, and Figure 19 shows their distribution in relation to their occurrence on Newhall Land property and within the entire study area. The majority (63%, or approximately 4,173 acres of 6,594 acres total development) of Newhall Land project development would be on slopes less than 20%. Relatively less development would occur on slopes between 20% and 40%, and a very small amount of development on Newhall Land property would occur on slopes greater than 40%. Development on the gentler slopes would reduce the amount of grading and earthwork in general compared to development on steeper slopes, which would also reduce the chance of erosion and sediment loading within the watershed during construction and over the long term. However, lower slopes supporting coastal scrubs and grasslands also generally provide greater habitat value for special-status species.

Table 24
Approved and Planned Development on Newhall Land Property in Relation to Slope

Slope	Total Study Area Acres	Newhall Land Property				
		Newhall Land Acres	*Acres Preserved*	*Acres Developed*	*Percent of Newhall Land Property Developed*	*Percent of Study Area Slope Developed*
0% to 20%	143,535	7,078	2,905	4,173	59%	2.9%
20% to 40%	162,813	5,528	3,417	2,111	38%	1.3%
>40%	119,159	4,115	3,804	311	7.6%	0.3%
Total	**425,507**	**16,720**	**10,126**	**6,594**	**39%**	**1.5%**

3.3.8 Impacts on Ecological Functions of the USCRW

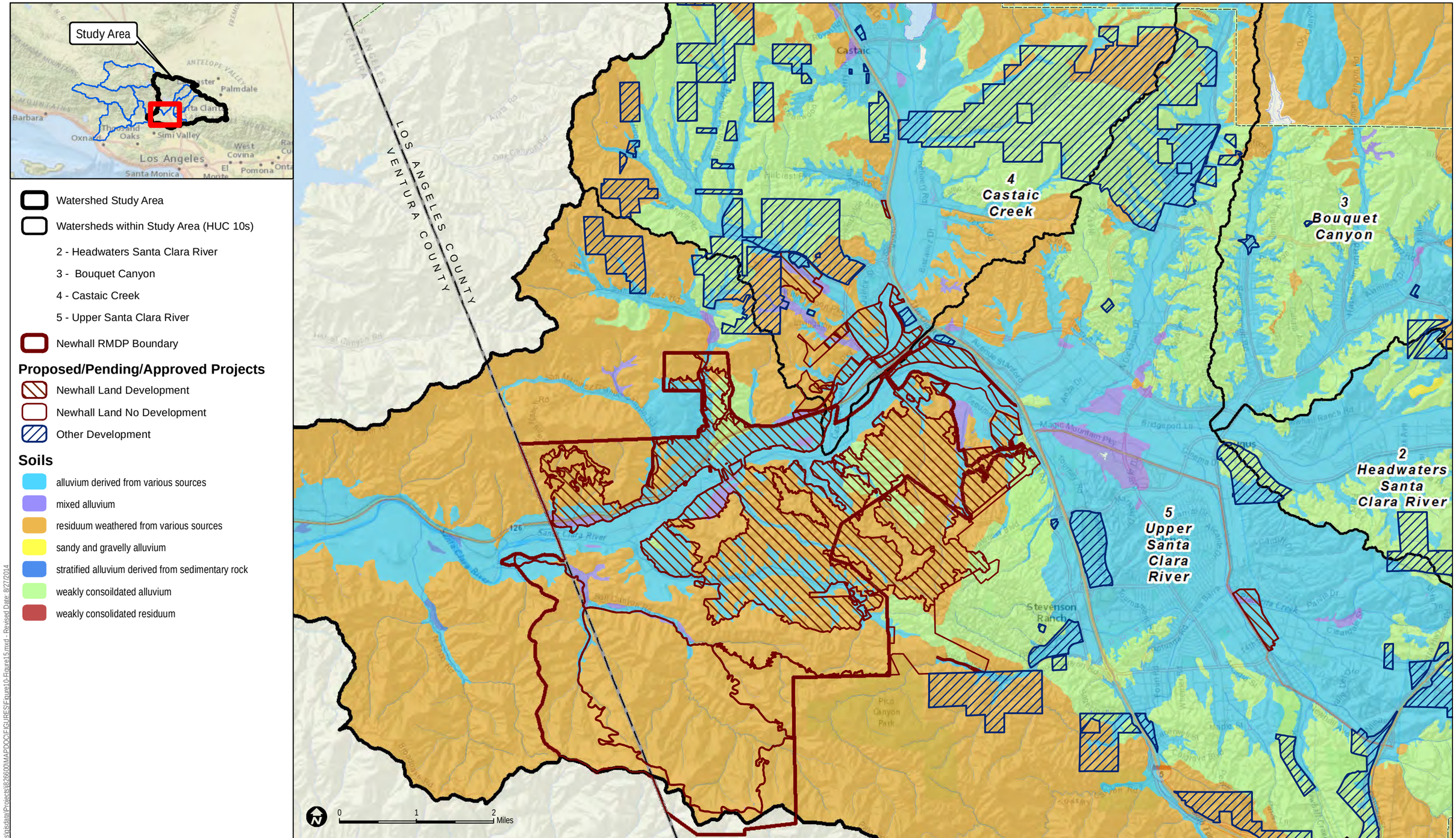
Habitat Availability

Development of Newhall Land property would affect habitat availability through direct conversion of existing vegetation communities to development (see Table 20). The specific vegetation communities with the greatest area of conversion on Newhall Land property would be as follows:

- Central Valley and southern coastal grassland communities, with 2,117 of 3,919 acres developed (54%).
- Southern California coastal scrub, with 1,456 of 3,914 acres developed (37%).
- Southern California dry-mesic chaparral, with 679 of 2,584 acres developed (26%).

Overall, Newhall Land's contribution to loss of habitat from planned and approved projects within the study area would be as follows:

- Chaparral – 711 acres of Newhall Land property impacted, out of 6,034 acres impacted by planned and approved projects in study area
- Scrubs – 1,463 acres of Newhall Land property impacted, out of 9,971 acres impacted by planned and approved projects in study area
- Riparian – 35 acres of Newhall Land property impacted, out of 440 acres impacted by planned and approved projects in study area
- Wetland and Aquatic – 40 acres of Newhall Land property impacted, out of 651 acres impacted by planned and approved projects in study area
- Woodland – 593 acres Newhall Land property impacted, out of 5,876 acres impacted by planned and approved projects in study area
- Coniferous Forest – 0.09 acre of Newhall Land property impacted, out of 19 acres impacted by planned and approved projects in study area
- Grasslands – 2,117 acres of Newhall Land property impacted, out of 8,708 acres impacted by planned and approved projects in study area
- Other Natural Land Covers – 0.01 acre of Newhall Land property impacted, out of 137 acres impacted by planned and approved projects in study area



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DUDEK

Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
SOILS: USDA NRCS Ssurgo Soil Survey 2014

FIGURE 17
Existing Soil Types in Relation to Newhall Land Projects

Upper Santa Clara River Watershed Study

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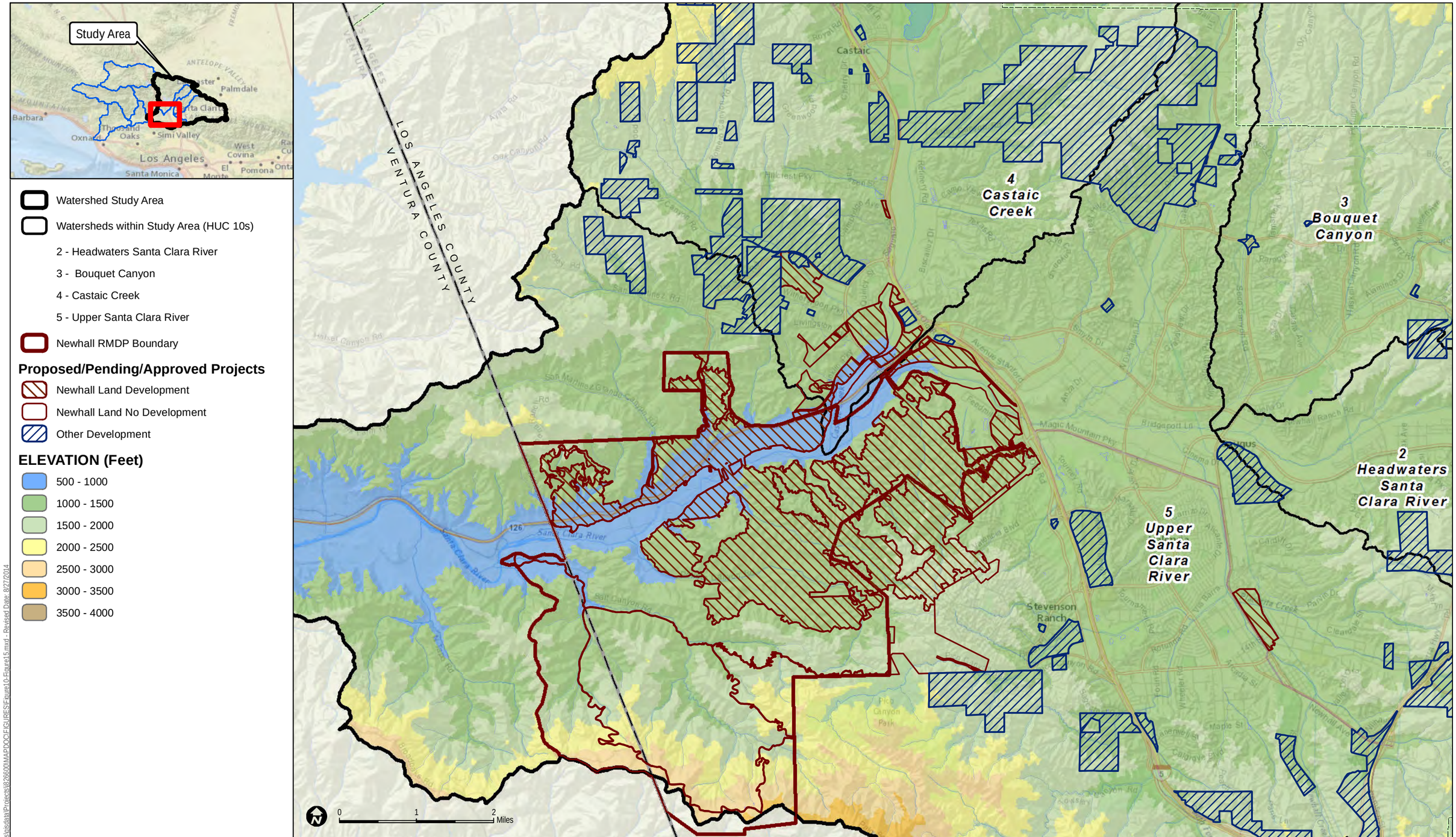

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Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
ELEVATION: USGS National Elevation Data (NED) 10-meter DEM

FIGURE 18
Existing Elevations in Relation to Newhall Land Projects

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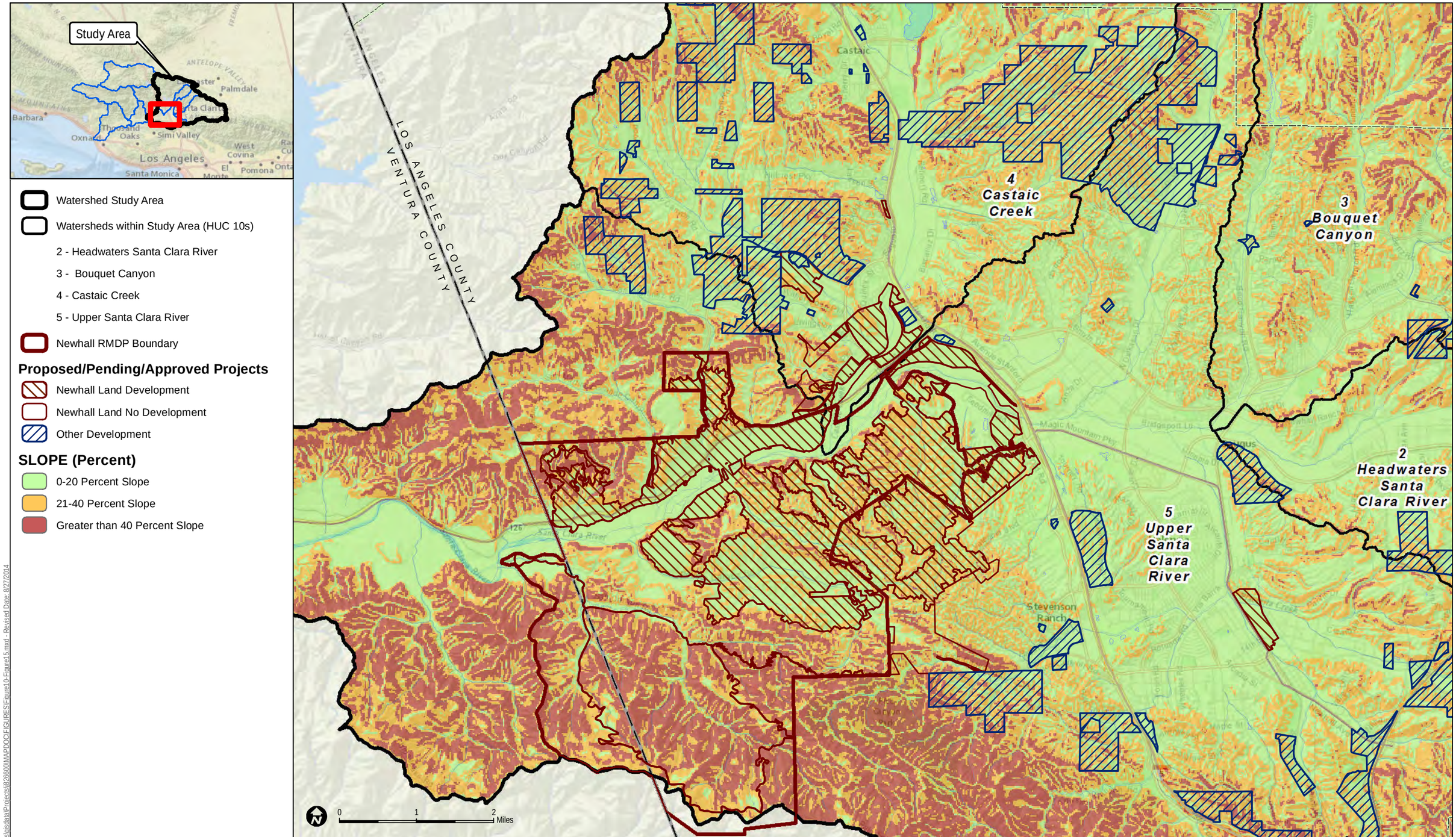

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Watersheds: U.S. Geological Survey Watershed Boundary Database (USGS WBD) 2013
Projects: County of Los Angeles Department of Regional Planning Subdivision Activity 2014, City of Santa Clarita Planned Development 2014
SLOPE: USGS National Elevation Data (NED) 10-meter DEM

FIGURE 19
Existing Slopes in Relation to Newhall Land Projects

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Habitat Quality

Development of Newhall Land projects within the study area would reduce available habitat area; however, the remaining habitat area would generally be located in sizable contiguous parcels (see Figure 15). Some vegetation would be disproportionately impacted, as discussed above, but the health of remaining suitable vegetation in undeveloped areas would not be substantially impacted (Corps and CDFG 2010). Large preserves designated within Newhall Land property such as Santa Clara River SMA/SEA, High County SMA/SEA, Salt Creek area, and others will ensure that high-quality habitat remains intact and protected from the effects of development and human encroachment. Development would not be expected to substantially alter flow quantities and patterns (e.g., peak flows) within watershed tributaries, as standard LID measures would ensure that infiltration remains adequate to minimize runoff from impermeable surfaces. By concentrating development and allowing for large undeveloped open space habitat areas, potential edge effects on habitat quality would be reduced compared to more scattered development.

Habitat Connectivity

The Environmental Impact Statement / Environmental Impact Report (EIS/EIR) for the Newhall Ranch RMDP / Spineflower Conservation Plan (RMDP/SCP) Project (RMDP/SCP EIS/EIR) (Corps and CDFG 2010) addresses preservation along the Santa Clara River corridor. Within and beyond the Newhall Land boundary, the river corridor is a regionally significant riparian and wetland resource, in part because it functions as a wildlife corridor and habitat linkage, as well as "live-in" and breeding habitat for a number of federally and/or state-listed species, such as least Bell's vireo, southwestern willow flycatcher, arroyo toad, and unarmored threespine stickleback. From its origin in the San Gabriel Mountains, the river corridor extends approximately 80 miles to the west, where it empties into the Pacific Ocean. It is an important migration corridor and, possibly, a genetic dispersion corridor for wildlife and plant species, including species restricted to aquatic and riparian habitats as well as larger, more mobile terrestrial species. The river corridor also constitutes a portion of the Santa Clara River SMA/SEA, which is wide enough to accommodate flood events while retaining nearly all of the existing riparian vegetation along the river corridor. To control human activities that could adversely affect the River's ability to function as a wildlife corridor and habitat linkage, the RMDP/SCP also provides for "transition" areas between the Santa Clara River SMA/SEA and development, restricts recreational uses of the river, and provides for long-term management of the Santa Clara River SMA/SEA.

Based on the South Coast Missing Linkages Project (SCMLP) results, Newhall Land development will not directly impact the least-cost union (LCU) area for habitat connectivity, which is described in Section 3.1.8 and shown on Figure 10. South of the Santa Clara River, the closest planned development on Newhall Land property in relation to the LCU area is about

3,500 feet to the east. This distance will provide the LCU with an adequate buffer from indirect development effects. North of the Santa Clara River, the distance between the development edge and the eastern boundary of the LCU is about 800 feet. However, the width of the LCU itself in this area is about 10,000 feet (1.9 miles), so indirect impacts in this portion of the LCU would be minor and would not significantly affect the function of the corridor in this area. The LCU is wide enough to absorb some indirect effects north of the Santa Clara River without compromising the function of the corridor.

Figure 11 shows that the least-cost corridor (LCC) for the mountain lion is confined to the eastern branch of the LCU, and the highest-permeability area (i.e., lowest cost, or green zone of map) is in Ventura County west of the Newhall Land RMDP boundary. The portion of the LCC within the RMDP boundary is rated as less permeable (i.e., the blue area in Figure 10).

Figure 12 illustrates that the LCC for the mule deer comprises the western and eastern branches of the LCU. The western branch has the highest permeability, and the eastern branch, which includes the High Country SMA/SEA and Salt Creek area, has lower permeability.

Figure 13 shows that the American badger's main linkage branch is located generally to the west and does not overlap with Newhall Land property; it intersects only the far western portion of the Upper Santa Clara River watershed.

Overall, approved and planned development on Newhall Land property will have a relatively minor effect on the regional wildlife movement corridors identified by the SCMLP that intersect the study area because development would occur well east of the most important corridors.

Water Availability and Quality

As is the case with approved and planned development in the study area, development of Newhall Land property could indirectly impact water quality and availability by changing flow rates and patterns in streams and rivers. These changes could affect habitat suitability of adjacent and downstream aquatic, wetland, and riparian vegetation communities. These impacts of Newhall Land projects would be reduced through the implementation of construction BMPs and LID design measures.

A River and Tributaries Drainage Analysis prepared by PACE (2010) to analyze the effects of Newhall Land projects found that there would be no long-term substantial effects on water flows, velocities, depth, sedimentation, or floodplain and channel conditions downstream of the study area. The PACE study determined that the river would still retain sufficient width to allow natural fluvial processes to continue. For this reason, any altered hydrology resulting from the Newhall Land projects is expected to be minor.

With respect to pollutant impacts on water quality, a study conducted by Geosyntec (2014) examined the potential for chemical contamination to affect the mainstem Santa Clara River. A recognized, natural barrier to fish migration within the Santa Clara River, the Dry Gap, exists downstream of Newhall Land projects and upstream of the Piru Creek confluence. The Dry Gap is an ephemeral reach of the river that consists of an area downstream of the Los Angeles County / Ventura County line where surface flows in the river are lost to the Piru groundwater basin. However, surface runoff during major storm events, which would include future discharges from the Newhall Land projects, provides temporary surface water connections that periodically allow flows to directly reach downstream occupied southern California steelhead distinct population segment (DPS) (*Oncorhynchus mykiss*) habitat. Therefore, there is a potential for constituents of the runoff to reach aquatic habitat occupied by the steelhead.

One such constituent is dissolved copper. Generally, average concentrations of dissolved copper in the Santa Clara River are not predicted to increase as a result of Newhall Land development over existing conditions or to be generally toxic to aquatic life. According to the Water Quality Technical Report prepared by Geosyntec (2014), the average annual concentration in stormwater runoff in the Santa Clara River, including discharges from Newhall Land development, is predicted to be 7.1 micrograms per liter (µg/L), which is well below the benchmark California Toxics Rule (CTR) water quality criteria for aquatic life protection.[10] Under the CTR, the acute (1-hour average concentration) criterion for dissolved copper at the average observed hardness of 198 milligrams per liter is 26 µg/L, and the chronic (4-day average concentration) is 16 µg/L. Also, the predicted average annual dissolved copper concentration in stormwater runoff is less than the observed average concentration in the Santa Clara River (see Table 7-16 in Geosyntec 2014). Geosyntec (2014) therefore concluded that runoff from Newhall Land development is not expected to affect the concentration of dissolved copper in the Santa Clara River (see the Water Quality Technical Report (Geosyntec 2014, Section 7.1.7)).

While the average annual dissolved copper concentration with development of Newhall Land projects would be well below the CTR water quality criteria for aquatic life protection, it could

[10] The CTR (40 CFR 131.38) is a federal regulation issued by the U.S. Environmental Protection Agency (EPA). It provides water quality criteria for toxic pollutants in waters with human health or aquatic life designated uses in California. The CTR criteria are the product of an extensive rule-making process, as required under the federal Clean Water Act (65 FR 31682; 68 FR 62744). The EPA adopted the CTR in 2000 to create "legally applicable [water quality criteria] in the State of California for inland surface waters, enclosed bays and estuaries for all purposes and programs under the Clean Water Act" (*Baykeeper v. Kramer Metals, Inc.* (C.D. Cal. 2009 619 F.Supp.2d 914, 926)). The CTR levels are lower than the EPA's benchmark levels; and for some of the priority toxic pollutants, the CTR levels are at concentrations below the EPA's current analytical detection limits. In a recent lawsuit, the California Court of Appeals upheld the California Department of Fish and Wildlife's decision to use the CTR threshold for determining the significance of sublethal impacts of copper on juvenile steelhead (see *Center for Biological Diversity, et al. v. Department of Fish and Game,* California Court of Appeals, Second Appellate District, Division Five, Case No. B245131).

exceed the benchmark concentration of 5.1 µg/L reported by the National Oceanic and Atmospheric Administration Technical Memorandum for deleterious effects on juvenile salmon (Hecht et al. 2007, as cited in Geosyntec 2014). For this reason, Geosyntec (2014) analyzed the National Oceanic and Atmospheric Administration's findings with respect to potential downstream effects on juvenile steelhead in the Santa Clara River, while also considering environmental factors that may reduce dissolved copper toxicity, such as the effects of dissolved organic carbon (DOC) and dissolved metal speciation, both of which can diminish the amount of dissolved copper that is bioavailable" to fish. Geosyntec's analysis determined that the National Oceanic and Atmospheric Administration Technical Memorandum, while providing useful information about the potential sublethal impacts of dissolved copper on salmonids, does not take into account key environmental conditions including bioavailability of dissolved copper, speciation of dissolved copper, and beneficial effects of LID techniques and water treatment best management practices. With consideration of these factors, even long-term effects to juvenile salmon would be below levels of concern.

3.3.9 Impacts on Special-Status Species and Sensitive Vegetation Types

CNDDB has recorded 64 special-status species in the study area (refer to Section 3.1.9). However, only 13 of those 64 species are recorded by CNDDB as occurring on Newhall Land property (Table 25). Several special-status species that have been recorded in the study area are restricted to areas east (i.e., up-watershed) of Newhall Land property in the Coastal/Mojave Transition area and higher elevations of the San Gabriel Mountains. As result, Newhall Land projects will not affect them or their watershed functions.

The Santa Clara River SMA/SEA includes habitat for endangered unarmored threespine stickleback (CDFW 2014) (see Table 25). Many of the other CNDDB element occurrences (locations where a special-status species has been recorded in the CNDDB) would be protected on Newhall Land property within designated preserves (e.g., Spineflower Preserve, SMA/SEAs) and other open space areas proposed and designed on Newhall Land property (CDFW 2014; Dudek 2010).

Table 25
CNDDB Element Occurrences for Special-Status Species on Newhall Land Property

Species	Total Element Occurrences
Plants – Chaparral/Scrub	
San Fernando Valley spineflower	64
Slender mariposa-lily	275
Plummer's mariposa-lily	4
Davidson's bush-mallow	1
Plants – Generalist	

Table 25
CNDDB Element Occurrences for Special-Status Species on Newhall Land Property

Species	Total Element Occurrences
Late-flowered mariposa-lily	1
Plants – Grassland	
Ojai navarretia	2
Plants – Wetland	
Newhall sunflower	1
Fish	
Santa Ana sucker	1
Arroyo chub	1
Reptiles – Low Mobility	
Coastal whiptail	1
Reptile and Amphibian – Semi-Aquatic	
Western pond turtle	1
Bird – Riparian	
Least Bell's vireo	5
Bird – Nesting/Foraging Raptor	
Burrowing owl	1

Source: CDFW 2014.

Altered hydrology and water quality primarily could affect species guilds associated with riparian/wetland habitats in the Santa Clara River, including the following: Plant–Wetland; Fish; Reptile and Amphibian – Semi-Aquatic; Bird – Riparian; Bird – Riparian/Upland Woodland; and Bat guilds. Indirect impacts include changes in flow rates and patterns in streams and rivers that could affect habitat suitability. For the bats, altered hydrology and water quality could affect the prey base. However, the River and Tributaries Drainage Analysis prepared by PACE (2010) found that there would be no long-term significant impacts to water flows, velocities, depth, sedimentation, or floodplain and channel conditions downstream as a result of Newhall Land development associated with the RMDP. These hydrologic effects were also found to be insufficient to alter the amount, location, and nature of aquatic and riparian habitats within the study area and downstream into Ventura County. The PACE study determined that the River would retain sufficient width to allow natural fluvial processes to continue. For this reason, and altered hydrology resulting from development of Newhall Land property is expected to be minor.

The specific effects of Newhall Land development on suitable fish habitat in the Santa Clara River and surrounding watershed were also analyzed by ENTRIX (2009) for the RMDP/SCP EIS/EIR. ENTRIX evaluated key habitat variables such as potential changes in floodplain width, backwater refuge habitat area (flood condition aquatic refugia), and water velocity during various theoretical flood frequency events, using the unarmored threespine stickleback as an indicator species because of its susceptibility to higher-velocity conditions.

The potential effects of Newhall Land development within the river channel (i.e., placement of buried bank stabilization, installation of bridge footings) would be the alteration of natural stream hydrology and the quantity of stickleback (and other fish) habitat available. Based on an evaluation of velocity tolerance studies of stickleback fishes, ENTRIX inferred that unarmored threespine stickleback in the Santa Clara River require flood refugia velocities of 2 feet per second or less in natural river floodplain in order to avoid being washed downstream during flood events (ENTRIX 2009). Arroyo chub may be more tolerant of higher flow velocity conditions; however, this analysis used the more conservative assumptions applied to unarmored threespine stickleback. Therefore, consistent with this approach, any areas maintaining velocities less than or equal to 2 feet per second would provide refuge for these species during storm events. While the placement of bridge footings would result in some loss of river channel, the large width and hydrology of the river would maintain the formation of natural channels that would maintain lower velocities to support special-status fish species.

Low mobility guilds (Reptile – Low Mobility; Mammal – Low Mobility) would be affected by loss of habitat related to vegetation clearing, grading, and development. Permanent loss of suitable habitat will be mitigated by measures requiring preservation, enhancement and restoration, and management in the Santa Clara River SMA/SEA, the High Country SMA/SEA, and the Salt Creek area. This will result in a large, permanent open space system that will provide suitable habitat to support these species. Western pond turtles and western spadefoots (Reptile and Amphibian – Semi-Aquatic guild) on Newhall Land property could be directly affected during all phases of their life histories. For example, impacts to riparian and wetland areas could adversely affect these species during the reproductive season and impacts to upland areas could adversely affect species dispersal, aestivation, and nesting (western pond turtle). In addition to loss of habitat, these species are highly vulnerable to mortality or injury during vegetation and grading activities because they tend to be cryptic (difficult to detect, well hidden), slow-moving, and belowground during aestivation periods following the breeding phase of their life cycles. Permanent loss of general suitable habitat and designated critical habitat for Reptile and Amphibian – Semi-Aquatic guild species will be mitigated by measures requiring preservation, enhancement, and restoration, and management that will result in a large, permanent open space system that will include suitable aquatic habitat and suitable upland habitat to support these species.

Birds in the Upland Grassland/Agriculture, Scrub and Chaparral, Nesting/Foraging Raptor, and Foraging Raptor guilds would experience disturbance of foraging activity and potentially nesting activity within the study area from Newhall development. Species in the Nesting/Foraging Raptor and Foraging Raptor guilds could forage virtually anywhere within the study area where prey are available, although species such as Swainson's hawk and prairie falcon tend to forage in more open habitats such as grasslands and agricultural areas. Development will likely cause these highly

mobile species to avoid sites due to both human activities and a lack of prey once areas are cleared of vegetation and graded. Permanent loss of suitable habitat for the Nesting/Foraging Raptor and Foraging Raptor species will be mitigated by measures requiring preservation, enhancement and restoration, and management that will result in a large, permanent open space system that will provide suitable nesting and foraging habitat to support these species.

Species in the Mammal – Bat guild may forage in virtually all of the non-developed land covers on Newhall Land property where insect prey is present. As a group, all of the natural habitats, agriculture, and disturbed lands on Newhall Land property provide potential foraging habitat for these species. However, the potential for maternity roosts of any of these bat species is low because they tend to establish maternity roosts in caves, cliffs, crevices, and buildings, of which there are very few on Newhall Land property. Permanent loss of suitable habitat for the Mammal – Bat guild will be mitigated by measures requiring preservation, enhancement and restoration, and management that will result in a large, permanent open space system that will provide suitable roosting and foraging habitat to support these species.

San Diego black-tailed jackrabbits and American badgers (Mammal – Moderate Mobility guild) are mobile and can generally relocate from a disturbed or converted habitat area to an intact one. Permanent loss of suitable habitat for the Mammal – Moderate Mobility guild species will be mitigated by measures requiring preservation, enhancement and restoration, and management that will result in a large, permanent open space system that will provide suitable habitat to support these species.

In addition to these special status species, several vegetation types that occur on Newhall Land property are considered sensitive according to the CNDDB (Sawyer et al. 2008):

- Southern cottonwood–willow riparian forest – Newhall Land plans protect a total of 891 acres of this community, mostly within the Santa Clara River SMA/SEA. This represents 17% of the total area of this community in the study area. This is approximately seven times the 113 acres of Southern cottonwood–willow riparian forest that would be impacted by Newhall Land development.
- Southern riparian scrub – Approximately 59 acres of southern riparian scrub would be impacted by Newhall development, which represents 1.2% of the 4,776 acres of this community within the study area.

- Southern willow scrub – Newhall Land plans to protect 122 acres of this community, or 6.9% of the 1,769 acres of this community within the study area. No southern willow scrub would be impacted by Newhall development.
- Valley oak woodland – Newhall Land plans to protect 68 acres of this community, or 3.8% of the 1,793 acres of this community within the study area. 4.6 acres would be impacted by Newhall Land development.

4 DISCUSSION

This section discusses the extent to which Newhall Land's approved and planned development projects affect ecological functions in the watersheds that comprise the study area. Newhall Land projects will be assessed in relation to (1) the existing baseline conditions in the study area described in Section 3, (2) current land use classifications, and (3) approved and planned projects in Los Angeles County, the City of Santa Clarita, and Ventura County that were issued between 1988 and 2008.

Several general observations can be drawn from the baseline data and other data analyzed in Section 3:

- Currently, the study area is mostly undeveloped.
- The study area has substantial existing public lands and Open Space that will be protected in perpetuity.
- Under current land use classifications, the large majority of the study area would remain undeveloped, but land use classifications in Los Angeles County could allow for more development than provided for by approved and planned projects. Although land use classifications do not equate to the amount of impervious surface created, current land use classifications represent a "worst-case" development scenario.
- Under current land use classifications, important biological and physical features of the study area would be retained. The major vegetation communities (coastal scrubs, chaparral, non-native grassland, woodlands and forest, and riparian/wetlands) are still relatively common in the study area and would remain common due to the substantial set-aside of existing public lands and Open Space in and adjacent to the study area. In addition, riparian/wetland and oak communities would be further protected and impacts mitigated under federal, state, and local regulations and policies.
- Newhall Land property is limited to the southwestern portion of the study area.
- Newhall Land's approved and planned projects would contribute a small percentage to the overall future development in the study area. Moreover, Newhall Land projects contemplate substantially less development (and therefore substantially less impervious surface) than would otherwise be allowed under existing land use classifications.
- Newhall Land's approved and planned projects are located downstream from and adjacent to existing, planned, and approved urban land uses in the City of Santa Clarita and the Valencia community.
- Newhall Land's approved and planned projects would not significantly impact ecosystem processes of downstream watersheds because they would not substantially alter patterns

of quantity or flow in the Santa Clara River and would not substantially affect habitat connectivity to downstream watersheds.

- Regional wildlife corridors and habitat linkages will be preserved in the study area.
- The Newhall Land projects, when combined with existing and planned projects in the study area, will not have a cumulatively considerable impact on the ecological function of the affected watersheds.

These issues are discussed further below.

The Study Area Is Relatively Undeveloped and Has Substantial Existing and Designated Open Space.

Based on the GAP data (USGS 2012) approximately 4,750 acres of the 425,507-acre study area has been converted to agricultural uses and approximately 52,750 acres to development, together comprising about 13.5% of the study area (Table 2).

Based on current public lands and currently classified Open Space, approximately 304,040 acres (71%) of the study area are existing or classified Open Space (Table 1 and Figure 3), including approximately 225,290 acres of existing public lands (see Table 8). Open space percentages in the study area range from 78.4% in the Upper Santa Clara River watershed to 94.1% in the Castaic Creek watershed.

These substantial areas of existing and designated open space will serve to mitigate effects of planned and approved development (including Newhall Land development) on the ecological function of the watershed. Open space areas provide buffers from direct human disturbance, as well as indirect effects to water quality and runoff from developed areas.

Biological and Physical Features of the Study Area Related to Watershed Function Would Be Retained under Current Land Use Classifications.

Tables 1 through 7 and Subsection 3.1 summarize the relationship between current land use classifications and vegetation communities and land types, geologic types, soil types, elevations, and slopes, respectively.

Although some vegetation communities proportionally would be more heavily impacted than others (e.g., coastal scrubs and grasslands), the majority of the general vegetation types in the study area would be preserved (Table 3). Exceptions are generally limited to more narrowly distributed desert scrubs such as Sonora–Mojave mixed salt desert scrub, for which about 90% of the 442 acres mapped for this community is classified for development. Mojave mid-elevation mixed desert scrub is another community that would be substantially impacted out of proportion

with other vegetation communities in the watersheds; 53% of this community would be impacted under current classifications. Part of the difficulty with the desert scrubs is that they tend to occur at lower elevations and on gentler slopes where more development is planned. However, the desert scrubs generally also provide habitat for a number of special-status wildlife and plant species. As a result, development affecting this vegetation type will require additional avoidance, minimization, and mitigation. About 50% of grasslands, which also tend to occur on level, developable lands, would be impacted under current classifications. Chaparrals, which tend to occur in more rugged and/or higher-elevation terrain, would experience relatively few impacts overall, at 8.8% of the general community (Table 3). However, some chaparral types, such as Sonora–Mojave semi-desert chaparral, that cover smaller areas (779 mapped within the study area) could be impacted to a greater extent, with about 29% classified for development. Riparian and wetland impacts would occur to about 53% of the mapped area but, as resources subject to state and federal "no net loss" policies, this level of impact would be reduced through required mitigation. Similar to chaparrals, woodlands and forests would have relatively few impacts, at 22% overall and ranging from less than 1% impacts to Mediterranean California dry-mesic mixed conifer and woodland to 43% impacts to southern California oak woodland and savanna. However, oak woodlands are protected under CLAOTO and will require additional avoidance, minimization, and mitigation.

With regard to physical features—geologic types, soils, elevations, and slopes—development under current classifications would disproportionately impact resources that tend to occur in more developable areas in the watersheds—that is, relatively level terrains at lower elevations. As such, four geologic types—alluvium associated with the lower Valley, Miocene nonmarine, Pliocene marine, and tertiary volcanic flow rocks—would be impacted at levels ranging from 45% to 77% of their distribution in the watersheds under current classifications (Table 4). Alluvial geologic types are more erodible than others in the study area, and their development could increase the rate of sedimentation in the watershed. Tertiary volcanic flow rocks provide hard substrates that can increase habitat value for sensitive species.

Similarly, several soils would be disproportionately impacted under current classifications: Hanford coarse sandy loam, Hanford sandy loam, Yolo loam, sandy alluvial land, and Vista coarse sandy loam (Table 5). Each of these soil types occurs at lower elevations and on gentler slopes. As with the affected geologic types, these most impacted soils are more erodible than others in the study area and their development could affect sensitive watershed resources through sedimentation.

Classified Developed areas at different elevations follow a very simple pattern: the heaviest development is classified for areas at the moderate elevations, and the least development is classified for areas at the higher elevations (Table 6). A main breakpoint occurs at around 1,500 feet amsl, where 71% of lands between 1,000 and 1,500 feet amsl would be developed and 32% of

lands between 1,500 and 2,000 feet amsl would be developed. About 48% of all lands under 2,000 feet amsl would be developed, while 19% of lands over 2,000 feet amsl would be developed.

Development of slopes follows a similar pattern to elevation, and again is related to location and developability. The gentlest slopes occur in association with the Valley, and this is where most past land conversion occurred for agriculture and urban uses occurred and where approved and planned development would occur. The majority of development would occur on slopes less than 20%, accounting for 63% of the potential development (Table 7). About 53% of lands with slopes less than 20% would be developed, while 16% of lands with slopes greater than 20% would be developed.

Strictly from a hydrologic and geomorphic perspective, siting development at lower elevations and on gentler slopes in the watersheds and protecting headwaters is preferred because natural drainage and sediment transport patterns are more likely to be retained when the headwaters and upper portions of the watersheds in more rugged terrain are protected. Issues in the lower portions of the watersheds are more related to maintaining riparian ecosystem integrity, including riparian corridors and their buffers, floodplain connections, and habitats of riparian/ wetland species. However, many of the special-status species known from the study area occur in more typically developed areas (i.e., at lower elevations and on gentler slopes), which is why their habitats have been so severely impacted in southern California.

Newhall Land Property Constitutes a Very Small Proportion of the Study Area.

Newhall Land property comprises a small portion (3.9%) of the study area (Table 17) and is located in the southwestern corner of the study area (Figure 2). Approved and planned development on Newhall Land property would directly impact 1.5% of the total study area and would not indirectly affect up-watershed functions, except as it contributes to overall loss of habitat. Further, Newhall Land approved and planned developments are contiguous with an already substantially urbanized portion of the study area (Figure 4). Newhall Land approved and planned development is generally downstream of, and contiguous with, urban development in the City of Santa Clarita and the community of Valencia. If additional development is to occur in the study area, to avoid and minimize future impacts on watershed function to the maximum extent, development would most logically occur in areas including Newhall Land approved and planned development.

Proposed Development on Newhall Land Property Is Substantially Less Than Could Occur under Current Land Use Classifications.

Current land use classifications would allow up to 12,761 acres (77%) of development on Newhall Land property (Table 16). Newhall Land continues to focus its projects in areas classified for, and contiguous with, development, especially the areas just west of Interstate 5

and south of SR-126. Although classified for low-density residential uses, the southern part of the study area is located in the High Country SMA/SEA (see Figure 12) and therefore not open to development. As a result, Newhall Land's overall ability to build single-family residential projects is less than the land use classifications might indicate. Approved and planned development would affect 6,594 acres (39%), a reduction of 6,167 acres, or 48% less development than would be allowed under current classifications.

Potential Impacts of Development on Newhall Land Property Primarily Relate to Mainstem Downstream Effects in the Santa Clara River and Not the Overall Santa Clara Subbasin.

The main concern for development of Newhall Land projects regarding watershed function is maintaining riparian ecosystem integrity along the Santa Clara River, as discussed above, and maintaining habitat for the numerous special-status aquatic and riparian species that occur in the mainstem Santa Clara River, including areas downstream of the study area. In the case of Newhall Land projects, the geographic area addressed in evaluating impacts comprises the watershed areas tributary to the reaches of the Santa Clara River. Watersheds completely unaffected by Newhall Land development include Upper Piru Creek, Lower Piru Creek, and Sespe Creek. The analysis of effects in the USCRWS takes into account potential physical and chemical impacts both to drainages tributary to the river and to the river itself. It also is based upon a review of the incremental contribution of the Newhall Land projects to hydrologic impacts to the Santa Clara River, when taken together with the effects of other projects. Planned development on Newhall Land property would not affect the large majority of the study area or other watersheds in the Santa Clara River watershed (see entire watershed context in Figure 2). A River and Tributaries Drainage Analysis prepared by PACE (2010) found that there would be no long-term substantial effects on water flows, velocities, depth, sedimentation, or floodplain and channel conditions downstream of the study area. A study conducted by Geosyntec (2014) examined the potential for chemical contamination to affect the mainstem Santa Clara River, and found that even long-term effects to juvenile salmon would be below levels of concern.

Newhall Land property occurs at lower elevations along the southern edge of the study area adjacent to the Santa Clara River (Figure 16), and development is planned for areas contiguous with existing urban development at these lower elevations (Figure 13). Potential watershed impacts thus primarily concern various downstream biological and abiotic effects to the river and downstream watersheds. Watersheds downstream of Newhall Land property include Middle Santa Clara River and Lower Santa Clara River (which includes the City of Ventura), all of which drain directly into the Santa Clara River (see Figure 2). These downstream watersheds total about 160,298 acres and comprise about 15% of the total area of the Santa Clara Subbasin. However, because these watersheds include the Santa Clara River Valley and occur on gentler slopes, they also support the most converted lands (agriculture and urban development) in the Santa Clara Subbasin.

Proposed Development on Newhall Land Property Would Not Contribute to Substantial Cumulative Impacts to Watershed Ecological Functions.

Habitat Availability and Quality: Development of Newhall Land projects within the study area would reduce available habitat area; however, the remaining habitat area would generally be located in sizable contiguous parcels. Some vegetation would be disproportionately impacted as discussed above, but the health of remaining suitable vegetation in undeveloped areas would not be substantially impacted. Concentrating development and allowing for large undeveloped open space habitat areas would minimize edge effects on habitat quality.

Watershed Availability and Quality: Development would not be expected to substantially alter flow quantities within watershed tributaries, as standard LID measures would ensure that infiltration remains adequate to minimize runoff from impermeable surfaces. Proposed development in the study area would also not substantially alter flows through diversions from the Santa Clara River or its tributaries. By minimizing changes in runoff, Newhall Land development would also make a less than substantial contribution to cumulative effects on water quality and temperature. Other development in the study area that could affect water availability and quality would be subject to similar requirements for construction BMPs and LID design measures.

Special-Status Species: Several special-status species that have been recorded in the study area are restricted to the east of Newhall Land property in the Coastal/Mojave Transition area and higher elevations of the San Gabriel Mountains. Watershed functions for these up-watershed species would not be affected by Newhall Land development. Permanent loss of suitable habitat will be mitigated by measures requiring preservation, enhancement and restoration, and management in the Santa Clara River SMA/SEA, the High Country SMA/SEA, and the Salt Creek area. This will result in a large, permanent open space system that will provide suitable habitat to support these species, and would minimize cumulative impacts to special-status species.

Habitat Connectivity: The two main corridors and linkages identified by the SCMLP (Penrod et al. 2006)—the east–west Santa Clara River corridor and the north–south Santa Monica–Sierra Madre connection—would both be preserved in the context of their relationship to Newhall Land property and the study area. The Santa Clara River corridor will be preserved, including upland transition zones between the river and development, and will be managed to preserve its function as a regionally significant wildlife corridor and habitat linkage. The north–south linkages that were identified by the SCMLP for mountain lion, mule deer, and American badger are generally west of Newhall Land property and will not be substantially directly or indirectly affected by Newhall Land development, which is located well to the east. Maintaining these major habitat linkages would allow for continued wildlife movement even with the cumulative effects of development within the study area.

5 REFERENCES

40 CFR 131.38. California Toxics Rule.

AMEC. 2005. *Santa Clara River Enhancement and Management Plan*.

Birosik. 2006. *State of the Watershed—Report on Surface Water Quality: The Santa Clara River Watershed*.

BLM (Bureau of Land Management). 2001. H-4180-1: Rangeland Health Standards. U.S. Department of the Interior, BLM. January 19, 2001.

CDFG (California Department of Fish and Game). 2003. "List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database." Vegetation Classification and Mapping Program. September 2003.

CDFW. 2014. *RareFind*. California Natural Diversity Database. Accessed 2014. http://www.dfg.ca.gov/bdb/html/cnddb.html

CIWMC (California Interagency Watershed Mapping Committee). 1999. California Interagency Watershed Map of 1999. CalWater Version 2.2 http://gis.ca.gov/meta.epl?oid=22175

Corps (U.S. Army Corps of Engineers). 2005. *Santa Clara River Watershed Feasibility Study*. http://www.spl.usace.army.mil/santaclara/santaclarariverwatershed.htm.

Corps and CDFG (U.S. Army Corps of Engineers and California Department of Fish and Game). 2010. *Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan Joint Environmental Impact Statement and Environmental Impact Report*. Final. SCH No. 2000011025. Los Angeles, California: Corps and CDFG. June 2010.

County of Los Angeles. 1988. Oak Tree Ordinance. Los Angeles, California County Code; Municipal Codes, Title 22, Chapter 56, Part 16: Oak Tree Permits, Sections 2050 *et seq*.

County of Los Angeles. 2010. Los Angeles County Watershed Model Configuration and Calibration—Part I: Hydrology. Prepared by Tetra Tech for the County of Los Angeles Department of Public Works. August 6, 2010.

Dudek. 2007. *Spineflower Conservation Plan*. Draft. Prepared for the Newhall Land and Farming Company. Valencia, California: Dudek. December 2007.

Dudek. 2010. *Spineflower Conservation Plan*. Prepared for the Newhall Land and Farming Company. Valencia, California: Dudek.

ENTRIX (ENTRIX Inc.). 2009. *Focused Special-Status Fish Species Habitat Assessment—Santa Clara River and Tributary Drainages, Newhall Ranch, Los Angeles County, California.* Prepared for Newhall Land. Ventura, California: ENTRIX.

EPA (U.S. Environmental Protection Agency). 2014. "Principles of Water Management." Watershed Academy Web. www.epa.gov/watertrain.

FGDC (Federal Geographic Data Committee). 2008. *National Vegetation Classification Standard, Version 2.* FGDC-STD-005-2008. Vegetation Subcommittee, Federal Geographic Data Committee, FGDC Secretariat, U.S. Geological Survey. Reston, Virginia: U.S. Geological Survey. February 2008. http://www.fgdc.gov/standards/projects/FGDC-standards-projects/vegetation/NVCS_V2_FINAL_2008-02.pdf.

Geosyntec. 2014. Entrada South Water Quality Technical Report. Prepared by Geosyntec Consultants for The Newhall Land and Farming Company.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Communities of California*. Nongame-Heritage Program, California Department of Fish and Game. October 1986.

Holland, A., D. Sanger, C. Gawle, S. Lerberg, M.S. Santiago, G.H.M. Riekerk, L.E. Zimmerman, and G.I. Scott. 2004. "Linkages between Tidal Creek Ecosystems and the Landscape and Demographic Attributes of Their Watersheds." *Journal of Experimental Marine Biology and Ecology* 298(2) 151–178.

NRCS (National Resources Conservation Service). 2013. Soil Survey Geographic (SSURGO) database. Accessed 2014. http://soils.usda.gov/survey/geography/ssurgo/description.html.

O'Sullivan, P.E. 1979. "The Ecosystem-Watershed Concept in the Environmental Sciences: A Review." *International Journal of Environmental Studies* 13(4): 273–281.

PACE (Pacific Advanced Civil Engineering, Inc.). 2010. *Revised Newhall Ranch Resource Management & Development Plan River & Tributaries Drainage Analysis – Santa Clara River*. Prepared for Newhall Land. Fountain Valley, California: PACE. June 2010.

Penrod, K. 2000. *Missing Linkages: Restoring Connectivity to the California Landscape.* Idyllwild, California: South Coast Wildlands, in cooperation with The California

Wilderness Coalition, California State Parks, The Nature Conservancy, the Biological Resources Division of the U.S. Geological Survey, and the Center for Reproduction of Endangered Species.

Penrod, K., C. Cabanero, P. Beier, C. Luke, W. Spencer, E. Rubin, R. Sauvajot, S. Riley, and D. Kamradt. 2006. *South Coast Missing Linkages Project: A Linkage Design for the Santa Monica–Sierra Madre Connection*. Idyllwild, California: South Coast Wildlands, in cooperation with the National Park Service, Santa Monica Mountains Conservancy, California State Parks, and The Nature Conservancy.

Reid, L.M. 1993. *Research and Cumulative Watershed Effects*. General Technical Report PSW-GTR-141. Albany, California: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. March 1993.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation.* Second ed. Sacramento, California: California Native Plant Society.

SCAG (Southern California Association of Governments). 2008.

Shilling, F., S. Sommarstrom, R. Kattelmann, B. Washburn, J. Florsheim, and R. Henly. 2005. *California Watershed Assessment Manual: Volume I*. Prepared for the California Resources Agency and the California Bay-Delta Authority. May 2005. http://cwam.ucdavis.edu.

Singleton, P.H., W.L. Gaines, and J.F. Lehmkuhl. 2002. *Landscape Permeability for Large Carnivores in Washington: A Geographic Information System Weighted-Distance and Least-Cost Corridor Assessment*. Res. Pap. PNW-RP-549. Portland, Oregon: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

South Coast Wildlands. 2006. *Wildlands of the Santa Clara River Watershed: Restoring and Maintaining the Integrity and Health of the River and its Watershed*. http://www.scwildlands.org/reports/WildlandsoftheSCRWatershed.pdf.

South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. Produced in cooperation with partners in the South Coast Missing Linkages Initiative. http://www.scwildlands.org.

Stillwater Sciences. 2011. *Geomorphic Assessment of the Santa Clara River Watershed: Synthesis of the Lower and Upper Watershed Studies, Ventura and Los Angeles Counties, California*. Prepared by Stillwater Sciences, Berkeley, California, for Ventura County

Watershed Protection District, Los Angeles County Department of Public Works, and the U.S. Army Corps of Engineers–L.A. District.

Stillwater Sciences & URS Corporation. 2007. *Riparian Vegetation Mapping and Preliminary Classification of the Lower Santa Clara River and Major Tributaries, Ventura County, California, Volume I*.

TNC (The Nature Conservancy). 2006. *Santa Clara River Upper Watershed Conservation Plan*. Fall 2006.

TNC. 2008. *Conservation Plan for the Lower Santa Clara River Watershed and Surrounding Areas*.

USFWS (U.S. Fish and Wildlife Service). 2008. *Strategic Habitat Conservation Handbook: A Guide to Implementing the Technical Elements of Strategic Habitat Conservation* (Version 1.0). Report from the National Technical Assistance Team. February 11, 2008.

USGS (U.S. Geological Survey). 2007. National Elevation Dataset. Accessed 2014. http://ned.usgs.gov/.

USGS. 2012. National Gap Analysis Program. Version 2. Updated 2012.

USGS. 2013. Watershed Boundary Database.

Van Dyne, G.M. 1969. *The Ecosystem Concept in Natural Resource Management*.

APPENDIX A

Detailed Watershed Breakdown Tables

Table A-1
Study Area, HUC 10 Watersheds, and Current Land Use Zoning

HUC 10 Watershed	Acres in Watershed	Percent of Study Area	Current Land Use Zoninga													
			Commercial			*Residential*				*Other Development*				*Total Development*	*Agricultural*	*Open Space*
			Low Density	*High Density*	*Industrial*	*Very Low Density*	*Low Density*	*Medium Density*	*High Density*	*Planned Development*	*Mixed Use*	*Public Institution*	*Transportation*			
2 – Headwaters Santa Clara River	150,611	35%	1,498	910	2,482	252	3,484	6,006	374	3,759	225	639	2,224	21,852	66,329	62,430
3- Bouquet Canyon	46,572	11%	651	110	0	234	457	3,343	53	1,420	0	223	243	6,732	6,028	33,812
4- Castaic Creek	129,433	30%	1,063	201	1,947	138	0	1,318	32	2,128	0	0	648	7,476	28,711	93,427
5 – Upper Santa Clara River	98,890	23%	991	749	2,754	287	2,701	4,844	134	15,906	380	842	1,491	31,079	25,634	42,177
Total	**425,507**	**100%**	**4,203**	**1,970**	**7,183**	**911**	**6,642**	**15,510**	**593**	**23,213**	**605**	**1,704**	**4,605**	**67,139**	**126,702**	**231,666**

Table A-2
Vegetation Communities and Land Cover Types in the Study Area

Vegetation and Land Cover Type	Acres in Watershed	Percent of Study Area	Current Land Use Zoning[a]													
			Commercial			*Residential*				*Other Development*				*Total Development*	*Agricultural*	*Open Space*
			Low Density	*High Density*	*Industrial*	*Very Low Density*	*Low Density*	*Medium Density*	*High Density*	*Planned Development*	*Mixed Use*	*Public Institution*	*Transportation*			
Chaparrals																
Southern California dry-mesic chaparral	137,999	32%	573	24	291	162	525	605	40	2,895	29	59	260	5463	21,363	111,176
California mesic chaparral	1,922	0.5%	8.9	0	1.8	0.2	3.8	5.3	0.2	73	0.4	0.7	1.8	96	638	1,189
Sonora-Mojave semi-desert chaparral	779	0.2%	0	0	0	0	0	0	0	23	0	0	0.9	24	288	468
Mediterranean California mesic serpentine woodland and chaparral	313	0.1%	4.7	0.9	6.6	0.4	4.2	13	0	46	0	0	1.0	77	53	183
California montane woodland and chaparral	850.02%0	0	0	0	0	0	0	0	0	0	0	0	0.4	84		
Subtotal	*141,098*	*33%*	*587*	*25*	*299*	*163*	*533*	*623*	*40*	*3037*	*29*	*60*	*264*	*5,660*	*22,342*	*113,100*
Scrubs																
Southern California coastal scrub	69,263	16%	379	84	955	149	1,220	1,178	62	4,832	36	117	164	9,176	21,245	38,843
Sonora-Mojave creosotebush-white bursage desert scrub	5,015	1.2%	30	18	136	28	20	115	1.5	480	0.9	20	98	947	987	3,081
Mojave mid-elevation mixed desert scrub	2,653	0.6%	43	2.3	40	12	1.4	19	1.0	24	0.2	0.7	79	223	1,610	820
Sonora-Mojave mixed salt desert scrub	442	0.1%	4.6	1.7	28	1.7	19	2.6	0	60	0.2	0.6	20	138	268	36
Mediterranean California southern coastal dune	90	0.02%	1.1	1.4	1.1	0	0	2.8	0	2.9	0.2	0.1	1.3	11	59	20
Inter-mountain basins big sagebrush shrubland	41	0.01%	0.6	0.2	4.3	0	2.2	0.7	0.7	1.2	0	0	0.6	11	16	14
Inter-mountain basins mixed salt desert scrub	32	0.01%	1.1	0	1.1	0	0	0	0	0	0	0	0.6	2.8	25	4.3
North American warm desert active and stabilized dune	2.4	0.001%	0	0	1.5	0	0	0	0	0.2	0	0	0	1.7	0.7	0.1
Subtotal	*77,538*	*18%*	*459*	*108*	*1,167*	*191*	*1,263*	*1,318*	*65*	*5,400*	*38*	*138*	*364*	*10,510*	*24,211*	*42,818*
Riparian																
Mediterranean California foothill and lower montane riparian woodland	2,121	0.5%	166	6.9	120	0.9	22	37	3.6	236	2.0	5.1	25	625	549	948
North American warm desert riparian woodland and shrubland	148	0.03%	4.8	0.3	1.1	0.4	7.7	14	0.4	4.2	0.01	0.2	4.7	38	64	46

Table A-2
Vegetation Communities and Land Cover Types in the Study Area

Vegetation and Land Cover Type	Acres in Watershed	Percent of Study Area	Current Land Use Zoning[a]													
			Commercial			*Residential*				*Other Development*						
			Low Density	*High Density*	*Industrial*	*Very Low Density*	*Low Density*	*Medium Density*	*High Density*	*Planned Development*	*Mixed Use*	*Public Institution*	*Transportation*	*Total Development*	*Agricultural*	*Open Space*
California Central Valley riparian woodland and shrubland	7.6	0.002%	0	0	0	0	0.9	0.4	0	0.4	0	0	0	1.7	3.8	2.1
Subtotal	*2,277*	*0.5%*	*171*	*7.2*	*121*	*1.3*	*31*	*51*	*4.0*	*241*	*2.0*	*5.3*	*30*	*664*	*617*	*996*
Wetland and Aquatic																
Open water (fresh)	3,282	0.8%	207	0	0	0	0	0.5	0	0	0	0	0.1	208	2,274	801
Temperate Pacific freshwater mudflat	1,319	0.3%	76	33	151	0	11	27	0.5	267	3.2	0.3	73	642	333	345
Temperate Pacific freshwater emergent marsh	509	0.1%	8.7	5.1	94	0	5.8	3.5	0.1	71	0.4	0	0.8	189	182	138
Subtotal	*5,110*	*1.2%*	*292*	*38*	*245*	*0*	*16.8*	*31*	*0.6*	*338*	*3.6*	*0.3*	*74*	*1,039*	*2,789*	*1,284*
Woodland																
Great Basin pinyon–juniper woodland	44,223	10%	672	8.0	274	85	2.9	105	0	781	0	2.6	216	2,147	26,539	15,538
California coastal live oak woodland and savanna	19,504	4.6%	48	11	167	36	314	115	0.8	2,203	13	31	42	2,981	5.202	11,383
California Central Valley mixed oak savanna	4,460	1.0%	18	10	87	6.1	56	102	5.5	287	2.7	55	11	640	1,476	2,344
Central and southern California mixed evergreen woodland	1,547	0.4%	0	0	0	0	0	0	0	61	0	0	0.3	61	24	1,462
California lower montane blue oak–foothill pine woodland and savanna	1,486	0.3%	13	2.3	28	2.8	46	53	5.5	132	2.0	10	7.0	302	678	507
Southern California oak woodland and savanna	516	0.1%	0.8	2.1	26	0.8	34	41	1.0	80.5	2.1	9.5	0.9	199	177	140
Mediterranean California mixed evergreen forest	84	0.02%	0.2	0	0	0	0	0	0	0	0	0	0	0.2	2.1	82
Subtotal	*71,820*	*17%*	*752*	*33*	*582*	*131*	*453*	*416*	*13*	*3,545*	*20*	*108*	*277*	*6,329*	*28,901*	*31,456*
Coniferous Forest																
Mediterranean California dry-mesic mixed conifer forest and woodland	17,734	4.2%	1.3	0.2	0.6	0.03	0	0	0	56	0	0.04	5.5	64	299	17,371
California montane Jeffrey pine–(Ponderosa pine) woodland	1,315	0.3%	0	0	0	0	0	0	0	107	0	0	0.02	107	44	1,164
California coastal redwood forest	90	0.02%	1.6	0.1	0.7	0	2.1	0.8	0	11	0	0	0.3	17	45	29
Subtotal	*19,139*	*4.5%*	*2.9*	*0.3*	*1.3*	*0.03*	*2.1*	*0.8*	*0*	*174*	*0*	*0.04*	*5.8*	*187*	*388*	*18,564*
Grasslands																
California Central Valley and southern coastal grassland	50,143	12%	526	217	1,258	150	739	1,477	38	5,362	53	277	323	10,420	26,343	13,378
California mesic serpentine grassland	27	0.01	0.7	0	0.2	0	0	0.2	0	0	0	0	0.6	1.7	19	5.8
Subtotal	*20,170*	*12%*	*527*	*217*	*1,258*	*150*	*739*	*1,477*	*38*	*5,362*	*53*	*277*	*324*	*10,422*	*26,362*	*13,384*
Other Natural Land Covers																
Southern California Coast Ranges cliff and canyon	433	0.1%	8.0	0.6	9.0	0	0	0	0	0	0	0	9.8	27	311	95
North American warm desert bedrock cliff and outcrop	386	0.1%	15	1.6	11	4.0	5.5	36	0.3	56	0.2	29	31	190	138	58
North American warm desert pavement	32	0.01%	2.9	2.5	5.0	1.1	0.002	1.6	0	11	0	0.1	2.3	27	2.9	3.0
Subtotal	*851*	*0.2%*	*26*	*4.7*	*25*	*5.1*	*5.5*	*38*	*0.3*	*67*	*0.2*	*29*	*43*	*244*	*452*	*156*
Agricultural Lands																
Pasture/hay	2,657	0.6%	138	42	355	62	11	8.8	15	785	15	2.0	15	1,449	931	278
Cultivated cropland	2,099	0.5%	8.1	2.4	90	7.3	0	2.3	0	281	0	0.3	0.01	391	1,267	441
Recently burned shrubland	810	0.2%	39	0	0	0	0.7	185	0	129	0	1.6	2.5	358	3.1	450
Subtotal	*5,566*	*1.3%*	*185*	*44*	*445*	*69*	*12*	*196*	*15*	*1,195*	*15*	*3.9*	*17.5*	*2,198*	*2,201*	*1,169*

Table A-2
Vegetation Communities and Land Cover Types in the Study Area

Vegetation and Land Cover Type	Acres in Watershed	Percent of Study Area	Current Land Use Zoning[a]													
			Commercial			*Residential*				*Other Development*						
			Low Density	*High Density*	*Industrial*	*Very Low Density*	*Low Density*	*Medium Density*	*High Density*	*Planned Development*	*Mixed Use*	*Public Institution*	*Transportation*	*Total Development*	*Agricultural*	*Open Space*
Developed/Disturbed Lands																
Developed, Open Space	30,691	7.2%	522	501	1,427	171	1,971	2,640	114	2,264	157	472	1,849	12,088	11,154	7,449
Developed, low intensity	12,990	3.1%	293	336	574	29	1,159	5,135	109	1,006	96	338	1,060	10,135	1,881	975
Developed, medium intensity	8,033	1.9%	376	617	948	2.7	456	3,585	195	580	187	267	297	7,511	206	316
Developed, high intensity	226	0.1%	13	38	150	0	2.2	2.6	0.1	5.5	5.8	5.4	0.4	223	1.6	1.5
Subtotal	*51,940*	*12%*	*1,204*	*1,492*	*3,099*	*203*	*3,588*	*11,363*	*418*	*3,856*	*446*	*1,082*	*3,206*	*29,957*	*13,243*	*8,742*
Total	**425,507**	**100%**	**4,203**	**1,970**	**7,183**	**911**	**6,642**	**15,510**	**593**	**23,213**	**605**	**1,704**	**4,605**	**67,139**	**126,702**	**231,666**

Table A-3
Geologic Types in the Study Area in Relation to Current Land Use Zoning

Geologic Type	Acres in Study Area	Percent of Study Area	Current Land Use Zoning[a]													
			Commercial			*Residential*				*Other Development*						
			Low Density	*High Density*	*Industrial*	*Very Low Density*	*Low Density*	*Medium Density*	*High Density*	*Planned Development*	*Mixed Use*	*Public Institution*	*Transportation*	*Total Development*	*Agricultural*	*Open Space*
Alluvium (mostly Holocene, some Pleistocene) Quaternary nonmarine & marine	24,375	5.7%	812	728	1,887	159	1,005	3,100	136	3,773	242	748	523	13,113	8,239	3,022
Granitic and metamorphic rocks, undivided, of pre-Cenozoic age	3,666	0.9%	0	23	109	0	0	31	0	0	0	0	82	245	2,679	742
Mesozoic granitic rocks	46,210	11%	690	83	122	334	0	268	0	26	0	0	768	2,291	14,970	28,949
Miocene marine	26,482	6.2%	25	11	122	0	178	513	0	2,172	0	0	59	3,080	14,197	9,205
Miocene nonmarine	32,592	7.7%	333	590	436	76	2,850	3,975	173	1,445	142	381	718	11,119	14,170	7,303
Oligocene marine	3,508	0.8%	5.0	0	0	0	0	0	0	0	0	0	60	65		3,443
Oligocene nonmarine	14,699	3.5%	226	0	545	0	0	0	0	0	0	0	137	909	7,197	6,594
Paleocene marine	22,989	5.4%	40	0	0	0	0	0	0	0	0	0	81	121	87	22,782
Paleozoic and Permo- Triassic granitic rocks	16,383	3.9%	0	0	0	0	0	0	0	0	0	0	80	80	908	15,395
Pliocene marine	32,574	7.7%	91	64	173	171	182	648	130	7,761	40	99	268	9,625	12,849	10,099
Plio-Pleistocene nonmarine, Pliocene nonmarine	52,010	12%	280	422	3,299	117	2,301	6,687	154	6,177	182	476	937	21,032	15,585	15,393
Precambrian granitic rocks	38,965	9.2%	702	17	355	55	118	1.0	0	95	0	0	287	1,629	9,573	27,763
Precambrian rocks, undivided	61,053	14%	151	26	42	0	0	247	0	41	0	0	251	758	10,272	50,024
Schist of various types and ages (metasedimentary or metavolcanic	38,873	9.1%	600	4.1	70	0	0	33	0	1,724	0	0	116	2,547	6,315	30,011

Table A-3
Geologic Types in the Study Area in Relation to Current Land Use Zoning

Geologic Type	Acres in Study Area	Percent of Study Area	Current Land Use Zoning[a]													
			Commercial			*Residential*				*Other Development*				*Total Development*	*Agricultural*	*Open Space*
			Low Density	*High Density*	*Industrial*	*Very Low Density*	*Low Density*	*Medium Density*	*High Density*	*Planned Development*	*Mixed Use*	*Public Institution*	*Transportation*			
Tertiary nonmarine, undivided	591	0.1%	0	0	0	0	0	0	0	0	0	0	0	0	498	93
Tertiary volcanic flow rocks	9,786	2.3%	242	0	23	0	0	0	0	0	0	0	235	500	9,160	125
Water	751	0.2%	6.4	0	0	0	6.9	7.9	0	0	0	0	2.5	24	2.6	725
Total	**425,507**	**100%**	**4,203**	**1,970**	**7,183**	**911**	**6,642**	**15,510**	**593**	**23,213**	**605**	**1,704**	**4,605**	**67,139**	**126,702**	**231,666**

Table A-4
Elevations in the Study Area in Relation to Current Land Use Zoning

Elevation (feet AMSL)	Acres in Watershed	Percent of Study Area	Current Land Use Zoning[a]													
			Commercial			*Residential*				*Other Development*				*Total Development*	*Agricultural*	*Open Space*
			Low Density	*High Density*	*Industrial*	*Very Low Density*	*Low Density*	*Medium Density*	*High Density*	*Planned Development*	*Mixed Use*	*Public Institution*	*Transportation*			
500 to 1,000	7,154	1.7%	63	0	262	0	0	0	0	2,080	0	0	0	2,404	2,550	2,200
1,000 to 1,500	56,052	13.2%	872	1,354	4,774	112	2,448	8,904	365	11,630	473	1,343	903	33,179	13,857	9,016
1,500 to 2,000	73,771	17.3%	356	428	976	410	3,997	5,476	228	5,989	132	361	1,143	19,496	31,480	22,795
2,000 to 2,500	53,373	12.5%	809	44	666	54	196	311	0	1,179	0	0	602	3,861	18,439	31,073
2,500 to 3,000	71,580	16.8%	820	85	482	195	0	236	0	490	0	0	820	3,126	24,045	44,409
3,000 to 3,500	73,614	17.3%	1212	58	24	88	0	521	0	118	0	0	947	2968	23,412	47,234
3,500 to 4,000	45,479	10.7%	72	0	0	52	0	64	0	77	0	0	150	415	10,182	34,882
4,000 to 4,500	23,113	5.4%	0	0	0	0	0	0	0	508	0	0	25	533	2,315	20,265
4,500 to 5,000	12,100	2.8%	0.1	0.1	0.5	0	0	0	0	906	0	0.06	15	921	279	10,900
5,000 to 5,500	6,869	1.6%	0	0	0	0	0	0	0	236	0	0	0	236	76	6,557
5,500 to 6,000	2,045	0.5%	0	0	0	0	0	0	0	0	0	0	0	0	67	1,978
6,000 to 6,500	336	0.08%	0	0	0	0	0	0	0	0	0	0	0	0	0	336
6,500 to 7,000	21	0.005%	0	0	0	0	0	0	0	0	0	0	0	0	0	21
Total	**425,507**	**100%**	**4,203**	**1,970**	**7,183**	**911**	**6,642**	**15,510**	**593**	**23,213**	**605**	**1,704**	**4,605**	**67,139**	**126,702**	**231,666**

Table A-5
Slopes in the Study Area in Relation to Current Land Use Zoning

Slope	Acres in Study Area	Percent of Study Area	Current Land Use Zoning[a]													
			Commercial			*Residential*				*Other Development*				*Total Development*	*Agricultural*	*Open Space*
			Low Density	*High Density*	*Industrial*	*Very Low Density*	*Low Density*	*Medium Density*	*High Density*	*Planned Development*	*Mixed Use*	*Public Institution*	*Transportation*			
0% to 20%	143,535	34%	2,678	1,767	5,126	574	4,347	10,826	479	10,730	500	1,281	3,134	41,441	58,748	43,347
20% to 40%	162,814	38%	1,086	184	1,572	243	2,079	4,255	107	8,149	101	375	1,160	19,313	47,338	96,162

Table A-5
Slopes in the Study Area in Relation to Current Land Use Zoning

Slope	Acres in Study Area	Percent of Study Area	Current Land Use Zoning[a]													
			Commercial			*Residential*				*Other Development*				*Total Development*	*Agricultural*	*Open Space*
			Low Density	*High Density*	*Industrial*	*Very Low Density*	*Low Density*	*Medium Density*	*High Density*	*Planned Development*	*Mixed Use*	*Public Institution*	*Transportation*			
>40%	119,159	28%	438	19	485	94	216	430	7.2	4,333	3.6	49	311	6,385	20,616	92,158
Total	**425,507**	**100%**	**4,203**	**1,970**	**7,183**	**911**	**6,642**	**15,510**	**593**	**23,213**	**605**	**1,704**	**4,605**	**67,139**	**126,702**	**231,666**

Table A-6
Planned Development on Newhall Land Property in Relation to Current Land Use Zoning

Land Use Zoning	Total Acres	Open Space					Development								
		High Country SMA	*Salt Creek Area*	*Potrero Village Open Space*	*Other Open Space*	*Total Open Space*	*Entrada*	*Homestead*	*Landmark Village*	*Legacy*	*Mission Village*	*Potrero Village*	*VCC*	*Others*	*Total Develop-ment*
Agricultural	2,599	0.5	135	0	1,051	1186	441	0.1	0	951	21	0	0	1.7	1,414
Commercial High Density	47	0	0	0	15	15	32	0	0	0	0	0	0	0	32
Commercial Low Density	7.4	0	0	0	1.7	1.7	0	0	0	0	0	0	0	5.7	5.7
Industrial	809	0	0	0	259	259	97	0	0	0	0	0	334	119	550
Mixed Use	51	0	0	0	0	0	0	0	0	0	0	0	0	51	51
Open Space	1,483	0.2	1,375	0	5.8	1,381	3.2	12	27	0	0	0	8.8	50	102
Planned Development	11,657	3,884	0	1,514	1,884	7,282	0.2	1,858	303	0	822	1,274	0	118	4,375
Public Institution	11	0	0	0	0	0	0	0	0	0	0	0	0	11	11
Residential Low Density	50	0	0	0	0	0	0	0	0	0	0	0	0	50	50
Residential Medium Density	3.5	0	0	0	0.1	0.1	0	0	0	3.4	0	0	0	0	3.8
Transportation	2.8	0	0	0	1.5	1.5	0.1	0	0	0.01	1.2	0	0	0	1.3
Grand Total	**16,720**	**3,885**	**1,510**	**1,514**	**3,218**	**10,126**	**574**	**1,870**	**330**	**954**	**844**	**1,274**	**343**	**406**	**6,595**

Table A-7
Planned Development on Newhall Land Property in Relation to Watersheds

HUC 10 Watershed	Acres in Watershed	Open Space					Development								
		High Country SMA	*Salt Creek Area*	*Potrero Village Open Space*	*Other Open Space*	*Total Open Space*	*Entrada*	*Homestead*	*Landmark Village*	*Legacy*	*Mission Village*	*Potrero Village*	*VCC*	*Others*	*Total Development*
2 = Headwaters Santa Clara River	150,611	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 = Bouquet Canyon	46,572	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 = Castaic Creek	129,433	0	0	0	286	286	2.9	0	19	0	0	0	328	131	481
5 = Upper Santa Clara River	98,890	3,885	1,510	1,514	2,931	9,840	571	1,870	311	954	844	1,274	15	274	6,113
Grand Total	**425,507**	**3,885**	**1,510**	**1,514**	**3,218**	**10,126**	**574**	**1,870**	**330**	**954**	**844**	**1,274**	**343**	**406**	**6,595**

Table A-8
Planned Development on Newhall Land Property in Relation to Vegetation and Land Cover Types

Vegetation and Land Cover Type	Acres in Study Area	Open Space					Development								
		High Country SMA	*Salt Creek Area*	*Potrero Village Open Space*	*Other Open Space*	*Total Open Space*	*Entrada*	*Homestead*	*Landmark Village*	*Legacy*	*Mission Village*	*Potrero Village*	*VCC*	*Others*	*Total Development*
Chapparals															
Southern California Dry-Mesic Chaparral	137,999	1,086	275	109	436	1,906	9.9	189.7	0	382	64	22	1.6	9.6	679
California Mesic Chaparral	1,922	44	6.1	8.3	12	71	0	3.1	0	1.8	1.6	1.5	0	0.1	8.1
Mediterranean California Mesic Serpentine Woodland and Chaparral	313	0	0	0	21	21	0.9	4.8	0	0	17	0	0.9	0	24
Subtotal	*140,234*	*1,130*	*281*	*117*	*469*	*1,998*	*11*	*198*	*0*	*384*	*83*	*24*	*2.5*	*10*	*711*
Scrubs															
Southern California Coastal Scrub	69,263	864	362	381	852	2,458	42	515.2	13	298	188	281	53	66	1,456
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	5,014	4.0	0.4	0.2	0.9	5.5	0	0.0	0	0	0	0	0	7.3	7.3
Sonora-Mojave Mixed Salt Desert Scrub	442	0	0	0	0.2	0.2	0			0	0	0	0	0	0
Inter-Mountain Basins Big Sagebrush Shrubland	41	0	0	0	0	0	0	0.0	0	0.2	0	0	0	0	0.2
Subtotal	*74,760*	*868*	*362*	*381*	*853*	*2,464*	*42*	*515*	*13*	*298*	*188*	*281*	*53.0*	*73*	*1,464*
Riparian															
Mediterranean California Foothill and Lower Montane Riparian Woodland	2,121	12	1.7	21	340	375	7.6	0.2	0	0	11	0.2	13	3.1	35
North American Warm Desert Riparian Woodland and Shrubland	148	1.1	0.2		0.4	1.7	0		0	0	0	0	0	0	0
California Central Valley Riparian Woodland and Shrubland	7.6	0	0	0	0.2	0.2			0	0	0	0	0	0	0
Subtotal	*2,277*	*13*	*1.9*	*21*	*341*	*377*	*7.6*	*0.2*	*0*	*0*	*11*	*0*	*13*	*3.1*	*35*
Wetland and Aquatic															
Temperate Pacific Freshwater Mudflat	1,319	0	0	6.6	15	21.3	0	8.1	1.6	1.1	3.4	0.3	4.0	1.7	20
Temperate Pacific Freshwater Emergent Marsh	509	0	0	0.2	9.6	9.8	0	0.0	0	0	0	0	20	0	20
Subtotal	*1,828*	*0*	*0*	*6.8*	*25*	*31*	*0*	*8.1*	*1.6*	*1.1*	*3.4*	*0.3*	*24*	*1.7*	*35*
Woodland															
Great Basin Pinyon-Juniper Woodland	44,223	14	4.9	1.6	12	32	0	2.0	0	0	0.3	0.2	0	0	2.5
California Coastal Live Oak Woodland and Savanna	19,504	1,392	497	248	271	2,408	53	143.4	0	101	71	71	0.4	13	452
California Central Valley Mixed Oak Savanna	4,460	0	0	0	51	51	0.7	41.6	0	0	9.7	0	3.5	8.3	64
California Lower Montane Blue Oak-Foothill Pine Woodland and Savanna	1,486	11	3.3	14	20	49	7.0	11.0	0	11	16	4.8	0	1.8	51
Southern California Oak Woodland and Savanna	516	4.7	0.4	7.8	9.9	23	1.6	6.9	0	7.4	1.7	1.6	0.2	3.0	23
Subtotal	*70,189*	*1,422*	*506*	*271*	*364*	*2,563*	*62*	*205*	*0*	*119*	*99*	*78*	*4.1*	*26*	*593*
Coniferous Forest															
Mediterranean California Dry-Mesic Mixed	17,734	3.7	1.2	0	0.1	5.0	0	0	0	0	0	0	0	0	0

Table A-8
Planned Development on Newhall Land Property in Relation to Vegetation and Land Cover Types

Vegetation and Land Cover Type	Acres in Study Area	Open Space					Development								
		High Country SMA	*Salt Creek Area*	*Potrero Village Open Space*	*Other Open Space*	*Total Open Space*	*Entrada*	*Homestead*	*Landmark Village*	*Legacy*	*Mission Village*	*Potrero Village*	*VCC*	*Others*	*Total Development*
Conifer Forest and Woodland															
California Coastal Redwood Forest	90	9.5	0.7	0	0	10	0	0	0	0	0	0	0	0.1	0.1
Subtotal	*17,824*	*13*	*1.9*	*0*	*0.1*	*15*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0.1*	*0.1*
Grasslands															
California Central Valley and Southern Coastal Grassland	50,142	411	282	500	609	1,802	217	462.3	19	85	367	734	110	126	2,117
Subtotal	*50,142*	*411*	*282*	*500*	*609*	*1,802*	*217*	*462.3*	*19*	*85*	*367*	*734*	*110*	*126*	*2,117*
Other Natural Land Covers															
North American Warm Desert Bedrock Cliff and Outcrop	386	1.6	0	0	0.4	2.0	0	0	0	0	0	0	0	0	0
North American Warm Desert Pavement	33	0	0	0	1.3	1.3	0	0	0	0	0	0	0	0	0
Subtotal	*419*	*1.6*	*0*	*0*	*1.7*	*3.3*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Agricultural Lands															
Pasture/Hay	2,657	0	0	1.2	64	65	76	197	165	0	5.1	121	12	18	593
Cultivated Cropland	2,099	1.1	13	53	50	118	40	108	19	0	0	5.3	22	13	207
Recently burned shrubland	810	0	0	127	0	127	0	0.0	0	0	0	1.5	0	0	1.5
Subtotal	*5,566*	*1.1*	*13*	*181*	*114*	*310*	*116*	*305*	*184*	*0*	*5.1*	*128*	*34*	*31*	*802*
Developed/Disturbed Lands															
Developed, Low Intensity	226	0	0	0	67	67	29	10.7	13	12	2.2	0.1	14	21	102
Developed, Medium Intensity	8,033	0	0	0	2.5	2.5	9.5	1.1	1.2	1.0	0.2	0	1.5	11	25
Developed, Open Space	30,690	25	62	35	373	495	80	164.8	99	54	87	30	86	107	707
Subtotal	*38,949*	*25*	*62*	*35*	*443*	*565*	*119*	*177*	*113*	*67*	*89*	*30*	*102*	*139*	*834*
Grand Total	**402,188**	**3,885**	**1,510**	**1,514**	**3,218**	**10,126**	**574**	**1,870**	**330**	**954**	**844**	**1,274**	**343**	**406**	**6,595**

Table A-9
Planned Development on Newhall Land Property in Relation to Geologic Types

Vegetation and Land Cover Type	Acres in Study Area	Open Space					Development								
		High Country SMA	*Salt Creek Area*	*Potrero Village Open Space*	*Other Open Space*	*Total Open Space*	*Entrada*	*Homestead*	*Landmark Village*	*Legacy*	*Mission Village*	*Potrero Village*	*VCC*	*Others*	*Total Development*
California Central Valley and Southern Coastal Grassland	50,142	411	282	500	609	1,802	217	462.3	19	85	367	734	110	126	2,117
California Central Valley Mixed Oak Savanna	4,460	0	0	0	51	51	0.7	41.6	0	0	9.7	0	3.5	8.3	64
California Central Valley Riparian Woodland and Shrubland	7.6	0	0	0	0.2	0.2			0	0	0	0	0	0	0
California Coastal Live Oak Woodland and Savanna	19,504	1,392	497	248	271	2,408	53	143.4	0	101	71	71	0.4	13	452
California Coastal Redwood Forest	90	9.5	0.7		0	10	0	0.0	0	0	0	0	0	0.1	0.1

Table A-9
Planned Development on Newhall Land Property in Relation to Geologic Types

Vegetation and Land Cover Type	Acres in Study Area	Open Space					Development								
		High Country SMA	*Salt Creek Area*	*Potrero Village Open Space*	*Other Open Space*	*Total Open Space*	*Entrada*	*Homestead*	*Landmark Village*	*Legacy*	*Mission Village*	*Potrero Village*	*VCC*	*Others*	*Total Development*
California Lower Montane Blue Oak-Foothill Pine Woodland and Savanna	1,486	11	3.3	14	20	49	7.0	11.0	0	11	16	4.8	0	1.8	51
California Mesic Chaparral	1,922	44	6.1	8.3	12	71	0	3.1	0	1.8	1.6	1.5	0	0.1	8.1
Cultivated Cropland	2,099	1.1	13	53	50	118	40	108.3	19	0	0	5.3	22	13	207
Developed, Low Intensity	226	0	0	0	67	67	29	10.7	13	12	2.2	0.1	14	21	102
Developed, Medium Intensity	8,033	0	0	0	2.5	2.5	9.5	1.1	1.2	1.0	0.2	0	1.5	11	25
Developed, Open Space	30,690	25	62	35	373	495	80	164.8	99	54	87	30	86	107	707
Great Basin Pinyon-Juniper Woodland	44,223	14	4.9	1.6	12	32	0	2.0	0	0	0.3	0.2	0	0	2.5
Inter-Mountain Basins Big Sagebrush Shrubland	41	0	0	0	0	0	0	0.0	0	0.2	0	0	0	0	0.2
Mediterranean California Dry-Mesic Mixed Conifer Forest and Woodland	17,734	3.7	1.2	0	0.1	5.0	0		0	0	0	0	0	0	0
Mediterranean California Foothill and Lower Montane Riparian Woodland	2,121	12	1.7	21	340	375	7.6	0.2	0	0	11	0.2	13	3.1	35
Mediterranean California Mesic Serpentine Woodland and Chaparral	313	0	0	0	21	21	0.9	4.8	0	0	17	0	0.9	0	24
North American Warm Desert Bedrock Cliff and Outcrop	386	1.6	0	0	0.4	2.0	0		0	0	0	0	0	0	0
North American Warm Desert Pavement	33	0	0	0	1.3	1.3	0	0.0	0	0	0	0	0	0	0
North American Warm Desert Riparian Woodland and Shrubland	148	1.1	0.2		0.4	1.7	0		0	0	0	0	0	0	0
Pasture/Hay	2,657	0	0	1.2	64	65	76	196.7	165	0	5.1	121	12	18	593
Recently burned shrubland	810	0	0	127	0	127	0	0.0	0	0	0	1.5	0	0	1.5
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	5,014	4.0	0.4	0.2	0.9	5.5	0	0.0	0	0	0	0	0	7.3	7.3
Sonora-Mojave Mixed Salt Desert Scrub	442	0	0	0	0.2	0.2	0			0	0	0	0	0	0
Southern California Coastal Scrub	69,263	864	362	381	852	2,458	42	515.2	13	298	188	281	53	66	1,456
Southern California Dry-Mesic Chaparral	137,999	1,086	275	109	436	1,906	9.9	189.7	0	382	64	22	1.6	9.6	679
Southern California Oak Woodland and Savanna	516	4.7	0.4	7.8	9.9	23	1.6	6.9	0	7.4	1.7	1.6	0.2	3.0	23
Temperate Pacific Freshwater Emergent Marsh	509	0	0	0.2	9.6	9.8	0	0.0	0	0	0	0	20	0	20
Temperate Pacific Freshwater Mudflat	1,319	0	0	6.6	15	21.3	0	8.1	1.6	1.1	3.4	0.3	4.0	1.7	20
Grand Total	**402,188**	**3,885**	**1,510**	**1,514**	**3,218**	**10,126**	**574**	**1,870**	**330**	**954**	**844**	**1,274**	**343**	**406**	**6,595**

Table A-10
Planned Development on Newhall Land Property in Relation to Elevations

		Open Space					Development								
Elevation (feet amsl)	**Acres in Study Area**	*High Country SMA*	*Salt Creek Area*	*Potrero Village Open Space*	*Other Open Space*	*Total Open Space*	*Entrada*	*Homestead*	*Landmark Village*	*Legacy*	*Mission Village*	*Potrero Village*	*VCC*	*Others*	*Total Development*
500 to 1000	7,154	107	140	394	733	1,374	21	544	330	0	9.6	5.6	120	139	1,169
1000 to 1500	56,052	1,001	592	1,012	1,800	4,404	553	1,309	0.2	625	834	1,269	223	249	5,062
1500 to 2000	73,771	1,549	359	108	685	2,701	0	17	0	329	0	0	0	9.3	356
2000 to 2500	53,373	722	263	0	0	986	0	0	0	0	0	0	0	3.7	3.7
2500 to 3000	71,580	468	155	0	0	624	0	0	0	0	0	0	0	4.4	4.4
3000 to 3500	73,614	34	0	0	0	34	0	0	0	0	0	0	0	0	0
4500 to 5000	12,100	3.4	0.9	0	0	4.3	0	0	0	0	0	0	0	0	0
Grand Total	**347,644**	**3,885**	**1,510**	**1,514**	**3,218**	**10,126**	**574**	**1,870**	**330**	**954**	**844**	**1,274**	**343**	**406**	**6,595**

Table A-11
Planned Development on Newhall Land Property in Relation to Slopes

		Open Space					Development								
Slope	**Acres in Study Area**	*High Country SMA*	*Salt Creek Area*	*Potrero Village Open Space*	*Other Open Space*	*Total Open Space*	*Entrada*	*Homestead*	*Landmark Village*	*Legacy*	*Mission Village*	*Potrero Village*	*VCC*	*Others*	*Total Development*
0% to 20%	143,535	4,48	281	689	1,487	2,905	468	1017	328	384	399	944	298	335	4,173
20% to 40%	162,814	1,256	526	834	1,101	3,417	106	665	1.8	535	406	294	43	61	2,111
Above 40% slope	119,159	2,181	702	291	630	3,804	0.0	189	0	35	39	37	1.7	10	311
Grand Total	**425,507**	**3,885**	**1,510**	**1,514**	**3,218**	**10,126**	**574**	**1,870**	**330**	**954**	**844**	**1,274**	**343**	**406**	**6,595**

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Appendix 5.4B

Oak Tree Report—Entrada VTTM 53295

Land Design Consultants, Inc.

January 31, 2011

OAK TREE REPORT

"ENTRADA"
V.T.T.M. 53295

Prepared For

Newhall Land Company
25124 Springfield Ct., Ste. 300
Valencia, CA 91355
(661) 255-4000

February 21, 2007
Revised: January 31, 2011

LAND DESIGN CONSULTANTS, INC.

Land Planning, Civil Engineering, Surveying & Environmental Services

199 South Los Robles Avenue, Suite 250, Pasadena, California 91101 / 626 • 578•7000 Fax 626 • 578-7373

OAK TREE REPORT

"ENTRADA"
V.T.T.M. 53295

Applicant

Newhall Land Company
25124 Springfield Ct., Ste. 300
Valencia, CA 91355
(661) 255-4000

Prepared By

Land Design Consultants, Inc.
199 South Los Robles Avenue, Suite 250
Pasadena, CA 91101
626.578.7000

LDC Project No.: 97001-018

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INTRODUCTION

The following report describes the general condition and potential impacts to the 104 ordinance-sized oak trees located within the proposed development area or within 200 feet of the proposed grading (project area) associated with the Entrada project, Vesting Tentative Tract Map (V.T.T.M.) 53295, in the Magic Mountain area of unincorporated Los Angeles County.

The Entrada project is located west of Interstate 5 and the Old Road, south of Six Flags Magic Mountain Theme Park and northerly of the existing community of Westridge, separated from the Westridge site by a utility easement of approximately 300 feet in width. Entrada is located easterly of the boundary of the Newhall Ranch Specific Plan and the pending Mission Village, V.T.T.M. 61105. Project acreage is approximately 515 acres including the 382.3 acre tract map site and 132.7 acres of off-site improvements that are located off-site of the Vesting Tentative Tract Map, but are part of the project.

This report is a revision to the previous oak tree report that was prepared on February 21, 2007. The following represents updated information regarding the site and the trees per engineering changes to V.T.T.M. 53295 and the addition of seven (7) trees that are located off-site, but within 200 feet of the proposed impacted areas. The impact status changed for certain trees, detailed in Table 1, as did the total number impacted, encroached upon, and those to remain with no impact.

The February 21, 2007 report included 124 ordinance-sized oak trees for the 844 acre project site. The Entrada tract map area has since been significantly reduced from 844 acres to approximately 382.3 acres. The previous northern-most project area adjacent to The Old Road and Henry Mayo Drive, referred to as "Castaic Junction", as well as the area previously referred to as the "Tenderloin" (Recorded PM 18654), between the east boundary of Six Flags Magic Mountain and The Old Road, are no longer part of V.T.T.M. 53295. An Oak Tree Report Amendment Letter, dated April 8, 2010, was prepared to address the revised project boundary as well as adjustments made to the limits of grading. This revised report supersedes both the February 21, 2007 report and

the April 8, 2010 Amendment Letter.

Twenty-four (24) previously surveyed oak trees that were located in the previous 844-acre project area have been removed from the scope of this report. Those trees, #44, 65, 67-77, 79-83, and 158-162, are no longer within the project area or within 200 feet of the proposed project impact area. In addition, Tree #1 was not included in the February 21, 2007 report, but was included in the amendment letter and is included in this revision. Tree #7 and 13 were previously removed per separate oak tree permits and are not included in this report. Please see the attached Oak Tree Location & Impact Map (5 sheets) that illustrates the revised project.

The majority of the surveyed oaks onsite or within 200 feet of the proposed impacted areas are valley oaks (*Quercus lobata*), totaling sixty-four (64) trees. Scrub oaks (*Q. berberidifolia)* comprise thirty-five (35) trees of the total, with the exception of two (2) *Q. lobata-berberidifolia* hybrids. The three (3) remaining oaks found onsite and included in the survey are coast live oaks, *Quercus agrifolia*. In addition to the ordinance sized trees discussed herein, there are in excess of 200 additional non-ordinance size oak trees on the property or within the 200 foot buffer envelope. Many of the oak trees onsite show signs of past fire damage.

Of the 104 ordinance-sized oak trees surveyed for this report, sixty-seven (67) trees are proposed for removal, twelve (12) trees will potentially have an encroachment into their protected zone, and twenty-five (25) trees will remain with no impact. Seven (7) of the 104 surveyed oak trees (#2, 3, 9, 12, 29, 39, and 84 - all *Q. lobata*) qualify as heritage oak trees based on their trunk diameter. Two (2) heritage trees (#2 and 9) are proposed to be saved with no impacts or encroachment into their protected zone. Two (2) heritage trees (#12 and 39) will be encroached upon due to implementation of the project. Three (3) heritage trees (#3, 29, and 84) are proposed for removal.

Of the 104 oaks surveyed, three (3) trees (3%) have an overall grade of "A" based on their excellent health and aesthetics. Fifty-two (52) oak trees (50%) received a "B" grade

and thirty-one (31) oaks (30%) earned a "C' grade at the time of the surveys. Due mostly to fire damage and its effects, eighteen (18) oak trees (17%) received a "D" grade because of failing health. This report identifies the extent of the potential impacts and recommends management and/or mitigation measures where appropriate.

Three other approved oak tree permits were associated with projects located in the immediate vicinity of the project area at the time that the February 21, 2007 report was prepared. The Oak Tree Permit (OTP) numbers associated with those cases were: OTP 87-561, OTP 03-360(5), and OTP R-2005-01381(5). The oaks associated with OTP 87-561 (Recorded PM 18654) were evaluated during the field survey of the project area and were tagged and numbered (trees #45-64 and 78). The trees associated with OTP 87-561 have either been removed per that approved permit or are not within 200 feet of the proposed grading and are therefore not included in this report. The oaks associated with OTP 03-360(5) (Chevron station relocation) have been removed as part of that approved permit. A copy of the Oak Tree Permit Closure Letter, dated August 12, 2009, is included in Appendix IV. Approved OTP R-2005-01381(5) (The Old Road widening project) permitted the removal of Oak tree #13.

DEFINITIONS & SURVEY METHOD

The County of Los Angeles has established the Oak Tree Permit, in part, "…to recognize oak trees as significant historical, aesthetic and ecological resources, and as one of the most picturesque trees in Los Angeles County, lending beauty and charm to the natural and manmade landscape, enhancing the value of property, and the character of the communities in which they exist; and to create favorable conditions for the preservation and propagation of this unique, threatened plant heritage, particularly those trees which may be classified as heritage oak trees, for the benefit of current and future residents of Los Angeles County." (Ord. 88-0157 § 1, 1988: Ord. 82-0168 § 2 (part), 1982.) An Oak Tree Permit is required prior to cutting, destroying, removing, relocating, inflicting damage, or encroaching into the protected zone of any tree of the oak genus, which is eight (8) inches or more in diameter for a single trunk-tree, or whose two largest combined trunks equal 12 inches in diameter as measured 4 ½ feet above mean natural

grade (22.56.2060 (A)). The protected zone includes the area within the dripline of an oak tree and extends to a point at least five feet outside the dripline, or 15 feet from the trunk of a tree, whichever distance is greater (22.56.2060 (C)).

Due to the anticipated length of time it will take before the proposed project is approved and built-out, the potential for growth of some of the trees to ordinance size, and for the current Oak Tree Ordinance to change in that timeframe, the applicant requested that those oaks measuring six (6) inches or more in diameter for a single-trunk tree, or whose two largest combined trunks equal 10 inches in diameter or greater be included in this survey. A complete evaluation of these non-ordinance sized trees was performed and the trees were tagged and numbered. Therefore, numerous tree numbers are purposely omitted here since the tree numbers shown in the table below are only those trees that are currently ordinance size that will be impacted by V.T.T.M. 53295. This accounts for the discontinuity in the tree numbering herein.

In the County of Los Angeles, trees with a diameter breast height (DBH) of 36" or more are considered to be "heritage" trees. However, trees that do not meet this criterion may be classified as heritage trees if the tree has been determined to have "significant historical or cultural importance to the community". Seven (7) of the 104 surveyed oak trees for this report meet the 36"-diameter size requirement for heritage (H) trees. No additional oaks are considered to be heritage trees by merit of historical or cultural importance.

This oak tree report complies with the requirements set forth in Section 22.56.2090 (F)(1a-f) of the County Code, which indicates that the report evaluate the physical structure, aesthetics, and health of each tree in the development area or within 200 feet of the proposed development. In this case, "development" refers to selective grading in areas designated for such uses as residential lots, commercial lots, slopes, future streets, etc. In addition, the area within 20 feet of the daylight grading line was included as potential impact area to allow for equipment access and backcut or remedial grading contingencies.

The oak trees were originally surveyed and tagged by LDC in the field over several weeks from November 9, 2004 through November 17, 2004 and on January 31, 2005. The trees were briefly resurveyed on November 21, 2006 to check for any removals or mortalities since the initial surveys. Since the 2006 survey, the proposed changes to the project limits, along with the amount of time that has passed, warranted an updated survey of the oak trees in the project impact area. The applicant directed LDC to limit this survey to only those trees with potential encroachments. Therefore, only those oaks (Trees #3, 4, 6, 8, 9, 12, 26, 32-34, 38, 39, 41-43, and 173) that were located on the edge of the project grading envelope were resurveyed. The potential encroachment oaks were resurveyed on December 21, 2009. The revised Oak Tree Field Data Worksheets, dated December 21, 2009, are included in this revised report. The oaks in the interior portion of the project, which were proposed for removal in the February 2007 report and are still proposed for removal, were not resurveyed.

Seven (7) oak trees that were not included in the February 21, 2007 report have been included in this revised report. These seven (7) trees were surveyed by Impact Sciences, Inc. and are included in their "Oak Tree Report: Mission Village V.T.T.M. 61105, March 2010 Update." They are: Trees #7(MV), 717(MV), 718(MV), 719(MV), 4351(MV), 4352(MV), and 4353(MV). These trees are located near the border between Mission Village and V.T.T.M. 53295 and are concurrently covered by the Oak Tree Permit associated with adjacent V.T.T.M. 61105 (OTP No. 2005-00043). See **Table 2** for a summary of these oak trees.

Each tree was evaluated for a variety of health, structural, and aesthetic qualities as indicated on the field inspection worksheets in Appendix I. The tree number, location, canopy, and protected zone of each tree are mapped on the enclosed "Oak Tree Location & Impact Map". The map includes five (5) sheets; Sheet 1 is a 300-scale (1" = 300') index map of the entire site. Sheets 2, 3, 4, & 5 are 100' scale portions of the site. The following discussion expands on the information summarized in the field survey worksheets attached in Appendix I.

Trunk diameter is measured at "diameter breast height" (DBH), approximately 4½ feet (54") above the natural grade. This measurement is most appropriate for trees with vertical growth forms. Oak trees often have large lateral branches diverging from the trunk at or near 4½ feet. Measuring a tree of this type at exactly 4½ feet above natural grade would often result in an inaccurate impression of tree size. For trees that exhibit lateral branching at DBH, the trunk diameter measurement is made at the nearest point where the measurement can be accomplished without being impeded by the branches. For multi-trunk trees, the number of trunks and the diameter (DBH) of each trunk is recorded.

Evaluation of canopy characteristics includes two sets of measurement: the dripline radius and the height of the branch from the natural grade at the dripline. The dripline radius is measured along a line extending from the center of the trunk outward in four magnetic compass directions. The measurement is made from the outer edge of the trunk to the outermost living part of the tree. In some cases, where a tree has several trunks growing in a ring, the dripline radius is measured from the center of the ring. Use of this measurement is noted under comments and notes when used. In order to determine branch height, a measurement is taken from the lowest living leaf on a branch to the natural grade for each compass direction. Leaves on small sucker stems growing directly from the trunk are not used for branch height measurements. The canopy-spread measurement is the maximum canopy diameter of the tree in question.

Tree injuries leave the tree vulnerable to many potential sources of damage and disease. Insect pests will take advantage of an injury to invade exposed wood and cambium. Some fungi, which break down wood, will also take advantage of a wound to enter the tree. These fungi will result in the softening of the wood called heart rot. Heart rot, in combination with the activities of insects, animals and/or fire, will eventually produce cavities in the trunk or major branches of the tree.

Structural stability also affects the potential survival of a tree. Trees that are structurally

unstable are assumed to have a shorter potential life span than structurally stable trees. Oaks frequently grow in loose soil on steep slopes; this soil is prone to down slope movement, resulting in trees that have been undermined and lean precariously down hill. The action of streams, as described above, also results in unstable trees. Young oaks are highly phototropic (growing toward light). In woodland environment this trait often causes young trees to grow toward an opening in the canopy that may be far from directly overhead, resulting in a poorly balanced tree. Another common cause of structural instability is severe cavitations or mechanical damage as described above.

The most common health problem affecting oak trees is some form of biological infestation. Almost all oak trees have sub-critical infestations of one type or another. Only when the tree has been severely injured are the infesting organisms able to invade the tree and become a severe problem. Termites are one of the most common pests to utilize oak trees as a food source. Termites eat only dead wood and must enter the tree through an opening in the bark or root. Most oaks have a limited (and usually harmless) number of termites in the smaller terminal twigs and branches that have died. Wood boring beetles are similar to termites in their requirements and have a similar affect on the tree. Only when the infestation becomes severe do wood eating insects pose a threat to the tree. However, beetles that eat cambium can be a serious threat to a tree even in small numbers. Cambium eaters can easily kill a small branch or trunk by girdling the structure and curtailing the flow of nutrients through the cambium.

There are a host of other insects and arthropods, which utilize oaks in a variety of ways. In natural situations these potential threats are kept in check by abundant natural enemies and the oak's natural protective features. Climbing plants, though not technically an infestation, are also included in this category.

Each tree was assigned two letter grades, one health rating and one aesthetic and conformity rating. The health and aesthetic ratings of the trees are based on the archetype tree of the same species through a subjective evaluation of its health, aesthetic value, and ecological value. The health of the tree depends on the level of damage caused by

infestation of various pests including termites, wood boring beetles, cambium eating beetles, fungus of various types, climbing plants, and parasitic plants (i.e., mistletoe), or fire.

While the aesthetic value of a tree is subjective, a tree is usually considered highly aesthetic if it has generally dense foliage, a relatively uniform or spectacular irregular shape, and large size. Ecological value is based on many factors, not all of which have a positive correlation with the health and aesthetic value of the tree. Most important is the likelihood that the tree will continue to survive.

The following criteria were used to establish each grade:

"A" = Outstanding:

> Exceptional trees, mostly of large size, of good growth form with often large spreading crown, exhibiting very good to excellent health with mostly normal necrosis and a minimum of pathological symptoms and a minimum of fire damage. Some of these trees may have some trunk cavitation and some disease symptoms, but these are not considered detrimental to the overall health of the tree. The trees are large and overall attractive.

"B" = Above Average:

> Good to very good trees but either not of large size or tending to show some necrotic or pathological symptoms or minor fire damage. Most of these trees have some dieback and may have some brooming (regrowth) and all have normal amounts of normal stem dieback. These are basically good trees with a strong potential for continued survival.

"C" = Average:

> Average, moderately good trees whose growth habit and pathological or fire-induced symptoms indicate an equal chance to either decline or continue in the future. Most of these trees would have moderate stem and branch dieback, some bark exfoliation, or stem cavitation with rot, and relatively moderate fire damage.

They may also show various amounts of insect damage to leaves etc. or are impacted and shaded or crowded by adjacent trees in such a way that it is expected to negatively affect the tree.

"D" = Below Average/Poor

Declining trees with a reduced chance of survival due to excessive fire damage, or strong-stem or branch dieback caused by crowding, shading or various pathological conditions. These would not be expected to survive over the long term and generally show partial foliage. However, some may show sucker shoots or crown-sprouting that have developed after the fire and are expected to survive over the long term.

"F" = Dead:

This tree exhibits no signs of life whatsoever.

INFLUENCE OF CONSTRUCTION-RELATED ACTIVITIES

Soil compaction inhibits the natural exchange of gases between the feeder roots and the atmosphere and restricts water percolation to the root zone. This alteration of the gas and water balance in the soil can inhibit the growth of the oaks, weaken them and make them more susceptible to disease. This soil compaction under a tree can cause serious root damage and crown loss over an extended period of time.

Grade-changes within the drip line and root zone of the oaks may directly lead to injury or death of the tree. Removing soil around oak trees may result in the shallow feeder roots being cut, damaged, or exposed by the scraping away of topsoil. This may reduce the tree's ability to take up water and nutrients from the soil. The placement of soil under oak trees, on the other hand, may cover the feeder root system and reduce soil aeration and gas exchange to the roots. When deprived of oxygen, the roots of oak trees can suffocate resulting in death of the tree.

Changes to the site's drainage pattern and/or water table may have a negative effect on

oak trees. The placement of fill material beyond the tree's canopy may result in change in drainage or water movement so that soil under the tree becomes saturated, which may result in the weakening of the tree and an increased susceptibility to crown or root rot. Extensive cuts away from trees may also change drainage patterns and cause the soil to dry more rapidly in the summer. The result can be insufficient moisture available to the trees. This lack of available water may result in the death of the tree or may weaken the tree causing a greater susceptibility to disease.

PROJECT IMPACTS

The Entrada project is proposing a total of 1,640 units, including 408 single-family residences and 1,232 multi-family residences. The project will also include commercial areas, totaling 726,000 square feet of development, interchangeable for office or retail development, in addition to an elementary school, private drives, public facilities, a park, two private recreation centers, and natural and manufactured open space areas throughout.

In addition to the 382.3-acre tract map site, the project also includes 132.7 acres of development at locations beyond the tract map site. There are a number of off-site project-related components consisting of road improvements including portions of the following: Magic Mountain Pkwy, Media Center Lane, Commerce Center Drive, and Westridge Parkway. Other project-related improvements consist of: a water tank and booster station, sewer improvements, a water quality basin, debris basins, storm drain/flood control improvements, access roads, and of offsite grading (borrow site) to the west of the project.

Illustrated on the Oak Tree Location Map are the location and canopies of the ordinance-sized oak trees located within the development area or within 200 feet of the proposed grading. One-hundred four (104) surveyed and tagged ordinance-sized oak trees fell within this limit. **Twenty-five (25) oak trees will remain with no impact, twelve (12) are proposed to have temporary or permanent encroachments within their**

protected zone, and sixty-seven (67) oak trees are proposed for removal.

Oak trees #88-90, 97, 100, 102-103, 106, 108-109, 111, 113, 115-118, 120, 122, 124-126, 128-131, 155-157, and 164 are located in the Magic Mountain Theme Park fireworks land zone. This area is periodically cleared for fire protection purposes. The clearing associated with the fireworks land zone is limited to non-mechanical weed whipping that occurs within the protected zones of the oak trees in this area. All of the above-referenced trees are proposed for removal as part of the Entrada project. Oak trees #101 and 165, located in the fireworks land zone, died at some point after the 2004 and 2006 surveys and have been excluded from this report and are not subject to permitting requirements of the Los Angeles County Oak Tree Ordinance.

The following table summarizes the proposed status of each tree. The species is noted after the tree number in a code. The overall grade for each tree is also noted. The comment column gives a brief explanation of the proposed reason for impact, be it removal or encroachment. See the notes at the bottom of the summary table for a key to the species and impact status.

Table 1
Summary of Oak Trees
for "Entrada" - V.T.T.M. 53295

Tree No.	Species	DBH (inches)	Overall Grade	Impact Status			Comment
				N I	R	E	
1	QL	29	C	✓			
2(H)	QL	40.5	D	✓			
3(H)	QL	39	B+		✓		Construction of Magic Mountain Parkway
4	QL	22.5	B-		✓		Slope associated with Lot 510
5	QL	24, 21	B		✓		Slope associated with Lot 510
6	QL	22	B+		✓		Construction of Magic Mountain Parkway
7 (MV)	QL	8.5,6.5, 5.5,5	A		✓		Off-site grading west of proposed Commerce Center Drive
9(H)	QL	36	C	✓			
10	QL	14, 14	B	✓			
11	QL	18	B	✓			
12(H)	QL	44, 21	D			✓	Previous no impact in 2007 report – Now encroachment. Encroachment 13' into PZ for construction activity and retaining wall for Lot 475
14	QL	24	B	✓			
15	QL	13	C	✓			
16	QL	24	B	✓			
17	QL	15.5, 16, 13, 21	C	✓			

Table 1
Summary of Oak Trees
for "Entrada" - V.T.T.M. 53295

Tree No.	Species	DBH (inches)	Overall Grade	Impact Status			Comment
				N I	R	E	
18	QL	25.5	B	✓			
19	QL	17.5	B	✓			
20	QL	25	B	✓			
21	QL	23	B-	✓			
22	QL	12.5	B+	✓			
23	QL	32.5	B+	✓			
24	QL	28	B	✓			
25	QL	8, 24.5	B	✓			
26	QL	32	C-			✓	Encr. 2' into PZ for slope associated with Lot 466
27	QL	28	B		✓		Grading associated with Lots 468 & 470
28	QL	24.5	B		✓		Grading associated with Lot 468
29(H)	QL	46	B+		✓		Grading associated with Magic Mtn. Pkwy. Ext. & grading for Lot 510
30	QL	28.5	B		✓		Grading associated with Lot 464
31	QL	30	C-		✓		Grading associated with Lot 456 & 460
32*	QL	22	B-			✓	Previous no impact in 2007 report – Now encroachment. Potential temp. encroachment because 20' construction buffer extends into PZ within Lot 557
33	QL	17, 14.5, 17	C-			✓	Previous no impact in 2007 report – Now encroachment because PZ is at edge of grading limits assoc. with Lot 557
34	QL	14, 11, 11, 11.5	D+			✓	Encr. 6' into PZ for slope associated with Lot 557
37	QA	26	B		✓		Grading associated with Lot 451
38*	QL	9, 34	C+			✓	Potential temp. encroachment because 20' construction buffer for Lot 590 grading encr. 17' into PZ
39(H)*	QL	39	B+			✓	Potential temp. encroachment because 20' construction buffer for Lot 512 grading encr. 9' into PZ
41*	QA	6, 6, 5.5, 4	D			✓	Potential temp. encroachment because 20' construction buffer for Lot 512 grading encr. 18' into PZ
42*	QL	17, 18	D+			✓	Potential temp. encroachment because 20' construction buffer for Lot 512 grading encr. 12' into PZ
43	QL	31	B			✓	Grading for Lot 512 encr. 6' into PZ and 20' construction buffer for Lot 512 grading encr. 26' into PZ
84(H)	QL	42	B		✓		Grading on north side of Magic Mountain Pkwy
85	QLB	8.5, 3.5, 2, 4, 3	C-		✓		Grading on north side of Magic Mountain Pkwy
86	QLB	12, 7	C		✓		Grading on north side of Magic Mountain Pkwy
87	QL	34	C	✓			Previous encroachment – Now no impact.
88	QB	6, 6	C+		✓		Grading associated with PA 1-3
89	QB	6, 6	B-		✓		Grading associated with PA 1-3
90	QB	6, 4, 8.5	B-		✓		Grading associated with PA 1-3
97	QB	7.5, 2.5, 4.5	C		✓		Grading associated with PA 1-3
100	QB	6, 6	B-		✓		Grading associated with PA 1-3
102	QL	26	B+		✓		Grading associated with PA 1-3
103	QB	6, 6.5, 9, 4	C		✓		Grading associated with PA 1-3

Table 1
Summary of Oak Trees
for "Entrada" - V.T.T.M. 53295

Tree No.	Species	DBH (inches)	Overall Grade	Impact Status			Comment
				N I	R	E	
106	QB	6, 2, 1, 6, 3, 3	C-		✓		Grading associated with PA 1-3
108	QB	6, 6.5	D		✓		Grading associated with PA 1-3
109	QB	6, 6.5, 1	B-		✓		Grading associated with PA 1-3
111	QB	6, 6	C		✓		Grading associated with PA 1-3
113	QB	7.5, 4.5	C-		✓		Grading associated with PA 1-3
115	QB	6, 8	B-		✓		Grading associated with PA 1-3
116	QB	10, 4, 2, 2, 1.5	D		✓		Grading associated with PA 1-3
117	QB	3.5, 6.5, 9.5, 10, 2	C		✓		Grading associated with PA 1-3
118	QB	27.5	B		✓		Grading associated with PA 1-3
120	QB	6.5, 4, 7	B		✓		Grading associated with PA 1-3
122	QB	3, 7, 7	D		✓		Grading associated with PA 1-3
124	QB	6, 6, 2, 5	D		✓		Grading associated with PA 1-3
125	QB	6, 8.5, 9.5	B		✓		Grading associated with PA 1-3
126	QB	6, 6	C		✓		Grading associated with PA 1-3
128	QB	6, 6, 4, 3	D		✓		Grading associated with PA 1-3
129	QB	12	C		✓		Grading associated with PA 1-3
130	QB	14.5, 2, 5	C-		✓		Grading associated with PA 1-3
131	QB	7, 5.5, 7.5, 7.5	C		✓		Grading associated with PA 1-3
132	QL	15.5, 16.5	A		✓		Grading assoc. with Westridge Pkwy.
134	QB	4.5, 4.5, 6, 5, 3, 6, 5	B-		✓		Grading assoc. with Westridge Pkwy.
136	QL	18, 15	B-		✓		Grading associated with Westridge Pkwy.
137	QB	8.5, 9	B		✓		Grading associated with Westridge Pkwy.
141	QA	32, 25, 11	D	✓			
143	QB	5.5, 4, 3, 4, 3.5, 6, 5, 6, 5, 3.5	C+		✓		Grading associated with Lot 301
144	QB	7, 2.5, 2, 9.5	C		✓		Grading associated with Lot 208
145	QB	6(2), 6.5, 5, 4(4) 5.5(2) 3.5(3)	D		✓		Grading associated with Lot 192
150	QB	5, 5, 7	C		✓		Slope associated with Lot 40 & 478
152	QL	12	D		✓		Slope associated with Lot 515 & Magic Mtn. Pkwy. extension
153	QL	10, 14	B		✓		Grading associated with PA 9
154	QB	10	D		✓		Grading associated with Magic Mtn. Pkwy. extension
155	QB	6, 6.5, 10	C		✓		Grading associated with PA 1-3
156	QB	3, 6, 3.5(3), 5, 2, 6.5	C-		✓		Grading associated with PA 1-3

Table 1
Summary of Oak Trees
for "Entrada" - V.T.T.M. 53295

Tree No.	Species	DBH (inches)	Overall Grade	Impact Status			Comment
				N I	R	E	
157	QB	8.5	C-		✓		Grading associated with PA 1-3
163	QL	23, 16.5	B		✓		Grading associated with PA 1-3
164	QB	6(3), 5(3), 5.5, 4.5(3)	D		✓		Grading associated with PA 1-3
166	QL	32.5	C-		✓		Grading associated with PA 1-3
167	QL	21	C		✓		Grading associated with PA 1-3
168	QL	28	B		✓		Grading associated with PA 1-3
169	QL	26	B		✓		Grading associated with PA 1-3
170	QL	21	B		✓		Grading associated with PA 1-3
171	QL	25, 33	D		✓		Slope associated with PA 1-3
172	QL	15, 11.5	D		✓		Slope associated with PA 1-3
173	QL	21.5	B-		✓		Slope associated with PA 1-3
174	QL	13.5	B-		✓		Grading associated with Water Quality Basin
175	QL	21	B-		✓		Grading associated with Water Quality Basin
176	QL	14.5	B-		✓		Grading associated with Water Quality Basin
177	QL	22	B		✓		Grading associated with Water Quality Basin
178*	QL	20	B-			✓	Potential temp. encroachment because 20' construction buffer for grading for Water Quality Basin encr. 3' into PZ
179	QL	11	C-	✓			
717 (MV)	QL	12.5	D-	✓			
718 (MV)	QL	16	B+	✓			
719 (MV)	QL	27	B	✓			
4351(MV)	QL	14.5	B	✓			
4352(MV) *	QL	15.5, 9	A-			✓	Potential temp. encroachment because 20' construction buffer for grading for off-site storm drain encr. 4' into canopy
4353(MV)	QL	26	B-	✓			
TOTAL				**25**	**67**	**12**	

NI = NO IMPACT R = REMOVAL E = ENCROACHMENT

(H) = Heritage tree DBH = Diameter at Breast Height

(MV) = Trees surveyed by Impact Sciences, Inc. for Mission Village project – data worksheets for these trees are not included in this report

QB = *Q. berberidifolia* QLB = *Q. lobata-berberidifolia* hybrid QA = *Q. agrifolia* QL = *Q. lobata*

* = *Potential encroachment due to possible overexcavation and/or backcut associated with adjacent slope (20' buffer zone)*

- ***Trees 44, 65, 67-77, 79-83, and 158-162 are no longer within 200' of the proposed impacted area (previously included in 2/21/07 report).***
- ***Trees 8, 40, 101 and 165 have died and have been excluded from this report and are not subject to permitting requirements of the LA County Oak Tree Ordinance.***

As part of V.T.T.M. 53295, a portion of the proposed extension of Westridge Parkway at the western boundary of the project will be constructed from the existing terminus to the intersection of proposed "B" Street. The Mission Village V.T.T.M. 61105 project, which is pending entitlement with the County of Los Angeles, is located to the immediate west of V.T.T.M. 53295. If Mission Village is approved prior to V.T.T.M. 53295, the entire extension of Westridge Parkway will be constructed as part of that project. As indicated in the "*Oak Tree Report: Mission Village, March 2010 Update*", dated March 2010, Trees #132, 136, and 137 will be removed as part of that project (Trees # 4361, 761, and 762 respectively per Oak Tree Permit No. 2005-00043). Tree #134 will also require removal, though is not included in the Mission Village Oak Tree Report, assumingly due to the tree not being of ordinance size at the time of their survey. If V.T.T.M. 53295 is approved prior to Mission Village, that section of the extension of Westridge Parkway from the existing terminus to the intersection of proposed "B" Street, will also result in the removals of Trees #132, 134, 136, and 137, as well as those trees indicated in **Table 1**. The removals of these four (4) oaks are included in the 67 removals reported herein. In addition, if V.T.T.M. 53295 is approved prior to Mission Village, V.T.T.M. 53295 will require offsite grading from a "borrow site" on the Mission Village site. One (1) oak tree (Tree #7(MV) from the Mission Village Oak Tree Report) is present at the borrow site. Tree #7(MV) will be removed if the off-site grading from the "borrow site" is required.

Table 2 below gives a summary of seventeen (17) oak trees that are located off-site, but within 200 feet of the proposed grading, and are concurrently covered by the Oak Tree Permit (OTP 2005-00043) for the Mission Village project (V.T.T.M. 61105). Trees #7(MV), 717(MV), 718(MV), 719(MV), 4351(MV), 4352(MV), and 4353(MV) were surveyed by Impact Sciences, Inc. and are included in this report because they are located within 200 feet of the proposed grading associated with V.T.T.M. 53295. Trees #132, 134, 136, 137, 174-179 were surveyed by LDC for the February 2007 report and remain within the development area or within 200 feet of the proposed grading for V.T.T.M. 53295 and overlap with the Mission Village project boundary. Nine (9) of the seventeen

(17) overlapping trees (#7(MV), 132, 134, 136, 137, 174, 175, 176, and 177) are proposed to be removed by V.T.T.M. 53295. Two (2) of these trees (#178 and 4352(MV)) will potentially have encroachments into their protected zone. Six (6) of the trees (#179, 717(MV), 718(MV), 719(MV), 4351(MV), and 4353(MV)) will remain with no impact.

Table 2
Summary of Impacts to Entrada Oak Trees
that are concurrently covered by OTP 2005-00043 for V.T.T.M. 61105 (Mission Village)

LDC Tree No.	IS Tree No.	Species	DBH (inches)	Impact Status by Entrada			Comment*
				N I	R	E	
7 (MV)	7	QL	8.5,6.5, 5.5,5		✓		Off-site grading west of proposed Commerce Center Drive **PROPOSED REMOVAL PER OTP 2005-00043**
132	4361	QL	15.5, 16.5		✓		Grading assoc. with Westridge Pkwy. **PROPOSED REMOVAL PER OTP 2005-00043**
134	N/A	QB	4.5, 4.5, 6, 5, 3, 6, 5		✓		Grading assoc. with Westridge Pkwy. **NOT INCLUDED IN OTP 2005-00043**
136	761	QL	18, 15		✓		Grading associated with Westridge Pkwy. **PROPOSED REMOVAL PER OTP 2005-00043**
137	762	QL	8.5, 9		✓		Grading associated with Westridge Pkwy. **PROPOSED REMOVAL PER OTP 2005-00043**
174	4341	QL	13.5		✓		Grading associated with Water Quality Basin **PROPOSED REMOVAL PER OTP 2005-00043**
175	4342	QL	21		✓		Grading associated with Water Quality Basin **PROPOSED REMOVAL PER OTP 2005-00043**
176	4343	QL	14.5		✓		Grading associated with Water Quality Basin **PROPOSED REMOVAL PER OTP 2005-00043**
177	4344	QL	22		✓		Grading associated with Water Quality Basin **PROPOSED REMOVAL PER OTP 2005-00043**
178	4345	QL	20			✓	Potential temp. encroachment because 20' construction buffer for grading for Water Quality Basin encr. 3' into PZ **PROPOSED ENCROACHMENT PER OTP 2005-00043**
179	4346	QL	11	✓			Located within 200' of offsite improvements **NOT IMPACTED PER OTP 2005-00043**
717 (MV)	717	QL	12.5	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
718 (MV)	718	QL	16	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
719 (MV)	719	QL	27	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
4351(MV)	4351	QL	14.5	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
4352(MV)	4352	QL	15.5, 9			✓	Potential temp. encroachment because 20' construction buffer for grading for off-site storm drain encr. 4' into canopy **PROPOSED REMOVAL PER OTP 2005-00043**
4353(MV)	4353	QL	26	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
TOTAL				**6**	**9**	**2**	

NI = NO IMPACT R = REMOVAL E = ENCROACHMENT

DBH = Diameter at Breast Height (MV) = Trees surveyed by Impact Sciences (IS) for Mission Village project

QB = *Q. berberidifolia* QL = *Q. lobata*

* *Impacts taken from Oak Tree Report: Mission Village, March 2010 update from Impact Sciences, Inc.*

Table 3 below gives a summary of thirteen (13) oak trees that are located within the proposed development area or within 200 feet of the proposed grading, and is concurrently covered by Oak Tree Permit No. 2005-00032. Eleven (11) of the oak trees (#3-6, 29, 84-86, and 152-154 are proposed to be removed by the Magic Mountain Parkway extension project. Three (3) of the eleven (11) proposed removals are heritage trees (#3, 29, and 84). Two (2) trees (#42 and 43) are proposed for potential encroachments into their protected zones.

Table 3
Summary of Impacts to Entrada Oak Trees
that are concurrently covered by OTP 2005-00032 (Magic Mountain Pkwy extension)

LDC Tree No.	Species	DBH (inches)	Overall Grade	Impact Status by Entrada			Comment*
				N I	R	E	
3(H)	QL	39	B+		✓		Construction of Magic Mountain Parkway **PROPOSED REMOVAL PER OTP 2005-00032**
4	QL	22.5	B-		✓		Slope associated with Lot 510 **PROPOSED REMOVAL PER OTP 2005-00032**
5	QL	24, 21	B		✓		Slope associated with Lot 510 **PROPOSED REMOVAL PER OTP 2005-00032**
6	QL	22	B+		✓		Construction of Magic Mountain Parkway **PROPOSED REMOVAL PER OTP 2005-00032**
29(H)	QL	46	B+		✓		Grading associated with Magic Mtn. Pkwy. Ext. & grading for Lot 510 **PROPOSED REMOVAL PER OTP 2005-00032**
42*	QL	17, 18	D+			✓	Potential temp. encroachment because 20' construction buffer for Lot 512 grading encr. 12' into PZ **PROPOSED ENCROACHMENT PER OTP 2005-00032**
43	QL	31	B			✓	Grading for Lot 512 encr. 6' into PZ and 20' construction buffer for Lot 512 grading encr. 26' into PZ **PROPOSED ENCROACHMENT PER OTP 2005-00032**
84(H)	QL	42	B		✓		Grading on north side of Magic Mountain Pkwy **PROPOSED REMOVAL PER OTP 2005-00032**
85	QLB	8.5, 3.5, 2, 4, 3	C-		✓		Grading on north side of Magic Mountain Pkwy **PROPOSED REMOVAL PER OTP 2005-00032**
86	QLB	12, 7	C		✓		Grading on north side of Magic Mountain Pkwy **PROPOSED REMOVAL PER OTP 2005-00032**
152	QL	12	D		✓		Slope associated with Lot 515 & Magic Mtn. Pkwy. Extension **PROPOSED REMOVAL PER OTP 2005-00032**
153	QL	10, 14	B		✓		Grading associated with PA 9 **PROPOSED REMOVAL PER OTP 2005-00032**
154	QB	10	D		✓		Grading associated with Magic Mtn. Pkwy. Extension **PROPOSED REMOVAL PER OTP 2005-00032**
TOTAL				**0**	**11**	**2**	

NI = NO IMPACT R = REMOVAL E = ENCROACHMENT

(H) = Heritage tree DBH = Diameter at Breast Height

QB = *Q. berberidifolia* QLB = *Q. lobata-berberidifolia* hybrid QL = *Q. lobata*

** Impacts taken from Oak Tree Report: Easterly Extension of Magic Mtn. Pkwy., Aug. 2010 Update, from Impact Sciences, Inc.*

Table 4 below summarizes the impacts to the oak trees that are located within the 382.3-acre Entrada tract map area, if the Mission Village (V.T.T.M. 61105) project and the Magic Mountain Parkway extension project are approved and commence prior to Entrada. Twenty (20) of the Entrada project's 104 oak trees will be removed as part of OTP 2005-00043 (Mission Village) and OTP 2005-00032 (Magic Mountain Parkway extension), leaving a total of 84 ordinance-sized oak trees located within the proposed development area or within 200 feet of the project area. The table lists those 20 trees that are proposed for removal under OTP 2005-00043 and OTP 2005-00032.

The removal of the 20 oak trees associated with the adjacent oak tree permits would reduce the overall number of trees from 104 to 84. As a result, a total of 47 of the 84 overlapping trees would be proposed for removal by the Entrada project. The impacts to the remaining 37 trees (12 to have encroachments and 25 to remain with no impact) will not change due to the implementation of OTP 2005-00043 and OTP 2005-00032.

Table 4
Matrix of Impacts to Oak Trees for "Entrada" - V.T.T.M. 53295
in conjunction with V.T.T.M. 61105 (Mission Village) & Magic Mountain Pkwy extension approvals

Project	Total # of trees	# of trees to remain	# of trees to be encroached	# of trees to be removed	Trees to be removed
Entrada If Entrada approved before Mission Village & Magic Mtn. Pkwy. Extension	104	25	12	67	3(H), 4, 5, 6, 7(MV), 27, 28, 29(H), 30, 31, 37, 84(H), 85, 86, 88, 89, 90, 97, 100, 102, 103, 106, 108, 109, 111, 113, 115, 116, 117, 118, 120, 122, 124, 125, 126, 128, 129, 130, 131, 132, 134, 136, 137, 143, 144, 145, 150, 152, 153, 154, 155, 156, 157, 163, 164, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177
Mission Village (MV) V.T.T.M. 61105 **OTP 2005-00043**	17	6	2	9	7(MV), 132, 134, 136, 137, 174, 175, 176, 177
Magic Mountain Parkway Extension (MMPE) **OTP 2005-00032**	13	0	2	11	3(H), 4, 5, 6, 29(H), 84(H), 85, 86, 152, 153,154
Total impacts from MV & MMPE projects	30*	6	4	20	
Entrada If Mission Village & Magic Mtn. Pkwy. Extension are approved and commence prior to Entrada	84	25	12	47	27, 28, 30, 31, 37, 88, 89, 90, 97, 100, 102, 103, 106, 108, 109, 111, 113, 115, 116, 117, 118, 120, 122, 124, 125, 126, 128, 129, 130, 131, 143, 144, 145, 150, 155, 156, 157, 163, 164, 166, 167, 168, 169, 170, 171, 172, 173

(H) = Heritage tree (MV) = tree surveyed for Mission Village
* = The 30 oaks impacted by the Mission Village and Magic Mountain Parkway Extension projects are part of the 104 total oaks that are included in this Oak Tree Report.

MITIGATION MEASURES

Sixty-seven (67) of the 104 oak trees surveyed are proposed for removal. Twelve (12) oak trees will sustain permanent or temporary encroachments within their protected zones. Therefore, special care must be taken during grading to minimize impacts to the tree roots and canopy in the protected zone. Implementation of the following measures will insure that the roots and canopy in the protected zone will not be significantly affected.

1. The applicant shall be responsible for notifying the County Forester of any changes in the scope of the work and shall insure that all work is performed in accordance with

applicable ordinances, permits and procedures. Work performed within the protected zones of the trees shall be preceded by not less than 48 hours notice to the County Forester and the project's oak tree consultant (certified arborist).

2. **The applicant shall plant a minimum of 158, 15-gallon minimum replacement oak trees within the open space areas of VTTM 53295 to replace the 67 removal trees (2:1 ratio for non-heritage & 10:1 ratio for heritage).** The mitigation trees shall consist of a combination of indigenous scrub oaks, coast live oaks and valley oaks. The applicant shall be responsible for the monitoring and maintenance of the replacement trees for a minimum of two years. If the replacement trees die during the two-year period, the applicant shall plant new replacement trees and the two-year monitoring period shall begin again from the date of that planting.

3. All work in the protected zone of the trees approved for encroachment must be done using hand implements only; the use of mechanized tools is prohibited except where absolutely necessary AND as approved by the County Forester. All work conducted within the protected zone of the oak trees shall be performed in the presence of the applicant's oak tree consultant. The protected zone shall commence from a point five (5) feet outside of the dripline and extend inwards to the trunk of the tree. In no case shall the protected zone be less than fifteen (15) feet from the trunk of an oak tree.

4. Equipment, materials, and vehicles shall not be stored, parked or operated within the protected zone of an oak tree, except on the already improved road base for work that is being performed at the time in the immediate vicinity.

5. Preservation and encroachment trees may benefit from supplemental irrigation prior to and during construction. The monitoring arborist shall recommend an irrigation regimen if necessary.

6. Removal of the natural leaf mulch within the protected zone of the project oak trees is prohibited except where absolutely necessary AND as approved by the project's oak tree consultant.

7. All trees not approved for removal shall be fenced in accordance with County of Los Angeles guidelines prior to commencement of grading operations, and shall remain fenced until the County Forester approves removal of fencing. Encroachment trees

shall also be fenced until the actual encroachment work is performed. At that time, the fencing shall be moved to the limit of the encroachment.

8. Any pruning, including dead wooding, shall be performed in compliance with the latest ANSI pruning standards by a certified arborist (or certified tree worker).

9. Root-pruning within the protected zone shall be reduced to the minimum amount that is absolutely necessary. All roots pruned shall consist of clean, 90º-angle cuts utilizing sharp hand tools and shall not be sealed unless directed by the County Forester. Any major roots (2" or greater in diameter) encountered shall be preserved to the extent possible, wrapped in moist burlap, until the soil is replaced. Soil shall be replaced as soon as possible around preserved roots.

10. Dust accumulation on the canopy of the preserved and encroached trees shall be washed off at the direction of the monitoring arborist.

11. Upon completion of the work associated with this permit, a four to six-inch layer of certified mulch shall be placed around the protected zone of the encroachment trees. Where feasible, the native leaf litter should be retained and used as the mulching material.

12. Within 10 working days of completion of the work approved under this permit, the oak tree consultant shall provide a project certification letter to the County Forester. The applicant shall be responsible for notifying and coordinating all conditions with the County and the project's oak tree consultant.

Disclaimer:

This report represents the independent opinion of the signatory consultant (Land Design Consultants, Inc.). The trees discussed herein were generally reviewed for physical, biological function, and aesthetic conditions. This examination was conducted in accordance with presently accepted industry procedures, which are a ground-plane macro-visual observation only. No extensive micro-biological, soil-root excavations, upper crown examination, nor internal tree investigations were conducted and therefore, the reporting herein reflects the overall visual appearance of the trees on the date(s) reviewed and no warranty is implied to the potential failure, health, or demise of any part or whole of any tree described in the report. Records may not remain accurate after our inspection due to unknown causes of changeable deterioration of the reviewed site.

Respectfully submitted,

LAND DESIGN CONSULTANTS, INC.

Scott McAllaster
Project Planner
ISA Certified Arborist, WE 7011A

APPENDIX I

FIELD INSPECTION WORKSHEETS

OAK TREE FIELD DATA WORKSHEET *LDC Project No: 97001-018*

Survey Date: 11/1/04 **Tree Number: 1**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 29"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	15.5	25	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	18	30	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	21	20	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	21	30	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		39	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☐ No ☒ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☐ No ☒ Yes
Impacts: Encroachment			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #19. The trunk base is exposed and a different tree is growing out next to the tree at the south side. Fire damage.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No: 97001-018*

Survey Date: 11/1/04 **Tree Number: 2**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 40.5"	☐ stag-head
Percent Canopy Cover: 60	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☐ No ☒ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	35	25	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	31	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	20	20	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	21	30	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET):		55	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☐ No ☒ Yes
Impacts: None			**Borers/ Ants /Termites**	☐ Minor ☒ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #2 and #20. South half of the tree is hollow; there is fire damage, a bee hive, and broken branches. Protective fencing present on 11-21-06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 3**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B+ ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 40'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 39"	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☒A- ☐B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B+ ☐C ☐D ☐ F	**Heritage Tree**: ☐ No ☒ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	41	18	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	39	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	42	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	38	12	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		83	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Also tagged #21. Tree has included bark where major scaffold branches diverge (from ground to 8' up) & on other scaffold branches, minor fire damage, and south side branches are touching the ground. Several dead branches lying on ground. Protective fencing present. Previous LDC tag from 11/1/04 turned over and "Do Not Use" written on back of tag.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 4**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 22.5"	☐ stag-head
Percent Canopy Cover: 40	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B+ ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	27	30	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	25	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	25	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	22	30	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		52	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☐ No ☒ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Previously tagged, but numbers have been scratched out. Next to a fence. Conk in upper scaffold branch (±20' up); some dead branches on ground; some dead branches with fungus & heart rot still present

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 5**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 24", 21"	☐ stag-head
Percent Canopy Cover: 50	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	24	10	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	35	25	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	42	4	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	28	6	**Shading Out**	☐ No ☒ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		66	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☒ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged, but the number has been scratched out. Lots of broken branches and south side branches leaning on the ground. There is included bark. Protective fencing present on 11-21-06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 6**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B+ ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 33'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 22"	☐ stag-head
Percent Canopy Cover: 60	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B+ ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	17	22	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	28	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	29	4	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	18	7	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:** **None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		46	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Previously tagged, but the two numbers have been scratched out. Several dead branches & few broken branches.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 9**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 45'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 36"	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C+ ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☐ No ☒ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	25	6	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	27	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	23	20	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	23	8	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET): 50			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:	☐ Yes ☐ No		**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:	☐ Yes ☐ No		**Fungus:**	☒ No ☐ Yes
Remove Deadwood:	☐ Yes ☐ No		**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:	☐ Yes ☐ No			
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☐ Normal ☒ Small
Proposed Land Use: N/A			**Heart Rot**	☐ No ☒ Yes
Impacts: None			**Borers/ Ants /Termites**	☐ Minor ☒ Moderate ☒Extensive
Mitigations:			**Exudations:**	☐ No ☒ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Large conk on N. side. Numerous ants and termites present. Extensive epicormic growth; included bark where major scaffold branches diverge (±10' up); several dead branches in tree and on ground

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 10**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☒D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 14", 14"	☐ stag-head
Percent Canopy Cover: 50	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	32	15	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	27	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	19	4	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	31	10	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 58			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:	☐ Yes ☐ No		**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:	☐ Yes ☐ No		**Fungus:**	☒ No ☐ Yes
Remove Deadwood:	☐ Yes ☐ No		**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:	☐ Yes ☐ No			
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #18, the tree consists of included bark, broken branches, and bee hive. Protective fencing present on 11-21-06 but missing fence on NW side.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 11**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☒D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 18"	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☒A ☐B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	17	10	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	22	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	26	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	20	10	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 43			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:	☐ Yes ☐ No		**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:	☐ Yes ☐ No		**Fungus:**	☒ No ☐ Yes
Remove Deadwood:	☐ Yes ☐ No		**Vigor:**	☒ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:	☐ Yes ☐ No			
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #2.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 12**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height**: 45'	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 44", 21" (est. due to fencing)	☐ stag-head
Percent Canopy Cover: 30	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☐ No ☒ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	40	9
NE		
E	42	45
SE		
S	35	1
SW		
W	0	0
NW		
CANOPY SPREAD (FEET): 75		

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☐ Normal ☒ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☒ Trunk ☒ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☐ No ☒ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☐ No ☒ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☐ Normal ☒ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☐ Minor ☐ Moderate ☒Extensive
Exudations:	☐ No ☒ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☒ No
Proposed Land Use: N/A
Impacts: None
Mitigations:

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Previously tagged #1. Visually surveyed from outside protective fencing (no access); 2 very large scaffold branches on west side have broken off – several other smaller branches have broken off as well; broken branches on east side also; extensive dieback; bees in trunk cavity

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 14**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 24"	☐ stag-head
Percent Canopy Cover: 50	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	27	15	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	26	25	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	29	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	32	20	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		58	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #3 and #14.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 15**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 18'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 13"	☐ stag-head
Percent Canopy Cover: 80	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	5	12	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	6	12	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	11	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	11	8	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		17	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☐ No ☒ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #4. Bird nest on the tree.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 16**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 24"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	27	10	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	29	5	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	21	12	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	30	5	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET): 59			**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:	☐ Yes ☐ No		**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:	☐ Yes ☐ No		**Fungus:**	☒ No ☐ Yes
Remove Deadwood:	☐ Yes ☐ No		**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:	☐ Yes ☐ No			
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☐ No ☒ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #9.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 17**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 4 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 15.5", 16", 13", 21"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	31	20	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	40	18	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	40	3	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	30	10	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET):		71	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #10. The tree consists of included bark and trunk base is exposed. There are small dead branches.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 18**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 25.5"	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	27	25	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	27	25	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	24	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	30	6	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		57	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #1325. Included bark and broken branches.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 19**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 20'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 17.5"	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	28	7	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	22	12	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	21	7	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	17	5	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET):		49	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #11. Fire damage.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 20**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 28'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 25"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	21	10	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	28	12	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	21	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	18	10	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		46	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☐ No ☒ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #10 and #12. Next to the SCE tower.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 21**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 23"	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C+ ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	27	30	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	20	25	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	24	15	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	21	27	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		51	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes:

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 22**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 12.5"	☐ stag-head
Percent Canopy Cover: 95	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☒A ☐B ☐C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B+ ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	13	13	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	11	17	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	18	20	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	16	5	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		31	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #1213.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 23**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 45'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 32.5"	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☒A ☐B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B+ ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	28	15
NE		
E	32	20
SE		
S	30	45
SW		
W	29	15
NW		
CANOPY SPREAD (FEET): 61		

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities: None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☐ No ☒ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☒ No
Proposed Land Use: N/A
Impacts: None
Mitigations:

Comments & Notes: Previously tagged #8 and #17.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 24**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 40'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 28"	☐ stag-head
Percent Canopy Cover: 40	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	34	12	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	34	8	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	32	4	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	29	5	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		66	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #7.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 25**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8", 24.5"	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	21	8	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	20	6	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	26	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	23	12	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		47	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Fire damage.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 26**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 45'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 32" at 4 ft.	☐ stag-head
Percent Canopy Cover: 30	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C- ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	29	8	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	32	25	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	28	4	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	22	6	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET):		57	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Encroachment			**Borers/ Ants /Termites**	☐ Minor ☒ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Also tagged #15. Fire damage; south & west side of trunk scorched from fire – exfoliating bark; foliage mostly dead/scorched; cavity on NE side of trunk base

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 27**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 24'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 28"	☐ stag-head
Percent Canopy Cover: 80	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	23	25	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	37	20	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	43	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	38	5	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		75	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☒ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #13.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 28**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 24.5"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	33	10	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	32	20	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	30	30	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	32	6	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		64	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #14. Fire damage.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/3/04 **Tree Number: 29**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☒A- ☐B ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 50'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 46"	☐ stag-head
Percent Canopy Cover: 95	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B+ ☐C ☐D ☐ F	**Heritage Tree**: ☐ No ☒ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	43	30	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	42	40	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	44	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	40	3	**Shading Out**	☐ No ☒ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		87	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #6. The tree has included bark, lots of small fresh lobata oaks growing out around the area. Protective fencing present on 11-21-06

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/3/04 **Tree Number: 30**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 28.5"	☐ stag-head
Percent Canopy Cover: 80	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	21	30	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	32	5	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	26	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	32	25	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		64	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☐ Minor ☒ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #27 and #34. There is moss growing on branches.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/304 **Tree Number: 31**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 30" at 3 ft.	☐ stag-head
Percent Canopy Cover: 80	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	20	12	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	18	5	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	31	15	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	25	8	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		51	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☒ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☐ Minor ☒ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #28. Construction fencing around the protected zone of the tree (still present 11-21-06). There is barbwire growing into the trunk. Broken scaffold branches.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 32**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☒C+ ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 22"	☐ stag-head
Percent Canopy Cover: 50	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B+ ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	20	13	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	19	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	17	15	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	17	8	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:** **None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		37	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☐ No ☒ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☒ No ☐ Yes
Impacts: None – potential temp. encroachment			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Also tagged #29. Past fire damage. Fungus on dead branches – dead branches on ground. The tree is located in the middle of channel.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 33**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 17", 14.5", 17"	☐ stag-head
Percent Canopy Cover: 35	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	22	14	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	26	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	11	25	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	23	14	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		49	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☐ No ☒ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☒ No ☐ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Also tagged #25 and #30. The tree is located in a channel. There is past fire damage and dead branches in tree and on ground. South side of the tree was dead at last visit on 11-21-06, resprouting off dead branches to the south, but mostly still sparse foliage on south side.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 34**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D+ ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 4 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 14", 11", 11", 11.5"	☐ stag-head
Percent Canopy Cover: 35	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C- ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D+ ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	14	30	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	17	21	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	23	25	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	18	19	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		37	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☒ No ☐ Yes
Impacts: Encroachment			**Borers/ Ants /Termites**	☐ Minor ☒ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Also tagged #31. Past fire damage; located within the channel; insects in dead branches; galls throughout canopy. Dead branches and dead epicormic growth; shrub growing immediately adjacent to trunks

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/304 **Tree Number: 37**

GENERAL CHARACTERISTICS	
Species: __X__ *Q. agrifolia* ____*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 26"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☒A ☐B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	23	9	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	34	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	35	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	27	8	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		61	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☐ No ☒ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #38. Fire damage, broken branches and beetle holes.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 38**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 33'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 9", 34* "	☐ stag-head
Percent Canopy Cover: 50	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B- ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C+ ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	20	25	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	35	30	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	27	8	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	19	15	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		54	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Encroachment			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Also tagged #28 and #33. Past fire damage, included bark and cavities at base where trunks diverge.

* 34" dbh taken at 5½' – bulge in trunk at 4½' (36" dbh with bulge)

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 39**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 36'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 39"	☐ stag-head
Percent Canopy Cover: 50	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☒A ☐B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B+ ☐C ☐D ☐ F	**Heritage Tree**: ☐ No ☒ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	36	25	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	32	7	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	32	3	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	32	22	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		68	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☒ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Encroachment			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Also tagged #34. Past fire damage – recovering well; some dead branches have broken off

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 41**

GENERAL CHARACTERISTICS	
Species: __X__ *Q. agrifolia* ___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 4 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6.5", 6.5", 4"	☐ stag-head
Percent Canopy Cover: 25	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	16	4	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	14	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	14	4	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	13	2	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET):		30	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☐ Normal ☒ Small
Proposed Land Use: Slope			**Heart Rot**	☐ No ☒ Yes
Impacts: Encroachment			**Borers/ Ants /Termites**	☐ Minor ☐ Moderate ☒Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Also tagged #36. Past fire damage – some dead branches. Very poor health – beetle holes throughout all 4 trunks – cavity at trunk base that is approx. 1½' deep

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 42**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height**: 33'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 18", 18"	☐ stag-head
Percent Canopy Cover: 40	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C+ ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D+ ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	17	8	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	19	25	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	19	12	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	24	7	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET):		46	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☐ No ☒ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☐ No ☒ Yes
Impacts: Encroachment			**Borers/ Ants /Termites**	☐ Minor ☒ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Also tagged #37. The tree is hollow on the south side of the trunk – extensive fire damage with included bark. Section of trunk (approx. 5' x 2.5') with no bark; cavity at trunk base with heart rot; extensive epicormic growth

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 43**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 32"	☐ stag-head
Percent Canopy Cover: 40	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☒A- ☐B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	28	15	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	34	5	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	30	6	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	30	12	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		63	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☒ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☒ No ☐ Yes
Impacts: Encroachment			**Borers/ Ants /Termites**	☐ Minor ☐ Moderate ☒Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Also tagged #32 and #39. Minor fire damage and included bark. Extensive ants on trunk.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 84**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 42"	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B+ ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☐ No ☒ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	38	30	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	32	24	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	39	6	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	33	1	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		77	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☐ No ☒ Yes

Comments & Notes: Previously tagged #114. Poison oak on north side around trunk. Cavity in trunk base with heart rot and beetle holes; some dead branches split in one trunk with heart rot. Protective fencing around #84-86 present on 11-21-06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 85**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* _X___*Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
Q. lobata- berberidifolia hybrid	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 5 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8.5", 3.5", 2", 4", 3"	☐ stag-head
Percent Canopy Cover: 80	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	17	0	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	9	6	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	9	1	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	19	0	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		61	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #115 & #51. Extensive beetle holes and woodpecker holes; split in trunk with heart rot. Protective fencing around #84-86 present on 11-21-06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/10/04 **Tree Number: 86**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐ F
Q. lobata- berberidifolia hybrid	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 12", 7"	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C+ ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	12	15
NE		
E	12	7
SE		
S	15	7
SW		
W	17	10
NW		
CANOPY SPREAD (FEET):	66	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities: None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☒ No ☐ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #116 & #34. Scrub oak to south; some interior dieback; and yellow spots on some leaves (possible chlorosis). Protective fencing around #84-86 present on 11-21-06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/10/04 **Tree Number: 87**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 34"	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B+ ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	26	4	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	29	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	24	8	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	19	5	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		50	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Encroachment			**Borers/ Ants /Termites**	☐ Minor ☒ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #35 and #117. Large conk on south side of trunk, cavity below conk (hollow inside), and large dead branch to east side of trunk. Several broken scaffold branches. Bees in hollow broken branch on S. side. Protective fencing present on 11-21-06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/10/04 **Tree Number: 88**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ___*Q. lobata* _X___*Other*	**Health Rating**[1]: ☐A ☐B ☒C+ ☐D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height**: 10'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6"	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	11	7	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	8	7	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	9	3	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	12	3	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		20	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #106. One dead trunk (3" dbh) and broken branches with heart rot. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/1/04 **Tree Number: 89**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ___*Q. lobata* __*X*__ *Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height**: 12'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	15	10
NE		
E	15	5
SE		
S	13	0
SW		
W	0	0
NW		
CANOPY SPREAD (FEET):	28	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☐ No ☒ Yes
Cavities: None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☒ No ☐ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Old #107. Animal burrow at trunk base and some small sucker growths from base. It is adjacent to #90. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/10/04 **Tree Number: 90**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ___*Q. lobata* _X__ *Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 4", 8.5"	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	12	4
NE		
E	13	2
SE		
S	11	2
SW		
W	11	8
NW		
CANOPY SPREAD (FEET):	24	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☐ No ☒ Yes
Cavities: None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☒ No ☐ Yes
Borers/ Ants /Termites	☐ Minor ☒ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #108. Animal burrow at trunk base, sprouts from ground adjacent to trunk. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/10/04 **Tree Number: 97**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* _X__*Other*	**Health Rating**[1]: ☐A ☐B ☒C+ ☐D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height**: 12'	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 7.5", 2.5", 4.5"	☐ stag-head
Percent Canopy Cover: 60	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	8	6
NE		
E	6	6
SE		
S	7	1
SW		
W	10	3
NW		
CANOPY SPREAD (FEET):	16	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☐ No ☒ Yes
Cavities: None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☐ No ☒ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☒ No ☐ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #120. Small scrub oaks growing to the south. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/10/04 **Tree Number: 100**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 12'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6"	☐ stag-head
Percent Canopy Cover: 60	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C+ ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	8	7
NE		
E	7	5
SE		
S	9	2
SW		
W	14	4
NW		
CANOPY SPREAD (FEET):	21	

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities: None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☒ No ☐ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

Comments & Notes: Previously tagged #125. Base (collar) of trunk buried by eroded soil. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/10/04 **Tree Number: 102**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ___X_*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 45'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 26"	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☒A ☐B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B+ ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	22	20
NE		
E	22	10
SE		
S	23	15
SW		
W	28	17
NW		
CANOPY SPREAD (FEET): 50		

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities: None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☐ No ☒ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☒ No ☐ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #129. Soil is higher on west side of the tree. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 103**

GENERAL CHARACTERISTICS	
Species: ____ *Q. agrifolia* ___*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 4 **Height**: 20'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6.5", 9", 4"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	15	10
NE		
E	15	10
SE		
S	10	8
SW		
W	12	10
NW		
CANOPY SPREAD (FEET):	27	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☐ No ☒ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #145. Woodrat's nest, broken branches, beetle holes, and trunk collar is exposed due to erosion on north side. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 106**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ___*Q. lobata* __*X*__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 6 **Height**: 60'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 2", 1", 6", 3", 3"- at 2'	☐ stag-head
Percent Canopy Cover: 95	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C- ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS

	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	12	6
NE		
E	12	2
SE		
S	14	4
SW		
W	7	6
NW		

CANOPY SPREAD (FEET): 26

TREE HEALTH

Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☒ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS

Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS

In Impacted Area:	☒ Yes ☐ No
Proposed Land Use: Grading	
Impacts: Removal	
Mitigations: See Oak Tree Report	

Comments & Notes: Previously tagged #142. Woodrat's nest. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/3/04 **Tree Number: 108**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height**: 12'	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6.5", one dead trunk	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	13	9
NE		
E	13	7
SE		
S	10	10
SW		
W	13	10
NW		
CANOPY SPREAD (FEET): 26		

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☐ No ☒ Yes
Cavities:	☒ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☐ No ☒ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☐ No ☒ Yes
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #137. Fire damage and one dead trunk. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 109**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 3 **Height**: 18'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6.5", 1"	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	13	10
NE		
E	11	8
SE		
S	7	10
SW		
W	14	15
NW		
CANOPY SPREAD (FEET):	25	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities: None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☒ No ☐ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #134. Fire damage. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 111**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 13'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6"	☐ stag-head
Percent Canopy Cover: 70	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	11	15
NE		
E	7	10
SE		
S	10	8
SW		
W	9	7
NW		
CANOPY SPREAD (FEET):	21	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic[4] **growth**	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☐ Minor ☒ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #136. Fire damage. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 113**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 7.5", 4.5"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	15	4
NE		
E	17	4
SE		
S	10	12
SW		
W	15	4
NW		
CANOPY SPREAD (FEET):	32	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☐ Trunk ☒ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☐ No ☒ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS	
In Impacted Area:	☒ Yes ☐ No
Proposed Land Use: Grading	
Impacts: Removal	
Mitigations: See Oak Tree Report	

Comments & Notes: Previously tagged #131. Fire damage. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 115**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C+ ☐D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 8"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	11	1	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	12	1	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	10	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	13	1	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		25	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☐ No ☒ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☐ No ☒ Yes

Comments & Notes: Previously tagged #149. Brown leaves and sprouting from base. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 116**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 5 **Height**: 15'	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10", 4", 2", 2", 1.5"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	15	12	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	15	6	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	12	3	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	18	1	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		33	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #148. Broken branches, fire damage, hollow trunk, lots of sprouting in trunks and one broken trunk. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 117**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 5 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 3.5", 6.5", 9.5", 10", 2"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	14	5
NE		
E	16	6
SE		
S	17	4
SW		
W	18	6
NW		
CANOPY SPREAD (FEET):	34	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☐ No ☒ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☒ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #150. Fire damage and beetle holes. Couple of dead trunks. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 118**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* _X___*Q. lobata* ____*Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 50'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 27.5"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☐ None
N	25	4	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	24	5	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	31	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	26	9	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		56	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☒ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #157. Fire damage and next to fence. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 120**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 3 **Height**: 20'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6.5", 4", 7"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	7	10
NE		
E	7	1
SE		
S	10	10
SW		
W	12	9
NW		
CANOPY SPREAD (FEET):	19	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☒ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☒ No ☐ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #52. Lots of sprouts and fallen dead trunk. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 122**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height**: 15'	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 3", 7", 7"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	7	12	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	11	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	12	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	8	6	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		19	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #51. Sprouting, dead trunks, fire damage, and wood-rats nest. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 124**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 4 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6", 2", 5"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	11	7	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	4	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	7	10	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	8	5	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		18	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #50. Fire damage, lots of dead branches, sprouts, couple of dead trunks, and hollow all the way up through the trunk. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No: 97001-018*

Survey Date: 11/11/04 **Tree Number: 125**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 3 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 8.5", 9.5"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	16	2	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	22	6	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	17	7	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	21	5	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		43	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #48. Lots of trash, minor exposed roots, and basal flair. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 126**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6"	☐ stag-head
Percent Canopy Cover: 60	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C+ ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	7	7
NE		
E	8	7
SE		
S	9	8
SW		
W	8	8
NW		
CANOPY SPREAD (FEET):	16	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☐ Poor ☒ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities: None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☒ No ☐ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #47. Fire damage and sprouts. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 128**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 4 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6", 4", 3"	☐ stag-head
Percent Canopy Cover: 60	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	0	0	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	7	12	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	10	6	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	8	12	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET):		15	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Beetle holes and hollow. 5" dead trunk. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 129**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 18'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 12"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	7	10
NE		
E	9	11
SE		
S	9	6
SW		
W	10	9
NW		
CANOPY SPREAD (FEET):	19	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☒ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS	
In Impacted Area:	☒ Yes ☐ No
Proposed Land Use: Grading	
Impacts: Removal	
Mitigations: See Oak Tree Report	

Comments & Notes: Previously tagged #41. Fire damage, hollow, and broken scaffold branches. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 130**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 3 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 14.5", 2", 5"	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C- ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	14	2
NE		
E	13	8
SE		
S	13	12
SW		
W	11	4
NW		
CANOPY SPREAD (FEET):	27	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities: None	☒ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☐Average ☒ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #43. Fire damage. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 131**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 4 **Height**: 20'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 7", 5.5", 7.5", 7.5"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	13	5
NE		
E	20	8
SE		
S	14	7
SW		
W	12	10
NW		
CANOPY SPREAD (FEET):	32	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☒ Trunk ☐ Branch
Exfoliating Bark:	☐ No ☒ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☐ No ☒ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #42. Fire damage and hollow. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 132**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☒A ☐B ☐C ☐D ☐F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 15.5", 16.5"	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☒A ☐B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☒A ☐B ☐C ☐D ☐F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	30	9
NE		
E	30	20
SE		
S	30	20
SW		
W	25	15
NW		
CANOPY SPREAD (FEET):	60	

TREE HEALTH	
Wound Wood Development:	☒ Excellent ☐ Average ☐ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☒ No ☐ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities: None	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☒ Excellent ☐Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☒ Minor ☐ Moderate ☐Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☒ No ☐ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: ~~Previously tagged #223 and #1226~~. Previous tag #4361 only remaining tag as of 11-21-06 – all other tags removed. Included bark. Retagged by LDC 11-21-06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 134**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 7 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 4.5", 4.5", 6", 5", 3", 6", 5"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	9	10	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	12	4	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	15	6	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	17	5	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		29	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #785. Fire damage. Retagged by LDC 11-21-06. Near large packrat midden.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/11/04 **Tree Number: 136**

GENERAL CHARACTERISTICS			
Species: ____*Q. agrifolia* __X__*Q. lobata* _____ *Other*			**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
			Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 28'			☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 18", 15"			☐ stag-head
Percent Canopy Cover: 100			**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope			**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F			☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F			**Heritage Tree**: ☒ No ☐ Yes
CANOPY CHARACTERISTICS			**TREE HEALTH**
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:** ☐ Excellent ☐ Average ☒ Poor ☐ None
N	28	11	**Foliage Density** ☒ Normal ☐ Sparse
NE			**Weak crotches:** ☒ No ☐ Yes
E	30	8	**Oak Pit Scale:** ☒ No ☐ Yes
SE			**Mainstem dieback:** ☒ No ☐ Yes
S	32	11	**Exposed Roots:** ☒ No ☐ Yes
SW			**Epicormic growth** ☐ No ☒ Yes
W	23	5	**Shading Out** ☒ No ☐ Yes
NW			**Cavities:** ☒ Trunk ☐ Branch
			Exfoliating Bark: ☒ No ☐ Yes
CANOPY SPREAD (FEET): 60			**Water Pocket(s):** ☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:** ☒ Trunk ☐ Branch
Monitor for Progress:	☐ Yes ☐ No		**Canker/Galls:** ☒ No ☐ Yes
Treat Infestations:	☐ Yes ☐ No		**Fungus:** ☒ No ☐ Yes
Remove Deadwood:	☐ Yes ☐ No		**Vigor:** ☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:	☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:** ☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size** ☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot** ☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites** ☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:** ☒ No ☐ Yes

Comments & Notes: Previously tagged #1225 and #761 (as of 11-21-06 only remaining tag was #761). Beetle holes, located within drainage, trunk has been spray painted, and debris. Retagged by LDC 11-21-06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No: 97001-018*

Survey Date: 11/11/04 **Tree Number: 137**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 20'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8.5", 9"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	14	7	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	16	6	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	19	6	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	13	6	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		33	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☒ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #762. Lots of sprouts at base, one small dead trunk, fire damage, and it is spray painted. LDC tag gone as of 11-21-06; retagged on same date. More tree-like structure.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/16/04 **Tree Number: 141**

GENERAL CHARACTERISTICS	
Species: __X__ *Q. agrifolia* ____ *Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 43 **Height**: 45'	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 32", 25", 11"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	25	20	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	31	3	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	24	6	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	26	6	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET):		57	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☐ No ☒ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☐ Yes ☒ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: N/A			**Heart Rot**	☐ No ☒ Yes
Impacts: None			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations:			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #214. Fire damage, tree trunk is split and hollow, beetle holes, and east side scaffold branch is leaning o the ground.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/16/04 **Tree Number: 143**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C+ ☐D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 10 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 5.5", 4", 3", 4", 3.5", 6", 5", 6", 5", 3.5"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	15	0	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	19	6	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	15	3	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	13	5	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		32	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☐ Normal ☒ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Woodrat's nest.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/16/04 **Tree Number: 144**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 4 **Height**: 10'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 7", 2.5", 2", 9.5"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	10	2	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	12	8	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	10	6	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	0	0	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		20	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #162. On the edge of the slope with one dead trunk.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/16/04 **Tree Number: 145**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 13 **Height**: 20'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6", 6.5", 5", 4"(4), 5.5"(2), 3.5"(3)	☐ stag-head
Percent Canopy Cover: 50	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☒ Poor ☐ None
N	13	5	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	12	15	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	15	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	15	2	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		28	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #181. Fire damage, several deal trunks, and woodrat's nest.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/16/04 **Tree Number: 150**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 3 **Height**: 15'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 5", 5", 7"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	15	12
NE		
E	10	12
SE		
S	0	0
SW		
W	12	12
NW		
CANOPY SPREAD (FEET):	22	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☐ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Slope
Impacts: Removal
Mitigations: See Oak Tree Report

Comments & Notes: Previously tagged #95. Fire damage.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 152**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 12"	☐ stag-head
Percent Canopy Cover: 50	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	5	7	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	7	14	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	0	0	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	0	0	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		7	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #168 and #1222. Fire damage and most of the tree is dead with few live leaves.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 153**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10", 14"	☐ stag-head
Percent Canopy Cover: 80	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☒ Flat ☐ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	16	11	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	17	14	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	22	6	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	16	15	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		38	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #170 and #1224.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 154**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 20'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10"	☐ stag-head
Percent Canopy Cover: 25	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☒ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	14	10	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	12	11	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	9	7	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	15	6	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☐ No ☒ Yes
CANOPY SPREAD (FEET):		27	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☐ Fair ☒ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #154. One dead trunk.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No: 97001-018*

Survey Date: 11/17/04 **Tree Number: 155**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height**: 20'	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6", 6.5", 10"	☐ stag-head
Percent Canopy Cover: 40	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	10	11	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	15	12	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	5	13	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	8	8	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		23	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☐ Minor ☒ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☐ No ☒ Yes

Comments & Notes: Previously tagged #155. Fire damage, woodrat's nest, and lots of broken trunks and branches. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 156**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 8 **Height**: 18'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 3", 6", 3.5", 5", 3.5", 2", 3.5", 6.5"	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C- ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	10.5	7	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	12	11	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	13.5	3	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	12	8	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		24	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☒ Trunk ☒ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #157. Fire damage, and some trunks are split and hollow. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06. New mechanical damage within past 2 years.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 157**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
Q. berberidifolia	**Form:** ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 18'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8.5"	☐ stag-head
Percent Canopy Cover: 80	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	11	3
NE		
E	11	8
SE		
S	16	2
SW		
W	10.5	6
NW		
CANOPY SPREAD (FEET):	27	

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☒ Yes ☐ No
Proposed Land Use: Grading
Impacts: Removal
Mitigations: See Oak Tree Report

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☐ Average ☒ Poor ☐ None
Foliage Density	☒ Normal ☐ Sparse
Weak crotches:	☐ No ☒ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:	☐ No ☒ Yes
Exposed Roots:	☒ No ☐ Yes
Epicormic growth	☐ No ☒ Yes
Shading Out	☒ No ☐ Yes
Cavities:	☒ Trunk ☒ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☒ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:	☐ Excellent ☒Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:	☐ None ☐ Minor ☐ Moderate ☒Extensive
Leaf Size	☒ Normal ☐ Small
Heart Rot	☐ No ☒ Yes
Borers/ Ants /Termites	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

Comments & Notes: Previously tagged #158. Fire damage. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06. Resprouting around base.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 163**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 23", 16.5"	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	14	22	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	22	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	12	20	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	20	35	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		42	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☒ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 164**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* ____*Q. lobata* __X__ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☐D ☐ F
Q. berberidifolia	**Form:** ☒ symmetric ☐ minor asymmetry
Trunk Count: 10 **Height**: 12'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6"(3), 5"(3), 5.5", 4.5"(3)	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☒ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☐ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	12	10	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	15	10	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	10	3	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	8	6	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		23	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☐ Moderate ☒Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Fire damage. Located near existing fence. Clearing around the oak for Magic Mnt. fireworks land zone - occurred between 11/04 and 11/06.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No: 97001-018*

Survey Date: 11/17/04 **Tree Number: 166**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 32.5"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	15	30	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	26	24	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	32	6	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	20	20	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		47	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Broken scaffold branches to the south side and trunk base damaged.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 167**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☐B ☒C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 28'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 21"	☐ stag-head
Percent Canopy Cover: 65	**Crown Class**[2]: ☐ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	5	4	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	9	6	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	15	6	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	14	15	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		23	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Next to fence and brown leaves.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 168**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☐B ☒C+ ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 28"	☐ stag-head
Percent Canopy Cover: 95	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	15	16	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	26	13	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	24	4	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	25	2	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		51	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Previously tagged #50. Fire damage, lots of dead branches, sprouts, couple of dead trunks, and hollow all the way up through the trunk.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 169**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 35'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 26"	☐ stag-head
Percent Canopy Cover: 85	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	21	4	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	17	20	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	30	3	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	24	2	**Shading Out**	☒ No ☐ Yes
NW			**Cavities: None**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		51	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☒ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Fire damage.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 170**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 21"	☐ stag-head
Percent Canopy Cover: 75	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☒ Excellent ☐ Average ☐ Poor ☐ None
N	15	32	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	21	17	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	24	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	15	21	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		39	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☒ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Fire damage.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No: 97001-018*

Survey Date: 11/17/04 **Tree Number: 171**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height**: 30'	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 25", 33"	☐ stag-head
Percent Canopy Cover: 90	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	15	20	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	7	20	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	10	30	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	28	10	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☒ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		35	**Water Pocket(s):**	☐ No ☒ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☐Average ☒ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☐ No ☒ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Hollow, and one trunk is leaning on the ground. Fire damage.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 11/17/04 **Tree Number: 172**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☐B ☐C ☒D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 15", 11.5"	☐ stag-head
Percent Canopy Cover: 100	**Crown Class**[2]: ☒ Decurrent ☒ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☐C ☒D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☐C ☒D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☐ None
N	5	6	**Foliage Density**	☒ Normal ☐ Sparse
NE			**Weak crotches:**	☐ No ☒ Yes
E	18	20	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☒ No ☐ Yes
S	20	12	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	25	0	**Shading Out**	☐ No ☒ Yes
NW			**Cavities:**	☒ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		43	**Water Pocket(s):**	☐ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☐ No ☒ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☒ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☐ Minor ☐ Moderate ☒Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Included bark, lots of dead scaffold branches next to it and lots of beetle holes.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 12/21/09 **Tree Number: 173**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 28'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 21.5"	☐ stag-head
Percent Canopy Cover: 60	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B+ ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	18	19	**Foliage Density**	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	20	4	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:**	☐ No ☒ Yes
S	23	5	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	15	14	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☒ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		41	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:**	☐ Excellent ☒Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:**	☐ None ☐ Minor ☒ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size**	☒ Normal ☐ Small
Proposed Land Use: Slope			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: Tree is deciduous – time of year for tree to lose its leaves. Past fire damage; approx. 10' from Magic Mountain property fence.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 1/31/05 **Tree Number: 174**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 25'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 13.5"	☐ stag-head
Percent Canopy Cover: * = see note below	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B- ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	18	12	**Foliage Density:***	☐ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	14	7	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:***	☐ No ☐ Yes
S	11	15	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth**	☐ No ☒ Yes
W	13	12	**Shading Out**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		29	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:***	☐ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:***	☐ None ☐ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size:***	☐ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: * = Survey taken during tree's dormant period; Previously tagged #108; moss on dead branches.

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 1/31/05 **Tree Number: 175**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 30'	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 21"	☐ stag-head
Percent Canopy Cover: * see note below	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B- ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	23	5	**Foliage Density:***	☐ Normal ☒ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	27	4	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:***	☐ No ☐ Yes
S	16	1	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	0	0	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		39	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:***	☐ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:***	☐ None ☐ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size:***	☐ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot:**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: * = Survey taken during tree's dormant period, Previously tagged #107

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 1/31/05 **Tree Number: 176**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 14.5"	☐ stag-head
Percent Canopy Cover: * see note below	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B- ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	28	21	**Foliage Density:***	☐ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	14	5	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:***	☐ No ☐ Yes
S	13.5	4	**Exposed Roots:**	☐ No ☒ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	5	20	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		41.5	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:***	☐ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:***	☐ None ☐ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size:***	☐ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot:**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: * = Survey taken during tree's dormant period; Previously tagged #106; some broken branches, moss on branches, sunken area at base of trunk on NW side

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No: 97001-018*

Survey Date: 1/31/05 **Tree Number: 177**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☒B ☐C ☐D ☐ F
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 22"	☐ stag-head
Percent Canopy Cover: * see note below	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☒ Average ☐ Poor ☐ None
N	14	25	**Foliage Density:***	☐ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	26	4	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:***	☐ No ☐ Yes
S	27	3	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	16	27	**Shading Out:**	☐ No ☒ Yes
NW			**Cavities:**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		42	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:***	☐ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:***	☐ None ☐ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size:***	☐ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot:**	☒ No ☐ Yes
Impacts: Removal			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: * = Survey taken during tree's dormant period; Previously tagged #105

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 1/31/05 **Tree Number: 178**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☒B- ☐C ☐D ☐ F
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 1 **Height**: 30'	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 20"	☐ stag-head
Percent Canopy Cover: * see note below	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☒B- ☐C ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B- ☐C ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS			**TREE HEALTH**	
	Dripline Radius (Feet)	Canopy to Grade (Feet)	**Wound Wood Development:**	☐ Excellent ☐ Average ☐ Poor ☒ None
N	17	18	**Foliage Density:***	☐ Normal ☐ Sparse
NE			**Weak crotches:**	☒ No ☐ Yes
E	21	12	**Oak Pit Scale:**	☒ No ☐ Yes
SE			**Mainstem dieback:***	☐ No ☐ Yes
S	19	13	**Exposed Roots:**	☒ No ☐ Yes
SW			**Epicormic growth:**	☐ No ☒ Yes
W	28	4	**Shading Out:**	☒ No ☐ Yes
NW			**Cavities:**	☐ Trunk ☐ Branch
			Exfoliating Bark:	☒ No ☐ Yes
CANOPY SPREAD (FEET):		49	**Water Pocket(s):**	☒ No ☐ Yes
PROPOSED ACTIONS			**Mechanical Damage:**	☐ Trunk ☐ Branch
Monitor for Progress:		☐ Yes ☐ No	**Canker/Galls:**	☒ No ☐ Yes
Treat Infestations:		☐ Yes ☐ No	**Fungus:**	☒ No ☐ Yes
Remove Deadwood:		☐ Yes ☐ No	**Vigor:***	☐ Excellent ☐Average ☐ Fair ☐ Poor
Support Structure:		☐ Yes ☐ No		
IMPACTS & MITIGATIONS			**Twig/ Branch Dieback:***	☐ None ☐ Minor ☐ Moderate ☐Extensive
In Impacted Area: ☒ Yes ☐ No			**Leaf Size:***	☐ Normal ☐ Small
Proposed Land Use: Grading			**Heart Rot:**	☒ No ☐ Yes
Impacts: Potential Encroachment			**Borers/ Ants /Termites:**	☒ Minor ☐ Moderate ☐Extensive
Mitigations: See Oak Tree Report			**Exudations:**	☒ No ☐ Yes

Comments & Notes: * = Survey taken during tree's dormant period; Previously tagged #103; some dead branches; large amount of Epicormic growth

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

Survey Date: 1/31/05 **Tree Number: 179**

GENERAL CHARACTERISTICS	
Species: ____*Q. agrifolia* __X__*Q. lobata* ____ *Other*	**Health Rating**[1]: ☐A ☐B ☒C- ☐D ☐ F
	Form: ☐ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height**: 18'	☒ major asymmetry ☐ stump sprout
Trunk DBH (in.): 11"	☐ stag-head
Percent Canopy Cover: * see note below	**Crown Class**[2]: ☒ Decurrent ☐ Excurrent
Existing Terrain: ☐ Flat ☒ Slope	**Age Class:** ☐ immature ☐ semi-mature
Aesthetic Rating[3]: ☐A ☐B ☒C- ☐D ☐ F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐ F	**Heritage Tree**: ☒ No ☐ Yes

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	10	12
NE		
E	0	0
SE		
S	0	0
SW		
W	23	7
NW		
CANOPY SPREAD (FEET):	23	

TREE HEALTH	
Wound Wood Development:	☐ Excellent ☒ Average ☐ Poor ☐ None
Foliage Density:*	☐ Normal ☐ Sparse
Weak crotches:	☒ No ☐ Yes
Oak Pit Scale:	☒ No ☐ Yes
Mainstem dieback:*	☐ No ☐ Yes
Exposed Roots:	☐ No ☒ Yes
Epicormic growth:	☐ No ☒ Yes
Shading Out:	☒ No ☐ Yes
Cavities:	☐ Trunk ☐ Branch
Exfoliating Bark:	☒ No ☐ Yes
Water Pocket(s):	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch
Canker/Galls:	☒ No ☐ Yes
Fungus:	☒ No ☐ Yes
Vigor:*	☐ Excellent ☐Average ☐ Fair ☐ Poor
Twig/ Branch Dieback:*	☐ None ☐ Minor ☐ Moderate ☐Extensive
Leaf Size:*	☐ Normal ☐ Small
Heart Rot:	☐ No ☒ Yes
Borers/ Ants /Termites:	☒ Minor ☐ Moderate ☐Extensive
Exudations:	☒ No ☐ Yes

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☐ No
Treat Infestations:	☐ Yes ☐ No
Remove Deadwood:	☐ Yes ☐ No
Support Structure:	☐ Yes ☐ No

IMPACTS & MITIGATIONS
In Impacted Area: ☐ Yes ☒ No
Proposed Land Use: N/A
Impacts: None
Mitigations:

Comments & Notes: * = Survey taken during tree's dormant period; Previously tagged #104; several dead branches with heart rot where branches broke off; moss on branches

[1] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead
[2] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[3] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead

APPENDIX II

DOCUMENTS PERTAINING TO APPROVED OAK TREE PERMITS LOCATED IN THE IMMEDIATE VICINITY OF THE PROJECT AREA

COUNTY OF LOS ANGELES

FIRE DEPARTMENT
1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294
(323) 890-4330

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

August 12, 2009

Philip Estes
Department of Regional Planning
Zoning Permits
320 West Temple Street
Los Angeles, CA 90012

Dear Mr. Philip Estes:

OAK TREE PERMIT #03-360, CHEVRON RELOCATION PROJECT, IN UNICORPORATED SANTA CLARITA
CLOSURE OF OAK TREE PERMIT

On August 12, 2009 Forestry Technician Samantha Conn preformed a final monitoring inspection at the aforementioned property. The five (5) mitigation trees numbers 75, 76,77,78,79 have survived the monitoring period. This warrants the closure of the monitoring term for Oak Tree Permit No.03-360.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

FRANK VIDALES, ACTING CHIEF, FORESTRY
FORESTRY DIVISION, PREVENTION BUREAU

c: Romo
OTP #03-360

cc: Environmental Review Unit

cc: Richard Johnson & Associates, Inc.
801 Glenneyers St. Suite D, Laguna Beach, CA 92651

Richard Johnson & Associates
Environmental Horticulture

801 Glenneyre Street, Suite D, Laguna Beach, CA 92651
P.O. Box 127, Laguna Beach, CA 92652
Ph. (949) 497-4248 • Fx. (949) 497-6440

September 21, 2010

Mr. Alex Herrell
NEWHALL LAND
25124 Springfield Court, Suite 300
Valencia, CA 91355

RE: **OTP 03-360 Chevron Relocation Project Update for Fallen Tree #16**

Dear Alex:

As requested and as arborist of record for the referenced project, RJA sends this update regarding the status of native oak tree #16, a *Quercus lobata*. A brief history and arborist observations follow:

As detailed in a documentation letter dated November 20, 2007 to Los Angeles County Forester, Bill Romo, a fire spread through the site in October of 2007 and damaged a number of native LA County ordinance-sized oak trees. As of September 2010, one of these trees fell. The fallen tree was tagged with number 16 as it relates to the original Oak Tree Report for the project, completed by Robert Wallace, January 26, 2004.

Recent field Inspection indicated the trunk was hollow and had burned heavily in the fire resulting in a weak trunk base attachment. The lower trunk had broken away from the trunk base, as shown in the enclosed photographs. No trunk sprouting of new growth was observed at the time this 2010 inspection.

A copy of this documentation letter is being sent to Los Angeles County Forester, Bill Romo, Environmental Review Unit. Please call if you have any questions.

Respectfully submitted by,

RICHARD JOHNSON & ASSOCIATES, INC.

xc: Bill Romo, LOCO

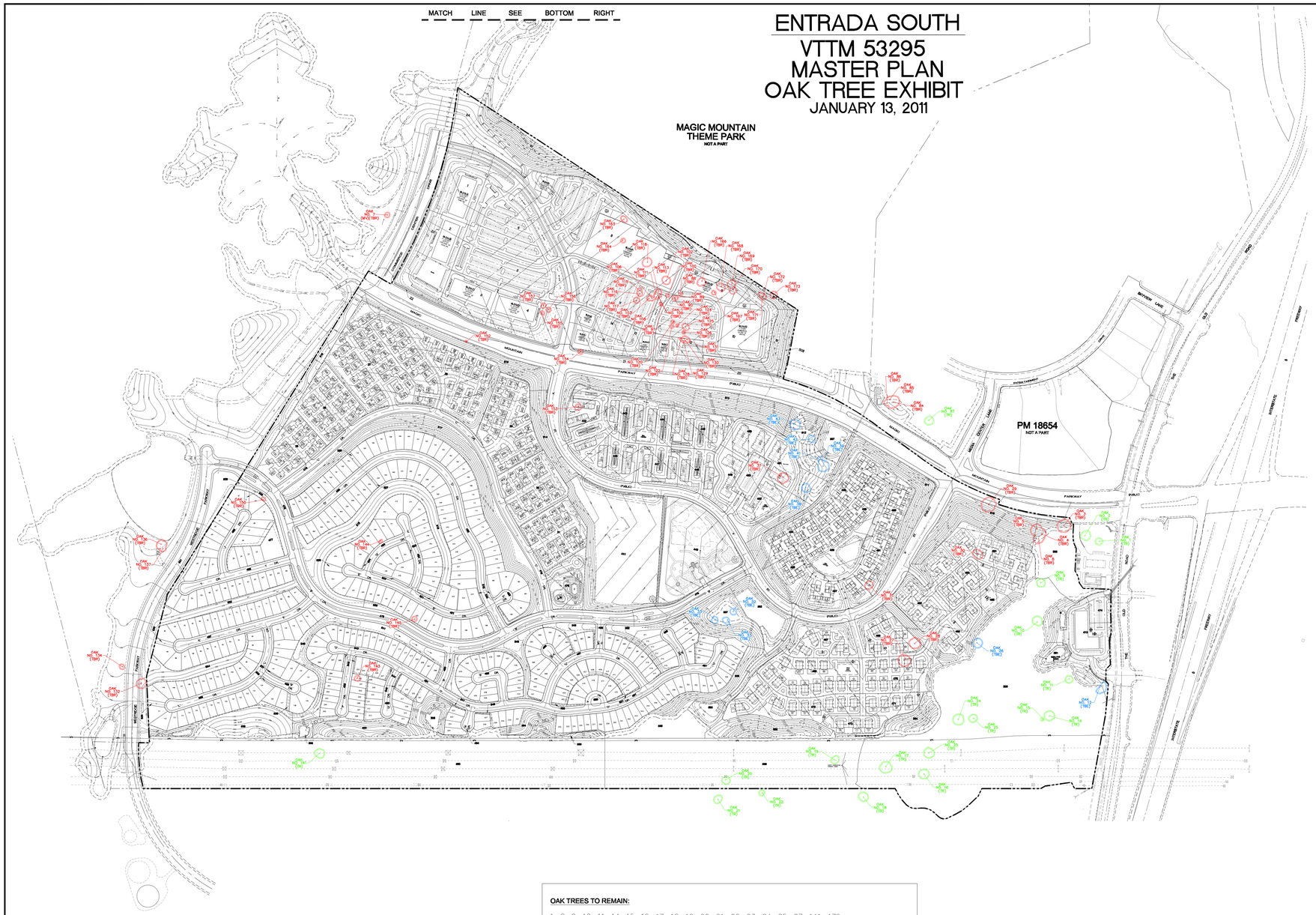
Tree #16 Photographs

16

ENTRADA SOUTH

VTTM 53295
MASTER PLAN
OAK TREE EXHIBIT

JANUARY 13, 2011



LEGEND:

- OAK TREES TO REMAIN (25 TREES)
- OAK TREES TO BE ENCROACHED (12 TREES)
- OAK TREES TO BE REMOVED (67 TREES)
- PROTECTED ZONE

TOTAL: 104 TREES

OAK TREES TO REMAIN:

1, 2, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 87, 141, 179, 717 (MV), 718 (MV), 719 (MV), 4351 (MV), 4353 (MV)
(15 OAK TREEES ONSITE, 10 OAK TREES OFFSITE)

OAK TREES TO BE ENCROACHED:

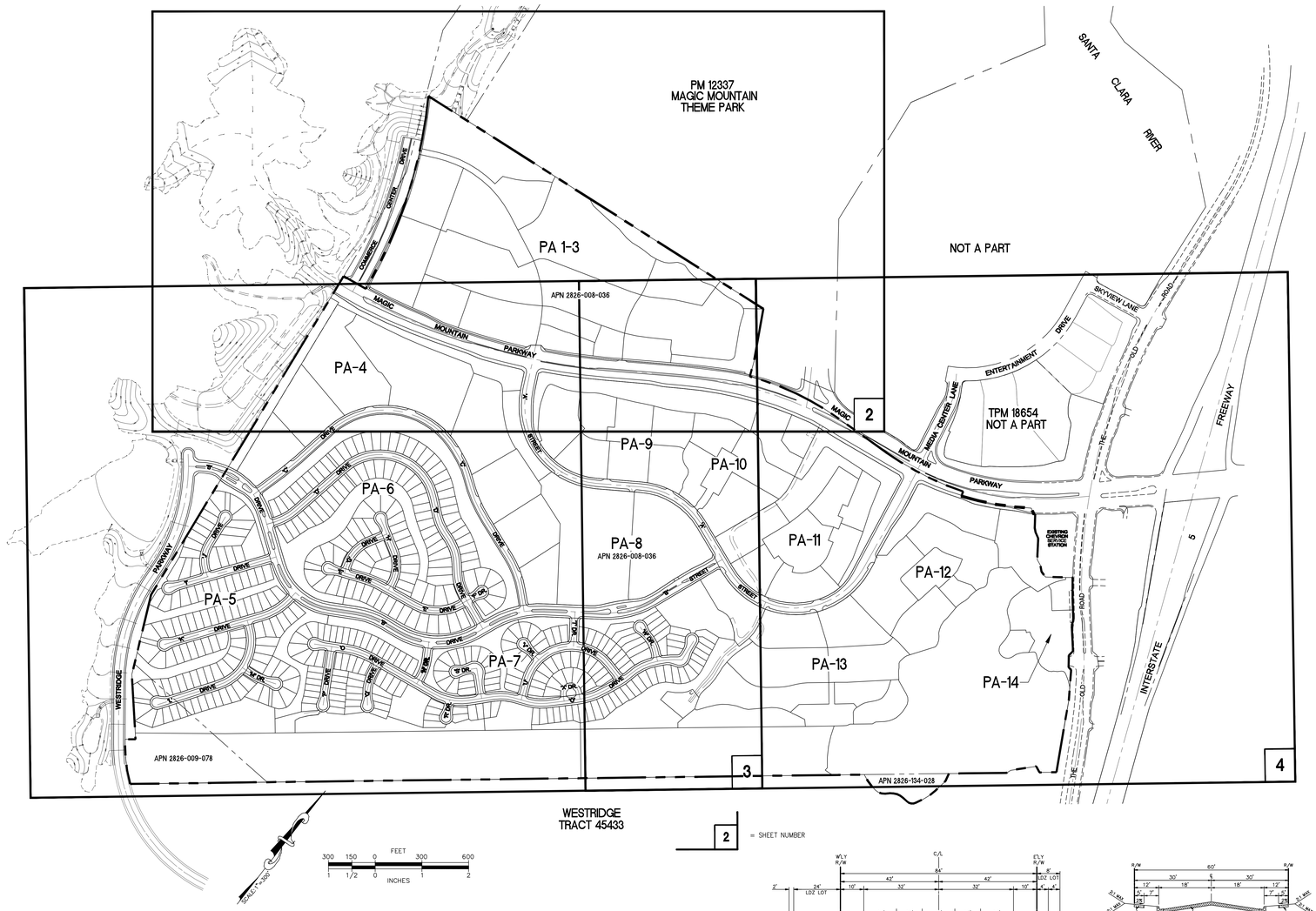
12, 26, 32, 33, 34, 38, 39, 41, 42, 43, 178, 4352 (MV)
(11 OAK TREES ONSITE, 2 OAK TREES OFFSITE)

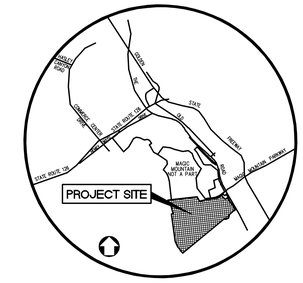
OAK TREES TO BE REMOVED:

3, 4, 5, 6, 7 (MV), 27, 28, 29, 30, 31, 37, 84, 85, 86, 88, 89, 90, 97, 100, 102, 103, 106, 108, 109, 111, 113, 115, 116, 117, 118, 120, 122, 124, 125, 126, 128, 129, 130, 131, 132, 134, 136, 137, 143, 144, 145, 150, 152, 153, 154, 155, 156, 157, 163, 164, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177
(55 OAK TREEES ONSITE, 12 OAK TREES OFFSITE)

ALLIANCE
LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-8696
FAX: (760) 431-9862
27442 PORTOLA PKWY.
STE. 200
LAGUNA HILLS, CA 92656
TEL: (949) 559-0700
CIVIL ENGINEERING • LAND PLANNING • NATURAL DESIGN • SURVEYING

I:\CAD\2930\MASTER PLAN\2930_MASTER_PLAN_OAK_TREE_EXHIBIT.dwg





VICINITY MAP
NOT TO SCALE

GENERAL NOTES

1. GRADE ELEVATIONS SHOWN ON THE VTTM AND THE EXHIBITS MAP ARE APPROXIMATE. THE ELEVATIONS MAY CHANGE BY 3 FEET. ELEVATION CHANGES MAY BE GREATER THAN 3 FEET BUT ONLY IF DETERMINED BY DPW AND DRP. THAT THE REVISIONS ARE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP APPROVAL.
2. LOT LINES CAN BE ADJUSTED TO THE SATISFACTION OF DRP PROVIDED NO ADDITIONAL DEVELOPMENT LOTS ARE CREATED. THE DEGREE OF ADJUSTMENT SHALL BE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP ACT.
3. ALIGNMENT AND GEOMETRICS OF STREETS AND TRAILS ARE APPROXIMATE. ADJUSTMENTS TO TRAILS CAN BE MADE WITH APPROVAL BY DRP AND THE PARKS AND RECREATION DEPARTMENT.
4. BUILDING FOOTPRINTS THAT ARE SHOWN ON THE VTTM OR THIS EXHIBIT MAP ARE ONLY FOR ILLUSTRATIVE PURPOSES. ACTUAL BUILDING LOCATIONS AND FOOTPRINTS MAY VARY. APPROVAL IS REQUESTED DURING PLOT PLAN REVIEW PROVIDED THE PROPOSED BUILDINGS SATISFY ALL EXISTING CODES AND ORDINANCES. THIS MINOR CHANGE DOES NOT, HOWEVER, INCLUDE:
   A. THE CHANGE IN PROPOSED LAND USE.
   B. A CHANGE OF MORE THAN 5 FEET IN BUILDING HEIGHT.
5. THE RECORDATION OF A "LARGE LOT" PARCEL MAP WHERE ALL PARCELS ARE LARGER THAN 20 ACRES SHALL NOT REQUIRE THE OBLIGATION OF CONSTRUCTING IMPROVEMENTS OR INFRASTRUCTURE AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
6. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL NOT REQUIRE THE OBLIGATION OF FEES, DEDICATIONS (E.G. RIGHTS-OF-WAY OR PARKS), EXACTIONS, OR INFRASTRUCTURE AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
7. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL BE CONSIDERED THE FILING OF THE FIRST UNIT FOR THE PURPOSE OF TIME EXTENSIONS PURSUANT TO THE SUBDIVISION MAP ACT.
8. PERMISSION IS REQUESTED FOR UNIT PHASING.
9. PERMISSION IS REQUESTED TO COMBINE LOTS.
10. PERMISSION IS REQUESTED TO RECORD ADDITIONAL OPEN SPACE LOTS.
11. PERMISSION IS REQUESTED TO RECORD ADDITIONAL UTILITY LOTS AND PROVIDE MAINTENANCE EASEMENTS TO THE SATISFACTION OF THE DPW AND DRP.
12. THE LOCATIONS OF APPURTENANT STRUCTURES (E.G., PASEOS, PEDESTRIAN BRIDGES, TRANSIT SHELTERS, WATER QUALITY BASINS, ETC.) MAY BE RELOCATED TO THE SATISFACTION OF DPW AND DRP.
13. PERMISSION IS REQUESTED TO RECORD JOINT ACCESS EASEMENTS (20' WIDE) AS LOTS.
14. PERMISSION IS REQUESTED TO MASS GRADE.
15. PROPOSED STREET GRADING IS APPROXIMATE ONLY AND SUBJECT TO ADJUSTMENTS PENDING DETERMINATION OF FINAL DEVELOPMENT LAYOUT AND PLANS.
16. LOCATION OF TRAILS TO BE FINALIZED PRIOR TO FINAL MAP APPROVAL.
17. PERMISSION IS REQUESTED TO PROVIDE RIGHT OF WAY RETURN RADII OF 13 FT AT ALL LOCAL STREET INTERSECTIONS AND 27 FT WHERE ALL PLANNED HIGHWAYS INTERSECT OR WHERE ONE OF THE ROADS SERVES A COMMERCIAL OR INDUSTRIAL DEVELOPMENT.
18. MODIFIED STREET CROSS-SECTIONS AS SHOWN ON VESTING TENTATIVE TRACT MAP ARE REQUESTED. HOWEVER, PERMISSION IS SOUGHT TO CONSTRUCT STANDARD AND ALTERNATE STREET CROSS-SECTIONS AT THE DISCRETION OF THE SUBDIVIDER.
19. ALL DIMENSIONS SHOWN ARE APPROXIMATE.
20. TOPO COMPILED FROM DATA FLOWN 11/06.
21. ADDITIONAL RIGHT OF WAY MAY BE DEDICATED AS REQUIRED TO THE SATISFACTION OF PUBLIC WORKS.
22. RELATED ENTITLEMENTS:
   - TENTATIVE MAP NO. 53295
   - GENERAL PLAN EMENDMENT NO. 201000001 (LOCAL PLAN AMENDMENT 201000002)
   - CONDITIONAL USE PERMINT NO. 00-210
   - OAK TREE PERMIT NO. 200700018
   - ZONE CHANGE NO. 00-210
   - PARKING PERMIT NO. 200700013
23. PERMISSION IS REQUESTED TO ALLOW OFFICE & RETAIL SPACE TO BE INTERCHANGEABLE PROVIDED THE REQUIRED PARKING IS SATISFIED.
24. FIRE ACCESS TO BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.
25. MODIFICATIONS OF REQUIRED STREET FRONTAGE IS REQUESTED PER SECTION 21.24.040 OF THE LOS ANGELES COUNTY CODE.
26. GUEST PARKING PROPOSED ON PRIVATE DRIVES PER COUNTY PRIVATE DRIVE MANUAL.
27. PRIVATE DRIVES DESIGNED PER THE COUNTY PRIVATE DRIVE MANUAL.
28. SHARED AND RECIPROCAL PARKING SHOWN PER REQUESTED PARKING PERMIT.
29. WITHIN COMMERCIAL PLANNING AREA 1-3, RESIDENTIAL PLANNING AREAS 4, 9-13 AND COMMERCIAL PLANNING AREA 14 FLEXIBILITY IN FUTURE DESIGN IS PERMITTED, INCLUDING BUT NOT LIMITED TO: CHANGING COMMERCIAL TO OFFICE AND OFFICE TO COMMERCIAL, CHANGING APARTMENTS TO CONDOMINIUMS AND CONDOMINIUMS TO APARTMENTS, CHANGING FROM ATTACHED TO DETACHED UNITS AND DETACHED TO ATTACHED UNITS, CHANGES TO BUILDING TYPES AND LOCATION, LOT CONFIGURATIONS AND RELOCATION OF DRIVEWAYS, DRIVE ENTRIES, DRIVEWAY ALIGNMENT AND OPEN SPACE AND LANDSCAPE AREA LOCATIONS AFFECTED AS A RESULT OF DESIGN CHANGES, PROVIDED THE CHANGES DO NOT EXCEED THE APPROVED TOTAL RESIDENTIAL UNIT COUNT, TOTAL COMMERCIAL/OFFICE SQUARE FOOTAGE AND DOES NOT RESULT IN A REDUCTION OF TOTAL OPEN SPACE. CHANGES SHALL BE DEPICTED ON A REVISED EXHIBIT MAP.
30. THE ABOVE MENTIONED GENERAL NOTES (THAT ADDRESS MINOR MODIFICATION) MAY REQUIRE REVIEW AND APPROVAL OF A REVISED EXHIBIT MAP.
31. PERMISSION REQUESTED TO HAVE REDUCED LOT SIZES (< 5000 SF) AND REDUCED LOT WIDTHS (< 50'). MINIMUM RESIDENTIAL SINGLE-FAMILY LOT SIZE IS 4,000 SF. MINIMUM RESIDENTIAL SINGLE-FAMILY LOT WIDTH(NON-CULDESAC) IS 40'.
32. GRADING OF LOTS 5,3293 MAY BE DONE IN SUB-PHASES OVER TIME BUT SUCH GRADING WILL STILL BALANCE WITHIN THE GRADING LIMITS IDENTIFIED ON THE TENTATIVE TRACT MAP. ALL GRADING OF SUCH LOTS WILL BE PERFORMED AS ENGINEERED GRADING. THE LIMIT OF A GRADING SUB-PHASE WILL BE ESTABLISHED TO ACHIEVE A BALANCED EARTHWORK FOR THAT SUB-PHASE AND MAY EXTEND BEYOND THE LIMITS OF A PARTICULAR FINAL UNIT MAP BOUNDARY IN ORDER TO ACHIEVE A PHASED OF GRADING BALANCED. AN INTERIM HYDROLOGY REPORT WILL BE PROVIDED TO SUPPORT THE PHASED GRADING. DRAINAGE AND EROSION CONTROL FACILITIES WILL BE PROVIDED TO THE SATISFACTION OF DWP.
33. PERMISSION REQUESTED TO VACATE EXCESS RIGHT OF WAY ON MAGIC MOUNTAIN PARKWAY.

SPECIAL NOTES

1. WATER QUALITY BASINS AND BIOSWALES WILL PROVIDE FOR TREATMENT OF STORM WATER RUN OFF PER THE APPROVED DRAINAGE CONCEPT.
2. THE WATER QUALITY BASINS SHALL BE DEDICATED TO THE COUNTY WHEN COMPLETED AND ACCEPTED.
3. PROPOSED RECLAIMED WATER LINES WILL BE LOCATED IN PUBLIC STREETS AND TRAILS.

SURVEY NOTES:

VERTICAL DATUM:
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS BENCHMARK DESCRIBED AS FOLLOWS: LACDPW L5402 RND HD SPK IN LOWER CONC HDWL @ N END 24 FT W/O C/L THE OLD RD (W ROWY) AND 0.6 MI S/O HENRY MAYO DR @ MI MKR @6.25 NEWHALL QUAD. 1995 ADJUSTMENT (NAVD 1988) ELEVATION = 1031.951

THERE IS APPROXIMATELY 2.3 FEET DIFFERENCE BETWEEN PREVIOUS COUNTY OF LOS ANGELES DATUMS BASED UPON NAVD 1929 AND NAVD 1988 (NAVD 1988 IS 2.3 FEET HIGHER THAN NAVD 1929).

AERIAL PLANMETRY:
THIS SURVEY WAS PREPARED BY PHOTOGRAMMETRIC PROCESSES, UTILIZING AERIAL PHOTOGRAPHY DATED NOVEMBER 15, 2006. THE OUTLINE OF BUILDINGS AND OTHER ROOFED IMPROVEMENTS, MAY INCLUDE EAVES, CANOPIES AND BALCONIES, SINCE BUILDINGS BELOW THESE ITEMS ARE NOT VISIBLE TO THE CAMERA.

TOPOGRAPHY:
DATED NOVEMBER 15, 2006, AND COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.

CONTOUR INTERVAL:
10 FOOT, UNLESS OTHERWISE NOTED.

PROJECT SUMMARY:

GROSS AREA:	382.3 Acres
NET AREA:	362.8 Acres
TOTAL LOTS:	560
TOTAL RESIDENTIAL D.U.:	1,640 DU
TOTAL OFFICE/COMMERCIAL:	726,000 SF
EXISTING ZONING:	A-2-5 (362.0 AC), C-3 (18.8 AC), C-R (1.5 AC)
PROPOSED ZONING:	C-3 (3.9 AC), C-3-DP (56.6 AC), RPD-5000-4U (140.8 AC), RPD-5000-8U (179.5 AC), C-R (1.5 AC)
EXISTING LAND USE:	N1 (41.2 AC), HM (234.7 AC), U1 (13.9 AC), C (92.5 AC)
PROPOSED LAND USE:	C (60.5 AC), U1 (1.5 AC), U2 (140.8 AC), U3 (179.5 AC)
APN: 2826-008-036 2826-009-078 2826-134-028	
ESTIMATED EARTHWORK: ONSITE:	7,000,000 CY CUT 7,400,000 CY FILL 400,000 CY IMPORT
OFFSITE:	1,100,000 CY CUT 700,000 CY FILL 400,000 CY EXPORT
TOTAL:	8,100,000 CY CUT 8,100,000 CY FILL

LAND USE AND ZONING (SANTA CLARITA VALLEY AREA PLAN UPDATE)

EXISTING LAND USE:	CM, H5, U1, OS-PR
PROPOSED LAND USE:	CM, H5, U1, OS-PR
EXISTING ZONING:	C-3, R-1, C-R
PROPOSED ZONING:	C-3, R-1, R-3, C-R

RELATED ENTITLEMENTS

GENERAL PLAN AMENDMENT NO. 201000001
(LOCAL PLAN AMENDMENT 201000002)
CONDITION USE PERMINT NO.. 00-210
OAK TREE PERMIT NO. . . . . ROAK 200700018
ZONE CHANGE NO. . . . . RZC 00-210
PARKING PERMIT NO.. 200700013

LEGEND:

1	LOT NO.
10,000 SF	LOT AREA (SQUARE FEET)
1010.0	PAD ELEVATION
	PROJECT BOUNDARY
	PROPOSED RIGHT OF WAY
	PROPOSED UTILITY EASEMENT
	EXISTING EASEMENT
1000	PROPOSED CONTOUR
	PROPOSED DAYLIGHT LINE
	TEMPORARY IMPACT LINE FOR GRADING
D	PROPOSED STORM DRAIN
SS	PROPOSED SANITARY SEWER
W	PROPOSED WATER
D	PROPOSED STORM DRAIN INLET/OUTLET
	PROPOSED CATCH BASIN
SD	EXISTING STORM DRAIN LINE
S	EXISTING SEWER LINE
W	EXISTING WATER LINE
O	EXISTING OIL LINE
G	EXISTING GAS LINE
OE	EXISTING OVERHEAD POWER LINE
	EXISTING POWER POLE
	PROPOSED RETAINING WALL
	SIGHT DISTANCE LINE
	EXISTING OIL WELL LOCATION

ABBREVIATIONS:

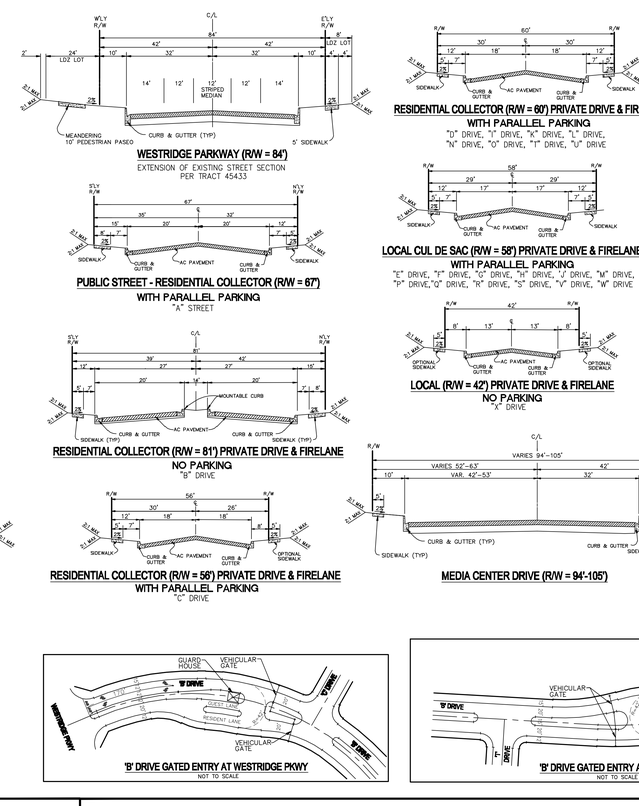
AC	ACRES
EX	EXISTING
FF	FINISH FLOOR
GB	GRADE BREAK
HP	HIGH POINT
L	LENGTH
MIN	MINIMUM
PROP	PROPOSED
R	RADIUS
R/W	RIGHT OF WAY
SF	SQUARE FEET
SD	STORM DRAIN
SS	SANITARY SEWER
TBI	TO BE IMPACTED
TBR	TO BE REMOVED
VC	VERTICAL CURVE
W	WATER

UTILITY PROVIDERS

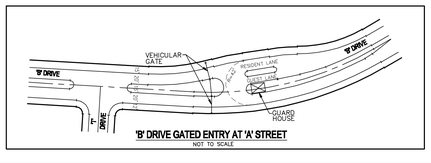
SEWER:	L.A. COUNTY SANITATION DIST. 32
WATER:	VALENCIA WATER COMPANY
ELECTRICAL:	SOUTHERN CALIFORNIA EDISON
GAS:	SOUTHERN CALIFORNIA GAS CO.
TELEPHONE:	AT&T
CABLE TV:	TIME WARNER CABLE

LOT SUMMARY

Lot Numbers	Sheet No.	No. of Lots	No. of Bldgs	Type (Use)	Dwelling Units	Commercial SF	Total Acres
Planning Area 1-3							
1-6	2	6	4	OFFICE/COMMERCIAL		400,000	19.5
7-15		9	8	OFFICE/COMMERCIAL		276,000	24.7
16-24		9		OPEN SPACE			8.6
Planning Area 4							
25-31	2,3	7		CONDOMINIUM	185		25.6
Planning Area 5							
32-143	3	112	112	SINGLE-FAMILY 46'x100' MIN.	112		16.5
Planning Area 6							
144-265	3	122	122	SINGLE-FAMILY 50'x110' MIN.	122		19.4
Planning Area 7							
266-439	3	174	174	SINGLE-FAMILY 40'x100' MIN.	174		20.0
Planning Area 8							
440	3	1		PUBLIC PARK SITE			5.5
441		1		SCHOOL SITE			8.6
Planning Area 9							
442-448	3,4	7	15	CONDOMINIUM	255		11.1
Planning Area 10							
449-453	4	5	8	CONDOMINIUM	236		8.0
Planning Area 11							
454-461	4	8	18	CONDOMINIUM	248		13.8
Planning Area 12							
462-466	4	5	21	CONDOMINIUM	120		10.9
Planning Area 13							
467-473	4	7	5	CONDOMINIUM	188		15.6
Planning Area 14							
474-475	4	2	1	OFFICE/COMMERCIAL		50,000	4.3
Miscellaneous							
476		1		PRIVATE RECREATION CENTER 'A'			1.6
477		1		PRIVATE RECREATION CENTER 'B'			0.5
478-500	2,3,4	23		PRIVATE DRIVES			29.4
501-507		7		PUBLIC UTILITY			6.5
508-560		53		OPEN SPACE			112.7
				PUBLIC STREETS			19.5
TOTAL		560			1,640	726,000	382.3



'B' DRIVE GATED ENTRY AT WESTRIDGE PKWY
NOT TO SCALE



'B' DRIVE GATED ENTRY AT 'A' STREET
NOT TO SCALE

OAK TREES TO REMAIN:

1, 2, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 87, 141, 179, 717 (MV), 718 (MV), 719 (MV), 4351 (MV), 4353 (MV)
(15 OAK TREEES ONSITE, 10 OAK TREES OFFSITE)

OAK TREES TO BE ENCROACHED:

12, 26, 32, 33, 34, 38, 39, 41, 42, 43, 178, 4352 (MV)
(10 OAK TREES ONSITE, 2 OAK TREES OFFSITE)

OAK TREES TO BE REMOVED:

3, 4, 5, 6, 7 (MV), 27, 28, 29, 30, 31, 37, 84, 85, 86, 88, 89, 90, 97, 100, 102, 103, 106, 108, 109, 111, 113, 115, 116, 117, 118, 120, 122, 124, 125, 126, 128, 129, 130, 131, 132, 134, 136, 137, 143, 144, 145, 150, 152, 153, 154, 155, 156, 157, 163, 164, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177
(55 OAK TREEES ONSITE, 12 OAK TREES OFFSITE)

LEGEND:

	OAK TREES TO REMAIN (25 TREES)
	OAK TREES TO BE ENCROACHED (12 TREES)
	OAK TREES TO BE REMOVED (67 TREES)
PROTECTED ZONE	TOTAL: 104 TREES

OAK TREE LOCATION & IMPACT MAP

SHEET 1 COUNTY OF LOS ANGELES 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802
27453 TOURNEY ROAD
SUITE 200
VALENCIA, CA 91355
TEL: (661) 799-2760
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PREPARED FOR:
NEWHALL LAND & FARMING CO.
25124 SPRINGFIELD COURT
SUITE 300
VALENCIA, CA 91355
(661)255-4000
REPRESENTATIVE: MR. MILES HELFRICH

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:

CRAIG M. WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-12 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

I:\CAD\0930\M OAK TREE SET\0930_TENTATIVE-MAP_OAKS_SHEET-01.dwg

EASEMENTS BASED ON FIRST AMERICAN TITLE INSURANCE COMPANY
ORDER NO. 3400119 (DB) DATED JUNE 28, 2010

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION	ADDITIONAL COMMENTS
2	GENERAL PIPE LINE COMPANY OF CALIFORNIA	PIPE LINE	AUGUST 5, 1912 INSTR. NO. 119 BOOK 5156 PAGE 8	TO BE QUITCLAIMED	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE
3	PACIFIC LIGHT AND POWER CORPORATION	POLES, etc.	MAY 22, 1914 INSTR. NO. 131 BOOK 5810 PAGE 192	TO BE QUITCLAIMED	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE
4	PACIFIC TELEPHONE AND TELEGRAPH COMPANY	POLES, etc.	JUNE 12, 1915 INSTR. NO. 132 BOOK 6083 PAGE 40	TO BE QUITCLAIMED	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING
5.1	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 27, 1920 INSTR. NO. 426 BOOK 7065 PAGE 323	TO BE QUITCLAIMED	NOT PLOTTABLE PARTS OF DOCUMENTS ARE ILLEGIBLE
5.2	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	MAY 28, 1924 INSTR. NO. 570 BOOK 4222 PAGE 192	TO BE QUITCLAIMED	NOT PLOTTABLE PARTS OF DOCUMENTS ARE ILLEGIBLE
5.3	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	APRIL 17, 1925 INSTR. NO. 1820 BOOK 3307 PAGE 67	TO REMAIN	
5.4	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 10, 1928 INSTR. NO. 1921 BOOK 7853 PAGE 11	TO REMAIN	
5.5	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JANUARY 12, 1931 INSTR. NO. 917 BOOK 10831 PAGE 4	TO REMAIN	
5.6	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	SEPTEMBER 14, 1941 INSTR. NO. 20 BOOK 18811 PAGE 7	TO BE QUITCLAIMED	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING
5.7	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JULY 28, 1948 INSTR. NO. 3094 BOOK 27928 PAGE 248	TO BE QUITCLAIMED	NOT PLOTTABLE PARTS OF DOCUMENTS ARE ILLEGIBLE
5.8	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	MAY 25, 1950 INSTR. NO. 2284 BOOK 33333 PAGE 24	TO BE QUITCLAIMED	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE
5.9	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	NOVEMBER 24, 1950 INSTR. NO. 3033 BOOK 34881 PAGE 223	TO BE QUITCLAIMED	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING
5.10	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	SEPTEMBER 27, 1951 INSTR. NO. 2313 BOOK 37026 PAGE 252	TO BE QUITCLAIMED	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE
5.11	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	MAY 22, 1952 INSTR. NO. 2249 BOOK 38991 PAGE 298	TO BE QUITCLAIMED	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE
5.12	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JULY 11, 1952 INSTR. NO. 2716 BOOK 38363 PAGE 41	TO BE QUITCLAIMED	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING
5.13	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	SEPTEMBER 10, 1952 INSTR. NO. 3424 BOOK 38811 PAGE 49	TO BE QUITCLAIMED	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE
5.14	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	OCTOBER 27, 1954 INSTR. NO. 3026 BOOK 49950 PAGE 255	TO BE QUITCLAIMED	NOT PART OF ENTRADA SOUTH
5.15	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JANUARY 15, 1958 INSTR. NO. 3085 BOOK 56395 PAGE 205	TO BE QUITCLAIMED	
5.16	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JULY 12, 1966 INSTR. NO. 2217 BOOK 03363 PAGE 475	TO BE QUITCLAIMED	
5.17	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	AUGUST 7, 1968 INSTR. NO. 3513 BOOK 04083 PAGE 406	TO BE QUITCLAIMED	
5.18	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 5, 1971 INSTR. NO. 3029 BOOK 04964 PAGE 262	TO BE QUITCLAIMED	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE

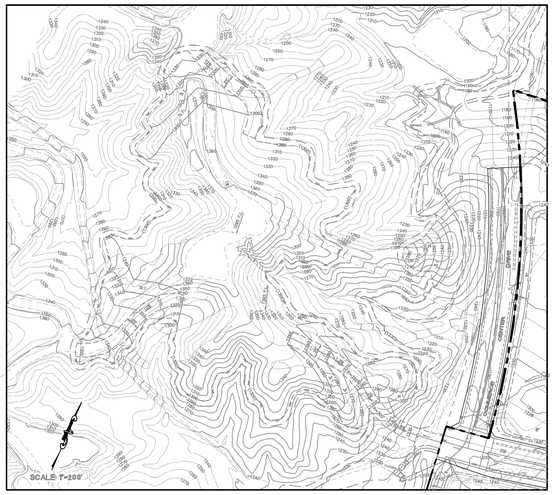
EASEMENTS BASED ON FIRST AMERICAN TITLE INSURANCE COMPANY
ORDER NO. 3400119 (DB) DATED JUNE 28, 2010

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION	ADDITIONAL COMMENTS
6	SOUTHERN CALIFORNIA TELEPHONE COMPANY	POLES, ect.	AUGUST 21, 1935 INSTR. NO. 732 BOOK 13612 PAGE 109	TO BE QUITCLAIMED	
7	UNION OIL COMPANY OF CALIFORNIA	PIPE LINE	MAY 6, 1938 INSTR. NO. 852 BOOK 15781 PAGE 98	TO BE QUITCLAIMED	
8	AUGUST A. RUBEL & MARY RUBEL	PIPE LINE	JUNE 14, 1940 INSTR. NO. 988 BOOK 17568 PAGE 237	TO BE QUITCLAIMED	NOT PLOTTABLE NO SPECIFIC DESCRIPTION OF EASEMENT
9	INTENTIONALLY DELETED FROM TITLE REPORT	—	—	—	—
10	SOUTHERN PACIFIC RAILROADS & SOUTHERN PACIFIC CO.	ROADWAY	SEPTEMBER 20, 1941 INSTR. NO. 20 BOOK 18811 PAGE 7	TO BE QUITCLAIMED	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING
11	INTENTIONALLY DELETED FROM TITLE REPORT	—	—	—	—
12	INTENTIONALLY DELETED FROM TITLE REPORT	—	—	—	—
13	COUNTY SANITARY DISTRICT NO. 32 OF LA COUNTY	SEWER LINE	FEBRUARY 25, 1966 INSTR. NO. 4236 BOOK D3219 PAGE 352	TO BE QUITCLAIMED	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING
14	THE COUNTY OF LOS ANGELES	PUBLIC ROAD AND HIGHWAY	APRIL 6, 1971 INSTR. NO. 3104 BOOK D5018 PAGE 704	TO REMAIN	
15	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINE	APRIL 13, 1971 INSTR. NO. 2154 BOOK D5024 PAGE 891	TO REMAIN	
16.1	VALENCIA WATER COMPANY	WATER LINE	NOVEMBER 10, 1972 INSTR. NO. 3974 BOOK D-5463 PAGE 731	TO BE QUITCLAIMED	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING
16.2	VALENCIA WATER COMPANY	WATER LINE	JULY 26, 2004 INSTR. NO. 04-1596888	TO BE QUITCLAIMED	BLANKET EASEMENT
16.3	VALENCIA WATER COMPANY	WATER LINE	SEPTEMBER 27, 2004 INSTR. NO. 2474523	TO BE QUITCLAIMED	BLANKET EASEMENT
17	SIX FLAG MAGIC MOUNTAIN INC.	GREENHOUSE NURSERY	JUNE 5, 1979 INSTR. NO. 79-603545	TO BE QUITCLAIMED	
18	SIX FLAG MAGIC MOUNTAIN INC.	LIVESTOCK	JUNE 5, 1979 – INSTR. NO. 79-603548 JUNE 10, 1980 – INSTR. NO. 80-559806	TO BE QUITCLAIMED	
19	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ect.	SEPTEMBER 15, 1988 INSTR. NO. 88-1483381	TO BE QUITCLAIMED	
20	INTENTIONALLY DELETED FROM TITLE REPORT	—	—	—	—
21	INTENTIONALLY DELETED FROM TITLE REPORT	—	—	—	—
22	LA COUNTY FLOOD CONTROL DISTRICT	FLOOD CONTROL	AUGUST 23, 2005 INSTR. NO. 05-2021536	TO BE ABANDONED	
23.1	THE CITY OF SANTA CLARITA	PUBLIC ROAD AND HIGHWAY	FEBRUARY 9, 2006 INSTR. NO. 06-307027	TO BE ABANDONED	NOT PLOTTABLE
23.2	THE CITY OF SANTA CLARITA	PUBLIC ROAD AND HIGHWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0307030	TO BE ABANDONED	
23.3	THE CITY OF SANTA CLARITA	PUBLIC ROAD AND HIGHWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0307031	TO BE ABANDONED	
24	THE CITY OF SANTA CLARITA	STORM DRAIN	MAY 2, 2006 INSTR. NO. 06-0963640	TO BE ABANDONED	

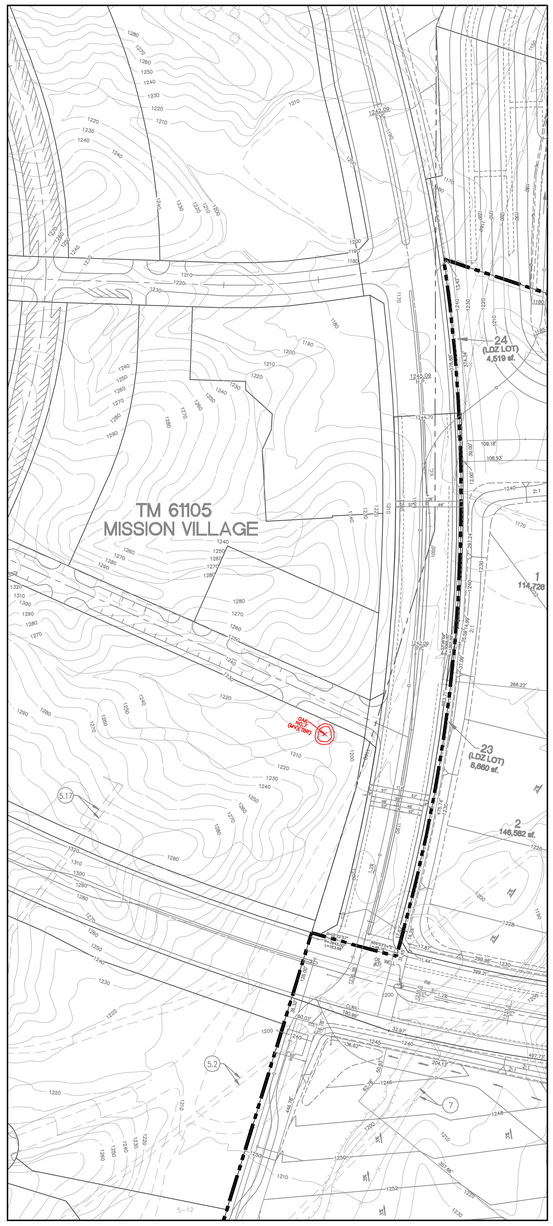
LEGEND:

- OAK TREES TO REMAIN (25 TREES)
- OAK TREES TO BE ENCROACHED (12 TREES)
- OAK TREES TO BE REMOVED (67 TREES)
- PROTECTED ZONE

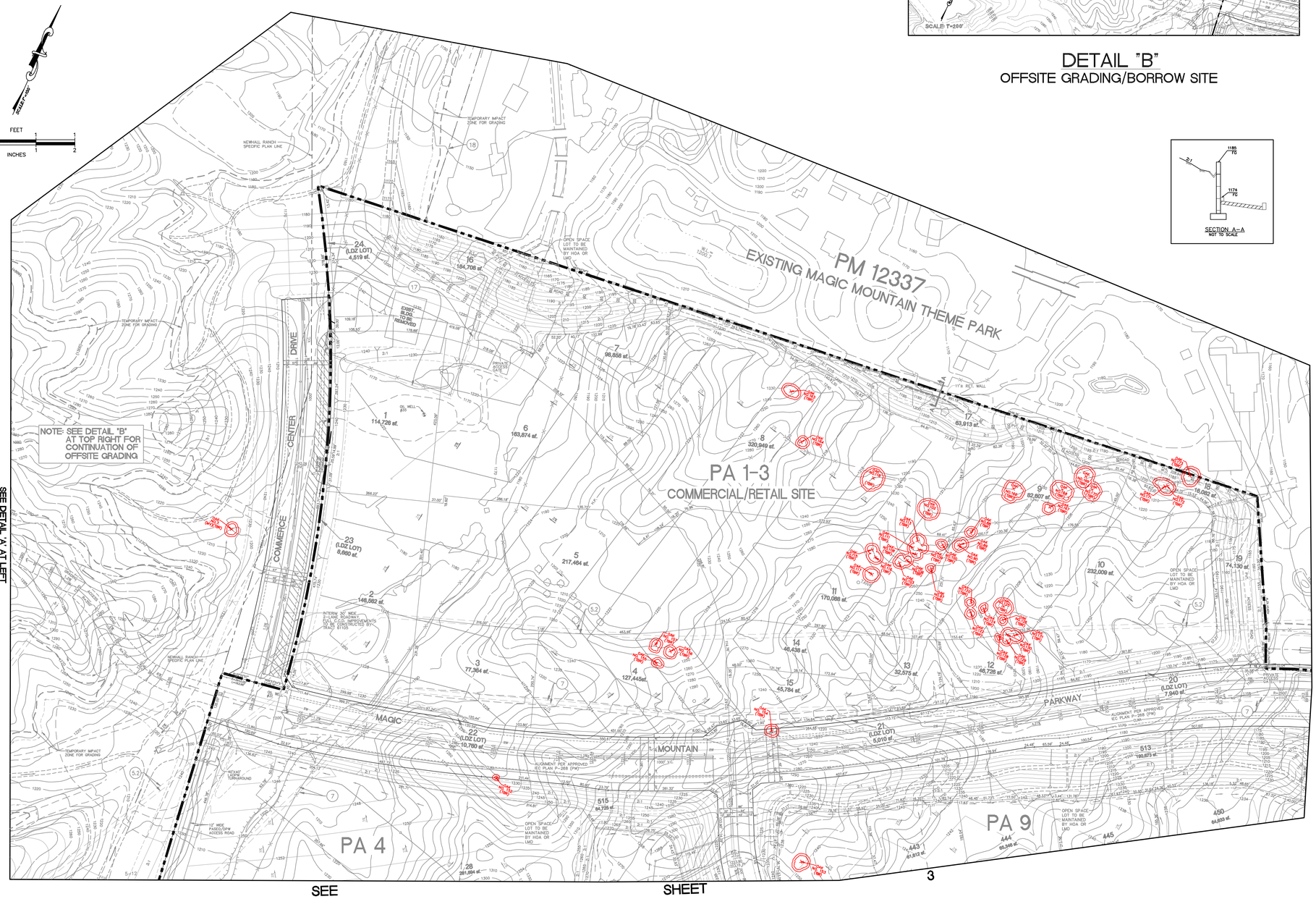
TOTAL: 104 TREES



DETAIL "B"
OFFSITE GRADING/BORROW SITE



DETAIL "A"
BUILDOUT CONDITION WITH TM 61105



SEE DETAIL 'A' AT LEFT FOR BUILDOUT CONDITION WITH TM 61105

SEE SHEET 3

SECTION A-A
NOT TO SCALE

OAK TREE LOCATION & IMPACT MAP

SHEET 2 | COUNTY OF LOS ANGELES | 5 SHEETS

ALLIANCE
LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802
27433 TOURNEY ROAD
SUITE 250
VALENCIA, CA 91355
TEL: (661) 799-2760
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PREPARED FOR:
NEWHALL LAND & FARMING CO.
25124 SPRINGFIELD COURT
SUITE 300
VALENCIA, CA 91355
(661)255-4000
REPRESENTATIVE: MR. MILES HELFRICH

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:
CRAIG M. WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-12 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

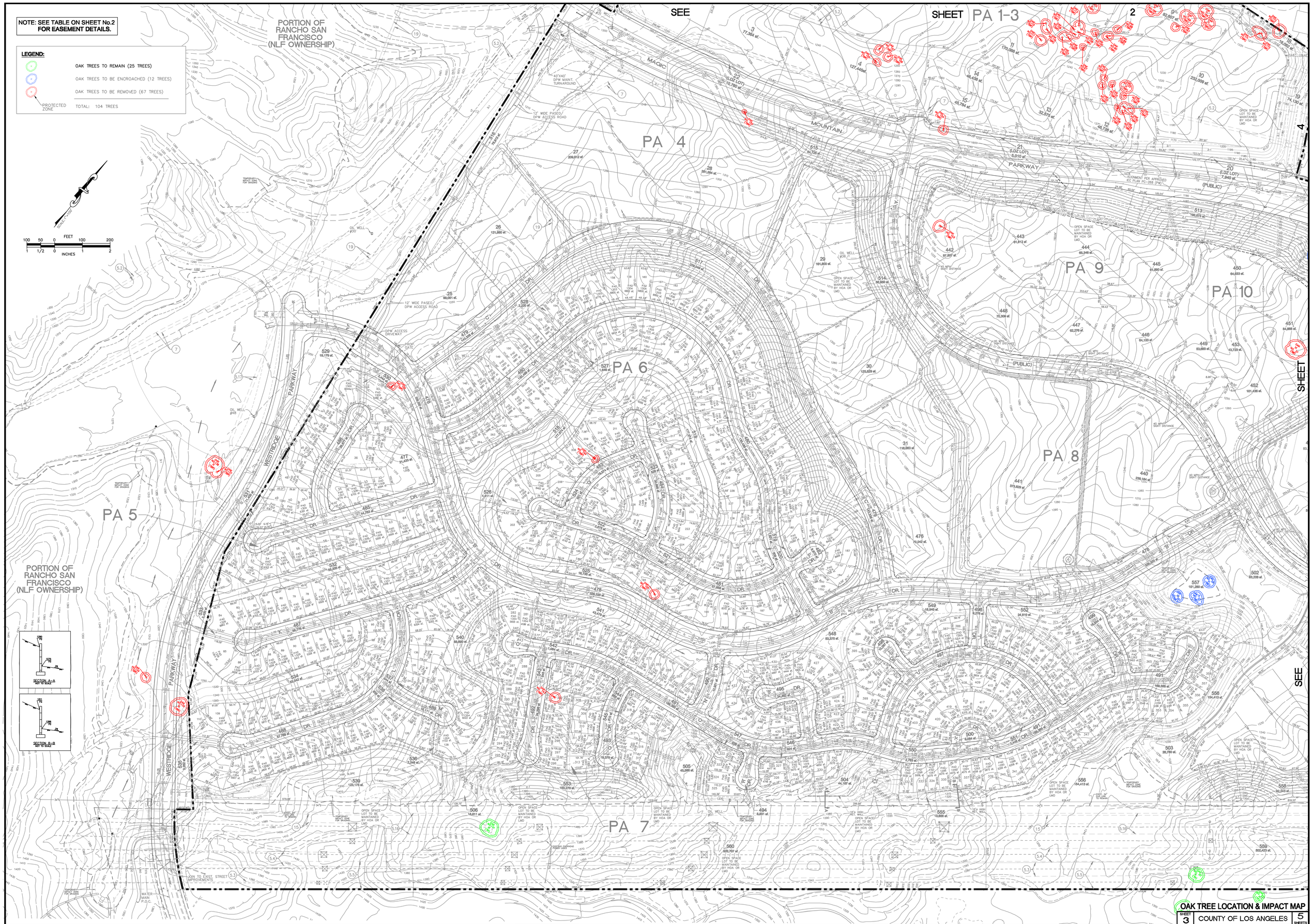
I:CAD/0930/TM OAK TREE SET/0930_TENTATIVE-MAP_OAKS_SHEET-02.dwg

NOTE: SEE TABLE ON SHEET No.2 FOR EASEMENT DETAILS.

LEGEND:

- OAK TREES TO REMAIN (25 TREES)
- OAK TREES TO BE ENCROACHED (12 TREES)
- OAK TREES TO BE REMOVED (67 TREES)
- PROTECTED ZONE

TOTAL: 104 TREES



OAK TREE LOCATION & IMPACT MAP

SHEET 3 COUNTY OF LOS ANGELES 5 SHEETS

ALLIANCE LAND PLANNING & ENGINEERING INC.

2248 FARADAY AVE. CARLSBAD, CA 92008 TEL: (760) 431-9896 FAX: (760) 431-8802

27433 TOURNEY ROAD SUITE 250 VALENCIA, CA 91355 TEL: (661) 799-2760

CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PREPARED FOR:
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VALENCIA, CA 91355
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REPRESENTATIVE: MR. MILES HELFRICH

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2248 FARADAY AVE.
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:

CRAIG M. WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-13 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

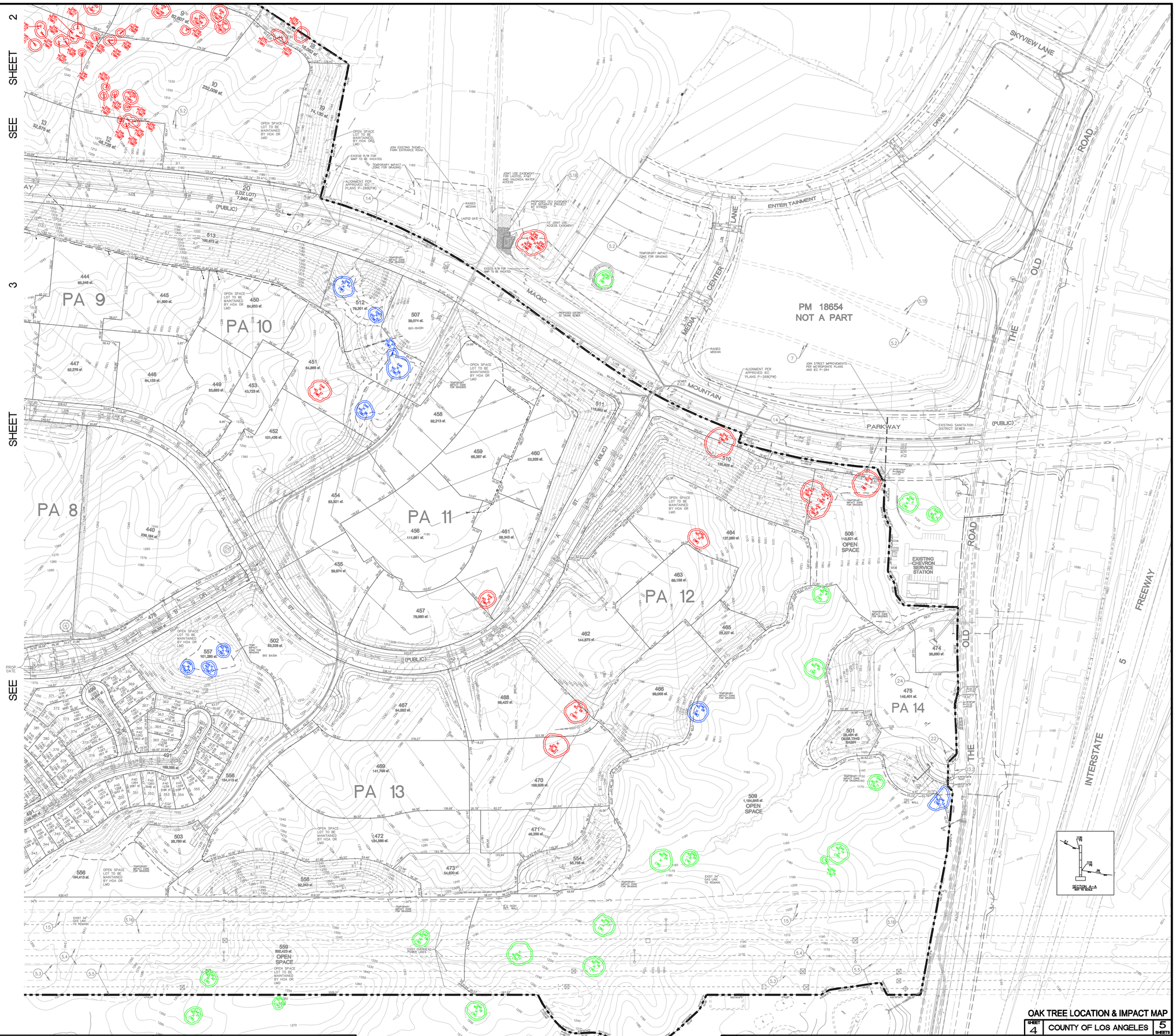
COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

I:\CAD\0930\TM OAK TREE SET\0930_TENTATIVE-MAP_OAKS_SHEET-03.dwg

NOTE: SEE TABLE ON SHEET No.2 FOR EASEMENT DETAILS.

LEGEND:

- OAK TREES TO REMAIN (25 TREES)
- OAK TREES TO BE ENCROACHED (12 TREES)
- OAK TREES TO BE REMOVED (67 TREES)
- PROTECTED ZONE
- TOTAL: 104 TREES



SCALE: 1"=100'

FEET 100 50 0 100 200

INCHES 1 1/2 0 1 2

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE. CARLSBAD, CA 92008 TEL: (760) 431-9896 FAX: (760) 431-8802
27433 TOURNEY ROAD SUITE 250 VALENCIA, CA 91355 TEL: (661) 799-2760
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(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:

CRAIG M. WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-13 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

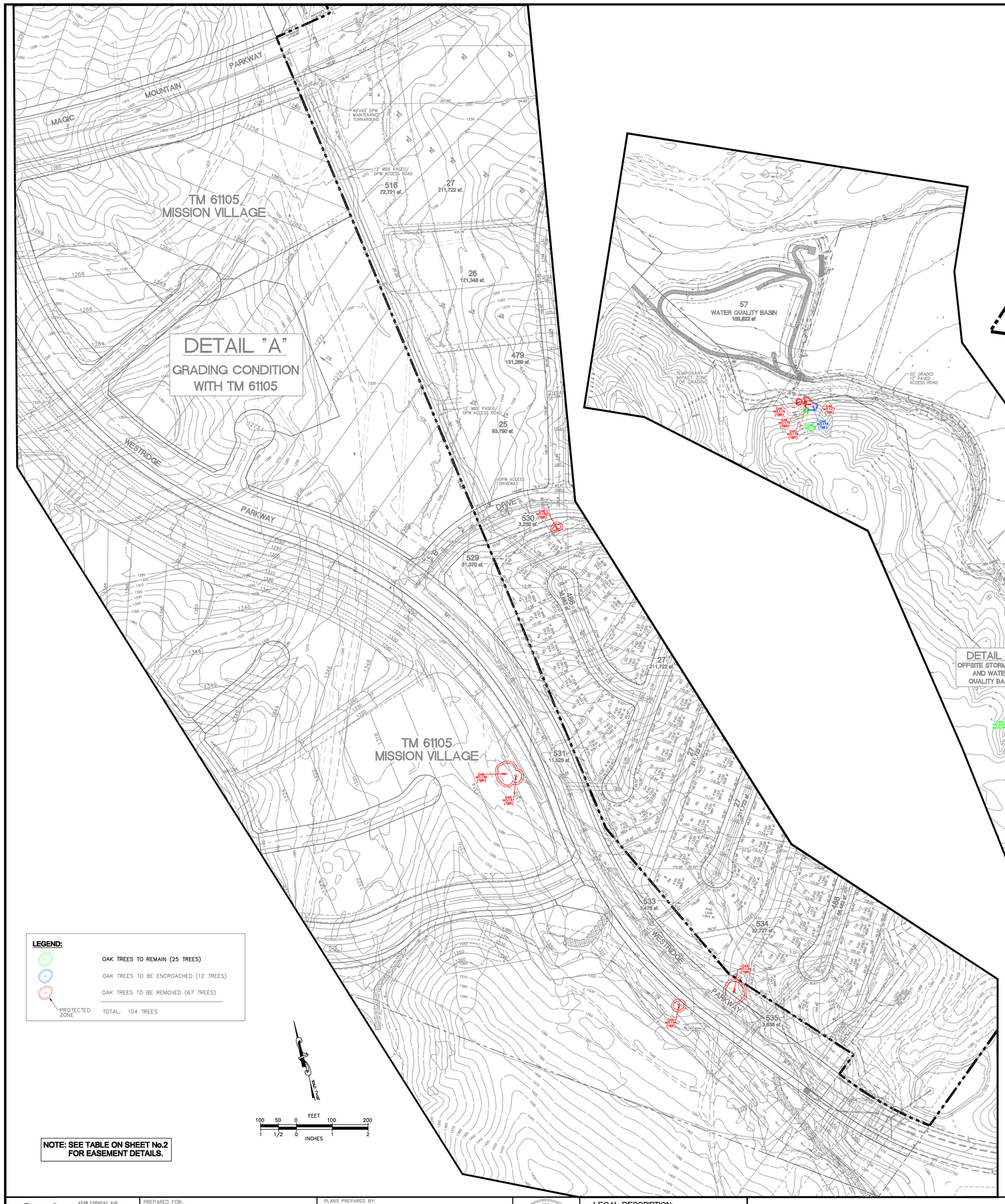
OAK TREE LOCATION & IMPACT MAP

SHEET 4 | COUNTY OF LOS ANGELES | 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

I:CAD\0930\TENTATIVE MAP\0930-TENTATIVE MAP-SHT-04.dwg


TM 61105
MISSION VILLAGE
DETAIL "A"
GRADING CONDITION
WITH TM 61105
MAGIC MOUNTAIN PARKWAY
WESTRIDGE PARKWAY
DRIVE
516
72,721 sf.
27
211,722 sf.
26
121,348 sf.
479
131,269 sf.
25
93,790 sf.
530
3,250 sf.
529
31,370 sf.
531
11,325 sf.
533
3,476 sf.
534
32,727 sf.
535
3,535 sf.
488
34,400 sf.
12' WIDE PASEO/
DPW ACCESS ROAD
40'x40' DPW
MAINTENANCE
TURNAROUND
DPW ACCESS
DRIVEWAY
PAD
1199 sf.
OAK
NO.1177
(TRIM)
OAK
NO.1178
(TRIM)
OAK
NO.1179
(TRIM)
OAK
NO.1180
(TRIM)
OAK
NO.1181
(TRIM)
OAK
NO.1182
(TRIM)
OAK
NO.1183
(TRIM)
OAK
NO.1184
(TRIM)
OAK
NO.1185
(TRIM)
OAK
NO.1186
(TRIM)
OAK
NO.1187
(TRIM)
OAK
NO.1188
(TRIM)
OAK
NO.1189
(TRIM)
OAK

Appendix 5.4C

Oak Tree Report Amendment Letter

Land Design Consultants, Inc.

January 20, 2014

LDC

LAND DESIGN CONSULTANTS, INC.

Land Planning, Civil Engineering, Surveying & Environmental Services

January 20, 2014

(VIA LDC DELIVERY)

Mr. Kim Szalay, MPL, AICP
County of Los Angeles
Department of Regional Planning
Special Projects Section
320 W. Temple Street, Room 1362
Los Angeles, CA 90012

RE: V.T.T.M. 53295 – "Entrada South"
Oak Tree Permit No.: #2007-00018
Oak Tree Report Amendment Letter
LDC Project No. 97001-020

Dear Mr. Szalay,

This letter is an amendment to the "Entrada South" oak tree report, dated January 31, 2011, and shall be included as part of the oak tree report. The following outlines the changes to the oak tree impacts resulting from the revisions made to Vesting Tentative Tract Map No. 53295. The impact status changed for only one (1) oak tree due to the change to the V.T.T.M..

Overview

This letter describes the updated condition and potential impacts to the 104 ordinance-sized oak trees located within the proposed development area or within 200 feet of the proposed grading (project area) associated with revised V.T.T.M. 53295. The January 31, 2011 report included 104 ordinance-sized oak trees for the 515 acre project site. The overall project impact area in the revised project boundary has also changed slightly, with adjustments being made to the limits of grading and the lot numbers. Please see the attached revised Oak Tree Location & Impact Map (5 sheets) that illustrates the revised project.

The oak trees referenced in this amendment were not resurveyed. After reviewing the revised V.T.T.M. in relation to the locations of the oak trees, it was determined that another survey would not be warranted. It is not expected that the general condition of the oak trees included in this report has significantly changed since the last survey in December 2009. In addition, any slight growth in the canopies to any of the trees would not result in a change of impact status.

2700 East Foothill Boulevard, Suite 200 Pasadena, California 91107 / 626•578•7000 Fax 626•578•7373
e-mail: ldc@ldcla.com • http//www.ldcla.com

Revised Impacts

As a result of the grading limits being altered, the impact status to one (1) of the 104 ordinance-sized oak trees on-site has changed from the January 31, 2011 report. The one (1) tree that had a change to its impact status is highlighted in the following updated **Table 1**. As indicated in **Table 1**, the one (1) tree, #4352(MV), is a valley oak (*Q. lobata*). Tree #4352(MV) changed from being encroached upon to not being impacted.

Of the 104 ordinance-sized oak trees surveyed for this report, 67 trees remain as proposed for removal, 11 trees will remain with potential encroachments into their protected zone, and 26 trees will remain with no impact. Seven (7) of the 104 surveyed oak trees (#2, 3, 9, 12, 29, 39, and 84 - all *Q. lobata*) qualify as heritage oak trees based on their trunk diameter. Two (2) heritage trees (#2 and 9) are proposed to be saved with no impacts or encroachment into their protected zone. Two (2) heritage trees (#12, and 39) will be encroached upon due to implementation of the project. Three (3) heritage trees (#3, 29 and 84) are proposed for removal. Please see **Table 1** for a summary of the oak trees.

Table 1 – Summary of Oak Trees for "Entrada South" - V.T.T.M. 53295							
Tree No.	Species	DBH (inches)	Overall Grade	Impact Status			Comment
				N I	R	E	
1	QL	29	C	✓			
2(H)	QL	40.5	D	✓			
3(H)	QL	39	B+		✓		Construction of Magic Mountain Parkway Ext.
4	QL	22.5	B-		✓		Slope associated with Lot 490
5	QL	24, 21	B		✓		Slope associated with Lot 490
6	QL	22	B+		✓		Slope associated with Lot 490
7 (MV)	QL	8.5,6.5, 5.5,5	A		✓		Off-site grading west of proposed Commerce Center Drive
9(H)	QL	36	C	✓			
10	QL	14, 14	B	✓			
11	QL	18	B	✓			
12(H)	QL	44, 21	D			✓	Encroachment 13' into PZ for construction activity and retaining wall for Lot 500
14	QL	24	B	✓			
15	QL	13	C	✓			
16	QL	24	B	✓			
17	QL	15.5, 16, 13, 21	C	✓			
18	QL	25.5	B	✓			
19	QL	17.5	B	✓			
20	QL	25	B	✓			
21	QL	23	B-	✓			
22	QL	12.5	B+	✓			
23	QL	32.5	B+	✓			
24	QL	28	B	✓			
25	QL	8, 24.5	B	✓			
26	QL	32	C-			✓	Encroach 2' into PZ for slope associated with Lot 398
27	QL	28	B		✓		Grading associated with Lots 402
28	QL	24.5	B		✓		Grading associated with Lot 400
29(H)	QL	46	B+		✓		Grading associated with Magic Mtn. Pkwy. Ext. & grading for Lot 444
30	QL	28.5	B		✓		Grading associated with Lot 396
31	QL	30	C-		✓		Grading associated with Lot 386
32*	QL	22	B-			✓	Potential temp. encroachment because 20' construction buffer extends into PZ within Lot 486

Table 1 – Summary of Oak Trees for "Entrada South" - V.T.T.M. 53295							
Tree No.	Species	DBH (inches)	Overall Grade	Impact Status			Comment
				N I	R	E	
33	QL	17, 14.5, 17	C-			✓	Encr. 3' into PZ for slope associated with Lot 486
34	QL	14, 11, 11, 11.5	D+			✓	Encr. 6' into PZ for slope associated with Lot 486
37	QA	26	B		✓		Grading associated with Lot 383
38*	QL	9, 34	C+			✓	Potential temp. encroachment because 20' construction buffer for Lot 497 grading encr. 17' into PZ
39(H)*	QL	39	B+			✓	Potential temp. encroachment because 20' construction buffer for Lot 497 grading encr. 9' into PZ
41*	QA	6, 6, 5.5, 4	D			✓	Potential temp. encroachment because 20' construction buffer for Lot 497 grading encr. 18' into PZ
42*	QL	17, 18	D+			✓	Potential temp. encroachment because 20' construction buffer for Lot 446 grading encr. 12' into PZ
43	QL	31	B			✓	Grading for Lot 446 encr. 6' into PZ and 20' construction buffer for Lot 446 grading encr. 26' into PZ
84(H)	QL	42	B		✓		Grading on north side of Magic Mountain Pkwy
85	QLB	8.5, 3.5, 2, 4, 3	C-		✓		Grading on north side of Magic Mountain Pkwy
86	QLB	12, 7	C		✓		Grading on north side of Magic Mountain Pkwy
87	QL	34	C	✓			
88	QB	6, 6	C+		✓		Grading associated with PA 1-3, Lot 10
89	QB	6, 6	B-		✓		Grading associated with PA 1-3, Lot 10
90	QB	6, 4, 8.5	B-		✓		Grading associated with PA 1-3, Lot 10
97	QB	7.5, 2.5, 4.5	C		✓		Grading associated with PA 1-3, Lot 10
100	QB	6, 6	B-		✓		Grading associated with PA 1-3, Lot 10
102	QL	26	B+		✓		Grading associated with PA 1-3, Lot 10
103	QB	6, 6.5, 9, 4	C		✓		Grading associated with PA 1-3, Lot 10
106	QB	6, 2, 1, 6, 3, 3	C-		✓		Grading associated with PA 1-3, Lot 10
108	QB	6, 6.5	D		✓		Grading associated with PA 1-3, Lot 10
109	QB	6, 6.5, 1	B-		✓		Grading associated with PA 1-3, Lot 10
111	QB	6, 6	C		✓		Grading associated with PA 1-3, Lot 10
113	QB	7.5, 4.5	C-		✓		Grading associated with PA 1-3, Lot 10
115	QB	6, 8	B-		✓		Grading associated with PA 1-3, Lot 10
116	QB	10, 4, 2, 2, 1.5	D		✓		Grading associated with PA 1-3, Lot 10
117	QB	3.5, 6.5, 9.5, 10, 2	C		✓		Grading associated with PA 1-3, Lot 10
118	QB	27.5	B		✓		Grading associated with PA 1-3, Lot 10
120	QB	6.5, 4, 7	B		✓		Grading associated with PA 1-3, Lot 12
122	QB	3, 7, 7	D		✓		Grading associated with PA 1-3, Lot 12
124	QB	6, 6, 2, 5	D		✓		Grading associated with PA 1-3, Lot 12

Table 1 – Summary of Oak Trees for "Entrada South" - V.T.T.M. 53295							
Tree No.	Species	DBH (inches)	Overall Grade	Impact Status			Comment
				N I	R	E	
125	QB	6, 8.5, 9.5	B		✓		Grading associated with PA 1-3, Lot 12
126	QB	6, 6	C		✓		Grading associated with PA 1-3, Lot 12
128	QB	6, 6, 4, 3	D		✓		Grading associated with PA 1-3, Lot 12
129	QB	12	C		✓		Grading associated with PA 1-3, Lot 12
130	QB	14.5, 2, 5	C-		✓		Grading associated with PA 1-3, Lot 12
131	QB	7, 5.5, 7.5, 7.5	C		✓		Grading associated with PA 1-3, Lot 12
132	QL	15.5, 16.5	A		✓		Grading assoc. with Westridge Pkwy.
134	QB	4.5, 4.5, 6, 5, 3, 6, 5	B-		✓		Grading assoc. with Westridge Pkwy.
136	QL	18, 15	B-		✓		Grading assoc. with Westridge Pkwy.
137	QB	8.5, 9	B		✓		Grading assoc. with Westridge Pkwy.
141	QA	32, 25, 11	D	✓			
143	QB	5.5, 4, 3, 4, 3.5, 6, 5, 6, 5, 3.5	C+		✓		Grading associated with Lot 137
144	QB	7, 2.5, 2, 9.5	C		✓		Grading associated with Lot 228
145	QB	6(2), 6.5, 5, 4(4) 5.5(2) 3.5(3)	D		✓		Grading associated with Lot 213
150	QB	5, 5, 7	C		✓		Slope associated with Lot 462
152	QL	12	D		✓		Slope associated with Lot 448 & Magic Mtn. Pkwy. extension
153	QL	10, 14	B		✓		Grading associated with Lot 374
154	QB	10	D		✓		Grading associated with Magic Mtn. Pkwy. extension
155	QB	6, 6.5, 10	C		✓		Grading associated with PA 1-3, Lot 6
156	QB	3, 6, 3.5(3), 5, 2, 6.5	C-		✓		Grading associated with PA 1-3, Lot 6
157	QB	8.5	C-		✓		Grading associated with PA 1-3, Lot 6
163	QL	23, 16.5	B		✓		Grading associated with PA 1-3, Lot 8. OAK HAS BEEN REMOVED PRIOR TO 11/2006 SURVEY. No prior permit associated with this tree.
164	QB	6(3), 5(3), 5.5, 4.5(3)	D		✓		Grading associated with PA 1-3, Lot 10
166	QL	32.5	C-		✓		Grading associated with PA 1-3, Lot 10
167	QL	21	C		✓		Grading associated with PA 1-3, Lot 11
168	QL	28	B		✓		Grading associated with PA 1-3, Lot 11
169	QL	26	B		✓		Grading associated with PA 1-3, Lot 11
170	QL	21	B		✓		Grading associated with PA 1-3, Lot 11
171	QL	25, 33	D		✓		Slope associated with PA 1-3, Lot 20
172	QL	15, 11.5	D		✓		Slope associated with PA 1-3, Lot 20

Table 1 – Summary of Oak Trees for "Entrada South" - V.T.T.M. 53295

Tree No.	Species	DBH (inches)	Overall Grade	Impact Status			Comment
				N I	R	E	
173	QL	21.5	B-		✓		Slope associated with PA 1-3, Lot 20
174	QL	13.5	B-		✓		Grading associated with Water Quality Basin
175	QL	21	B-		✓		Grading associated with Water Quality Basin
176	QL	14.5	B-		✓		Grading associated with Water Quality Basin
177	QL	22	B		✓		Grading associated with Water Quality Basin
178*	QL	20	B-			✓	Potential temp. encroachment because 20' construction buffer for grading for Water Quality Basin encr. 3' into PZ
179	QL	11	C-	✓			
717 (MV)	QL	12.5	D-	✓			
718 (MV)	QL	16	B+	✓			
719 (MV)	QL	27	B	✓			
4351 (MV)	QL	14.5	B	✓			
4352 (MV)	QL	15.5, 9	A-	✓			
4353 (MV)	QL	26	B-	✓			
TOTAL				**26**	**67**	**11**	

NI = NO IMPACT R = REMOVAL E = ENCROACHMENT

(H) = Heritage tree DBH = Diameter at Breast Height

(MV) = Trees surveyed by Impact Sciences, Inc. for Mission Village project – data worksheets for these trees are not included in this report

QB = *Q. berberidifolia* QLB = *Q. lobata-berberidifolia* hybrid QA = *Q. agrifolia* QL = *Q. lobata*

* = *Potential encroachment due to possible overexcavation and/or backcut associated with adjacent slope (20' buffer zone)*

Table 2 below has been updated to reflect the change in impact status to Tree #4352(MV). Tree #4352(MV) changed from being encroached upon to not being impacted. As indicated in the January 31, 2011, Oak Tree Report **Table 2** gives a summary of seventeen (17) oak trees that are located off-site, but within 200 feet of the proposed grading, and are concurrently covered by the Oak Tree Permit (OTP 2005-00043) for the Mission Village project (V.T.T.M. 61105). Trees #7(MV), 717(MV), 718(MV), 719(MV), 4351(MV), 4352(MV), and 4353(MV) were surveyed by Impact Sciences, Inc. and are included in this report because they are located within 200 feet of the proposed grading associated with V.T.T.M. 53295. Trees #132, 134, 136, 137, 174-179 were surveyed by LDC and remain within the development area or within 200 feet of the proposed grading for V.T.T.M. 53295 and overlap with the Mission Village project boundary. Nine (9) of the seventeen (17) overlapping trees (#7(MV), 132, 134, 136, 137, 174, 175, 176, and 177) are proposed to be removed by V.T.T.M. 53295. One (1) of these trees (#178) will potentially have encroachments into its protected zone. Seven (7) of the trees (#179, 717(MV), 718(MV), 719(MV), 4351(MV), 4352(MV) and 4353(MV)) will remain with no impact.

Table 2
Summary of Impacts to Entrada Oak Trees
that are concurrently covered by OTP 2005-00043 for V.T.T.M. 61105 (Mission Village)

LDC Tree No.	IS Tree No.	Species	DBH (inches)	Impact Status by Entrada			Comment*
				N I	R	E	
7 (MV)	7	QL	8.5,6.5, 5.5,5		✓		Off-site grading west of proposed Commerce Center Drive **PROPOSED REMOVAL PER OTP 2005-00043**
132	4361	QL	15.5, 16.5		✓		Grading assoc. with Westridge Pkwy. **PROPOSED REMOVAL PER OTP 2005-00043**
134	N/A	QB	4.5, 4.5, 6, 5, 3, 6, 5		✓		Grading assoc. with Westridge Pkwy. **NOT INCLUDED IN OTP 2005-00043**
136	761	QL	18, 15		✓		Grading associated with Westridge Pkwy. **PROPOSED REMOVAL PER OTP 2005-00043**
137	762	QL	8.5, 9		✓		Grading associated with Westridge Pkwy. **PROPOSED REMOVAL PER OTP 2005-00043**
174	4341	QL	13.5		✓		Grading associated with Water Quality Basin **PROPOSED REMOVAL PER OTP 2005-00043**
175	4342	QL	21		✓		Grading associated with Water Quality Basin **PROPOSED REMOVAL PER OTP 2005-00043**
176	4343	QL	14.5		✓		Grading associated with Water Quality Basin **PROPOSED REMOVAL PER OTP 2005-00043**
177	4344	QL	22		✓		Grading associated with Water Quality Basin **PROPOSED REMOVAL PER OTP 2005-00043**

Table 2
Summary of Impacts to Entrada Oak Trees
that are concurrently covered by OTP 2005-00043 for V.T.T.M. 61105 (Mission Village)

LDC Tree No.	IS Tree No.	Species	DBH (inches)	Impact Status by Entrada			Comment*
				N I	R	E	
178	4345	QL	20			✓	Potential temp. encroachment because 20' construction buffer for grading for Water Quality Basin encr. 3' into PZ **PROPOSED ENCROACHMENT PER OTP 2005-00043**
179	4346	QL	11	✓			Located within 200' of offsite improvements **NOT IMPACTED PER OTP 2005-00043**
717 (MV)	717	QL	12.5	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
718 (MV)	718	QL	16	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
719 (MV)	719	QL	27	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
4351(MV)	4351	QL	14.5	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
4352(MV)	4352	QL	15.5, 9	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
4353(MV)	4353	QL	26	✓			Located within 200' of offsite improvements **PROPOSED REMOVAL PER OTP 2005-00043**
TOTAL				**7**	**9**	**1**	

NI = NO IMPACT R = REMOVAL E = ENCROACHMENT

DBH = Diameter at Breast Height (MV) = Trees surveyed by Impact Sciences (IS) for Mission Village project

QB = *Q. berberidifolia* QL = *Q. lobata*

* *Impacts taken from Oak Tree Report: Mission Village, March 2010 update from Impact Sciences, Inc.*

Table 4 of the January 31, 2011 report summarizes the impacts to the oak trees that are located within the 382.3-acre Entrada South tract map area, if the Mission Village (V.T.T.M. 61105) project and the Magic Mountain Parkway extension project are approved and commence prior to Entrada South. Twenty (20) of the Entrada South project's 104 oak trees will be removed as part of OTP 2005-00043 (Mission Village) and OTP 2005-00032 (Magic Mountain Parkway extension), leaving a total of 84 ordinance-sized oak trees located within the proposed development area or within 200 feet of the project area. The table lists those 20 trees that are proposed for removal under OTP 2005-00043 and OTP 2005-00032.

The removal of the 20 oak trees associated with the adjacent oak tree permits would reduce the overall number of trees from 104 to 84. As a result, a total of 47 of the 84 overlapping

trees would be proposed for removal by the Entrada South project. The impacts to the remaining 37 trees (11 to have encroachments and 26 to remain with no impact) will not change due to the implementation of OTP 2005-00043 and OTP 2005-00032.

Table 4

Matrix of Impacts to Oak Trees for "Entrada South" - V.T.T.M. 53295

in conjunction with V.T.T.M. 61105 (Mission Village) & Magic Mountain Pkwy extension approvals

Project	Total # of trees	# of trees to remain	# of trees to be encroached	# of trees to be removed	Trees to be removed
Entrada South If Entrada South approved before Mission Village & Magic Mtn. Pkwy. Extension	104	26	11	67	3(H), 4, 5, 6, 7(MV), 27, 28, 29(H), 30, 31, 37, 84(H), 85, 86, 88, 89, 90, 97, 100, 102, 103, 106, 108, 109, 111, 113, 115, 116, 117, 118, 120, 122, 124, 125, 126, 128, 129, 130, 131, 132, 134, 136, 137, 143, 144, 145, 150, 152, 153, 154, 155, 156, 157, 163, 164, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177
Mission Village (MV) V.T.T.M. 61105 **OTP 2005-00043**	17	6	2	9	7(MV), 132, 134, 136, 137, 174, 175, 176, 177
Magic Mountain Parkway Extension (MMPE) **OTP 2005-00032**	13	0	2	11	3(H), 4, 5, 6, 29(H), 84(H), 85, 86, 152, 153,154
Total impacts from MV & MMPE projects	30*	6	4	20	
Entrada South If Mission Village & Magic Mtn. Pkwy. Extension are approved and commence prior to Entrada South	84	26	11	47	27, 28, 30, 31, 37, 88, 89, 90, 97, 100, 102, 103, 106, 108, 109, 111, 113, 115, 116, 117, 118, 120, 122, 124, 125, 126, 128, 129, 130, 131, 143, 144, 145, 150, 155, 156, 157, 163, 164, 166, 167, 168, 169, 170, 171, 172, 173

(H) = Heritage tree (MV) = tree surveyed for Mission Village

* = The 30 oaks impacted by the Mission Village and Magic Mountain Parkway Extension projects are part of the 104 total oaks that are included in this Oak Tree Report.

Mitigation Discussion

The mitigation measures outlined in the January 31, 2011 report will remain valid.

Please give us a call if you have any questions or need any additional information. Thank you.

Sincerely,
LAND DESIGN CONSULTANTS, INC.

Scott McAllaster
Project Planner
Certified Arborist

Enc. (5) Oak Tree Location Maps

c. Kelly Kim/LA County Fire Dept. (w/attachments)
Alex Herrell/Newhall Land (w/attachments)
Miles Helfrich/Newhall Land (w/attachments)
Steve Hunter/LDC

WESTRIDGE
TRACT 45433

2 = SHEET NUMBER

FEET 300 150 0 300 600
INCHES 1 1/2 0 1 2
SCALE: 1"=300'

GENERAL NOTES

1. GRADE ELEVATIONS SHOWN ON THE VTTM AND THE EXHIBITS MAP ARE APPROXIMATE. THE ELEVATIONS MAY CHANGE BY 3 FEET. ELEVATION CHANGES MAY BE GREATER THAN 3 FEET BUT ONLY IF DETERMINED BY DPW AND DRP . THAT THE REVISIONS ARE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP APPROVAL.
2. LOT LINES CAN BE ADJUSTED TO THE SATISFACTION OF DRP PROVIDED NO ADDITIONAL DEVELOPMENT LOTS ARE CREATED. THE DEGREE OF ADJUSTMENT SHALL BE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP ACT.
3. ALIGNMENT AND GEOMETRICS OF STREETS AND TRAILS ARE APPROXIMATE. ADJUSTMENTS TO TRAILS CAN BE MADE WITH APPROVAL BY DRP AND THE PARKS AND RECREATION DEPARTMENT.
4. BUILDING FOOTPRINTS THAT ARE SHOWN ON THE VTTM OR THIS EXHIBIT MAP ARE ONLY FOR ILLUSTRATIVE PURPOSES. ACTUAL BUILDING LOCATIONS AND FOOTPRINTS MAY VARY. APPROVAL IS REQUESTED DURING PLOT PLAN REVIEW PROVIDED THE PROPOSED BUILDINGS SATISFY ALL EXISTING CODES AND ORDINANCES. THIS MINOR CHANGE DOES NOT, HOWEVER, INCLUDE:
   A. A CHANGE IN PROPOSED LAND USE.
   B. A CHANGE OF MORE THAN 5 FEET IN BUILDING HEIGHT.
5. THE RECORDATION OF A "LARGE LOT" PARCEL MAP WHERE ALL PARCELS ARE LARGER THAN 20 ACRES SHALL NOT REQUIRE THE OBLIGATION OF CONSTRUCTING IMPROVEMENTS OR INFRASTRUCTURE AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
6. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL NOT REQUIRE THE OBLIGATION OF FEES, DEDICATIONS (E.G., RIGHTS-OF-WAY OR PARKS), EXACTIONS, OR INFRASTRUCTURE AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
7. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL BE CONSIDERED THE FILING OF THE FIRST UNIT FOR THE PURPOSE OF TIME EXTENSIONS PURSUANT TO THE SUBDIVISION MAP ACT.
8. PERMISSION IS REQUESTED FOR UNIT PHASING.
9. PERMISSION IS REQUESTED TO COMBINE LOTS.
10. PERMISSION IS REQUESTED TO RECORD ADDITIONAL OPEN SPACE LOTS.
11. PERMISSION IS REQUESTED TO RECORD ADDITIONAL UTILITY LOTS AND PROVIDE MAINTENANCE EASEMENTS TO THE SATISFACTION OF THE DPW AND DRP.
12. THE LOCATIONS OF APPURTENANT STRUCTURES (E.G., PASEOS, PEDESTRIAN BRIDGES, TRANSIT SHELTERS, WATER QUALITY BASINS, ETC.) MAY BE RELOCATED TO THE SATISFACTION OF DPW AND DRP.
13. PERMISSION IS REQUESTED TO RECORD JOINT ACCESS EASEMENTS (20' WIDE) AS LOTS.
14. PERMISSION IS REQUESTED TO MASS GRADE.
15. PROPOSED STREET GRADING IS APPROXIMATE ONLY AND SUBJECT TO ADJUSTMENTS PENDING DETERMINATION OF FINAL DEVELOPMENT LAYOUT AND PLANS.
16. LOCATION OF TRAILS TO BE FINALIZED PRIOR TO FINAL MAP APPROVAL.
17. PERMISSION IS REQUESTED TO PROVIDE RIGHT OF WAY RETURN RADII OF 13 FT. AT ALL LOCAL STREET INTERSECTIONS AND 27 FT WHERE ALL PLANNED HIGHWAYS INTERSECT OR WHERE ONE OF THE ROADS SERVES A COMMERCIAL OR INDUSTRIAL DEVELOPMENT.
18. MODIFIED STREET CROSS-SECTIONS AS SHOWN ON VESTING TENTATIVE TRACT MAP ARE REQUESTED. HOWEVER, PERMISSION IS SOUGHT TO CONSTRUCT STANDARD AND ALTERNATE STREET CROSS-SECTIONS AT THE DISCRETION OF THE SUBDIVIDER.
19. ALL DIMENSIONS SHOWN ARE APPROXIMATE.
20. TOPO COMPILED FROM DATA FLOWN 09/11.
21. ADDITIONAL RIGHT OF WAY MAY BE DEDICATED AS REQUIRED TO THE SATISFACTION OF PUBLIC WORKS.
22. RELATED ENTITLEMENTS:
   - TENTATIVE MAP NO. 53295
   - CONDITIONAL USE PERMINT NO. 00-210
   - OAK TREE PERMIT NO. 200700018
   - ZONE CHANGE NO. 00-210
   - PARKING PERMIT NO. 200700013
23. PERMISSION IS REQUESTED TO ALLOW OFFICE & RETAIL SPACE TO BE INTERCHANGEABLE PROVIDED THE REQUIRED PARKING IS SATISFIED.
24. FIRE ACCESS TO BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.
25. MODIFICATIONS OF REQUIRED STREET FRONTAGE IS REQUESTED PER SECTION 21.24.040 OF THE LOS ANGELES COUNTY CODE.
26. GUEST PARKING PROPOSED ON PRIVATE DRIVES PER COUNTY PRIVATE DRIVE MANUAL.
27. PRIVATE DRIVES DESIGNED PER THE COUNTY PRIVATE DRIVE MANUAL.
28. SHARED AND RECIPROCAL PARKING SHOWN PER REQUESTED PARKING PERMIT.
29. WITHIN COMMERCIAL PLANNING AREA 1-3, RESIDENTIAL PLANNING AREAS 4, 9-13 AND COMMERCIAL PLANNING AREA 14 FLEXIBILITY IN FUTURE DESIGN IS PERMITTED, INCLUDING BUT NOT LIMITED TO: CHANGING COMMERCIAL TO OFFICE AND OFFICE TO COMMERCIAL, CHANGING APARTMENTS TO CONDOMINIUMS AND CONDOMINIUMS TO APARTMENTS, CHANGING FROM ATTACHED TO DETACHED UNITS AND DETACHED TO ATTACHED UNITS, CHANGES TO BUILDING TYPES AND LOCATION, LOT CONFIGURATIONS AND RELOCATION OF DRIVEWAYS, DRIVE ENTRIES, DRIVEWAY ALIGNMENT AND OPEN SPACE AND LANDSCAPE AREA LOCATIONS AFFECTED AS A RESULT OF DESIGN CHANGES, PROVIDED THE CHANGES DO NOT EXCEED THE APPROVED TOTAL RESIDENTIAL UNIT COUNT, TOTAL COMMERCIAL/OFFICE SQUARE FOOTAGE AND DOES NOT RESULT IN A REDUCTION OF TOTAL OPEN SPACE. CHANGES SHALL BE DEPICTED ON A REVISED EXHIBIT MAP.
30. THE ABOVE MENTIONED GENERAL NOTES (THAT ADDRESS MINOR MODIFICATION) MAY REQUIRE REVIEW AND APPROVAL OF A REVISED EXHIBIT MAP.
31. PERMISSION REQUESTED TO HAVE REDUCED LOT SIZES (< 5000 SF) AND REDUCED LOT WIDTHS (< 50'). MINIMUM RESIDENTIAL SINGLE-FAMILY LOT SIZE IS 4,500 SF. MINIMUM RESIDENTIAL SINGLE-FAMILY LOT WIDTH(NON-CULDESAC) IS 45'.
32. GRADING OF VTTM 53295 MAY BE DONE IN SUB-PHASES OVER TIME BUT SUCH GRADING WILL STILL BE BALANCED WITHIN THE GRADING LIMITS IDENTIFIED ON THE TENTATIVE TRACT MAP. ALL GRADING OF SLOPES WILL BE PERFORMED AS ENGINEERED GRADING. THE LIMIT OF A GRADING SUB-PHASE WILL BE ESTABLISHED TO ACHIEVE A BALANCED EARTHWORK FOR THAT SUB-PHASE AND MAY EXTEND BEYOND THE LIMITS OF A PARTICULAR FINAL UNIT MAP BOUNDARY IN ORDER TO ACHIEVE A PHASED OF GRADING BALANCED. AN INTERIM HYDROLOGY REPORT WILL BE PROVIDED TO SUPPORT THE PHASED GRADING. DRAINAGE AND EROSION CONTROL FACILITIES WILL BE PROVIDED TO THE SATISFACTION OF DPW.
33. PERMISSION REQUESTED TO VACATE EXCESS RIGHT OF WAY ON MAGIC MOUNTAIN PARKWAY.
34. A BLANKET EASEMENT FOR COVERED STORM DRAIN, APPURTENANT STRUCTURES, AND INGRESS AND EGRESS PURPOSES SHALL BE DEDICATED TO THE LACFCD OVER ALL PRIVATE DRIVEWAYS AND FIRELANES TO THE SATISFACTION OF PUBLIC WORKS.

SPECIAL NOTES

1. WATER QUALITY BASINS AND BIOSWALES WILL PROVIDE FOR TREATMENT OF STORM WATER RUN OFF PER THE APPROVED DRAINAGE CONCEPT.
2. PROPOSED RECLAIMED WATER LINES WILL BE LOCATED IN PUBLIC/PRIVATE STREETS AND TRAILS.

SURVEY NOTES:

VERTICAL DATUM:
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS BENCHMARK DESCRIBED AS FOLLOWS: LACDPW L5402 RND HD SPK IN LOWER CONC HDWL @ N END 24 FT W/O C/L THE OLD RD (W RDWY) AND 0.6 MI S/O HENRY MAYO DR @ MI MKR #6.25 NEWHALL QUAD, 1995 ADJUSTMENT (NAVD 1988) ELEVATION = 1031.951

THERE IS APPROXIMATELY 2.3 FEET DIFFERENCE BETWEEN PREVIOUS COUNTY OF LOS ANGELES DATUMS BASED UPON NAVD 1929 AND NAVD 1988 (NAVD 1988 IS 2.3 FEET HIGHER THAN NAVD 1929).

AERIAL PLANIMETRY:
THIS SURVEY WAS PREPARED BY PHOTOGRAMMETRIC PROCESSES, UTILIZING AERIAL PHOTOGRAPHY DATED NOVEMBER 15, 2006. THE OUTLINE OF BUILDINGS AND OTHER ROOFED IMPROVEMENTS, MAY INCLUDE EAVES, CANOPIES AND BALCONIES, SINCE BUILDINGS BELOW THESE ITEMS ARE NOT VISIBLE TO THE CAMERA.

TOPOGRAPHY:
DATED SEPTEMBER 15, 2011, AND COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.

CONTOUR INTERVAL:
5 FOOT, UNLESS OTHERWISE NOTED.

PROJECT SUMMARY:

GROSS AREA:	382.3 Acres
NET AREA:	363.0 Acres
TOTAL LOTS:	500
TOTAL RESIDENTIAL D.U.:	1,574 DU
TOTAL OFFICE/COMMERCIAL:	730,000 SF
EXISTING ZONING:	R1 (328.4 AC), C-3 (52.4 AC), C-R (1.5 AC)
PROPOSED ZONING:	C-3 (3.9 AC), C-3-DP (57.9 AC), RPD-5000-5U (319.0 AC), RPD-5000-8U (182.6 AC), C-R (1.5 AC)
EXISTING LAND USE:	H5 (328.4 AC), CM (52.4 AC), OS-PR (1.5 AC)
PROPOSED LAND USE:	H5 (328.4 AC), CM (52.4 AC), OS-PR (1.5 AC)
APN:	2826-008-039 2826-008-040 2826-009-078
ESTIMATED EARTHWORK: ONSITE:	6,400,000 CY CUT 6,600,000 CY FILL 200,000 CY IMPORT
OFFSITE:	1,400,000 CY CUT 1,200,000 CY FILL 200,000 CY EXPORT
TOTAL:	7,800,000 CY CUT 7,800,000 CY FILL

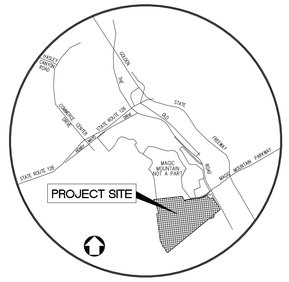
OAK TREES TO BE REMOVED: ONSITE 55 TREES, OFFSITE 12 TREES
OAK TREES TO BE ENCROACHED: ONSITE 10 TREES, OFFSITE 2 TREES
OAK TREES TO REMAIN: ONSITE 15 TREES, OFFSITE 10 TREES
TOTAL OAK TREES: 104

RELATED ENTITLEMENTS

CONDITION USE PERMINT NO.. 00-210
OAK TREE PERMIT NO. . . . . ROAK 200700018
ZONE CHANGE NO . . . . . RZC 00-210
PARKING PERMIT NO.. 200700013

UTILITY PROVIDERS

SEWER:	L.A. COUNTY SANITATION DIST. 32
WATER:	VALENCIA WATER COMPANY
ELECTRICAL:	SOUTHERN CALIFORNIA EDISON
GAS:	SOUTHERN CALIFORNIA GAS CO.
TELEPHONE:	AT&T
CABLE TV:	TIME WARNER CABLE



VICINITY MAP
NOT TO SCALE

LEGEND:

- 1 / 10,000 SF / 1010.0 — LOT NO. / LOT AREA (SQUARE FEET) / PAD ELEVATION
- PROJECT BOUNDARY
- PROPOSED RIGHT OF WAY
- PROPOSED UTILITY EASEMENT
- EXISTING EASEMENT
- 1000 — PROPOSED CONTOUR
- PROPOSED DAYLIGHT LINE
- TEMPORARY IMPACT LINE FOR GRADING
- D — PROPOSED STORM DRAIN
- SS — PROPOSED SANITARY SEWER
- W — PROPOSED WATER
- D — PROPOSED STORM DRAIN INLET/OUTLET
- PROPOSED CATCH BASIN
- SD — EXISTING STORM DRAIN LINE
- S — EXISTING SEWER LINE
- W — EXISTING WATER LINE
- O — EXISTING OIL LINE
- G — EXISTING GAS LINE
- OE — EXISTING OVERHEAD POWER LINE
- EXISTING POWER POLE
- PROPOSED RETAINING WALL
- SIGHT DISTANCE LINE
- EXISTING OIL WELL LOCATION (OIL WELL TO BE ABANDON IN PLACE)
- OAK NO. XX (TBE) — OAK TREE (TO BE ENCROACHED)
- OAK NO. XX (TBR) — OAK TREE (TO BE REMOVED)
- OAK NO. XX (TR) — OAK TREE (TO REMAIN)

ABBREVIATIONS:

AC	ACRES
EX	EXISTING
FF	FINISH FLOOR
GB	GRADE BREAK
HP	HIGH POINT
L	LENGTH
MIN	MINIMUM
PROP	PROPOSED
R	RADIUS
R/W	RIGHT OF WAY
SF	SQUARE FEET
SD	STORM DRAIN
SS	SANITARY SEWER
TBI	TO BE IMPACTED
TBR	TO BE REMOVED
VC	VERTICAL CURVE
W	WATER

LOT SUMMARY

Lot Numbers	Sheet No.	No. of Lots	No. of Bldgs	Type (Use)	Dwelling Units	Commercial SF	Total Acres
Planning Area 1-3							
1–6,11	2	7	7	OFFICE/COMMERCIAL		400,000	18.1
7–10,12–17		10	8	OFFICE/COMMERCIAL		280,000	26.0
18–26		9		OPEN SPACE			8.6
Planning Area 4	2,3						
27–32		6		CONDOMINIUM	178		22.3
Planning Area 5	3						
33–166		134	134	SINGLE-FAMILY 50'x105'	134		21.6
Planning Area 6	3						
167–281		115	115	SINGLE-FAMILY 55'x110'	115		19.5
Planning Area 7	3						
282–371		90	90	SINGLE-FAMILY 45'x100	90		12.3
Planning Area 8	3						
372		1		PUBLIC PARK SITE			5.6
373		1		SCHOOL SITE			9.4
Planning Area 9	3,4						
374–380		7	15	CONDOMINIUM	255		11.1
Planning Area 10	4						
381–385		5	8	CONDOMINIUM	280		6.9
Planning Area 11	4						
386–393		8	13	CONDOMINIUM	208		10.4
Planning Area 12	4						
394–398		5	21	CONDOMINIUM	120		10.8
Planning Area 13	4						
399–405		7	5	CONDOMINIUM	194		15.5
Planning Area 14	4						
406,407		2	1	OFFICE/COMMERCIAL		50,000	3.0
Miscellaneous	2,3,4						
408		1		PRIVATE RECREATION CENTER 'A'			2.1
409		1		PRIVATE RECREATION CENTER 'B'			0.8
410–433		24		PRIVATE DRIVES			29.0
434–442		9		LACFCD			9.5
443		1		SPINEFLOWER PRESERVE			27.2
444–500		57		OPEN SPACE			93.1
				PUBLIC STREETS			19.5
TOTAL		500			1,574	730,000	382.3

OAK TREES TO REMAIN:

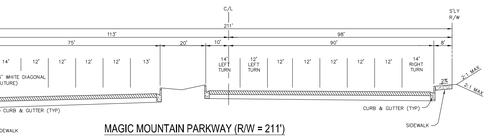
1, 2, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 87, 141, 179, 717 (MV), 718 (MV), 719 (MV), 4351 (MV), 4352 (MV), 4353 (MV)
(15 OAK TREEES ONSITE, 11 OAK TREES OFFSITE)

OAK TREES TO BE ENCROACHED:

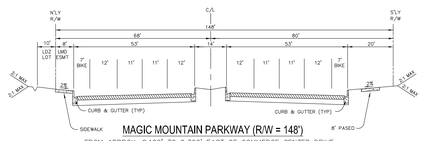
12, 26, 32, 33, 34, 38, 39, 41, 42, 43, 178
(10 OAK TREES ONSITE, OAK TREE OFFSITE)

OAK TREES TO BE REMOVED:

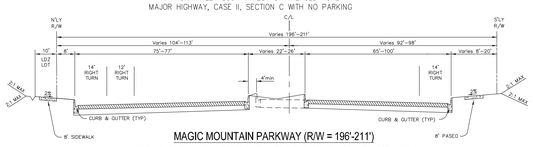
3, 4, 5, 6, 7 (MV), 27, 28, 29, 30, 31, 37, 84, 85, 86, 88, 89, 90, 97, 100, 102, 103, 106, 108, 109, 111, 113, 115, 116, 117, 118, 120, 122, 124, 125, 126, 128, 129, 130, 131, 132, 134, 136, 137, 143, 144, 145, 150, 152, 153, 154, 155, 156, 157, 163, 164, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177
(55 OAK TREES ONSITE, 12 OAK TREES OFFSITE)



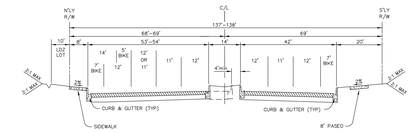
MAGIC MOUNTAIN PARKWAY (R/W = 211')
SECTION TO JOIN PER METROPOINTE IMPROVEMENT PLANS AT APPROXIMATELY 300 FT WEST OF THE OLD ROAD
MAJOR HIGHWAY, CASE II, SECTION C WITH NO PARKING



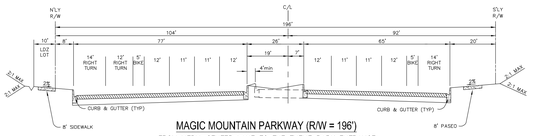
MAGIC MOUNTAIN PARKWAY (R/W = 148')
FROM APPROX. 2,100' TO 2,300' EAST OF COMMERCE CENTER DRIVE
MAJOR HIGHWAY, CASE II, SECTION C WITH ON STREET BIKE LANE AND NO PARKING



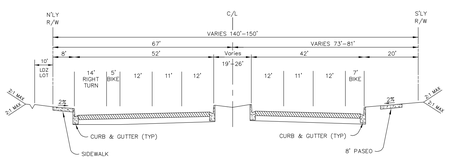
MAGIC MOUNTAIN PARKWAY (R/W = 196'-211')
FROM THE JOIN WITH METROPOINTE IMPROVEMENTS TO MEDIA CENTER LANE
MAJOR HIGHWAY, CASE II, SECTION C WITH NO PARKING



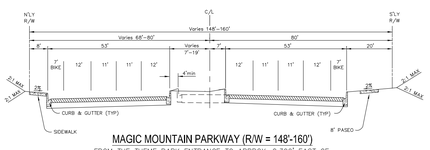
MAGIC MOUNTAIN PARKWAY (R/W = 137'-138')
FROM APPROX. 1,300' TO 2,100' EAST OF COMMERCE CENTER DRIVE
MAJOR HIGHWAY, CASE II, SECTION C WITH ON STREET BIKE LANE AND NO PARKING



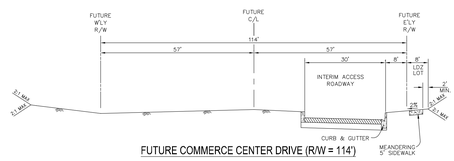
MAGIC MOUNTAIN PARKWAY (R/W = 196')
FROM MEDIA CENTER LANE TO THE THEME PARK ENTRANCE
MAJOR HIGHWAY, CASE II, SECTION C WITH ON STREET BIKE LANE AND NO PARKING



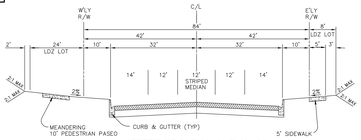
MAGIC MOUNTAIN PARKWAY (R/W = 140'-150')
FROM APPROX. 1,300' EAST OF COMMERCE CENTER DRIVE TO COMMERCE CENTER DRIVE
MAJOR HIGHWAY, CASE II, SECTION C WITH ON STREET BIKE LANE AND NO PARKING



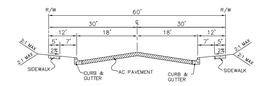
MAGIC MOUNTAIN PARKWAY (R/W = 148'-160')
FROM THE THEME PARK ENTRANCE TO APPROX. 2,300' EAST OF COMMERCE CENTER DRIVE
MAJOR HIGHWAY, CASE II, SECTION C WITH ON STREET BIKE LANE AND NO PARKING



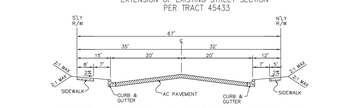
FUTURE COMMERCE CENTER DRIVE (R/W = 114')



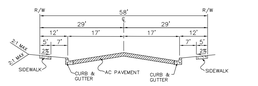
WESTRIDGE PARKWAY (R/W = 84')
EXTENSION OF EXISTING STREET SECTION PER TRACT 45433



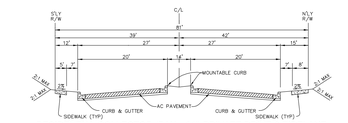
RESIDENTIAL COLLECTOR (R/W = 60') PRIVATE DRIVE & FIRELANE
WITH PARALLEL PARKING
"D" DRIVE, "J" DRIVE, "L" DRIVE,



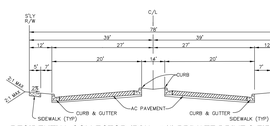
PUBLIC STREET - RESIDENTIAL COLLECTOR (R/W = 67')
WITH PARALLEL PARKING
"A" STREET



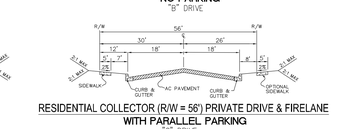
LOCAL CUL DE SAC (R/W = 58') PRIVATE DRIVE & FIRELANE
WITH PARALLEL PARKING
"E" DRIVE, "F" DRIVE, "G" DRIVE, "H" DRIVE, "K" DRIVE, "M" DRIVE, "N" DRIVE, "O" DRIVE, "P" DRIVE, "R" DRIVE, "S" DRIVE, "T" DRIVE, "U" DRIVE



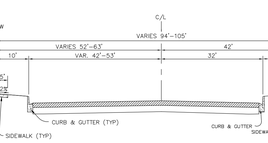
RESIDENTIAL COLLECTOR (R/W = 81') PRIVATE DRIVE & FIRELANE
NO PARKING
"B" DRIVE



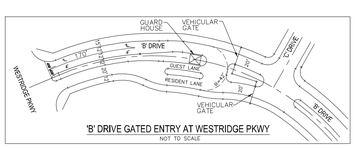
RESIDENTIAL COLLECTOR (R/W = 78') PRIVATE DRIVE & FIRELANE
NO PARKING
"I" DRIVE, "Q" DRIVE, "I" DRIVE (FROM "B" DR. TO "U" DR.)



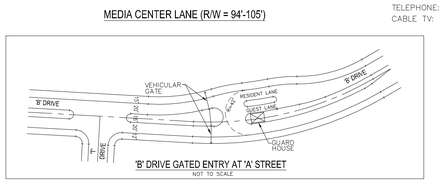
RESIDENTIAL COLLECTOR (R/W = 56') PRIVATE DRIVE & FIRELANE
WITH PARALLEL PARKING
"C" DRIVE



MEDIA CENTER LANE (R/W = 94'-105')



'B' DRIVE GATED ENTRY AT WESTRIDGE PKWY
NOT TO SCALE



'B' DRIVE GATED ENTRY AT 'A' STREET
NOT TO SCALE

LEGEND:

- OAK TREES TO REMAIN (26 TREES)
- OAK TREES TO BE ENCROACHED (11 TREES)
- OAK TREES TO BE REMOVED (67 TREES)
- PROTECTED ZONE
- TOTAL: 104 TREES

OAK TREE LOCATION & IMPACT MAP

SHEET 1 COUNTY OF LOS ANGELES 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802
27433 TOURNEY ROAD
SUITE 250
VALENCIA, CA 91355
TEL: (661) 799-2760
CIVIL ENGINEERING • LAND PLANNING • HELISDE DESIGN • SURVEYING

PREPARED FOR:
NEWHALL LAND & FARMING CO.
25124 SPRINGFIELD COURT
SUITE 300
VALENCIA, CA 91355
(661)255-4000
REPRESENTATIVE: MR. MILES HELFRICH

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
(760) 431-9896
PLANS PREPARED UNDER THE DIRECTION OF:
CRAIG M. WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-14 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

I:\CAD\0930\TM OAK TREE SET\2013\09302_TENTATIVE-MAP_OAKS-MAP_SHEET-01.dwg

EASEMENTS BASED ON FIRST AMERICAN TITLE INSURANCE COMPANY
PRELIMINARY TITLE REPORT ORDER NO. 3403118 (29) DATED JUNE 25, 2010

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION	ADDITIONAL COMMENTS	TENTATIVE MAP SHEET NO.
2	GENERAL PIPE LINE COMPANY OF CALIFORNIA	PIPE LINE	AUGUST 5, 1912 INSTR. NO. 119 BOOK 5156 PAGE 8	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
3	PACIFIC LIGHT AND POWER CORPORATION.	POLES, etc.	MAY 22, 1914 INSTR. NO. 131 BOOK 5810 PAGE 192	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
4	PACIFIC TELEPHONE AND TELEGRAPH COMPANY	POLES, etc.	JUNE 12, 1915 INSTR. NO. 130 BOOK 6080 PAGE 40	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
5.1	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 27, 1920 INSTR. NO. 428 BOOK 7068 PAGE 323	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE PART OF DOCUMENT IS ILLEGIBLE	———
5.2	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	MAY 26, 1924 INSTR. NO. 570 BOOK 4022 PAGE 192	TO BE QUITCLAIMED PRIOR TO FINAL MAP		2,4
5.3	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	APRIL 17, 1925 INSTR. NO. 1620 BOOK 3397 PAGE 67	TO REMAIN		3,4
5.4	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 15, 1928 INSTR. NO. 1921 BOOK 7853 PAGE 11	TO REMAIN		3,4
5.5	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JANUARY 12, 1931 INSTR. NO. 917 BOOK 10631 PAGE 4	TO REMAIN		3,4
5.6	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	SEPTEMBER 14, 1941 INSTR. NO. 20 BOOK 18811 PAGE 7	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
5.7	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JULY 28, 1948 INSTR. NO. 3284 BOOK 27828 PAGE 248	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE PART OF DOCUMENT IS ILLEGIBLE	———
5.8	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	MAY 25, 1950 INSTR. NO. 2284 BOOK 33233 PAGE 24	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
5.9	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	NOVEMBER 24, 1950 INSTR. NO. 3033 BOOK 34891 PAGE 223	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
5.10	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	SEPTEMBER 27, 1951 INSTR. NO. 2213 BOOK 37296 PAGE 252	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
5.11	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	MAY 22, 1952 INSTR. NO. 2249 BOOK 38591 PAGE 298	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
5.12	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JULY 11, 1952 INSTR. NO. 2795 BOOK 38363 PAGE 41	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
5.13	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	SEPTEMBER 10, 1952 INSTR. NO. 3424 BOOK 39811 PAGE 49	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
5.14	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	OCTOBER 27, 1954 INSTR. NO. 3028 BOOK 45950 PAGE 255	TO BE QUITCLAIMED PRIOR TO FINAL MAP		5
5.15	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JANUARY 15, 1958 INSTR. NO. 3080 BOOK 56396 PAGE 205	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
5.16	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JULY 12, 1966 INSTR. NO. 2217 BOOK 03363 PAGE 475	TO REMAIN	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	3,4
5.17	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	AUGUST 7, 1968 INSTR. NO. 3513 BOOK 04093 PAGE 406	TO BE QUITCLAIMED PRIOR TO FINAL MAP		3
5.18	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 5, 1971 INSTR. NO. 3029 BOOK 04964 PAGE 262	TO BE QUITCLAIMED PRIOR TO FINAL MAP		4

EASEMENT NOTE: PLOTTABLE EASEMENTS ARE SHOWN ON TENTATIVE MAP SHEETS. NON-PLOTTABLE EASEMENTS ARE NOTED AS SUCH IN THE SUMMARY TABLE HEREON. IT IS RECOMMENDED THAT LEGAL COUNSEL AND TITLE COMPANY BE RETAINED TO ANALYZE AND REPORT ON SUCH EASEMENTS.

EASEMENTS (CONTINUED)

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION	ADDITIONAL COMMENTS	TENTATIVE MAP SHEET NO.
6	SOUTHERN CALIFORNIA TELEPHONE COMPANY	POLES, ect.	AUGUST 21, 1935 INSTR. NO. 732 BOOK 13612 PAGE 109	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE PARTS OF DOCUMENT ARE ILLEGIBLE	———
7	UNION OIL COMPANY OF CALIFORNIA	PIPE LINE	MAY 6, 1938 INSTR. NO. 952 BOOK 15781 PAGE 98	TO BE QUITCLAIMED PRIOR TO FINAL MAP		2,3
8	AUGUST A. RUBEL & MARY RUBEL	PIPE LINE	JUNE 14, 1940 INSTR. NO. 988 BOOK 17568 PAGE 237	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE NO SPECIFIC DESCRIPTION OF EASEMENT	———
9	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
10	SOUTHERN PACIFIC RAILROADS & SOUTHERN PACIFIC CO.	ROADWAY	SEPTEMBER 20, 1941 INSTR. NO. 20 BOOK 18811 PAGE 7	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
11	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
12	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
13	COUNTY SANITARY DISTRICT NO. 32 OF LA COUNTY	SEWER LINE	FEBRUARY 25, 1966 INSTR. NO. 4236 BOOK D3219 PAGE 352	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
14	THE COUNTY OF LOS ANGELES	PUBLIC ROAD AND HIGHWAY	APRIL 6, 1971 INSTR. NO. 3104 BOOK D5018 PAGE 704	TO REMAIN		4
15	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINE	APRIL 13, 1971 INSTR. NO. 2154 BOOK D5024 PAGE 891	TO REMAIN		3,4
16.1	VALENCIA WATER COMPANY	WATER LINE	NOVEMBER 10, 1972 INSTR. NO. 2874 BOOK D-5663 PAGE 731	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
16.2	VALENCIA WATER COMPANY	WATER LINE	JULY 26, 2004 INSTR. NO. 04-1898888	TO BE QUITCLAIMED PRIOR TO FINAL MAP	BLANKET EASEMENT	———
16.3	VALENCIA WATER COMPANY	WATER LINE	SEPTEMBER 27, 2004 INSTR. NO. 2474523	TO BE QUITCLAIMED PRIOR TO FINAL MAP	BLANKET EASEMENT	———
17	SIX FLAGS MAGIC MOUNTAIN INC.	GREENHOUSE NURSERY	JUNE 5, 1979 INSTR. NO. 79-603645	TO BE QUITCLAIMED PRIOR TO FINAL MAP		2
18	SIX FLAGS MAGIC MOUNTAIN INC.	LIVESTOCK	JUNE 5, 1979 – INSTR. NO. 79-603648 JUNE 10, 1980 – INSTR. NO. 80-559806	TO REMAIN		5
19	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ect.	SEPTEMBER 15, 1988 INSTR. NO. 88-1463381	TO BE QUITCLAIMED PRIOR TO FINAL MAP		3
20	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
21	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
22	LA COUNTY FLOOD CONTROL DISTRICT	FLOOD CONTROL	AUGUST 23, 2005 INSTR. NO. 05-2021536	TO BE QUITCLAIMED PRIOR TO FINAL MAP		4
23.1	THE CITY OF SANTA CLARITA	PUBLIC ROAD AND HIGHWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0207027	TO REMAIN		4
23.2	THE CITY OF SANTA CLARITA	PUBLIC ROAD AND HIGHWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0207030	TO REMAIN		4
23.3	THE CITY OF SANTA CLARITA	PUBLIC ROAD AND HIGHWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0207031	TO REMAIN		4
24	THE CITY OF SANTA CLARITA	STORM DRAIN	MAY 2, 2006 INSTR. NO. 06-0963640	TO BE QUITCLAIMED PRIOR TO FINAL MAP		4
25	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
26	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———

LEASES (NOT PLOTTED)

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION	ADDITIONAL COMMENTS	TENTATIVE MAP SHEET NO.
27	HUMBLE OIL COMPANY	OIL/GAS	SEPTEMBER 1, 1948 INSTR. NO. 993 BOOK 28136 PAGE 231, 264	TO BE TERMINATED PRIOR TO FINAL MAP	———	———
28	TIDE WATER OIL COMPANY	OIL/GAS	DECEMBER 3, 1954 INSTR. NO. 954	TO BE TERMINATED PRIOR TO FINAL MAP	———	———
29	THE TEXAS COMPANY	OIL/GAS	JULY 31, 1958 INSTR. NO. 970 BOOK 17-39 PAGE 641	TO BE TERMINATED PRIOR TO FINAL MAP	———	———
30	STANDARD OIL COMPANY	OIL/GAS	AUGUST 19, 1958 INSTR. NO. 3370 BOOK 17-95 PAGE 123	TO BE TERMINATED PRIOR TO FINAL MAP	———	———
31	RICHARD R. CLEMENTS	OIL/GAS	AUGUST 7, 1962 INSTR. NO. 3408	TO BE TERMINATED PRIOR TO FINAL MAP	———	———
32	DEPCO INC.	OIL/GAS	APRIL 22, 1976 INSTR. NO. 27	TO BE TERMINATED PRIOR TO FINAL MAP	———	———

LEGEND:

OAK TREES TO REMAIN (26 TREES)

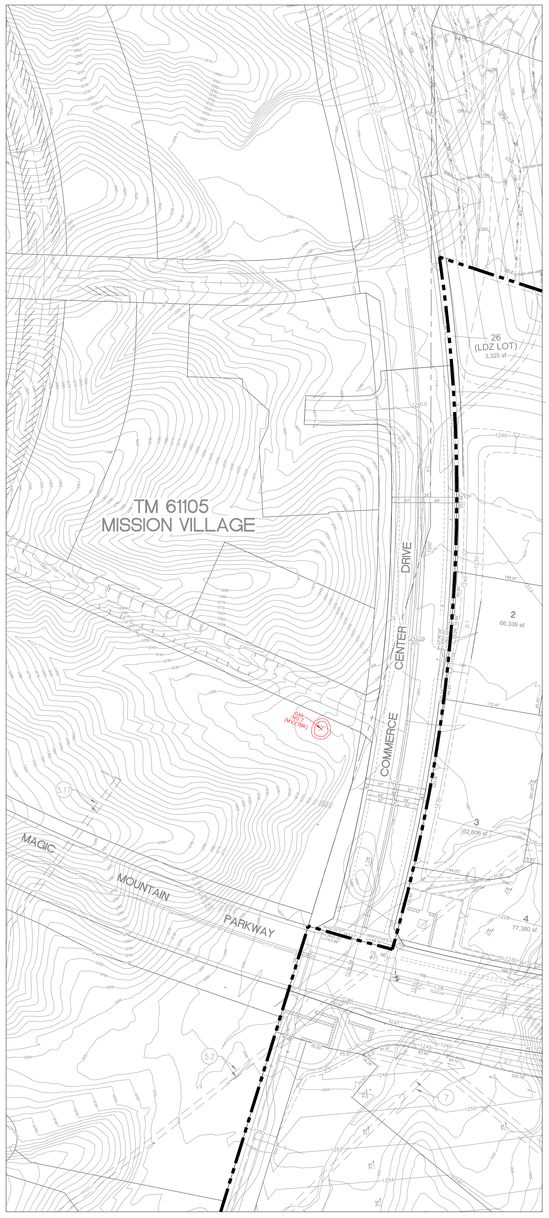
OAK TREES TO BE ENCROACHED (11 TREES)

OAK TREES TO BE REMOVED (67 TREES)

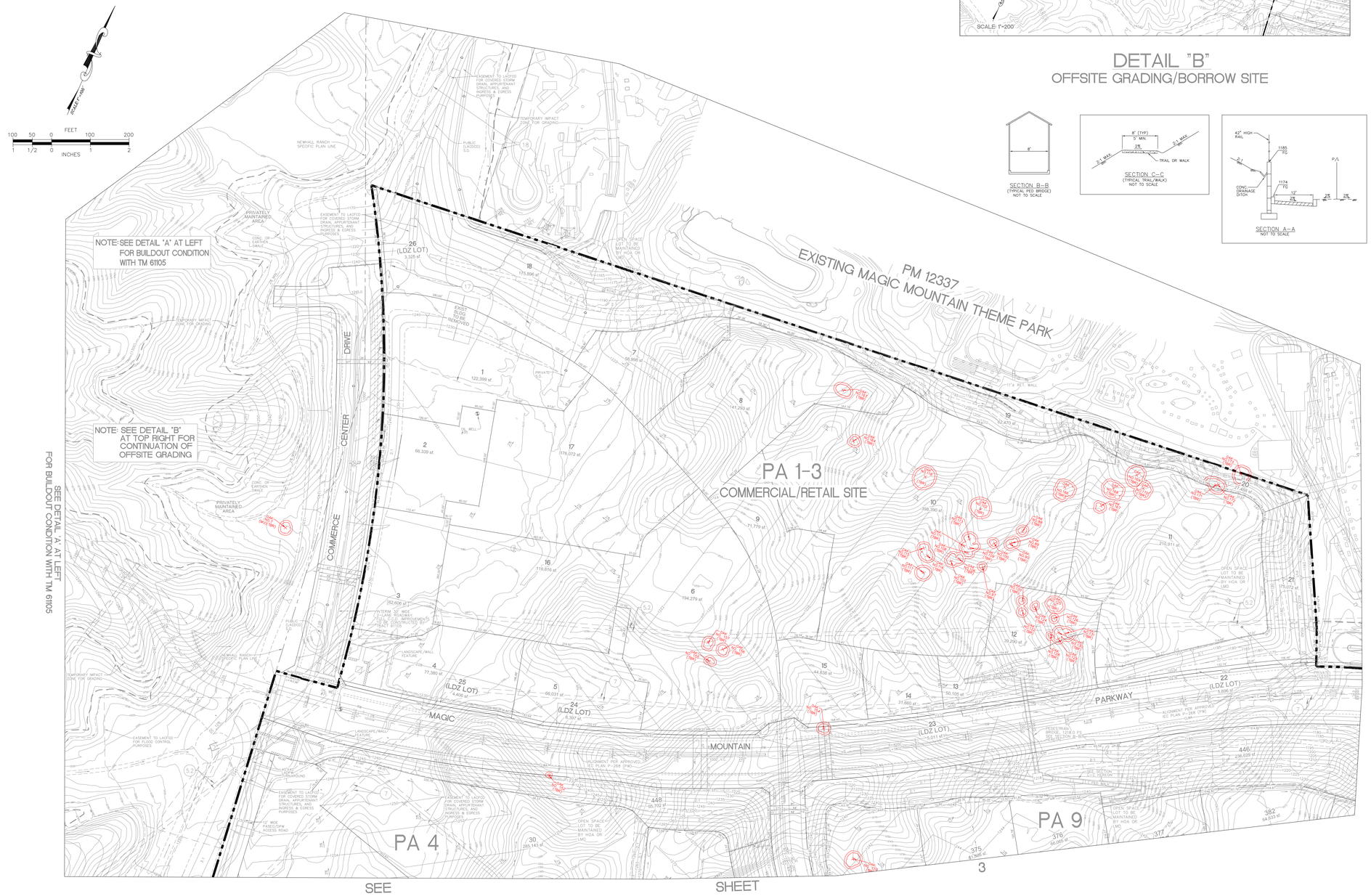
PROTECTED ZONE

TOTAL: 104 TREES

DETAIL "B"
OFFSITE GRADING/BORROW SITE



DETAIL "A"
BUILDOUT CONDITION WITH TM 61105



SECTION B–B
(TYPICAL PED BRIDGE)
NOT TO SCALE

SECTION C–C
(TYPICAL TRAIL/WALK)
NOT TO SCALE

SECTION A–A
NOT TO SCALE

OAK TREE LOCATION & IMPACT MAP

SHEET 2	COUNTY OF LOS ANGELES	5 SHEETS

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802
27433 TOURNEY ROAD
SUITE 230
VALENCIA, CA 91355
TEL: (661) 799-2760
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PREPARED FOR:
NEWHALL LAND & FARMING CO.
25124 SPRINGFIELD COURT
SUITE 300
VALENCIA, CA 91355
(661)255-4000
REPRESENTATIVE: MR. MILES HELFRICH

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:
CRAIG M. WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-14 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR.

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

I:\CAD\0930\TM OAK TREE SET\2013\0930_TENTATIVE-MAP_OAKS-MAP_SHEET-02.dwg

NOTE: SEE TABLE ON SHEET 2 FOR EASEMENT DETAILS.

LEGEND:

- OAK TREES TO REMAIN (26 TREES)
- OAK TREES TO BE ENCROACHED (11 TREES)
- OAK TREES TO BE REMOVED (67 TREES)
- PROTECTED ZONE

TOTAL: 104 TREES

DETAIL 'A'

SECTION A–A
NOT TO SCALE

FEET 100 50 0 100 200

INCHES 1 1/2 0 1 2

NOTE: SEE DETAIL 'A' ON SHEET 5 FOR BUILDOUT CONDITION WITH TM 61105

SEE SHEET 2

SEE SHEET 4

SEE SHEET 1

SEE DETAIL 'A' HEREON

OAK TREE LOCATION & IMPACT MAP

SHEET 3 | COUNTY OF LOS ANGELES | 5 SHEETS

MAJOR LAND DIVISION VESTING TENTATIVE TRACT MAP NO. 53295

COUNTY CASE NO. _____

LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

ALLIANCE LAND PLANNING & ENGINEERING INC.
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CARLSBAD, CA 92008
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PLANS PREPARED UNDER THE DIRECTION OF:
CRAIG M. WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-14 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

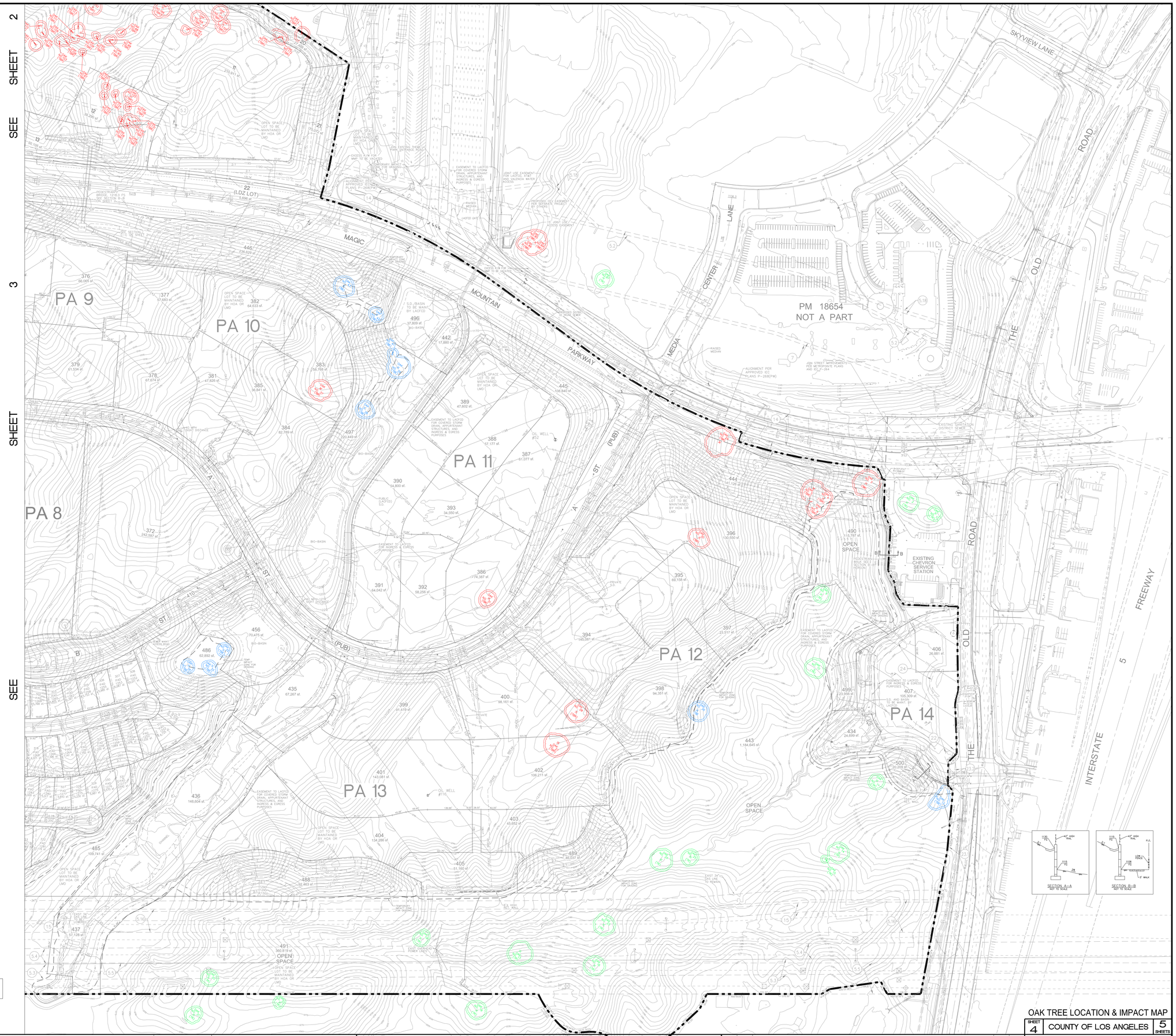
NO.	DATE	REVISIONS	BY	APPR

I:\CAD\09930\TM OAK TREE SET\2013\09930_TENTATIVE-MAP_OAKS-MAP_SHEET-03.dwg

LEGEND:

- OAK TREES TO REMAIN (26 TREES)
- OAK TREES TO BE ENCROACHED (11 TREES)
- OAK TREES TO BE REMOVED (67 TREES)
- PROTECTED ZONE

TOTAL: 104 TREES



SCALE 1"=100'

FEET 100 50 0 100 200

INCHES 1 1/2 0 1 2

NOTE: SEE TABLE ON SHEET 2 FOR EASEMENT DETAILS.

OAK TREE LOCATION & IMPACT MAP

SHEET 4 COUNTY OF LOS ANGELES 5 SHEETS

ALLIANCE LAND PLANNING & ENGINEERING INC.

2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802

27433 TOURNEY ROAD
SUITE 250
VALENCIA, CA 91355
TEL: (661) 799-2760

CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PREPARED FOR:
NEWHALL LAND & FARMING CO.
25124 SPRINGFIELD COURT
SUITE 300
VALENCIA, CA 91355
(661)255-4000

REPRESENTATIVE: MR. MILES HELFRICH

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:

CRAIG M. WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-14 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

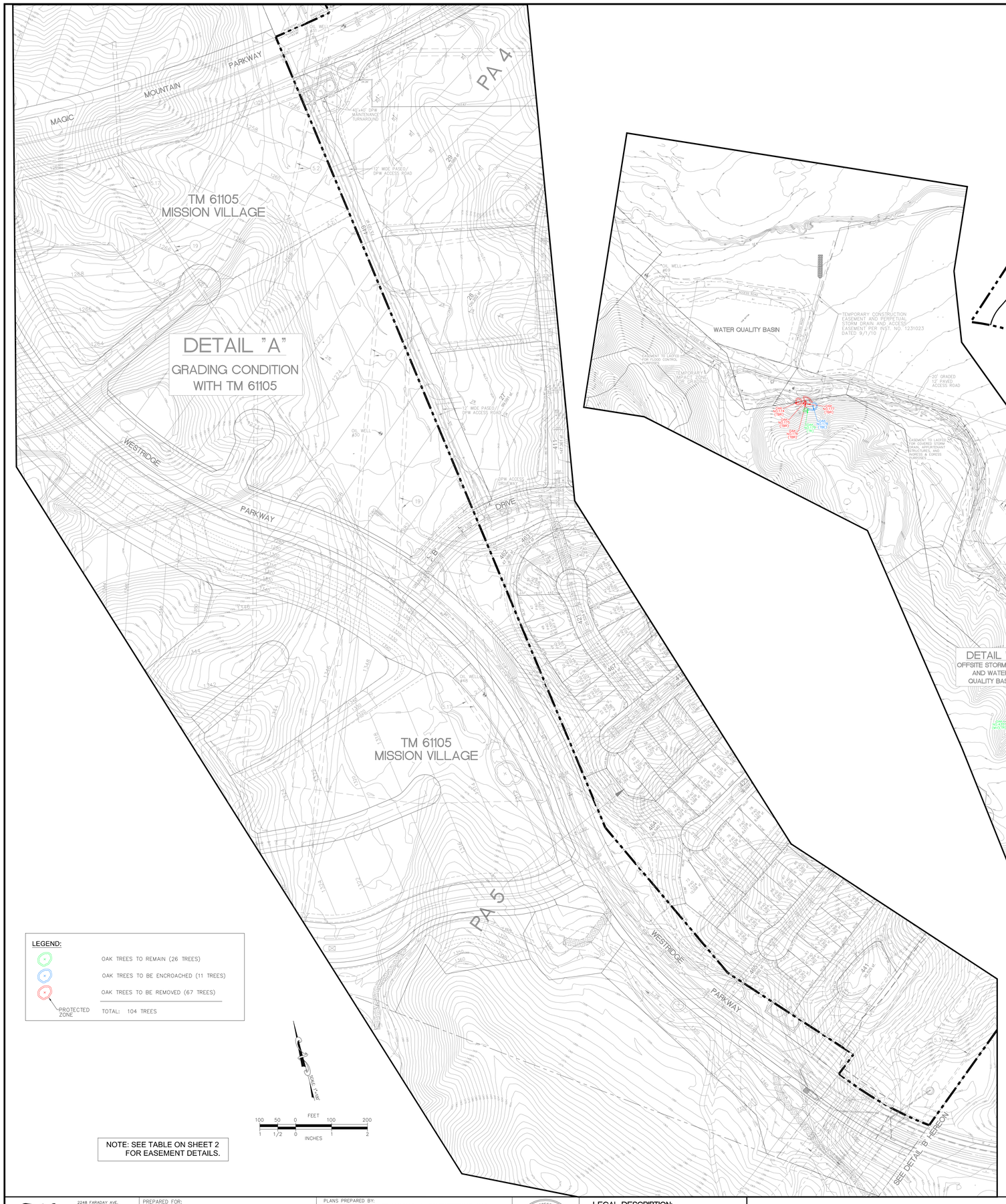
THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

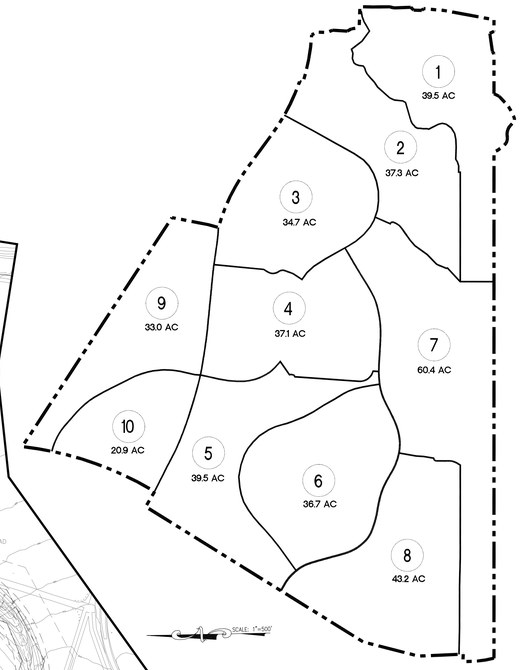
NO.	DATE	REVISIONS	BY	APPR

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

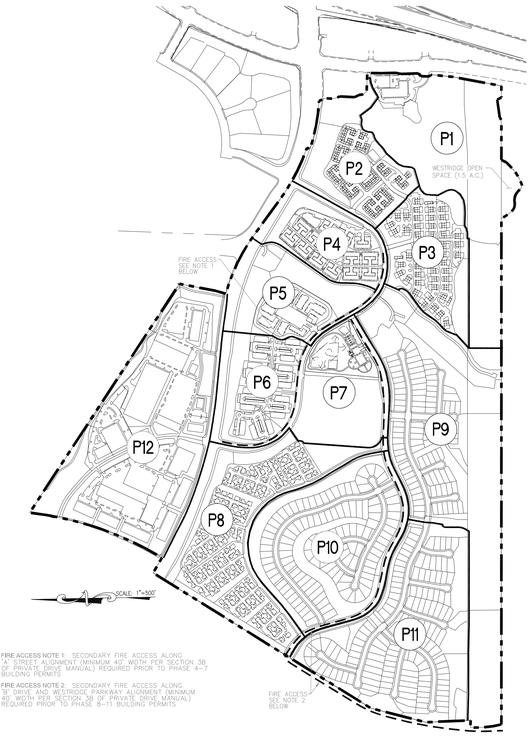
COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

I:\CAD\0930\TM OAK TREE SET\2013\0930_TENTATIVE-MAP_OAKS-MAP_SHEET-04.dwg





LARGE LOT MAP



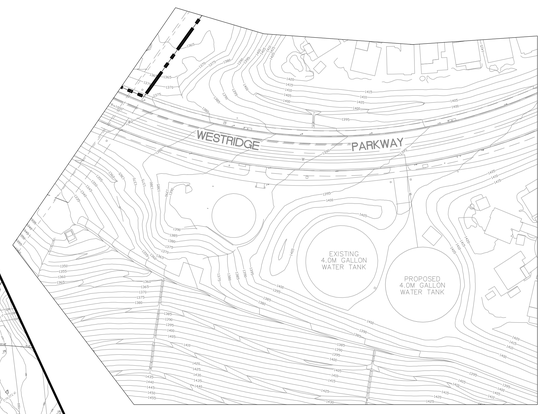
FIRE ACCESS NOTE 1: SECONDARY FIRE ACCESS ALONG "A" STREET ALIGNMENT (MINIMUM 40' WIDTH PER SECTION 38 OF PRIVATE DRIVE MANUAL) REQUIRED PRIOR TO PHASE 4–7 BUILDING PERMITS

FIRE ACCESS NOTE 2: SECONDARY FIRE ACCESS ALONG "B" DRIVE AND WESTRIDGE PARKWAY ALIGNMENT (MINIMUM 40' WIDTH PER SECTION 38 OF PRIVATE DRIVE MANUAL) REQUIRED PRIOR TO PHASE 8–11 BUILDING PERMITS

PHASING MAP

PHASING MAP DATA TABLE

PHASE	No. OF LOTS	No. OF UNITS	GROSS AREA * (AC.)	OPEN SPACE AREA (AC.)	% OPEN SPACE	Σ No. OF LOTS	Σ No. OF UNITS	Σ GROSS AREA (AC.)	Σ OPEN SPACE AREA (AC.)	Σ % OPEN SPACE
1	8	N/A	39.1	36.1	92%	7	N/A	39.1	36.1	92%
2	7	120	17.6	5.5	31%	13	120	56.7	41.6	76%
3	9	194	18.9	2.9	15%	22	314	75.6	44.5	59%
4	10	208	16.1	4.2	26%	32	522	91.7	48.7	53%
5	12	280	19.3	8.6	44%	44	802	111.0	57.3	52%
6	11	255	19.0	3.7	20%	55	1057	130.0	61.0	47%
7	3	N/A	15.9	6.5	41%	58	N/A	145.9	67.5	46%
8	10	178	37.7	8.2	21%	67	1235	183.6	75.7	41%
9	112	90	60.4	41.1	68%	179	1325	244.0	116.8	48%
10	129	115	39.1	11.4	29%	308	1440	283.1	128.2	45%
11	163	134	43.8	13.5	31%	471	1595	326.9	141.7	43%
12	26	N/A	53.9	8.5	16%	497	N/A	380.8	151.7	40%
WESTRIDGE OPEN SPACE	N/A	N/A	1.5	1.5	N/A	N/A	N/A	382.3	N/A	N/A
TOTAL	500	1,574	382.3	151.7	37%	500	1,574	382.3	151.7	40%



DETAIL 'B'

LEGEND:

- OAK TREES TO REMAIN (26 TREES)
- OAK TREES TO BE ENCROACHED (11 TREES)
- OAK TREES TO BE REMOVED (67 TREES)
- PROTECTED ZONE
- TOTAL: 104 TREES

NOTE: SEE TABLE ON SHEET 2 FOR EASEMENT DETAILS.

OAK TREE LOCATION & IMPACT MAP

SHEET 5 | COUNTY OF LOS ANGELES | 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
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(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:

CRAIG M. WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-14 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR.

I:\CAD\0930\TM OAK TREE SET\2013\0930_TENTATIVE-MAP_OAKS-MAP_SHEET-05.dwg

Appendix 5.4D

Literature Survey: Global Climate Change and its Effects on Sensitive Biological Resources

Eyestone Environmental

February 2015

Global Climate Change and its Effects on Sensitive Biological Resources

The purpose of this survey is to present the results of a scientific literature review that was conducted to determine the current state of knowledge on global climate change and its effects on sensitive biological resources and their related ecosystems. (The scientific literature summarized herein is available for public review and inspection upon reasonable request to the County of Los Angeles.) The survey concludes with the County's CEQA determination with respect to such issues.

1. Summaries of Relevant Scientific Literature

(a) Intergovernmental Panel on Climate Change (IPCC)

By way of introduction, the IPCC is the leading international body for the assessment of climate change. Established in 1988, the IPCC is a scientific, intergovernmental body under the auspices of the United Nations responsible for reviewing and assessing the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change. Because of its very nature, the IPCC embodies a unique opportunity to provide rigorous and balanced scientific information to decision makers.

***The Regional Impacts of Climate Change: An Assessment of Vulnerability* (IPCC 1997)**

This report evaluates the regional impacts of climate change across the globe. With regard to impacts to North America, this report concludes that the "characteristics of the subregions and sectors . . . suggest that neither the impacts of climate change nor the response options will be uniform." (IPCC 1997, Chapter 8 Executive Summary.) Nonetheless, the report concludes that reductions in terrestrial biological diversity are likely due to loss of habitat. (*Ibid.*) The same conclusion is reached as to fisheries and aquatic systems because of expected increases to water temperature, changes in freshwater flows and mixing regimes, and alterations to water quality. (*Ibid.*) In spite of the anticipated impacts, the report discloses significant scientific uncertainties:

> "Our current understanding of the potential impacts of climate change is limited by critical uncertainties. One important uncertainty relates to the inadequacy of regional-scale climate projections relative to the spatial scales of variability in North American natural and human systems. This uncertainty is compounded further by the uncertainties inherent in ecological, economic, and social models—which thereby further limit our ability to identify the full extent of impacts or prescriptive adaptation measures. *Given these uncertainties, particularly the inability to forecast futures, conclusions about regional impacts are not yet reliable* and are limited to the sensitivity and vulnerability of physical, biological,

> and socioeconomic systems to climate change and climate variability." (*Ibid.*, italics added.)

More simply, the report concludes "[u]ncertainty exists in our ability to predict ecosystem or individual species responses to elevated CO_2 [i.e., carbon dioxide] and global warming at either the regional or global scale." (*Ibid.*)

***Climate Change 2007: Climate Change Impacts, Adaptation, and Vulnerability* (IPCC 2007)**

This report addresses the "relationship between observed climate change and recent observed changes in the natural and human environment." (IPCC 2007, p. 2.) Based upon global assessment of data since 1970, the report concludes that "anthropogenic warming has had a discernable influence on many physical and biological systems." (*Id.* at p. 3.) The report further notes that recent warming "strongly" affects terrestrial biological systems, such that there is an earlier timing of spring events, and poleward/upward shifts in the ranges in plant and animal species. (*Id.* at p. 3.) Similarly, with regard to marine and freshwater biological systems, there is evidence that impacts are occurring due to rising water temperatures, which impact ice cover, salinity, oxygen levels, and circulation. (*Ibid.*) The specific impacts to marine and freshwater biological systems include range shifts, the earlier migration of fish in rivers, and changing abundance levels of algal, plankton, and fish in high-latitude oceans and high-altitude lakes. (*Ibid.*) If temperature increases exceed 1.5-2.5°C, major changes are projected for ecosystem structure and function, species' ecological interactions, and species' geographic ranges—all resulting in predominantly negative consequences for biodiversity. (*Id.* at p. 8.)

The IPCC 2007 report also summarizes the considerable scientific uncertainty associated with global climate change and its causes and effects on sensitive biological resources:

> "Limitations and gaps prevent more complete attribution of the causes of observed system responses to anthropogenic warming. First, the available analyses are limited in the number of systems and locations considered. Second, natural temperature variability is larger at the regional than the global scale, thus affecting identification of changes due to external forcing. Finally, at the regional scale other factors (such as land-use change, pollution, and invasive species) are influential." (*Id.* at p. 4.)

Similarly, the report notes that while climate change is beginning to have effects on many natural and human environments, "based on the published literature, the impacts have not yet become established trends." (*Ibid.*)

Climate Change 2014: Impacts, Adaptation and Vulnerability
(IPCC 2014)

This report evaluates and considers how impacts and risks related to climate change can be reduced and managed thru adaptation and mitigation. (IPCC 2014, Summary for Policymakers, p. 3.) The primary findings of this report are located in the Summary for Policymakers, which contains three sections. Section A characterizes observed impacts, vulnerability and exposure, and adaptive responses to date. Section B examines future risks and potential benefits. And, Section C considers principles for effective adaptation and sustainable impacts. (*Id.* at pp. 3–4.)

Section A: This section addresses observed impacts to water and biological resources. Studies indicate climate change has caused glacier shrinkage, permafrost warming, and thawing in high-latitude regions and high-elevation regions. Land and marine species also have shifted geographic ranges, seasonal activities, migration patterns, abundances, and interactions in response to climate change. Climate change generally yields negative impacts to crops, with a small subset of studies showing positive impacts to crops in high-latitude regions. Climate-related impacts from heat waves, droughts, floods and wildfires include alteration of ecosystems, disruption of food production and water supply, damage to infrastructure, morbidity and mortality, and human health effects. To combat these impacts, adaptation plans and policies are becoming commonplace, especially in North America where municipal governments are engaging in adaptation planning. (*Id.* at pp. 4–11.) This section acknowledges the difficulty of responding to climate-related risks due to the "continuing uncertainty about the severity and timing of climate-change impacts" (*id.* at p. 9) and the "[u]ncertainties about future vulnerability, exposure, and responses of interlinked human and natural systems" (*id.* at p. 11).

Section B: This section presents future risks, including those relating to sensitive biological resources. Key risks include loss of marine and coastal ecosystems, and loss of terrestrial and inland ecosystems. (*Id.* to pp. 11–25.) This section acknowledges that the "precise levels of climate change sufficient to trigger tipping points (thresholds for abrupt and irreversible climate change) remain uncertain." (*Id.* at p. 14.)

Section C: This section considers how to manage future risks and adjust to climate change impacts. First and foremost, this section recognizes that adaptation is context and location specific, finding "no single approach for reducing risks appropriate across all settings." (*Id.* at p. 25.) Governments, from local to multi-national, need to work together to reduce vulnerability and exposure to the effects of climate change. Such methods include improving environmental

quality and sustained development. (*Id.* at pp. 25–29.) This section again acknowledges the "uncertainties about projected impacts." (*Id.* at pp. 26–28.)

(b) U.S. Fish and Wildlife Service (USFWS)

National Fish, Wildlife & Plants Climate Adaptation Strategy
(USFWS 2012)

This strategy is the first joint effort between federal, state, and local/tribal officials to "inspire and enable" managers, legislators, and decision-makers to take steps towards climate change adaptation. (USFWS 2012, p. 3.) The strategy details current and expected future impacts of climate change on the ecosystems of the U.S., and describes steps that can be taken to address these impacts. (*Id.* at p. 3-4.) Finding it "difficult to predict how individual species and ecosystems will react to climate change," the strategy advocates for adaptation management, requiring continued and coordinated observation and monitoring. (*Id.* at p. 5.) In providing a guide to address the impacts of climate change, the strategy nonetheless acknowledges that "despite a growing foundation of information, many uncertainties and gaps remain in our current understanding about the current and future impacts of climate change." (*Id.* at p. 71.) Further, the strategy recognizes that "[t]here is considerable uncertainty as to how many species of fish, wildlife, and plants will respond to climate change effects." (*Id.* at p. 83.)

Climate Change Vulnerability Assessment for Natural Resources Management: Toolbox of Methods with Case Studies
(USFWS 2014)

This "toolbox" contains a "round-up" of case studies on climate change vulnerabilities and the impacts of climate change on species, habitats, regions, ecosystems, and watershed and water resources. The goal of this toolbox is to provide "real-time" updates on current studies being conducted in each of these areas. (USFWS 2014, p. 3.) Each of the case studies use either a coarse-filter approach, which includes a qualitative categorization of vulnerability, or a fine-filter approach, which employs models to determine vulnerability to climate change. (*Ibid.*) Several studies included in the toolbox assess climate change impacts on California's native plants, bird and small-mammal species. In the end, the toolbox contains no conclusions, but is a resource for discovering further studies on climate change.

(c) U.S. Department of the Interior, U.S. Geological Survey, Biological Resources Division

***Status and Trends of the Nation's Biological Resources* (USGS 1998)**

A chapter of this report addresses the impacts of climate change on the nation's biological resources. (USGS 1998, pp. 89–116.) The report closely considers impacts to avian species, and notes that "the ranges of most species moved north, up mountain slopes, or both." (*Id.* at p. 101.) Accordingly, such range shifts "could cause local extinctions in the more southern portions of the birds' ranges, and, if movement to the north is impossible, extinctions of entire species could occur." (*Ibid.*) The report also considers impacts to reptiles and amphibians, and notes that they are likely to be impacted because they are especially susceptible to extreme temperature, must remain close to water sources, and are not able to disperse at a rapid rate. (*Ibid.*) In addition, "[i]n general, animals most likely to be affected earliest by climatic change are those in which populations are fairly small and limited to isolated habitats." (*Id.* at p. 102.)

Significantly, this report notes that "[w]hat is most needed to evaluate potential biological effects of temperature change is a regional projection of climatic changes that can be applied to ecosystems at a regional or local scale" and "estimates of climatic variability during the transition to a new equilibrium, particularly at the regional scale." (*Id.* at pp. 94–95.) In addition, "[a] focus of climate research toward changing climatic variability [citations] might be more useful for ecological impact assessments than the current focus among climatic modelers on climatic means." (*Id.* at p. 112.) Finally, these projections, in order to be "more realistic and useful . . . [require a] multiscale, multispecies, multitaxa analysis driven by regionally specific, transient climatic change forecasts." (*Ibid.*)

The report also states that "at present [transient regional changes] are very difficult to predict credibly." (*Id.* at p. 95; see also p. 110 [As contrasted with regional assessments, "[t]he most reliable projects for climatic models are for global-scale temperature changes."].) This point is further underscored by the conclusion that climate forecast models are "fraught with uncertainties," leading to "the perplexing question" of "whether they can be trusted as a reliable basis for altering social policies, such as those governing CO_2 emissions or the shape and location of wildlife reserves." (*Ibid.*)

After disclosing the inadequacies of the projection models, this report assesses the policy implications:

> "Climatic change as now envisioned is not necessarily a threat to the well-being of all climate-sensitive species. However, the transient nature of most projected human-induced climatic change scenarios suggests that significant alterations are likely on a scale of decades, whereas the adaptability of many species—especially those upon which faster responding species depend—is on a scale of centuries…. The only forecast that seems unassailable is that the more rapidly the climate changes and the more extensively other human disturbances are forced on nature, the higher the probability of substantial disruption and surprise within natural systems.
>
> To forecast possible consequences of the projected climate changes, single-species studies should be guided by the overall effects that climate may have at the large scale or on range limits and abundance patterns, and on the interactions among species. Coupling such results with information from climatologists, geologists, and others will allow interdisciplinary teams to more reliably forecast the possible biological consequences of scenarios of global warming and other global changes. These forecasts can then be used by policy makers and the general public to determine what types of actions might be effective to mitigate potential impacts of forecasted climate changes. Research can help put such policy making of a firmer factual basis, but any plausible level of effort is not likely to reduce all important uncertainties before the global change experiment now under way on Earth is played out [citation]." (*Id.* at p. 113.)

(d) U.S. Global Change Research Program (USGCRP)

***Impacts of Climate Change on Biodiversity, Ecosystems, and Ecosystem Services* (Staudinger 2012)**

This technical input report for the 2013 National Climate Assessment synthesizes current scientific understanding of the mode by which climate change is affecting biodiversity, ecosystems, ecosystem services, and develops strategies to decrease current and future risks. (Staudinger 2012, p. S-1.) The report recognizes that our understanding of "the complex ways in which these underlying mechanisms are affecting individual fitness and population dynamics in response to climate change" is uncertain; and, "there are numerous examples from a range of taxa demonstrating that biological responses to climate change vary widely with positive, negative or uncertain effects." (*Id.*, Chapter 2.) To that end, each chapter summarizes "key uncertainties as well as critical gaps in research, knowledge, and data." (*Id.*, Chapter 1.)

First, the report observes that "due to uncertainties in climate change projections in the coming decades, and gaps in our knowledge of biological and ecological response to these changes," the degree to which biodiversity will be affected by climate change is unknown at this time. (*Id.*, Chapter 2.) Second, the report concludes that extinction and estimates on extinction rates are

"uncertain and expert opinion differs as to what the magnitude of loss will be… Predictions are complicated in part due to the great deal of uncertainty regarding the number of species that exist on earth." (*Ibid.*) Finally, the report notes that "biotic interactions are complex, and there is much uncertainty in the greater ecological consequences that climate-mediate changes in abundance and distribution will have at the ecosystem-level." (*Ibid.*)

Additionally, the report concludes that current modeling and projections contain inherent uncertainties:

> "Projecting climate change impacts on biodiversity involves many uncertainties [citation omitted] stemming from variability in climate projections (particularly precipitation patters), uncertainties in future emissions, and assumption and uncertainties in the models used to project species responses and extinction…. Some of these uncertainties are inevitable given that we are trying to predict the future; nonetheless, techniques and modeling approaches are becoming more sophisticated and able to evaluate myriad influences such as biotic interactions and dispersal abilities that were previously deficient. Projections are also complicated by uncertainty about where and how human responses to climate change are likely to impact biodiversity. Sustainable energy development and infrastructure, changes in agricultural practices, human migrations, and change sin water extraction and storage practices in response to climate change are all very likely to have impacts on biodiversity. Predicting where these migration and adaptation responses will occur, and how they will impact biodiversity will be a critical step in developing credible future climate change impact scenarios. Although many tools for forecasting climate change impacts on ecosystem services exist [citation omitted], fewer methods for anticipating how people will respond to those impacts have been developed or incorporated into projected impacts on biodiversity."

(*Ibid.*) The report determines that this same level of uncertainty found in projections and modeling poses challenges and critical gaps in knowledge to our understanding of the "multiple, indirect routes by which specific climate drivers affect particular ecosystem processes." (*Ibid.*, Chapter 3.)

In the end, the report posits several forms of adaptive management that can "improve and inform decisions in the face of uncertainty." (*Ibid.*, Chapter 6.) Specifically, "managing for unknown future conditions using broad-scale climate projections and species distribution models as

guidance is one of the greatest challenges managers currently face in an era of ongoing climate change." (*Ibid.*)

Climate Change Impacts in the United States
(USGCRP 2014)

This report assesses the science of climate change and its impacts across the United States. The basic findings reached with respect to climate change in the areas relevant to this literature survey are listed below:

- Climate change jeopardizes water quality and water supply reliability, resulting from increased competition for sources, demand for surface and groundwater supplies, declining runoff, and groundwater recharge.

- Climate change is projected to disrupt agriculture, with negative impacts on crop and livestock.

- Climate change has overwhelmed the capacity of ecosystems, resulting in changes to spring bud burst and species range shifts.

- Climate change's acidification of ocean waters affects ocean circulation, chemistry, ecosystems, and marine life, altering the distribution, abundance, and productivity of marine species.

- Current implementation efforts are insufficient, and planning for adaptation and mitigation is critical to improve public health, economic development, ecosystem protection, and quality of life.

(USGCRP 2014, pp. 15–17.) Despite these findings, the assessment recognizes that "uncertainty" remains in "projecting climate change beyond the next few decades" because of "the level of heat-trapping gas emissions." (*Id.* at p. 30, Figure 2.9.)

In reviewing climate change impacts in the Southwest, including California, the report provides five "key messages:"

- Snowpack and streamflow amounts are projected to decline in parts of the Southwest, decreasing surface water supply reliability for cities, agriculture, and ecosystems.

- The Southwest produces more than half of the nation's high-value specialty crops, which are irrigation-dependent and particularly vulnerable to extremes of moisture, cold, and heat. Reduced yields from increasing temperatures and increasing competition for scarce water supplies will displace jobs in some rural communities.

- Increased warming, drought, and insect outbreaks, all caused by or linked to climate change, have increased wildfires and impacts to people and ecosystems in the Southwest. Fire models project more wildfire and increased risks to communities across extensive areas.

- Flooding and erosion in coastal areas are already occurring even at existing sea levels and damaging some California Coastal areas during storms and extreme high tides. Sea level rise is projected to increase as Earth continues to warm, resulting in major damage as wind-driven waves ride upon higher seas and reach farther inland.

- Projected regional temperature increases, combined with the way cities amplify heat, will pose increase threats and costs to public health in southwestern cities, which are home to more than 90% of the region's population. Disruptions to urban electricity and water supplies will exacerbate these health problems.

(*Id.* at p. 463.) Based on these "messages," this report concludes that "[c]limate changes will increase stress on the region's rich diversity of plant and animal species." (*Ibid.*) But, the report recognizes the challenges in predicting the "exact location of some of these future changes… because the continental U.S. straddles a transition zone between projected drier conditions in the sub-tropics (south) and wetter conditions at higher latitudes (north)." (*Id.* at p. 369.) And, while the report notes that the Southwest region "is already experiencing the impacts of climate change" with the region "heating up markedly in recent decades," it also recognizes that "[p]rojections of precipitation changes are less certain than those for temperature." (*Id.* at pp. 464–465, 483.)

Finally, the report identifies "uncertainties" in the modeling used to predict future climate change:

- *Snowpack and Streamflow Amounts*: "Different model simulations predict different levels of snow loss. These differences arise because of uncertainty in climate change warming and precipitation projections due to… uncertainty in regional downscaling, uncertainty in hydrological modeling, differences in emissions, aerosols, and other forcings." (*Id.* at p. 483.)

- *Crop Yields*: Relying on the models remains a challenge because "[c]ompetition for water is an uncertainty. The extent to which water transfers take place depends on whether complementary investments in conveyance or storage infrastructure are made. Currently, there are legal and institutional restrictions limiting water transfers across state and local jurisdictions. It is uncertain whether infrastructure investments will be made or whether institutional innovations facilitating transfers will develop." (*Id.* at p. 484.)

- *Wildfire Patterns*: "Uncertainties in future projections derive from the inability of models to accurately simulate all past fire patterns… Fire projections depend highly on the spatial and

temporal distributions of precipitation projections… Although models generally project future increases in wildfire, uncertainty remains on the exact locations." (*Id.* at p. 485.)

- *Rising Sea Level*: "Major uncertainties are associated with sea level rise projections, such as the behavior of ice sheets with global warming and the actual level of global warming that the Earth will experience in the future. Regional sea level rise projections are even more uncertain than the projections for global averages because local factors such as the steric component (changes in the volume of water with changes in temperature and salinity) of sea level rise at regional levels and the vertical movement of land have large uncertainties." (*Ibid.*)

- *Rising Temperatures*: "Key uncertainties include the intensity and spatial extent of drought and heat waves. Uncertainty is also associated with quantification of the impact of temperature and water availability on energy generation, transmission, distribution, and consumption." (*Id.* at p. 486.)

(e) California Department of Fish and Wildlife (CDFW)

Confronting the Challenge: Climate Change
(CDFG 2010)

This publication includes several articles outlining CDFW's efforts to tackle the effects of climate change on California native species, and identifies the areas in which adaptation strategies for biodiversity conservation may prove necessary to combat climate change. (CDFG 2010, p. 8.)

Agriculture: The publication posits that competition between agricultural lands, fish and wildlife resources will result due to shifting temperature and precipitation patterns associated with climate change. Further exacerbating agricultural maintenance is the loss in biodiversity from chemical treatments to decrease pests and insects. (*Id.* at p. 9.)

Carbon Sequestration: Forests, open spaces, and wetlands provide benefits, help reduce GHG emissions, and provide homes to native plant and animal species. Open spaces and wetlands have the potential to capture and sequester a significant amount of GHG emissions. This publication advocates for increasing opportunities to sequester conservation areas. (*Id.* at p. 11.)

Energy Development: Development of alternative energy sources is critical to mitigating the impacts of GHG emissions and climate change. A better understanding of the impacts of biofuels, wind, hydro and geothermal, and solar development on natural resources is critical to energy independence. (*Id.* at p. 13.)

Wildfire: Suppression of fire and wildfire patterns alters and destabilizes ecosystems resulting in biodiversity loss. As temperatures rise, science predicts that severity of wildfires will increase, and as a result, this publication suggests increasing coordination among regional managers to protect urban areas from the consequences of wildfires. (*Id.* at p. 14.)

Forestry and Range Lands: The publication proposes heightened management of California's forests and range lands to increase the ability of native species to persist under climate change. Restoring habitats and increasing water capture and storage may help species sustainability. (*Id.* at p. 15.)

Oceans and Coastal Areas: Climate change has direct impacts on protected coastal areas and wildlife. The results of climate change could lead to salt water intrusion and loss of fresh water resources for fish and wildlife. Ocean acidification is already impacting shellfish and their prey. Finally, changes caused by coastal infrastructure, pollution, and sedimentation have impacted marine and near shore populations. (*Id.* at p. 16.)

Water: Climate change effects, such as increased temperatures and precipitation, may alter fresh water systems and reduce availability of species, requiring greater collaboration among regional managers.

***Unity, Integration, and Action: DFG's Vision for Confronting Climate Change in California* (CDFG 2011)**

This article illustrates CDFW's current efforts to address climate change and ensure a strategic, cohesive approach to developing responses. (CDFG 2011, p. 4.) Cognizant of the "uncertainties associated with emerging climate science," CDFW is employing a proactive and adaptive approach using planning tools and strategic initiatives, creating and maintaining vital partnerships, integrating climate change into CDFW activities, and meeting conservation objectives. (*Id.* at p. 7.) To build a cohesive framework to respond to climate change, CDFW recognizes that it must increase "funding, capacity building, collaborative partnerships, and education and outreach." (*Id.* at p. 13.)

(f) California Energy Commission (CEC)

***Consequences of Climate Change For Native Plants And Conservation: A White Paper from the California Energy Commission's California Climate Change Center* (CEC 2012)**

This study expands on prior modeling of climate change effects on the distribution of vegetation and species, through modeling species at sub-kilometer scales, and applying those models to advanced conservation planning, to illustrate the intersection of human adaptation and conservation under climate change.

Section 1 describes the fine-scale modeling employed by the study. In particular, the study modeled California native plant species at a resolution 100 times finer than the previous species-assessment models. Using newly available climate data and an improved dataset of species occurrence, model distributions were generated at various scales and resulted in illustration of the shift in native species richness under climate change. The study finds that "[b]y the end of the twenty-first century (Figure 1.10), zones of greatest species richness have contracted upslope, with greatest richness confined to the highest ridges of the Sierra Nevada Mountains. Regions of California that show the greatest decline of species richness by the end of the century include the Coast and Transverse ranges, as well as the transition zone between the Central Valley and the high Sierra." (CEC 2012, pp. 1–17.)

Section 2 outlines the development of conservation planning tools—Network Flow Analysis (NFA)—and its application in California, as traditional approaches to conservation are less effective under climate change, due to shifts in species ranges. "The NFA optimizes spatial sharing of connected conservation parcels [and] represent[s] the specific areas required to ensure spatial and temporal connectivity of suitable habitat through time." The purpose of the NFA is to identify priority areas for conservation that can accommodate shifting climatic suitability of native species under climate change. In the end, the study found that at least 70% of the modeled species, in or around existing protected areas, were able to survive under climate change. However, the study cautions that variability in soil requirements and species dispersal rates may skew results. (*Id.* at pp. 18–28.)

Section 3 captures indirect impacts on conservation due to human translocation and shifts in agriculture due to climate change. The study chose to focus on viticulture—grape growing and winemaking—to assess the indirect impacts on plant species from climate change. Using suitability models, including future topo-climate and soil parameters, the study found

"significant species relocation and an overall reduction of optimal viticulture climates within California (Figure 3.1)." Consistent with findings on other species models, the study found "the general trends for viticulture climates [] shift[ed] northward, coastward, and upslope as mean growing season temperatures increase." These results, however, are consistent with studies dating as far back as 2006, demonstrating a constant rate of change. (*Id.* at pp. 29–42.)

Our Changing Climate 2012:
Vulnerability & Adaptation to the Increasing Risks
***from Climate Change in California* (CEC 2012)**

This report, prepared by the California Energy Commission's California Climate Change Center, keeps Californians apprised of "new scientific developments, documents the emerging impacts of climate change, and alerts them to the increasing risks of a warming climate." (CEC 2012, p. 1.) In particular, this report notes that "[s]tate-sponsored research has played a major role in recent advances in our understanding of the potential impacts of climate change on California" and "examines adaptation options in regional case studies and offers insights into regulatory, legal, socioeconomic and other barriers to adaptation so that they can be addressed effectively at the local and state level." (*Ibid.*) To project future climate change impacts, this report uses "projections from six global climate models, all run with two emissions scenarios, one lower (B1) and one higher (A2) (the same as were used in the 2009 assessment)." (*Id.* at p. 2.) Scaling down, and using several population growth and land use policy scenarios, the report made the following findings relative to the area of interest in this literature survey:

- Temperatures in California will rise during this century as a result of heat-trapping gases human release in the atmosphere. (*Ibid.*)

- Precipitation projections show wet winters and dry summers. (*Id.* at p. 3.)

- Wildfire risk will increase; however, changes in land use development will guide the location and degree of wildfire risk. (*Id.* at p. 3.)

- Climate change impacts on water supplies include increased competition and demand among urban users, agricultural users, and environmental needs. Studies illustrate the need to adapt California's water supply allocation, as current criteria and water management decisions rely on yearly water availability, rather than future changes. (*Id.* at p. 5.)

- Sea level rise is expected to accelerate, representing a four- to eight-fold increase over the last century. More sophisticated mapping and modeling is improving California's ability to predict the location of water flow and vertical height, thereby ensuring adequate adaptation. (*Id.* at p. 9.)

- Previous studies established the increased risk of wildfire, but this report determined that wildfire risk increases depending on human development and advances into wildland areas. Thus, species shift and migration to suitable climate conditions is important for land use planning. (*Id.* at pp. 11–12.)

In the end, the report finds that "California has been a global and national leader in developing solutions to energy security and climate change…. [This report] shows both the challenges for the existing energy system emerging from climate change and the possibilities for moving toward clean, renewable energy and more robust, distributed electricity production and transmission." (*Id.* at p. 14.)

(g) California Office of Environmental Health Hazard Assessment (OEHHA)

Indicators of Climate Change in California
(OEHAA 2013)

This report tracks trends in GHG levels that influence climate, changes in the State's climate, and the impacts of climate change on California's environment and people. Specifically, the report compiles indicators that can be used to provide insight on the impacts of climate change in California. (OEHHA 2013, Executive Summary, p. i.) Examples of such indicators include GHG emissions, atmospheric black carbon concentrations, atmospheric GHG concentrations and acidification of coastal waters. According to the report, the result of studying these indicators imparts some understanding on impacts on changes in climate and impacts on physical systems and animals. (*Id.*, Introduction.)

Of particular relevance to this literature survey, the report analyzes GHG emission impacts on biological systems, including effects on vegetation and animals. (*Id.*, Impacts on Biological Systems, p. 119.) As to the effects on vegetation, the report indicates an increase in tree mortality in the Sierra Nevada forests, but cautions that "[g]lobal trends, however, are not always echoed by regional trends." (*Id.* at p. 133.) Effects on other vegetation are similarly noted; but, in some cases, the report indicates that trends and correlations between temperature and changes to vegetation are either not significant, uncertain, or indeterminable. (*Id.* at pp. 141, 148–149, 154–155, 159, 161, 167.) The report also observes the effect on animal species, finding evidence of life-cycle changes (*id.* at p. 184), such as migratory changes in response to earlier warming seasons (*id.* at pp. 171–172); shifts in elevations at which certain species are found (*id.* at p. 176); and variability of mortality of marine animals (*id.* at pp. 191–209, 217–219.)

The report concludes by recognizing that challenges exist in "deciphering the influence of climate among other factors both external (such as land use and environmental pollution) and internal (due to inherent, natural variability) to the climate system." (*Id.*, Emerging Climate Change Issues, p. 223.) To that end, California remains on the forefront of addressing climate change and creating a comprehensive strategy to respond to the risks climate change poses:

> "California's climate programs encompass mitigation of GHG emissions through a comprehensive set of policies and programs; adaptation strategies designed to reduce California's vulnerability to climate impacts and enhance the resiliency of communities, infrastructure, resources and people; research supporting the understanding of climate change and its impacts in the state; and joint action efforts through regional and international initiatives to expand emission reduction programs and enable effective adaptation (Cal/EPA, 2010)."

(*Id.*, Appendix A, p. A-1.)

(h) Other Publications

Observed Impacts of Global Climate Change in the U.S.
(Parmesan and Galbraith 2004)

Camille Parmesan and Hector Galbraith undertook a literature review to assess "the scientific evidence compiled to date on the observed ecological effects of climate change in the United States and their consequences" and the strength of that evidence. (Parmesan and Galbraith 2004 at p. iii.) The review included more than 40 studies showing a possible tie between global warming and ecological changes in the United States. In 20 of the studies, the authors found "strong evidence of a direct link" between climate change and observed ecological impacts in the United States. (*Ibid.*)

While the report identifies general trends, such as shifts in the timing of ecological events and habitat ranges, it also notes that "many species and ecological systems of interest have yet to be studied (often due to inherent limitations of available data) and the attribution of ecological changes to a particular cause remains challenging." (*Ibid.*, at p. iii; see also p. 13 [there are "enormous difficulties biologists have encountered in tackling the question of climate change impacts"].) Further, "[m]any if not most of the ecosystems and organisms in the United States are already suffering from other anthropogenic stressors . . . [and] [a]s yet, scientists do not have a clear idea how climate change might affect this already fragile situation." (*Id.* at p. v.) Accordingly, the report recommends that scientists achieve a "better understanding of which

systems or species are most or least susceptible to projected climate change" in order to better evaluate and mitigate potential impacts. (*Id.* at p. 41.)

2. County Determination

The County of Los Angeles has considered the literature review conducted, as well as the Draft EIR's finding that the proposed Project's GHG emissions would not be significant. On the basis of that information, the County has made the factual determination that evidence exists linking global climate change to ecological effects; however, the precise causes, extent, magnitude, and timing of such effects remain uncertain and preclude reliable forecasts of possible ecological effects resulting from global climate change, particularly as individual species will have individual responses. Additionally, there is no clear scientific evidence as to what particular quantity of GHG emissions is disadvantageous to the health of sensitive biological resources and their supporting ecosystems. Importantly, however, the literature makes clear that California takes a cautious approach to climate change, employing adaptive management techniques and planning tools to monitor and anticipate evolving needs.

Based on the information presented herein, the County has made the further factual determination that global climate change and its effect on sensitive species and other biological resources are too speculative at this time for any further evaluation. Accordingly, the County believes it is appropriate to terminate any further analysis of such effects, consistent with Section 15145 of the State CEQA Guidelines.