LOS VALLES PROJECT

Draft Environmental Impact Report

Volume VII – Appendices

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APPENDIX 5.2-5

Climate Change Technical Report

Climate Change Technical Report

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Santa Clarita, California

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May, 2014

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Acronyms and Abbreviations

Acronym	Definition
AB	Assembly Bill
ACC	Advanced Clean Cars
BAU	Business-As-Usual
BTU	British Thermal Units
CalEEMod®	California Emission Estimator Model®
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAR	California Climate Action Registry
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CEUS	Commercial End-Use Survey
CFC	Chlorofluorocarbon
CH_4	Methane
CO_2	carbon dioxide
CO_2e	CO_2 equivalents
DOE	Department of Energy
DOT	Department of Transportation
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act of 2007
EMFAC	EMission FACtor model
ENVIRON	ENVIRON International Corporation
ES	Executive Summary
FED	Functional Equivalent Document
GHG	greenhouse gas
GWP	global warming potential
HFCs	hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
ITE	Institute of Transportation Engineers
lb	pound
LCFS	Low Carbon Fuel Standard

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Acronym	Definition
LED	Light Emitting Diode
LGO	Local Government Operations Protocol
Mgal/yr	thousand gallons/year
MSW	Municipal solid waste
MT	metric tons
$MTCO_2e$	metric tonnes of CO_2 equivalent
MWh	megawatt-hour
N_2O	nitrous oxide
NA	not applicable
NAT	No Action Taken
NHTSA	National Highway Traffic Safety Administration
PUP	Power/Utility Protocol
RASS	Residential Appliance Saturation Survey
RFS	Renewable Fuel Standard
ROG	reactive organic gasses
RPS	Renewable Portfolio Standards
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
USEPA	United States Environmental Protection Agency
VMT	vehicle miles traveled

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Executive Summary

The Project is a proposed new residential development to be built in the northwesterly portion of the Santa Clarita Valley over 430.4-acre subject property. The Project will result in approximately 497 single-family residential lots being built over an approximately five to seven-year period, expected to be completed in 2023. The development will also include open-space lots, recreational facility, and community park.

The Project will result in one-time and annual direct and indirect emissions of greenhouse gases (GHGs). The term, “direct emissions of GHGs” refers to GHGs that are emitted directly as a result of the Project and include land use change and construction emissions. Indirect emissions are those emissions that the Project entitlement will enable, but are not controlled by the Project proponent. This report provides an inventory surveying the emissions that would result from the Project.

Residents of housing units use electricity, heating, and are transported by motor vehicles. These activities directly or indirectly emit GHGs. The most significant GHG emissions resulting from developments such as the Project are emissions of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). GHG emissions are typically measured in terms of tonnes of CO_2 equivalents (CO_2e), calculated as the product of the mass emitted of a given GHG and its specific global warming potential (GWP).

The GHG emissions inventory for this analysis includes the following sources of emissions: energy use associated with residential units, mobile sources, area sources, solid waste, water and wastewater, construction, and vegetation changes. The ongoing operational emissions consist of the first five categories, while the one-time emissions include construction (analysis conducted by Impact Sciences, Inc.) and vegetation changes. This report includes the direct emissions associated with the Project as well as the indirect emissions that may result from the Project. These indirect emissions are associated with electricity generation, the embodied energy used in supplying potable water, and emissions associated with solid waste disposal. The electrical power for the Project will be supplied by Southern California Edison (SCE). Accordingly, indirect GHG emissions from electricity usage associated with the Project are calculated using the SCE carbon-intensity factors adjusted for mandated renewable energy requirements.

This analysis primarily utilized the California Emission Estimator Model version 2013.2.2 (CalEEMod®)[1] to assist in quantifying the GHG emissions in the inventories presented in this report for the Project. CalEEMod® is a statewide program designed to calculate both criteria and GHG emissions from development projects in California. Third-party studies were also relied upon to support analyses and assumptions made outside of CalEEMod®.

At this time, there are no adopted numeric thresholds that govern the determination of the significance of the Project's GHG emissions. The South Coast Air Quality Management District

[1] SCAQMD, 2011, California Emissions Estimator Model. Available at: http://www.CalEEMod.com/. Accessed: February, 2013.

(SCAQMD or District) has not adopted a methodology to quantify nor a significance threshold for GHG emissions for development projects.[2] However, the District did release draft thresholds in September 2008 for discussion purposes. The draft thresholds were based on California Air Resources Board (CARB)'s interpretations of the statewide reductions called from in the California Global Warming Solutions Act of 2006, also known as Assembly Bill 32 (AB 32). AB 32 called for the state to achieve 1990 levels of GHG emissions by 2020 and numerically that equates to a 28.5 percent reduction in GHG emissions. In 2011, The Functional Equivalent Document (FED)[3] was released, where the GHG emissions threshold was revised due to prolonged economic downturn and inclusion of estimated regulation-based reduction. Based on this document, the state would achieve 1990 levels of GHG emissions by 2020 with 21.7 percent reduction in GHG emissions.

The analysis in this report used the Revised AB 32 Scoping Plan's (i.e., the Functional Equivalent Document, FED) statewide goals as the basis for the GHG significance threshold. The report's methodology is to compare the Project's emissions as proposed to the Project's emissions if the Project were built using a Business-As-Usual (BAU) (or No Action Taken, NAT) approach in terms of design, methodology, and technology (see Section 3 for additional discussion). This means the Project's emissions were calculated as if the Project was constructed before AB 32 to the Project as constructed with project design features to reduce GHG and with several regulatory measures adopted in furtherance of AB 32.

Emissions for the Project are presented in Table ES-1. Both one-time emissions and indirect emissions are expected to occur each year after build-out of the Project. One-time emissions from construction and vegetation removal were amortized over a 30-year period because no significance threshold has been adopted for such emissions.[4] The Project emission reductions are results of Project's commitments and regulatory changes, which include the implementation of the Renewables Portfolio Standard (RPS) of 33 percent, the Pavley regulation and Advanced Clean Cars program mandating higher fuel efficiency standards for light-duty vehicles, and the Low Carbon Fuel Standard (LCFS). The emissions for the Project and its associated CARB 2020 NAT scenario are estimated to be 8,560 and 11,443 MT CO_2e per year, respectively, which shows the Project will reduce emissions by 25.2 percent from the CARB 2020 NAT scenario. Based on these results, the Project meets the reduction target as a numeric threshold (21.7 percent) set forth in the Revised AB 32 Scoping Plan (FED).

[2] SCAQMD has adopted interim significance thresholds for industrial sources of 10,000 metric tons of carbon dioxide equivalents per year. The Board adopted these December 5, 2008.

[3] California Air Resources Board, *Status of Scoping Plan Recommended Measures*, July 25, 2011. Available at http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf. Accessed: March, 2014.

[4] This approach to one-time construction and vegetation change GHG emissions is based on the GHG Threshold Working Group Meeting #13 Minutes from August 26, 2009. Available at: http://www.aqmd.gov/ceqa/handbook/GHG/2009/aug26mtg/wkgp13minutes.pdf.

Table ES-1. Summary of GHG Emissions
SFI Los Valles, LLC
City of Santa Clarita, California

Category[1]	CO2e Emissions[2]		% Change From NAT
	2020 Project	2020 NAT	
	(MT/yr)	(MT/yr)	
Area	116	116	0.0%
Energy Use	1,308	1,972	-33.7%
Water Use	691	1,007	-31.3%
Waste Disposed	72	132	-45.7%
Traffic	6,382	8,215	-22.3%
Sub-Total	**8,570**	**11,442**	**-25.1%**
Construction Amortized[3]	372	372	0.0%
Vegetation Amortized[4]	-381	-371	2.9%
Total	**8,560**	**11,443**	**-25.2%**

Notes:

[1] CO_2e emissions were estimated using CalEEMod version 2013.2.2 for all operational categories.

[2] CO_2e includes CO_2, CH_4, and N_2O emissions, which are weighted by their respective global warming potentials.

[3] One-time emissions from construction were amortized over a 30-year period.

[4] One-time emissions from vegetation change were amortized over a 30-year period. These emissions are a benefit to the emissions inventory, and therefore it is subtracted from the total emissions.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tons
NAT - No Action Taken
N_2O - nitrous oxide
yr - year

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1 Introduction

The purpose of this technical report is to present the quantitative analyses that were used to evaluate the Project's greenhouse gas (GHG) emissions. Emissions during both construction[5] and operations of the Project were quantified. Legislation and rules regarding climate change, as well as scientific understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventory in this report is a reflection of the guidance and knowledge currently available.

1.1 Project Description

The Project development (Project) is a comprehensive plan for the development of approximately 430.4-acres in the northwesterly portion of the Santa Clarita Valley. The Project area is located west of Golden State Freeway 5, northerly of Hasley Canyon Road at Del Valle Road, between Gibraltar Lane and Sloan Canyon Road. The Project provides for development of housing units combined with parks and recreation areas, within an open space setting. The Project will result in close to 497 single-family residential lots being built over a five to seven-year period, expected to be completed in 2023. Table 1 summarizes the land uses for the Project and the CARB 2020 NAT scenario.

Analysis of the Project's GHG emissions incorporates the following regulatory measures and project design features:

Regulatory Measures

- The CO_2e intensity for the Project will include 33% RPS;
- Pavley regulation mandating higher fuel efficiency standards for cars and light-duty vehicles, Low Carbon Fuel Standard (LCFS) and the Advanced Clean Cars are included in vehicle emissions estimate for the Project,[6]
- The Project will meet the statewide goal of 75% solid waste diversion, by reducing, recycling, or composting the generated waste;
- Residential and non-residential buildings will meet the 2013 Title 24 part 6 building code (i.e., be 25 percent more energy efficient than the 2008 Title 24 part 6 building code);
- There will be no "wood burning" fireplaces;
- The Project will reduce potable water use by 20 percent compared to baseline water use levels through the use of water saving fixtures and or flow restrictors consistent with the California Green Building Code.

[5] Construction emissions were estimated by Impact Sciences, Inc.
[6] The analysis does not incorporate the potential emission reductions from the USEPA/NHTSA advanced fuel economy and GHG standards for medium and heavy duty trucks for model years 2014-2018 as part of this analysis. If incorporated, it would reduce the estimated emissions further. Available at: http://www.epa.gov/otaq/climate/documents/420f11031.pdf. Accessed: March, 2014.

Project Design Features

The following project design features were incorporated into the analysis of the Project 2020 scenario, which are described in the inventory:

- Where appliances are offered by homebuilders, Energy Star appliances will be installed in the residences;
- Where applicable, “high efficacy” Energy Star rated light fixtures and lamps will be offered by homebuilders;
- The Project will include 460 citrus trees as a part of vegetation enhancement.

These regulatory measures and project design features are not included in the emissions inventory developed for the CARB 2020 NAT scenario consistent with the approach and methodology as established in the AB 32 FED.

1.2 Existing Conditions

The Project site is currently vacant and is designated as A-2-2 zoning under the existing Los Angeles County land use. The site has been partially graded for residential and golf uses, but no development has been constructed.

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2 Draft Significance Thresholds

2.1 Assembly Bill 32

The California Global Warming Solutions Act of 2006 (AB 32) was signed into law in September 2006 after considerable study and expert testimony before the Legislature. The law instructs the California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verifying of statewide GHG emissions. The Act directed CARB to set a GHG emission limit based on 1990 levels, to be achieved by 2020.

On December 11, 2008, CARB adopted the Scoping Plan to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions for various categories of emissions. CARB determined that achieving the 1990 emission level would require a reduction of GHG emissions of by approximately 28.5 percent to achieve in 2020 emissions levels in the absence of new laws and regulations (referred to as “business as usual” or “No Action Taken” (NAT). The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. The key elements of the Scoping Plan include.[7]

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions;
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

In connection with preparation of the supplement to the Functional Equivalent Document, CARB released revised estimates of the expected 2020 emission reductions in consideration of the economic recession and the availability of updated information from development of measure-specific regulations. Incorporation of revised estimates in consideration of the economic recession reduced the projected 2020 emissions from 596 metric tonnes of CO_2

[7] California Air Resources Board, *Climate Change Scoping Plan*, December 2008. Available at http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed: March, 2014.

equivalent ($MTCO_2e$) to 545 $MTCO_2e$.[8] Under this scenario, achieving the 1990 emissions level would require a reduction of GHG emissions of 118 $MTCO_2e$, or 21.7 percent (down from 28.5 percent), to achieve in 2020 emissions levels in the "business as usual" condition. The 2020 AB 32 baseline was also updated to account for measures incorporated into the inventory, including Pavley (vehicle model-years 2009 - 2016) and the renewable portfolio standard (12% - 20%). Inclusion of these measures further reduced the 2020 baseline to 507 $MTCO_2e$. As a result, based on both the economic recession and the availability of updated information from development of measure-specific regulations, achieving the 1990 emission level would now require a reduction of GHG emissions of 80 $MTCO_2e$ or a reduction by approximately 16 percent (down from 28.5 percent) to achieve in 2020 emissions levels in the "business as usual" or NAT condition.[9, 10]

On February 10, 2014, CARB released a discussion draft first update to the Scoping Plan. The discussion draft recalculates 1990 GHG emissions using IPCC Fourth Assessment Report released in 2007. Using the AR4 global warming potentials GWPs, the 427 $MTCO_2e$ 1990 emissions level and 2020 GHG emissions limit would be slightly higher, at 431 $MTCO_2e$.[11] Based on the revised estimates of expected 2020 emissions identified in the draft first update to the Scoping Plan, achieving the 1990 emission level would require a reduction of 76 $MTCO_2e$ (down from 169 $MTCO_2e$) or a reduction by approximately 15 percent (down from 28.5 percent) to achieve in 2020 emissions levels in the "business as usual" or NAT condition.[12, 13, 14]

2.2 South Coast Air Quality Management District GHG Thresholds

SCAQMD is principally responsible for comprehensive air pollution control in the Basin, which includes Los Angeles, Orange, and the urbanized portions of Riverside and San Bernardino Counties, including the Project site. SCAQMD works directly with SCAG, County transportation commissions, and local governments and cooperates actively with all federal and State government agencies to regulate air quality.

In April 2008, SCAQMD convened a Working Group to develop GHG significance thresholds. On December 5, 2008, the SCAQMD Governing Board adopted its staff proposal for an interim CEQA GHG significance threshold for projects where the SCAQMD is the lead agency. The

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[8] California Air Resources Board, *Status of Scoping Plan Recommended Measures*, July 25, 2011. Available at http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf. Accessed August 22, 2013.

[9] California Air Resources Board, *Status of Scoping Plan Recommended Measures*, July 25, 2011. Available at http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf. Accessed August 22, 2013.

[10] California Air Resources Board, *Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document* Available at http://www.arb.ca.gov/cc/scopingplan/document/final_supplement_to_sp_fed.pdf. Accessed September 16, 2013.

[11] California Air Resources Board, *Climate Change Scoping Plan First Update, Discussion Draft for Public Review and Comment*, February 2014 Available at http://www.arb.ca.gov/cc/scopingplan/2013_update/draft_proposed_first_update.pdf. Accessed: March, 2014.

[12] California Air Resources Board, *Status of Scoping Plan Recommended Measures*, July 25, 2011. Available at http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf. Accessed: March, 2014.

[13] California Air Resources Board, *Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document* Available at http://www.arb.ca.gov/cc/scopingplan/document/final_supplement_to_sp_fed.pdf. Accessed: March, 2014.

[14] California Air Resources Board, *Climate Change Scoping Plan First Update, Discussion Draft for Public Review and Comment*, October 2013 Available at http://www.arb.ca.gov/cc/scopingplan/2013_update/discussion_draft.pdf. Accessed March, 2014.

Board has, to date, only adopted an interim threshold of 10,000 $MTCO_2e$ per year for industrial stationary source projects.[15] For all other projects, SCAQMD staff proposed a multiple tier analysis to determine the appropriate threshold to be used. The draft proposal suggests the following tiers: Tier 1 is any applicable CEQA exemptions, Tier 2 is consistency with a GHG reduction plan, Tier 3 is a screening value or bright line, Tier 4 is a performance based standard, and Tier 5 is GHG mitigation offsets.[16]

According to the presentation given at the September 28, 2010 Working Group meeting, SCAQMD staff reviewed the tiered significance threshold approach.[17] The proposed tiers are as follows:

- **Tier 1:** Determine if CEQA categorical exemptions are applicable. If not move to Tier 2;
- **Tier 2:** Consider whether or not the proposed project is consistent with a locally adopted GHG reduction plan (often called a Climate Action Plan) that has gone through public hearings and CEQA review, which has an approved inventory that includes monitoring, etc. If not move to Tier 3;
- **Tier 3:** For all land use types, if projects are less than 3,000 metric tonnes/year of carbon dioxide equivalents ($MTCO_2e$/yr), the project is presumed to be less than significant for GHGs. If the project exceeds 3,000 metric tonnes of $MTCO_2e$/yr; move to Tier 4. More specific screening thresholds were also provided, which include 1,400 $MTCO_2e$/yr for commercial projects and 3,500 $MTCO_2e$/yr for residential and mixed use projects. These thresholds were based on a review of the Office of Planning and Research database which included 711 CEQA projects using a 90% capture approach;
- **Tier 4:** The proposed performance standards include three options:
  1. Percent Emission Reduction Target (no further recommendation)
  2. Early Implementation of Applicable AB 32 Scoping Plan Measures (incorporated into option 3)
  3. SCAQMD Efficiency Target

     For option 3, there are targets for 2020 and 2035, using an approach similar to the Bay Area Air Quality District Thresholds. The proposed 2020 target is:

     – 4.8 MT/year CO2e per service population for project level threshold (land use employment only)

     – 6.6 MT/year CO_2e per service population for plan level threshold

[15] South Coast Air Quality Management District, *Board Meeting Date: December 5, 2008, Agenda No. 31, Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans for use by the AQMD*, website. Available at http://www.aqmd.gov/hb/2008/December/081231a.htm. Accessed March, 2014.
[16] South Coast Air Quality Management District, *Board Meeting Date: December 5, 2008, Agenda No. 31, Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans for use by the AQMD*, website. Available at http://www.aqmd.gov/hb/2008/December/081231a.htm. Accessed March, 2014.
[17] SCAQMD 2010. CEQA Significance Thresholds Working Group Meeting #15. September 28. Available at http://www.aqmd.gov/ceqa/handbook/GHG/2010/sept28mtg/sept29.html. Accessed: March, 2014.

The proposed 2035 target is:

- 3.0 MT/year CO_2e per service population for project level threshold
- 4.1 MT/year CO_2e per service population for plan level threshold
- Incorporate Sustainable Communities and Climate Protection Act of 2008 or Senate Bill 375 (SB 375) regional targets.

- **Tier 5:** Off-site mitigation for life of project (30 years), if this threshold is to be used, GHG emissions must be mitigated to less than the Tier 3 screening significance threshold. The SCAQMD clarified that offsets should have a 30 year project life, should be real, quantifiable, verifiable, and surplus and will be considered in the following prioritized manner:
  - Project design feature/onsite reduction measures
  - Offsite within neighborhood
  - Offsite within district
  - Offsite within state
  - Offsite out of state
  - Substitution allowed via enforceable commitment (e.g. when an offset project ends prematurely).

If the proposed project cannot meet any of the Tiers, it is presumed to be significant for GHG emissions.

The Tier 4 percent emission reduction target is based on a percent reduction target that is based on consistency with AB 32 as it was based on the same numeric reductions calculated in the Scoping Plan to reach 1990 levels by 2020.

The Working Group has not convened since the fall of 2010. As of October 2013, the proposal has not been considered or approved for use by the SCAQMD Board. In the meantime, no GHG significance thresholds are approved for use in the Basin.

2.3 Significance Threshold

This Greenhouse Gas Technical Report assesses significance by analyzing consistency with AB 32 through evaluating the Project's GHG emissions reduction as compared to a CARB 2020 NAT projection. As noted above, CARB approved an update to the 2008 AB 32 Scoping Plan. This update included lower statewide growth projections and, thus, a lower reduction as compared to the CARB 2020 NAT projection that is necessary to achieve AB 32's goals. Based on current state-wide growth projections, CARB has indicated that achieving AB 32's goals would require approximately a 21.7 percent reduction as compared to the CARB 2020 NAT projection (down from 28.5 percent).[18, 19] Since the proposed first update has

[18] CARB, 2011. Attachment D, Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document. August 19. Available at: http://www.CARB.ca.gov/cc/scopingplan/document/final_supplement_to_sp_fed.pdf. Accessed March, 2014.

not been formally approved, this Greenhouse Gas Technical Report uses the FED (Functional Equivalent Document) estimate (i.e., 21.7%) to determine significance of the Project's GHG emissions.

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[19] CARB, 2011. Status of Scoping Plan Measures. Available at: http://www.CARB.ca.gov/cc/scopingplan/sp_measures_implementation_timeline.pdf. Accessed: March, 2014.

3 GHG Emissions Inventory

This section describes the methodology that ENVIRON International Corporation (ENVIRON) used to develop the GHG emissions inventories associated with the Project, which include construction emissions and operational emissions. Sub-categories of GHG operational emissions include: area sources, energy use, water and wastewater, solid waste, and mobile sources. Legislation and rules regarding climate change, as well as the scientific understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventories in this report are a reflection of the guidance and knowledge currently available.

3.1 Units of measurement: Tonnes of CO_2 and CO_2e

The term "GHGs" includes gases that contribute to the natural greenhouse effect, such as CO_2, CH_4, N_2O, and water, as well as gases that are only man-made and that are emitted through the use of modern industrial products, such as hydrofluorocarbons (HFCs) and chlorofluorocarbons. The most important greenhouse gas in human-induced global warming is CO_2. While many gases have much higher GWPs than CO_2, CO_2 is emitted in such vastly higher quantities that it accounts for 85% of the GWP of all GHGs emitted by the United States.[20]

The effect each of these gases has on global warming is a combination of the volume of their emissions and their GWP. GWP indicates, on a pound for pound basis, how much a gas will contribute to global warming relative to how much warming would be caused by the same mass of CO_2. CH_4 and N_2O are substantially more potent than CO_2, with GWPs of 21 and 310, respectively. GHG emissions are typically measured in terms of mass of CO_2e. CO_2e are calculated as the product of the mass of a given GHG and its specific GWP.[21]

In many sections of this report, including the final summary sections, emissions are presented in units of CO_2e either because the GWPs of CH_4 and N_2O were accounted for explicitly, or the CH_4 and N_2O are assumed to contribute a negligible amount of GWP when compared to the CO_2 emissions from that particular emissions category.

In this report, a tonne refers to metric tonnes (1,000 kilograms). Additionally, exact totals presented in all tables and report sections may not equal the sum of components due to independent rounding of numbers.

3.2 Methodology and Resources

CalEEMod®

ENVIRON primarily utilized the California Emission Estimator Model version 2013.2.2 (CalEEMod®)[22] to assist in quantifying the GHG emissions in the inventories presented in this

[20] Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004, U.S. Environmental Protection Agency. Available online at: http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/RAMR6MBSC3/$File/06_Complete_Report.pdf.)

[21] In the updated Climate Change Scoping Plan published by ARB in 2013, the GWPs for CH_4 and N_2O were updated to 25 and 298, respectively. Since the updated scoping plan has not yet been formally adopted, and the Project has a relatively small GHG contribution from CH_4 and N_2O, this report was not updated with the new GWPs.

[22] SCAQMD, 2013, California Emissions Estimator Model. Available at: http://www.CalEEMod.com/. Accessed: February, 2014.

report for the Project. CalEEMod® is a statewide program designed to calculate both criteria and GHG emissions from development projects in California. This model was developed under the auspices of the SCAQMD and received input from other California air districts, and is currently supported by several lead agencies for use in quantifying the emissions associated with development projects undergoing environmental review. CalEEMod® utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the USEPA AP-42 emission factors,[23] CARB's on-road and off-road equipment emission models such as the EMission FACtor model (EMFAC) and the Emissions Inventory Program model (OFFROAD), and studies commissioned by California agencies such as the California Energy Commission (CEC) and CalRecycle.

CalEEMod® is based upon the Air Resources Board (ARB)-approved Off-Road and On-Road Mobile-Source Emission Factor models (OFFROAD and EMFAC, respectively), and is designed to estimate construction and operational emissions for land use development projects and allows for the input of project specific information. OFFROAD[24] is an emissions factor model used to calculate emission rates from off-road mobile sources (e.g., construction equipment, agricultural equipment). EMFAC[25] is an emissions factor model used to calculate emissions rates from on-road vehicles (e.g., passenger vehicles, haul trucks). The off-road diesel emission factors used by CalEEMod® are based on the ARB OFFROAD2007 program.

CalEEMod® provides a simple platform to calculate both construction[26] emissions and operational emissions from a land use project. It calculates both the daily maximum and annual average for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions. The model also provides default values for water and energy use. Specifically the model aids the user in the following calculations:

- Short term construction emissions associated with grading, trenching, building, coating, and paving from off-road construction equipment, on-road mobile equipment associated with workers, vendors, and hauling, and fugitive dust associated with grading, demolition, truck loading, and roads, and volatile emissions of reactive organic gasses (ROG) from architectural coating and paving. Fugitive dust from windblown sources such as storage piles are not quantified in CalEEMod®, which is consistent with approaches taken in other comprehensive models.
- Operational emissions associated with the fully built out land use development, such as on-road mobile vehicle traffic generated by the land uses, fugitive dust associated with roads, volatile emissions of ROG from architectural coating, off-road emissions from landscaping equipment, volatile emissions of ROG from consumer products and cleaning

[23] The USEPA maintains a compilation of Air pollutant Emission Factors and process information for several air pollution source categories. The data is based on source test data, material balance studies, and engineering estimates. Available at: http://epa.gov/ttnchie1/ap42/. Accessed: February, 2014.
[24] CARB, 2007. Off Road Mobile Source Emission factors. Available at: http://www.arb.ca.gov/msei/msei.htm. Accessed: February , 2014.
[25] CARB, 2010. EMFAC 2007 Release. Available at: http://arb.ca.gov/msei/onroad/latest_version.htm. Accessed: February, 2014.
[26] Construction emissions estimated by Impact Sciences, Inc.

supplies, wood stoves and hearth usage, natural gas usage in the buildings, electricity usage in the buildings, water usage by the land uses, and solid waste disposal by the land uses.

- One-time vegetation sequestration changes, such as permanent vegetation land use changes and new tree plantings.

Mitigation impacts to both short-term construction and operational emissions as described in California Air Pollution Control Officers Association (CAPCOA)'s Quantifying Greenhouse Gas Mitigation Measures.[27] In addition, CalEEMod® contains default values and existing regulation methodologies to use in each specific local air district region. Appropriate statewide default values can be utilized if regional default values are not defined. ENVIRON used default factors for Los Angeles – South Coast county area that is within the SCAQMD jurisdiction for the GHG emission inventory, unless otherwise noted in the methodology descriptions below.

ENVIRON directly or indirectly relied on emissions estimation guidance from government-sponsored organizations, government-commissioned studies of energy use patterns, energy surveys by other consulting firms, Project specific resource management studies (e.g., Traffic study and Water Supply Assessment), and emission estimation software as described above. In cases as noted below, third-party studies were also relied upon to support analyses and assumptions made outside of the approach described above.

The Project emissions were estimated for year 2020, as recommended in the Revised AB32 Scoping Plan (FED). The year 2020 is also a conservative estimate of the GHG emissions, since the actual build-out year is much later, i.e. 2023.

3.3 Indirect GHG Emissions from Electricity Use

The indirect GHG emissions created as a result of electricity use are based on the following methodology. Indirect emissions, such as when electricity is used in a building, are typically due to electricity generation from offsite power plant locations. For this Project, electrical power will be supplied to the Project Site by Southern California Edison (SCE).

Using CalEEMod®, the electricity intensities are multiplied by the emission intensity factors for the GHGs and are classified as indirect emissions. Emission intensity factors are GHG emission rates from a given source relative to the intensity of a specific activity in term of the amount of GHG released per megawatt of energy produced. The default electricity intensity for SCE in CalEEMod® for CO_2, CH_4, and N_2O are 630.89, 0.029, and 0.006 pounds (lbs) per megawatt-hour (MWh), respectively. The CO_2 default factor is based on the 2007 SCE Power/Utility Protocol (PUP) report.[28] The CH_4 and N_2O default factors are based on CARB's and E-Grid values.

[27] CAPCOA. Quantifying Greenhouse Gas Mitigation Measures. August 2010. Available at: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.

[28] SCE Power/Utility Protocol (PUP) Report available at: http://www.climateregistry.org/tools/carrot/carrot-public-reports.html. The 2007 report is the most recent available data.

For this Project, the CalEEMod® CO_2 intensity factor is modified based on the average factor from 2006 and 2007 PUP Reports to account for the RPS. The intensity factors for total energy delivered were estimated by multiplying the percentage of energy delivered from non-renewable energy by the CO_2 emissions per total non-renewable energy metric calculated. Total energy delivery and total CO_2 emissions are provided in the PUP Reports. The CO_2 intensity factor presented in this analysis is consistent with the 33% RPS for 2020. Based on the PUP reports issued by SCE, renewable energy sources do not result in any CO_2 emissions. CalEEMod® emission intensity factors for CH_4 and N_2O were used for this Project as a conservative estimate for these emissions. For the CARB 2020 NAT scenario, the CalEEMod® default CO_2 intensity factor is used, which does not account for the 33% RPS for 2020.

Details regarding the specific methodologies used by CalEEMod® can be found in the CalEEMod® User's Guide and associated appendices.[29] The CalEEMod® output files are provided for reference in Appendix A to this report.

3.4 One-Time Emissions

One-time emissions are those emissions that are not reoccurring over the life of the project. This includes emissions associated with construction and emissions associated with land use changes. The construction emissions (Table 2) were estimated by Impact Sciences, Inc. The emission estimation methodology for vegetation changes is described below.

3.4.1 Vegetation Changes

This section presents the calculation of the positive and negative GHG emissions associated with vegetation removal and re-vegetation at the Project site. Permanent vegetation changes that occur as a result of project development constitute a one-time change in the carbon sequestration capacity of a project site. In this case, undeveloped land will be converted to different land uses with landscaped areas with trees. This will result in an overall carbon sequestration once the vegetation reaches a steady state (i.e., new vegetation replaces dying vegetation). Consequently, vegetation change results in a GHG emissions decrease.

CalEEMod® was used to calculate GHG emissions associated with the vegetation activities of land use change and the planting of new trees, as according to the Intergovernmental Panel on Climate Change (IPCC) protocol for vegetation. Overall Change in Sequestered CO_2e can be estimated with this equation.[30]

$$\text{Overall Change in Sequestered CO2} = \sum_i ((SeqCO_2)_i \times area_i) - \sum_j ((SeqCO_2)_j \times area_j)$$

Where:

$SeqCO_2$ = mass of sequestered CO_2 per unit area [MT CO_2e/acre]
area = area of land for specific land use type [acre]
i = index for final land use type
j = index for initial land use type

[63] SCAQMD, 2013, California Emissions Estimator Model User's Guide. Version 2013.2.2. Available at: http://www.CalEEMod.com/. Accessed: February, 2014.
[30] SCAQMD, 2013, California Emissions Estimator Model User's Guide, Appendix A, pages 45-48. Version 2011.2.2. Available at: http://www.CalEEMod.com/. Accessed: February, 2014.

Overall change in sequestered CO_2 is the summation of sequestered CO_2 from initial land use type multiplied by area of land for initial land use type subtracted by the summation of sequestered CO_2 from final land use type multiplied by area of land for final land use type. There is reduction in GHG emissions associated with preservation of a land. The vegetation changes result in carbon sequestration. Since the exact species of trees to be planted is not known at this time, the miscellaneous tree type was selected which represents an average of several tree species. In addition, the existing vegetation being removed and added as part of the Project is accounted for. The details as to the location of the addition of new trees for Project and 2020 CARB NAT scenario is shown in Table 3. For the current Project site, only one oak tree, which is protected by the County of Los Angeles Oak Tree Ordinance (CLAOTO), will be removed during the construction phase. The oak tree was identified during the Project surveys that included an evaluation of all trees with trunk diameters of five inches or more, measuring at breast height as required under Public Resources Code Section 21083.4(a). As a conservative approach, this analysis assumes 30 trees will be removed from the project site. Using this conservative estimate, the Project and its associated CARB 2020 NAT scenario are estimated to include net new trees of 6,320 and 5,860 trees, respectively. The Project scenario includes 460 citrus trees, which are a feature of this Project. The greater number of trees for the Project scenario results in higher CO_2 sequestration. These citrus trees are not included in the CARB 2020 NAT scenario.

The change in vegetation at the proposed Project site results in a one-time net sequestration of GHG emissions as shown in Table 4. The Project CO_2e sequestered emissions was estimated to be 11,444 $MTCO_2e$. In other words, the Project was estimated to decrease a total of 11,444 $MTCO_2e$ or 381 $MTCO_2e$ per year if amortized over a 30-year project lifetime.

The change in vegetation for the CARB 2020 NAT scenario results in a one-time net sequestration of GHG emissions as shown in Table 5. The CARB 2020 NAT CO_2e sequestered emissions were estimated to be 11,118 $MTCO_2e$. In other words, the CARB 2020 NAT scenario was estimated to decrease a total of 11,118 $MTCO_2e$ or 371 $MTCO_2e$ per year if amortized over a 30-year project lifetime.

3.5 Annual Operational Emissions

Emissions from mobile and area sources and indirect emissions from energy and water use, wastewater, as well as waste management, would occur every year after build out. This section outlines the operational GHG emissions.

3.5.1 Area Sources

Area sources in CalEEMod® consist of direct sources of air and GHG emissions, which include emissions from hearths (natural gas fireplaces)[31] and landscape maintenance equipment. GHG emissions due to natural gas combustion in buildings other than from fireplaces are excluded from this section since they are included in the emissions associated with building energy use.

[31] Wood-burning fireplaces and stoves are largely prohibited in the South Coast Air District as of March 9, 2009. Rule 445**.**

The GHG emissions for the Project and CARB 2020 NAT scenario were calculated using CalEEMod® defaults based upon the land uses that will be part of these developments, except as noted below.

- All cooking stoves and fireplaces were assumed to be natural gas burning, based on SCAQMD Rule 445

The resulting GHG emissions for the Project and CARB 2020 NAT scenario are shown in Table 6.

3.5.2 Energy Use

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO_2 and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions. Table 7 lists the emission factors for electricity used in this analysis and how it was calculated. Climate Zone 9 was selected based on the CEC forecast climate zone map shown in the CalEEMod® User's Guide. Project emissions have been calculated using a SCE emission factor that accounts for the 33% RPS required by 2020, as discussed in Section 3.3. The adjusted SCE emission factor is based on the mix renewable and non-renewable sources in SCE's energy supply. With this data, the SCE emission factor is adjusted to represent what the emissions from SCE would be in 2020 assuming that the 33% RPS is met.

3.5.2.1 Emissions Estimation from Energy Use

Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as in plug-in appliances. In California, Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting.[32] Non-building energy use, or "plug-in" energy use can be further subdivided by specific end-use (refrigeration, cooking, office equipment, etc.).

CalEEMod® was used to calculate the non-residential energy use by calculating baseline energy usage from systems covered by Title 24. To calculate the building energy input for the Project (e.g., electricity, and natural gas), ENVIRON utilized default values provided in CalEEMod®, which are based on the California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS).[33] The Project's energy use also reflect the Project's project design feature requirement to construct buildings that are consistent with the 2013 Title

[32] Title 24, Part 6, of the California Code of Regulations: California's Energy Efficiency Standards for Residential and Nonresidential Buildings. http://www.energy.ca.gov/title24/.
[33] A detailed explanation how the RASS and CEUS data was processed for use in CalEEMod is available in CalEEMod User's Guide Appendix E pages 27-32.

24 Part 6 Building Code, which is reflected in the model as 25% more energy efficient than the 2008 Title 24 Part 6 Building Code.[34]

The Project energy use also calculates energy use assuming that Energy Star appliances for all major appliances (e.g., refrigerators, dishwashers, clothes washers, and fans) are installed in residential homes, and "high efficacy" Energy Star lighting fixtures and lights are installed. This assumption is based on the project design feature of the Project as described in Section 1. The Energy Star energy reduction estimates for the appliances are based on the CalEEMod® defaults for Energy Star appliances. The "high efficacy" lighting reduction is assumed to be 75% based on Energy Star ratings.[35,36] CalEEMod® converts the resulting energy use quantities to GHG emissions by multiplying by the utility emission factors obtained by incorporating information on local electricity production and the 33% RPS for the Project.

The CARB 2020 NAT scenario assumes 2005 Title 24 standards to estimate the energy intensity values, no Energy Star commitments, and default emission factors for each utility for the local electricity production. For the CARB 2020 NAT scenario, the CalEEMod® default CO_2 intensity factor is used, which does not account for the 33% RPS. These assumptions are consistent with how the AB 32 Scoping Plan defines the BAU emissions inventory.

For Project, CO_2e emissions from energy and natural gas usages were estimated to be 1,308 $MTCO_2$e/yr (Table 8). Its associated CARB 2020 NAT scenario was estimated to emit 1,972 $MTCO_2$e/yr (Table 9).

3.5.3 Water Supply, Treatment and Distribution

Indirect GHG emissions result from the production of electricity used to convey, treat and distribute water and wastewater. The amount of electricity required to convey, treat and distribute water depends on the volume of water as well as the sources of the water. Additional emissions from wastewater treatment include CH_4 and N_2O, which are emitted directly from the wastewater. Stetson Engineers provided water usage estimates for the Project. The water usage was conservatively assumed to be equal to the "dry year" estimate, which has a higher water demand compared to "normal year" water usage.[37]

The water demand estimate for the CARB 2020 NAT scenario were estimated based on the Project water demand estimates and the assumption that the water efficiency measures included consistent with the California Green Building Code were not in place. The California Green Building Code requires that indoor potable water use will be reduced by 20 percent

[34] The Title 24 2013 Building Energy Efficiency Standards are pending. Available at: http://www.energy.ca.gov/title24/2013standards/rulemaking/documents/2013_Building_Energy_Efficiency_Standards_FAQ.pdf. Accessed: February, 2014.

[35] U.S. Department of Energy, 2013. Lighting Choices to Save You Money. Available at: http://energy.gov/energysaver/articles/lighting-choices-save-you-money. Accessed: February, 2014.

[36] Energy Star. Residential Light Fixtures. Available at: http://www.energystar.gov/index.cfm?c=fixtures.pr_light_fixtures. Accessed: February, 2014.

[37] Stetson Engineers, 2014. Water Supply Assessment for Los Valles. February 6.

through the use of water saving fixtures and or flow restrictors.[38] Thus, the CARB 2020 NAT scenario water usage was estimated by dividing the Project water demand estimate by 0.80.

In addition, ENVIRON used CalEEMod® default assumptions for average embodied energy[39] for Southern California, which are based on analyses by the California Energy Commission. ENVIRON assumed CalEEMod® defaults for the embodied energy for wastewater treatment. The CARB 2020 NAT scenario wastewater treatment included the same assumptions as the Project (i.e., default CalEEMod® assumptions).The GHG emissions associated with energy use from water supply, treatment and distribution is based on the Project analysis is based on the utility emission factors and the 33% RPS for the Project. The CARB 2020 NAT scenario, is based on the CalEEMod® default CO_2 intensity factor is used, which does not account for the 33% RPS.

The Project was estimated to result in 691 $MTCO_2e$/yr as shown in Table 10. The associated CARB 2020 NAT scenario was estimated to result in 1,007 $MTCO_2e$/yr as shown in Table 11.

3.5.4 Solid Waste

Municipal solid waste (MSW) is the amount of material that is disposed of by land filling, recycling, or composting. CalEEMod® calculates the indirect GHG emissions associated with waste that is disposed of at a landfill. The program uses annual waste disposal rates from the California Department of Resources Recycling and Recovery (CalRecycle) data for individual land uses. The emission estimates in this Project were based on CalEEMod® default factors. CalEEMod® uses the overall California Waste Stream composition to generate the necessary types of different waste disposed into landfills. The program quantifies the GHG emissions associated with the decomposition of the waste, which generates methane based on the total amount of degradable organic carbon. The program quantifies the CO_2 emissions associated with the combustion of methane, if applicable. Default landfill gas concentrations were used as reported in Section 2.4 of AP-42. The IPCC has a similar method to calculate GHG emissions from MSW in its 2006 Guidelines for National Greenhouse Gas Inventories.

The analysis assumes that additional waste will be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting to meet the statewide goal of 75% waste diversion.[40] The remainder of the waste not diverted will be disposed of at a landfill. GHG emissions from landfills are associated with the anaerobic breakdown of material. The CalEEMod® solid waste module determines the GHG emissions associated with the disposal of solid waste into landfills, in quantities that are based upon land use type according to waste disposal studies conducted by CalRecycle. For this module, CalEEMod® default waste generation rates were used since site specific information was not available. GHG emissions associated with non-landfill diverted waste streams are not considered, because it is generally assumed that these diversions do not result in any

[38] CSBC, 2010. 2010 California Green Building Standards. 4.303.1. Available at: http://www.documents.dgs.ca.gov/bsc/calgreen/2010_ca_green_bldg.pdf. Accessed: March, 2014.
[39] Embodied energy refers to the amount of energy that was used in delivering water to the specific land use.
[40] CalRecycle, 2013. California's 75 Percent Initiative. Available at: http://www.calrecycle.ca.gov/75percent/. Accessed: March, 2014.

appreciable amounts of GHG emissions when operated effectively.[41] These waste diversion alternatives may result in differences in life-cycle emissions of GHGs, but it is not appropriate to combine life-cycle emissions for only one category of emissions.[42] As mentioned previously, biogenic CO_2 emissions were not included when CARB analyzed the GHG emissions inventory under AB 32. Therefore, they are not included in the Project emissions inventory.

The CARB 2020 NAT scenario assumes a solid waste diversion from the landfills consistent with what was occurring prior to the passing of AB32. The solid waste diversion for the CARB 2020 NAT scenario was assumed as 54 percent,[43] which was the waste diversion rate reported for Los Angeles – Unincorporated region in 2006.

The Project was estimated result in 72 $MTCO_2e$/yr as shown in Table 12. The associated CARB 2020 NAT scenario was estimated to result in 132 $MTCO_2e$/yr as shown in Table 13.

3.5.5 Mobile Source Emissions

The GHG emissions associated with on-road mobile sources are generated from residents of the Project. The emissions associated with on-road mobile sources includes running and starting exhaust emissions, evaporative emissions, brake and tire wear, and fugitive dust from paved and unpaved roads. Starting and evaporative emissions are associated with the number of starts or time between vehicle uses and the assumptions used in determining these values are described below. All of the other emissions are dependent on VMT. ENVIRON estimated traffic emissions using the trip rates specified in the Traffic Study[44] and CalEEMod® methodology.

The analysis includes the benefit of reductions from the regulatory programs such as Pavley, LCFS and Advance Clean Cars. AB 1493 ("the Pavley Standard") requires CARB to adopt regulations by January 1, 2005, to reduce GHG emissions from non-commercial passenger vehicles and light-duty trucks of model year 2009 and thereafter. The CalEEMod® model includes emission reductions for non-commercial passenger vehicles and light-duty trucks of model year 2017 – 2025. Executive Order S-01-07 (January 18, 2007) requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by CARB. The regulation went into effect on April 15, 2010, and requires a reduction in the carbon intensity of transportation fuels used in California by at least 10 percent by 2020. It imposes fuel requirements on fuel that will be sold in California, which will decrease GHG emissions, by reducing the full fuel-cycle, and the carbon intensity of the transportation fuel pool in California. Reductions due to Low Carbon Fuel Standards were further applied to CO_2 emission factors after adjustments from Pavley I for scenario years 2011 and after. This is also included in the CalEEMod® model. The Advanced Clean Cars program introduced in 2012,

[41] CARB. 2010. Local Government Operations Protocol. Chapter 9.4.
[42] This inventory represents scope 1 and 2 emission categories. A life-cycle analysis of waste diversion would be a scope 3 inventory. CARB's Local Government Operations Protocol Version 1.1 (May 2010) clearly states that scope 3 emissions should not be combined with scope 1 and 2 emissions.
[43] CalRecycle. 2006. Los Angeles - Unincorporated Jurisdiction Diversion / Disposal Rate Detail, Available at: http://www.calrecycle.ca.gov/LGCentral/reports/diversionprogram/JurisdictionDiversionDetail.aspx?JurisdictionID=274&Year=2006. Accessed: March, 2014.
[44] Linscott Law & Greenspan Engineers, 2014. Traffic Impact Study. January 16.

combines the control of smog, soot causing pollutants and greenhouse gas emissions into a single coordinated package of requirements for model years 2015 through 2025. This regulation has not been incorporated into CalEEMod®, and thus an estimate of the GHG emission reductions from the Advanced Clean Cars program were estimated separately. The emission factors were adjusted for the Advanced Clean Cars regulation based on the CARB's LEV III database model (LEV3 Tool), which was used to estimate the statewide Advanced Clean Cars emissions reduction factors for 2020.[45] The Advanced Clean Cars emission reduction factors were incorporated into the analysis by multiplying the CalEEMod emission factors by the Advanced Clean Cars emission reduction factors for the Project emissions inventory.

Consistent with the AB 32 Scoping Plan, the CARB 2020 NAT scenario assumes that the Pavley, LCFS regulations, and Advanced Clean Car Program are not in place.

The Project was estimated to result in 6,382 $MTCO_2e$/yr as shown in Table 14. The associated CARB 2020 NAT scenario was estimated to result in 8,215 $MTCO_2e$/yr as shown in Table 15.

[45] Available at: http://www.arb.ca.gov/msei/categories.htm#onroad_motor_vehicles. Accessed: March, 2014.

4 Inventory in Context

This section examines the differences between the overall Project emissions and the NAT emissions in the context of AB 32 FED emission reduction goals.

4.1 Comparison with Significance Threshold

Since no numeric threshold for determining the significance of construction or operational GHG emissions from a residential development project has been adopted by the lead agency or by the SCAQMD, the Project's emissions will be compared to a percent emission reduction target consistent with AB 32 FED.

ENVIRON compares the Project GHG emissions inventory to the GHG emissions that would occur from a development that would be built without the project design features commitments made by the Project and without the regulations that have been promulgated to comply with AB 32 (i.e., the CARB 2020 NAT Scenario). The CARB 2020 NAT scenario represents the GHG emission inventory if projects continued to be built according to standards at the time AB 32 was enacted, and was the scenario that the CARB used to estimate the percent reduction in GHG emissions required to return to 1990 levels by 2020.

The Project is consistent with AB 32's reduction goals. Table 16 shows total GHG emissions for construction and operation of the Project and the CARB 2020 NAT scenario. For the Project GHG emissions inventory is 8,560 MT CO_2e per year and the CARB 2020 NAT GHG emissions inventory is 11,443 MT CO_2e per year. The Project was estimated to result in a 25.2 percent reduction from the associated CARB 2020 NAT scenario. The Project takes into account the Project's commitments and changes due to implementation of the Renewables Portfolio Standard of 33 percent, the Pavley regulation mandating higher fuel efficiency standards for light-duty vehicles, LCFS and the Advanced Clean Cars program. In conclusion, using the emission reduction target consistent with AB 32 FED as a numeric threshold (21.7 percent), the Project would have less than significant GHG emission impacts. A summary of the CARB 2020 NAT and Project scenario assumptions are included in Table 17.

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Tables

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Table 1. Project Land Uses and Square Footages (2020 Project / CARB 2020 NAT)
SFI Los Valles, LLC
City of Santa Clarita, California

Project Entitlement[1]		Land Use Category	CalEEMod Analysis		
			Land Use Subtype[2]	Land Use Unit Amount	Size Metric
City Park	7.93 acres	Recreational	City Park	7.93	acres
Single Family Residential	497 DU	Residential	Single Family Housing	497	DU
Recreation Center	8.5 TSF	Recreational	Health Club	8.5	1000 sqft
Open Spaces	223.15 acres	Recreational	User Defined Recreational	223.15	acres

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 1

Notes:
[1] Based on project description.
[2] Land uses as defined in CalEEMod. When an exact mapping of a land use was not available in CalEEMod relative to the "Project Entitlement," a land use with similar emission characteristics was chosen. In CalEEMod, recreation center was represented as a 'health club'. Land uses such as open spaces, where similar land use types were unavailable in CalEEMod, a 'user defined' land use type was used.

Abbreviations:
sqft - square feet
CARB - California Air Resource Board
CalEEMod - CALifornia Emissions Estimator MODel
DU - dwelling units
NAT - No Action Taken
TSF - thousand square feet

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Table 2. Summary of Construction GHG Emissions[1]
SFI Los Valles, LLC
City of Santa Clarita, California

Construction Activity	Off-Road Equipment	On-Road Vehicles			Total CO_2e Emissions
		Hauling	Vendor	Worker	
	(MT CO_2e / yr)				
Grading	4,414	1,321	0	101	5,835
Trenching	192	0	0	16	208
Paving	1,510	0	0	92	1,603
Building Construction	1,516	0	658	1,032	3,207
Architectural Coating	133	0	0	161	294
Total CO2e from Construction					11,147
30-year amortized					**372**

Notes:
[1] Construction emissions evaluated by Impact Sciences, Inc.

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Table 3. Number of Net New Trees
SFI Los Valles, LLC
City of Santa Clarita, California

Area	Project Scenario	No Action Taken Scenario
	Number of Trees	
Existing Trees[1]		
Current Project Location	30	30
New Trees[1]		
1 @ 40' O.C	1,986	1,986
2 per lot	994	994
1 per 30 LF street	2,260	2,260
Parks @ 30' O.C.	650	650
Citrus	460	0
Total	**6,350**	**5,890**
Net NEW Trees	**6,320**	**5,860**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 3

Notes:

[1] For the current Project site, only one oak tree, which is protected by the County of Los Angeles Oak Tree Ordinance (CLAOTO), will be removed during the construction phase. The oak tree was identified during the Project surveys that included an evaluation of all trees with trunk diameters of five inches or more, measuring at breast height as required under Public Resources Code Section 21083.4(a). As a conservative approach, this analysis assumes 30 trees will be removed from the project site.

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Table 4. Vegetation Change Evaluation (2020 Project)
SFI Los Valles, LLC
City of Santa Clarita, California

Type of Vegetation Change	Land Use Change[1]		Annual CO_2 accumulation[2] (MT)
	Initial (acres)	Final (acres)	
Cropland	0	13.3	82
Grassland (Meadow)	0	10.8	47
Grassland	151.7	0	-654
Scrub	0	29.6	423
Trees	0	63.7	7,071
Total vegetation change	**152**	**117**	**6,969**
Net New Trees - CO_2e Sequestered[3]			
Type of Trees	**Initial (no. of Trees)**	**Final (no. of Trees)**	**Net New Trees**
Miscellaneous	30	6,350	6,320
CO_2e sequestered from Net New Trees (MT)			4,475
Total CO_2e accumulated / Sequestered[4]			**11,444**
30-yr amortized			**381**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 4

Notes:

[1] Based on vegetation change data for the Project.

[2] Emissions were estimated using CalEEMod version 2013.2.2.

[3] Total CO_2e sequestered over IPCC recommended 20 year active growth period of new trees.

[4] The positive value indicates a gain in sequestration. Thus it is a benefit to the emissions inventory, and these CO_2e emissions are removed from the atmosphere.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
IPCC - Intergovernmental Panel on Climate Change
MT - metric tons
yr - year

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Table 5. Vegetation Change Evaluation (CARB 2020 NAT)
SFI Los Valles, LLC
City of Santa Clarita, California

Type of Vegetation Change	Land Use Change[1]		Annual CO_2 accumulation[2] (MT)
	Initial (acres)	Final (acres)	
Cropland	0	13.3	82
Grassland (Meadow)	0	10.8	47
Grassland	151.7	0	-654
Scrub	0	29.6	423
Trees	0	63.7	7,071
Total vegetation change	**152**	**117**	**6,969**
Net New Trees - CO_2e Sequestered[3]			
Type of Trees	**(no. of Trees)**	**(no. of Trees)**	**Net New Trees**
Miscellaneous	30	5,890	5,860
CO_2e sequestered from Net New Trees (MT)			4,149
Total CO_2e accumulated / Sequestered[4]			**11,118**
30-yr amortized			**371**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 5

Notes:

[1] Based on vegetation change data for the Project.

[2] Emissions were estimated using CalEEMod version 2013.2.2.

[3] Total CO_2e sequestered over IPCC recommended 20 year active growth period of new trees.

[4] The positive value indicates a gain in sequestration. Thus it is a benefit to the emissions inventory, and these CO_2e emissions are removed from the atmosphere.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
IPCC - Intergovernmental Panel on Climate Change
MT - metric tons
yr - year
CARB - California Air Resources Board
NAT - No Action Taken

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Table 6. GHG Emissions from Area Sources (2020 Project / CARB 2020 NAT)
SFI Los Valles, LLC
City of Santa Clarita, California

Category[1]	CO_2e Emissions[2] (MT/yr)
Hearth[3]	107.44
Landscaping	8.55
Total	**116**

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Notes:

[1] CalEEMod listed "Area sources" with GHG emissions. CalEEMod does not associate any CO_2e emissions with Architectural Coating and Consumer Products.

[2] Emissions were estimated using CalEEMod version 2013.2.2. The 2020 Project and CARB 2020 NAT scenario use the same assumptions for this category.

[3] Assumed no wood burning devices as per SCAQMD Rule 445 and project description. Assume 89.5% of the single family housing units will have one natural gas fireplace in each unit.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CARB - California Air Resources Board
CO2e - carbon dioxide equivalents
GHG - greenhouse gases
NAT - No Action Taken
MT - metric tons
SCAQMD - South Coast Air Quality Management District
yr - year

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Table 7. Utility GHG Emission Factor Associated with Renewable Power Standard
SFI Los Valles, LLC
City of Santa Clarita, California

	2006	2007	Average	Units
Total Energy Delivery[1]	82,776,309	83,958,770		MWh
from renewables[2]	12,670,583	12,476,219		MWh
from non-renewables	70,105,726	71,482,551		MWh
% of Total Energy From Renewables[2]	15%	15%		
Total CO_2 Emissions[1]	24,077,133	24,026,108		metric tonnes CO_2
% of Total Energy From Non-Renewables	85%	85%		
CO_2 Emissions per Total Energy Delivered	641.26	630.89	636.07	lbs CO_2/MWh delivered
CO_2 Emissions per Total Non-Renewable Energy[3]	757.16	741.00		lbs CO_2/MWh delivered
Estimated Emission Factors for Total Energy Delivered[4]				
2020 RPS (33%)	**507.3**	**496.5**	**501.9**	lbs CO_2/MWh delivered

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 7

Notes:

[1] Total energy delivery and total CO_2 emissions are provided in SCE Power/Utility Protocol (PUP) Reports available at: http://www.climateregistry.org/tools/carrot/carrot-public-reports.html

[2] Renewable energy delivered is the sum of biogenic, geothermal and other renewable generations in PUP reports.

[3] The emissions metric presented here was calculated based on the total CO_2 emissions divided by the energy delivered from non-renewable sources.

[4] The emission factors for total energy delivered were estimated by multiplying the percentage of energy delivered from non-renewable energy by the CO_2 emissions per total non-renewable energy metric calculated above. The emission factor presented here is the 33% RPS for 2020. The 33% reduction was used for Project emissions in this report. The estimate provided here and the PUP reports issued by SCE assume that renewable energy sources do not result in any CO_2 emissions.

Abbreviations:

CO_2 - carbon dioxide
GHG - Greenhouse gas
kWh - kilowatt-hour
lbs - pounds
MWh - Megawatt-hour
PG&E - Pacific Gas and Electric
PUP - Power/Utility Protocol
RPS - Renewables Portfolio Standard

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Table 8. GHG Emissions Associated with Electricity and Natural Gas (2020 Project)
SFI Los Valles, LLC
City of Santa Clarita, California

CalEEMod Land Use	Project Entitlement	Electricity Use[1]	Natural Gas Use[1]	CO_2e Emissions from Energy Use[2]		
				Associated with Electricity Use	Associated with Natural Gas Burning	Total
		(kWh/yr)	(kBTU/yr)	(MT/yr)		
City Park	City Park	0.00	0.00	0.00	0.00	0.00
Health Club	Recreation Center	73,950	129,370	17	7	24
Single Family Housing	Single Family Residential	2,836,540	11,836,000	649	635	1,284
User Defined Recreational	Open Spaces	0.00	0.00	0.00	0.00	0.00
	Total	**2,910,490**	**11,965,370**	**666**	**642**	**1,308**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 8

Notes:

[1] Energy usage for each land use was based on CalEEMod databases, which were obtained from CEUS or RASS studies on energy use and adjusted to account for 2008 Title 24 building standards. See Appendix A of the CalEEMod user's guide for details.

[2] Emissions were estimated using CalEEMod version 2013.2.2 See report for project design features and assumptions. Energy emissions included regulatory measure for 33% RPS for the utility provider (i.e. Southern California Edison). Emissions also included project design features, such as: 25% improvement over Title 24 (2008), Energy Star appliances, and high efficacy lighting for residential land uses.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CEUS - California Commercial End-Use Survey
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
kBTU - 1,000 British thermal units
kWh - kilowatt hours
MT - metric tons
RASS - California Statewide Residential Appliance Saturation Study
SCAQMD - South Coast Air Quality Management District
yr - year

Reference:

SCAQMD. 2011. CalEEMod User's Guide. Available at: http://caleemod.com/. Accessed July 2012.

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Table 9. GHG Emissions Associated with Electricity and Natural Gas (CARB 2020 NAT)
SFI Los Valles, LLC
City of Santa Clarita, California

CalEEMod Land Use	Project Entitlement	Electricity Use[1]	Natural Gas Use[1]	CO_2e Emissions from Energy Use[2]		
				Associated with Electricity Use	Associated with Natural Gas Burning	Total
		(kWh/yr)	(kBTU/yr)	(MT/yr)		
City Park	City Park	0.00	0.00	0.00	0.00	0.00
Health Club	Recreation Center	106,590	168,300	31	9	40
Single Family Housing	Single Family Residential	3,712,490	16,133,300	1,067	866	1,933
User Defined Recreational	Open Spaces	0.00	0.00	0.00	0.00	0.00
	Total	**3,819,080**	**16,301,600**	**1,097**	**875**	**1,972**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 9

Notes:

[1] Energy usage for each land use was assumed to be consistent with CalEEMod version 2013.2.2 defaults for historical conditions. See Appendix A of the CalEEMod user's guide for details.

[2] Emissions were estimated using CalEEMod version 2013.2.2. See report for project design features and assumptions (i.e., Title 24 (2005)).

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CEUS - California Commercial End-Use Survey
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
kBTU - 1,000 British thermal units
kWh - kilowatt hours
MT - metric tons
RASS - California Statewide Residential Appliance Saturation Study
SCAQMD - South Coast Air Quality Management District
yr - year

Reference:

SCAQMD. 2011. CalEEMod User's Guide. Available at: http://caleemod.com/. Accessed July 2012.

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Table 10. GHG Emissions Associated with Water Usage (2020 Project)
SFI Los Valles, LLC
City of Santa Clarita, California

CalEEMod Land Use	Project Entitlement	Indoor Water Use	Outdoor Water Use	CO_2e Emissions
		(Mgal/yr)	(Mgal/yr)	(MT/yr)
City Park	City Park	0.00	15	37
Health Club	Recreation Center	0.14	0.08	0.79
Single Family Housing	Single Family Residential	93	58	539
User Defined Recreational	Open Spaces	0.00	45	114
	Total	**93**	**118**	**691**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 10

Notes:

[1] Water usage assumptions obtain from the project water technical report (Stetson Engineers, 2014).

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
Mgal - million gallons
MT - metric tons
yr - year

References:

Stetson Engineers, 2014. Water Supply Assessment for Los Valles. February 6

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Table 11. GHG Emissions Associated with Water Usage (CARB 2020 NAT)
SFI Los Valles, LLC
City of Santa Clarita, California

CalEEMod Land Use	Project Entitlement	Indoor Water Use	Outdoor Water Use	CO_2e Emissions
		(Mgal/yr)	(Mgal/yr)	(MT/yr)
City Park	City Park	0.00	17	56
Health Club	Recreation Center	0.16	0.10	1.13
Single Family Housing	Single Family Residential	111	70	778
User Defined Recreational	Open Spaces	0.00	54	172
	Total	**111**	**142**	**1,007**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 11

Notes:

[1] Water usage assumptions obtain from the project water technical report (Stetson Engineers, 2014). The NAT scenario does not include 20% reduction to indoor water usage.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
Mgal - million gallons
MT - metric tons
NC - Neighborhood Commercial
yr - year

References:

Stetson Engineers, 2014. Water Supply Assessment for Los Valles. February 6

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Table 12. GHG Emissions Associated with Waste Disposal (2020 Project)
SFI Los Valles, LLC
City of Santa Clarita, California

CalEEMod Land Use	Project Entitlement	Waste Disposed[1]	CO_2e Emissions Associated with Waste[1]
		(tons/yr)	(MT/yr)
City Park	City Park	0.17	0.08
Health Club	Recreation Center	12	6
Single Family Housing	Single Family Residential	146	66
User Defined Recreational	Open Spaces	0.00	0.00
	Total	**158**	**72**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 12

Notes:

[1] Solid waste disposal emissions were estimated using CalEEMod version 2013.2.2. Solid waste generation and associated emissions for the Project scenario has assumed 75 percent waste diversion, based on California (statewide) waste diversion goal. Available at: http://www.calrecycle.ca.gov/75percent/. Accessed: March, 2014.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tons
yr - year

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Table 13. GHG Emissions Associated with Waste Disposal (CARB 2020 NAT)
SFI Los Valles, LLC
City of Santa Clarita, California

CalEEMod Land Use	Project Entitlement	Waste Disposed[1]	CO_2e Emissions Associated with Waste[1]
		(tons/yr)	(MT/yr)
City Park	City Park	0.31	0.14
Health Club	Recreation Center	22	10
Single Family Housing	Single Family Residential	268	122
User Defined Recreational	Open Spaces	0.00	0.00
	Total	**291**	**132**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 13

Notes:

[1] Solid waste disposal emissions were estimated using CalEEMod version 2013.2.2. Solid waste generation and associated emissions for the No Action Taken scenario has assumed 54 percent waste diversion, based on the 2006 Santa Clarita Jurisdiction Diversion / Disposal Rate Detail. Available at: http://www.calrecycle.ca.gov/LGCentral/reports/diversionprogram/JurisdictionDiversionDetail.aspx?JurisdictionID=468&Year=2006. Accessed: March, 2014.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tons
yr - year

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Table 14. GHG Emissions Associated with Traffic (2020 Project)
SFI Los Valles, LLC
City of Santa Clarita, California

CalEEMod Land Use	Project Entitlement	Vehicles Miles Travelled	CO_2e Emissions Associated with Traffic
		(VMT/yr)	(MT/yr)
City Park	City Park	0.00	0.00
Health Club	Recreation Center	0.00	0.00
Single Family Housing	Single Family Residential	16,182,606	6,382
User Defined Recreational	Open Spaces	0.00	0.00
	Total	**16,182,606**	**6,382**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 14

Notes:

[1] Based on Traffic Impact Study (Linscott Law & Greenspan Engineers, 2014), traffic related emissions were only estimated for the single family housing land use since trips related to the other land use categories are internally captured. Emissions were estimated using CalEEMod version 2013.2.2. Emissions associated with transportation included emissions during running, idling, and startup of vehicles. Emissions also include benefit of reductions from the regulatory programs such as Pavley, LCFS and Advance Clean Cars See report for project design features and assumptions.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
GHG - greenhouse gases
MT - metric tons
VMT - vehicle miles traveled
yr - year

References:

Linscott Law & Greenspan Engineers, 2014. Traffic Impact Study. January 16.

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Table 15. GHG Emissions Associated with Traffic (CARB 2020 NAT)
SFI Los Valles, LLC
City of Santa Clarita, California

CalEEMod Land Use	Project Entitlement	Vehicles Miles Travelled	CO_2e Emissions Associated with Traffic
		(VMT/yr)	(MT/yr)
City Park	City Park	0.00	0.00
Health Club	Recreation Center	0.00	0.00
Single Family Housing	Single Family Residential	16,182,606	8,215
User Defined Recreational	Open Spaces	0.00	0.00
	Total	**16,182,606**	**8,215**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 15

Notes:

[1] Based on Traffic Impact Study (Linscott Law & Greenspan Engineers, 2014), traffic related emissions were only estimated for the single family housing land use since trips related to the other land use categories are internally captured. Emissions were estimated using CalEEMod version 2013.2.2. Emissions associated with transportation included emissions during running, idling, and startup of vehicles. Emissions do not include benefit of reductions from the regulatory programs. See report for project design features and assumptions.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
GHG - greenhouse gases
MT - metric tons
VMT - vehicle miles traveled
yr - year

References:

Linscott Law & Greenspan Engineers, 2014. Traffic Impact Study. January 16.

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Table 16. Summary of GHG Emissions
SFI Los Valles, LLC
City of Santa Clarita, California

Category[1]	CO_2e Emissions[2]		% Change From NAT
	2020 Project	2020 NAT	
	(MT/yr)	(MT/yr)	
Area	116	116	0.0%
Energy Use[3]	1,308	1,972	-33.7%
Water Use	691	1,007	-31.3%
Waste Disposed	72	132	-45.7%
Traffic	6,382	8,215	-22.3%
Sub-Total	**8,570**	**11,442**	**-25.1%**
Construction Amortized[3]	372	372	0.0%
Vegetation Amortized[4]	-381	-371	2.9%
Total	**8,560**	**11,443**	**-25.2%**

\\WCIRVFPS1\Projects\I\iStar\Los Valles\Technical\Report\[iStar Los Valles_GHG Report Tables_140519.xlsx]Table 16

Notes:

[1] CO_2e emissions were estimated using CalEEMod version 2013.2. for all operational categories.

[2] CO_2e includes CO_2, CH_4, and N_2O emissions, which are weighted by their respective global warming potentials.

[3] One-time emissions from construction were amortized over a 30-year period.

[4] One-time emissions from vegetation change were amortized over a 30-year period. These emissions are a benefit to the emissions inventory, and therefore it is subtracted from the total emissions.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
GHG - greenhouse gases
MT - metric tons
NAT - No Action Taken
N_2O - nitrous oxide
yr - year

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Table 17. Summary of CARB 2020 NAT and 2020 Project Scenario Assumptions
SFI Los Valles, LLC
City of Santa Clarita, California

	CARB 2020 NAT	2020 Project
Electricity CO_2 intensity factor	Based on 2020 SCE intensity factor.	SCE intensity factor adjusted for 33% RPS.
Vehicle trips:		
Number of trips generated	Trip generation based on Traffic Impact Study (Linscott Law & Greenspan Engineers, 2014), and are associated with Single Family Homes only	
Vehicle emission factor	Assumes LCFS, Pavley regulations and Advanced Clean Cars program are not in place consistent with AB32.	Assumes LCFS, Pavley regulations and Advanced Clean Cars program are in place consistent with buildout year.
Fireplaces	No wood burning devices. 89.5% dwelling units have gas fireplaces consistent with CalEEMod version 2013.2.2 default.	
Energy use	Building energy intensity based on Title 24 - 2005.	Building energy intensity based on Title 24 - 2008 plus a 25% reduction; Energy star appliances for residences; "High efficacy" Energy Star lighting.
Water use	Water usage 20% above Water Supply Assessment (Stetson Engineers, 2014)	Water usage provided in Water Supply Assessment (Stetson Engineers, 2014) Indoor water includes 20% indoor water reduction due to installing water saving fixtures and / or flow restrictors.
Solid Waste generation	Waste diversion of 54% (based on 2006 waste report for Santa Clarita Jurisdiction).	Waste diversion of 75% (2020 California State Goal).
Vegetation	Net new trees - 5,820	Net new trees - 6,320

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Abbreviations:
AB32 - Assembly Bill 32
CARB - California Air Resources Board
CalEEMod - CALifornia Emissions Estimator MODel
LCFS - Low Carbon Fuel Standard
NAT - No Action Taken
RPS - Renewable Portfolio Standard

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Appendix A

CalEEMod Output Files

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Appendix A.1-1 Operational GHG Emissions Estimates for Los Valles Development Proposed Project (2020 Project)
Appendix A.1-2 Operational GHG Emissions Estimates for Los Valles Development No Action Taken (NAT) scenario (CARB 2020 NAT)

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Appendix A.1-1

Operational GHG Emissions Estimates for Los Valles Development Proposed Project (2020 Project)

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iStar Los Valles PROJECT Operational GHG

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	7.93	Acre	7.93	345,430.80	0
Health Club	8.50	1000sqft	0.20	8,500.00	0
User Defined Recreational	223.15	User Defined Unit	223.15	9,720,626.02	0
Single Family Housing	497.00	Dwelling Unit	161.36	894,600.00	1421

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	501.88	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

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Project Characteristics - Including 33% RPS

Land Use - Based on Project Description "User Defined Recreational" is same as on-site "Open Spaces".

Construction Phase - Construction emissions evaluated separately

Off-road Equipment -

Vehicle Trips - Based on Traffic Study - trips associated with single family homes only

Vechicle Emission Factors - Including reduction for Advanced Clean Cars

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Per SCAQMD rule 445, wood burning fire places are not allowed

Energy Use - Title 24 2008

Water And Wastewater - Based on Water Supply Assessment

Land Use Change -

Sequestration -

Energy Mitigation - Exceed Title 24 2008 by 25% to meet Title 24 2013 requirements
75% Reduction for energy efficient lighting

Waste Mitigation - 75% waste diversion based on 2020 State goal.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	12/31/2014	12/31/2010
tblConstructionPhase	PhaseStartDate	1/1/2015	1/2/2011
tblFireplaces	NumberGas	422.45	444.70
tblFireplaces	NumberNoFireplace	49.70	52.30
tblFireplaces	NumberWood	24.85	0.00
tblLandUse	LandUseSquareFeet	0.00	9,720,626.02
tblLandUse	LotAcreage	0.00	223.15
tblProjectCharacteristics	CO2IntensityFactor	630.89	501.88
tblProjectCharacteristics	OperationalYear	2014	2020
tblSequestration	NumberOfNewTrees	0.00	6,320.00
tblVehicleEF	LDA	257.96	247.65

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tblVehicleEF	LDA	53.04	51.45
tblVehicleEF	LDT1	318.76	315.02
tblVehicleEF	LDT1	64.29	63.70
tblVehicleEF	LDT2	384.11	378.07
tblVehicleEF	LDT2	77.68	76.70
tblVehicleEF	MDV	510.84	504.24
tblVehicleEF	MDV	103.50	102.54
tblVehicleTrips	ST_TR	1.59	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	SU_TR	1.59	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	WD_TR	1.59	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblWater	IndoorWaterUseRate	502,716.72	136,094.00
tblWater	IndoorWaterUseRate	32,381,550.73	92,671,446.00
tblWater	OutdoorWaterUseRate	9,448,447.10	14,524,072.00
tblWater	OutdoorWaterUseRate	308,116.70	83,413.00
tblWater	OutdoorWaterUseRate	20,414,455.90	58,422,808.00
tblWater	OutdoorWaterUseRate	0.00	44,988,040.00
tblWoodstoves	NumberCatalytic	24.85	0.00
tblWoodstoves	NumberNoncatalytic	24.85	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	115.1672	115.1672	0.0102	1.9600e-003	115.9888
Energy											0.0000	1,647.5631	1,647.5631	0.0644	0.0248	1,656.6001
Mobile											0.0000	6,377.2855	6,377.2855	0.2413	0.0000	6,382.3533
Waste											128.2375	0.0000	128.2375	7.5786	0.0000	287.3885
Water											29.4436	573.5913	603.0348	3.0573	0.0783	691.4994
Total											**157.6811**	**8,713.6070**	**8,871.2881**	**10.9518**	**0.1050**	**9,133.8301**

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2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	115.1672	115.1672	0.0102	1.9600e-003	115.9888
Energy											0.0000	1,301.0892	1,301.0892	0.0505	0.0196	1,308.2347
Mobile											0.0000	6,377.2855	6,377.2855	0.2413	0.0000	6,382.3533
Waste											32.0594	0.0000	32.0594	1.8947	0.0000	71.8471
Water											29.4436	573.5913	603.0348	3.0567	0.0782	691.4524
Total											**61.5029**	**8,367.1331**	**8,428.6361**	**5.2535**	**0.0997**	**8,569.8763**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**61.00**	**3.98**	**4.99**	**52.03**	**5.02**	**6.17**

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2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	4,474.5600
Vegetation Land Change	6,969.1610
Total	**11,443.7210**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	No Phase	Trenching	1/2/2011	12/31/2010	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Trips and VMT

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
No Phase				0.00	14.70	6.90				

3.1 Mitigation Measures Construction

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	6,377.2855	6,377.2855	0.2413	0.0000	6,382.3533
Unmitigated											0.0000	6,377.2855	6,377.2855	0.2413	0.0000	6,382.3533

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Single Family Housing	4,756.29	5,009.76	4358.69	16,182,606	16,182,606
User Defined Recreational	0.00	0.00	0.00		
Total	4,756.29	5,009.76	4,358.69	16,182,606	16,182,606

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4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
User Defined Recreational	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.530094	0.057664	0.178835	0.124843	0.039181	0.006319	0.017052	0.034445	0.002509	0.003148	0.003693	0.000531	0.001685

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Install Energy Efficient Appliances

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated											0.0000	638.5189	638.5189	0.0122	0.0117	642.4048
NaturalGas Unmitigated											0.0000	798.9070	798.9070	0.0153	0.0147	803.7690
Electricity Mitigated											0.0000	662.5703	662.5703	0.0383	7.9200e-003	665.8298
Electricity Unmitigated											0.0000	848.6561	848.6561	0.0490	0.0102	852.8310

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	159885											0.0000	8.5321	8.5321	1.6000e-004	1.6000e-004	8.5840
Single Family Housing	1.48111e+007											0.0000	790.3750	790.3750	0.0152	0.0145	795.1850
User Defined Recreational	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**798.9070**	**798.9070**	**0.0153**	**0.0147**	**803.7690**

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5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	129370											0.0000	6.9037	6.9037	1.3000e-004	1.3000e-004	6.9457
Single Family Housing	1.1836e+007											0.0000	631.6153	631.6153	0.0121	0.0116	635.4592
User Defined Recreational	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**638.5189**	**638.5189**	**0.0122**	**0.0117**	**642.4048**

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5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Health Club	102425	23.3169	1.3500e-003	2.8000e-004	23.4317
Single Family Housing	3.62549e+006	825.3391	0.0477	9.8700e-003	829.3994
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**848.6561**	**0.0490**	**0.0102**	**852.8310**

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5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Health Club	73950	16.8346	9.7000e-004	2.0000e-004	16.9175
Single Family Housing	2.83654e+006	645.7357	0.0373	7.7200e-003	648.9124
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**662.5703**	**0.0383**	**7.9200e-003**	**665.8298**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	115.1672	115.1672	0.0102	1.9600e-003	115.9888
Unmitigated											0.0000	115.1672	115.1672	0.0102	1.9600e-003	115.9888

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6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	106.7890	106.7890	2.0500e-003	1.9600e-003	107.4389
Landscaping											0.0000	8.3782	8.3782	8.1800e-003	0.0000	8.5500
Total											**0.0000**	**115.1672**	**115.1672**	**0.0102**	**1.9600e-003**	**115.9888**

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6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	106.7890	106.7890	2.0500e-003	1.9600e-003	107.4389
Landscaping											0.0000	8.3782	8.3782	8.1800e-003	0.0000	8.5500
Total											**0.0000**	**115.1672**	**115.1672**	**0.0102**	**1.9600e-003**	**115.9888**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	603.0348	3.0573	0.0783	691.4994
Mitigated	603.0348	3.0567	0.0782	691.4524

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7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 14.5241	36.7340	2.1200e-003	4.4000e-004	36.9147
Health Club	0.136094 / 0.083413	0.6576	4.4700e-003	1.1000e-004	0.7862
Single Family Housing	92.6714 / 58.4228	451.8604	3.0441	0.0764	539.4559
User Defined Recreational	0 / 44.988	113.7828	6.5700e-003	1.3600e-003	114.3426
Total		**603.0348**	**3.0573**	**0.0783**	**691.4994**

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7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 14.5241	36.7340	2.1200e-003	4.4000e-004	36.9147
Health Club	0.136094 / 0.083413	0.6576	4.4700e-003	1.1000e-004	0.7861
Single Family Housing	92.6714 / 58.4228	451.8604	3.0436	0.0762	539.4090
User Defined Recreational	0 / 44.988	113.7828	6.5700e-003	1.3600e-003	114.3426
Total		**603.0348**	**3.0567**	**0.0782**	**691.4524**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

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Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	32.0594	1.8947	0.0000	71.8471
Unmitigated	128.2375	7.5786	0.0000	287.3885

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.68	0.1380	8.1600e-003	0.0000	0.3093
Health Club	48.45	9.8349	0.5812	0.0000	22.0407
Single Family Housing	582.61	118.2646	6.9892	0.0000	265.0385
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**128.2375**	**7.5786**	**0.0000**	**287.3885**

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8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.17	0.0345	2.0400e-003	0.0000	0.0773
Health Club	12.1125	2.4587	0.1453	0.0000	5.5102
Single Family Housing	145.653	29.5661	1.7473	0.0000	66.2596
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**32.0594**	**1.8947**	**0.0000**	**71.8471**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

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	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	11,443.7210	0.0000	0.0000	11,443.7210

10.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	0 / 13.3	82.4600	0.0000	0.0000	82.4600
Grassland	0 / 10.8	46.5480	0.0000	0.0000	46.5480
Grassland	151.7 / 0	-653.8270	0.0000	0.0000	-653.8270
Scrub	0 / 29.6	423.2800	0.0000	0.0000	423.2800
Trees	0 / 63.7	7,070.7000	0.0000	0.0000	7,070.7000
Total		**6,969.1610**	**0.0000**	**0.0000**	**6,969.1610**

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10.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	6320	4,474.5600	0.0000	0.0000	4,474.5600
Total		**4,474.5600**	**0.0000**	**0.0000**	**4,474.5600**

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Appendix A.1-2

Operational GHG Emissions Estimates for Los Valles Development
No Action Taken (NAT) scenario (CARB 2020 NAT)

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iStar Los Valles BAU Operational GHG

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	7.93	Acre	7.93	345,430.80	0
Health Club	8.50	1000sqft	0.20	8,500.00	0
User Defined Recreational	223.15	User Defined Unit	223.15	9,720,626.02	0
Single Family Housing	497.00	Dwelling Unit	161.36	894,600.00	1421

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

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Project Characteristics -

Land Use - Based on Project Description "User Defined Recreational" is same as on-site "Open Spaces".

Construction Phase - Construction emissions evaluated separately

Off-road Equipment -

Vehicle Trips - Based on Traffic Study - trips associated only with single family homes

Vechicle Emission Factors - Excluding reduction for Pavley and LCFS

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves - Per SCAQMD rule 445, wood burning fire places are not allowed

Energy Use - Title 24 2005

Water And Wastewater - Based on Water Supply Assessment

Land Use Change -

Sequestration - No orchards

Waste Mitigation - 54% waste diversion based on 2020 Santa Clarita jurisdiction.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	12/31/2014	12/31/2010
tblConstructionPhase	PhaseStartDate	1/1/2015	1/2/2011
tblFireplaces	NumberGas	422.45	444.70
tblFireplaces	NumberNoFireplace	49.70	52.30
tblFireplaces	NumberWood	24.85	0.00
tblLandUse	LandUseSquareFeet	0.00	9,720,626.02
tblLandUse	LotAcreage	0.00	223.15
tblProjectCharacteristics	OperationalYear	2014	2020
tblSequestration	NumberOfNewTrees	0.00	5,860.00
tblVehicleEF	LDA	257.96	370.25
tblVehicleEF	LDA	53.04	73.73
tblVehicleEF	LDT1	318.76	427.21

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tblVehicleEF	LDT1	64.29	84.57
tblVehicleEF	LDT2	384.11	503.98
tblVehicleEF	LDT2	77.68	100.47
tblVehicleEF	MDV	510.84	642.35
tblVehicleEF	MDV	103.50	127.26
tblVehicleTrips	ST_TR	1.59	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	SU_TR	1.59	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	WD_TR	1.59	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblWater	IndoorWaterUseRate	502,716.72	163,313.00
tblWater	IndoorWaterUseRate	32,381,550.73	111,205,736.00
tblWater	OutdoorWaterUseRate	9,448,447.10	17,428,887.00
tblWater	OutdoorWaterUseRate	308,116.70	100,095.00
tblWater	OutdoorWaterUseRate	20,414,455.90	70,107,370.00
tblWater	OutdoorWaterUseRate	0.00	53,985,648.00
tblWoodstoves	NumberCatalytic	24.85	0.00
tblWoodstoves	NumberNoncatalytic	24.85	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	115.1672	115.1672	0.0102	1.9600e-003	115.9888
Energy											0.0000	1,962.8105	1,962.8105	0.0669	0.0263	1,972.3817
Mobile											0.0000	8,209.9812	8,209.9812	0.2413	0.0000	8,215.0490
Waste											128.2375	0.0000	128.2375	7.5786	0.0000	287.3885
Water											35.3323	865.2419	900.5741	3.6687	0.0939	1,006.7316
Total											**163.5698**	**11,153.2007**	**11,316.7705**	**11.5658**	**0.1222**	**11,597.5397**

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2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	115.1672	115.1672	0.0102	1.9600e-003	115.9888
Energy											0.0000	1,962.8105	1,962.8105	0.0669	0.0263	1,972.3817
Mobile											0.0000	8,209.9812	8,209.9812	0.2413	0.0000	8,215.0490
Waste											58.9893	0.0000	58.9893	3.4862	0.0000	132.1987
Water											35.3323	865.2419	900.5741	3.6681	0.0938	1,006.6753
Total											**94.3215**	**11,153.2007**	**11,247.5222**	**7.4727**	**0.1221**	**11,442.2935**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**42.34**	**0.00**	**0.61**	**35.39**	**0.11**	**1.34**

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2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	4,148.8800
Vegetation Land Change	6,969.1610
Total	**11,118.0410**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	No Phase	Trenching	1/2/2011	12/31/2010	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Trips and VMT

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
No Phase				0.00	14.70	6.90				

3.1 Mitigation Measures Construction

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	8,209.9812	8,209.9812	0.2413	0.0000	8,215.0490
Unmitigated											0.0000	8,209.9812	8,209.9812	0.2413	0.0000	8,215.0490

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Single Family Housing	4,756.29	5,009.76	4358.69	16,182,606	16,182,606
User Defined Recreational	0.00	0.00	0.00		
Total	4,756.29	5,009.76	4,358.69	16,182,606	16,182,606

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4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
User Defined Recreational	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.530094	0.057664	0.178835	0.124843	0.039181	0.006319	0.017052	0.034445	0.002509	0.003148	0.003693	0.000531	0.001685

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
NaturalGas Mitigated											0.0000	869.9160	869.9160	0.0167	0.0160	875.2102
NaturalGas Unmitigated											0.0000	869.9160	869.9160	0.0167	0.0160	875.2102
Electricity Mitigated											0.0000	1,092.8944	1,092.8944	0.0502	0.0104	1,097.1715
Electricity Unmitigated											0.0000	1,092.8944	1,092.8944	0.0502	0.0104	1,097.1715

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5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	168300											0.0000	8.9811	8.9811	1.7000e-004	1.6000e-004	9.0358
Single Family Housing	1.61333e+007											0.0000	860.9349	860.9349	0.0165	0.0158	866.1744
User Defined Recreational	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**869.9160**	**869.9160**	**0.0167**	**0.0159**	**875.2102**

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5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	168300											0.0000	8.9811	8.9811	1.7000e-004	1.6000e-004	9.0358
Single Family Housing	1.61333e+007											0.0000	860.9349	860.9349	0.0165	0.0158	866.1744
User Defined Recreational	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**869.9160**	**869.9160**	**0.0167**	**0.0159**	**875.2102**

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5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Health Club	106590	30.5025	1.4000e-003	2.9000e-004	30.6219
Single Family Housing	3.71249e+006	1,062.3919	0.0488	0.0101	1,066.5496
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**1,092.8944**	**0.0502**	**0.0104**	**1,097.1715**

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5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Health Club	106590	30.5025	1.4000e-003	2.9000e-004	30.6219
Single Family Housing	3.71249e+006	1,062.3919	0.0488	0.0101	1,066.5496
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**1,092.8944**	**0.0502**	**0.0104**	**1,097.1715**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	115.1672	115.1672	0.0102	1.9600e-003	115.9888
Unmitigated											0.0000	115.1672	115.1672	0.0102	1.9600e-003	115.9888

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6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	106.7890	106.7890	2.0500e-003	1.9600e-003	107.4389
Landscaping											0.0000	8.3782	8.3782	8.1800e-003	0.0000	8.5500
Total											**0.0000**	**115.1672**	**115.1672**	**0.0102**	**1.9600e-003**	**115.9888**

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6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	106.7890	106.7890	2.0500e-003	1.9600e-003	107.4389
Landscaping											0.0000	8.3782	8.3782	8.1800e-003	0.0000	8.5500
Total											**0.0000**	**115.1672**	**115.1672**	**0.0102**	**1.9600e-003**	**115.9888**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	900.5741	3.6687	0.0939	1,006.7316
Mitigated	900.5741	3.6681	0.0938	1,006.6753

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7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 17.4289	55.4119	2.5500e-003	5.3000e-004	55.6288
Health Club	0.163313 / 0.100095	0.9786	5.3600e-003	1.3000e-004	1.1329
Single Family Housing	111.206 / 70.1074	672.5463	3.6529	0.0916	777.6609
User Defined Recreational	0 / 53.9856	171.6373	7.8900e-003	1.6300e-003	172.3090
Total		**900.5741**	**3.6687**	**0.0939**	**1,006.7316**

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7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 17.4289	55.4119	2.5500e-003	5.3000e-004	55.6288
Health Club	0.163313 / 0.100095	0.9786	5.3600e-003	1.3000e-004	1.1328
Single Family Housing	111.206 / 70.1074	672.5463	3.6523	0.0915	777.6046
User Defined Recreational	0 / 53.9856	171.6373	7.8900e-003	1.6300e-003	172.3090
Total		**900.5741**	**3.6681**	**0.0938**	**1,006.6753**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

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Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	58.9893	3.4862	0.0000	132.1987
Unmitigated	128.2375	7.5786	0.0000	287.3885

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.68	0.1380	8.1600e-003	0.0000	0.3093
Health Club	48.45	9.8349	0.5812	0.0000	22.0407
Single Family Housing	582.61	118.2646	6.9892	0.0000	265.0385
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**128.2375**	**7.5786**	**0.0000**	**287.3885**

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8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.3128	0.0635	3.7500e-003	0.0000	0.1423
Health Club	22.287	4.5241	0.2674	0.0000	10.1387
Single Family Housing	268.001	54.4017	3.2151	0.0000	121.9177
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**58.9893**	**3.4862**	**0.0000**	**132.1987**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

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	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	11,118.0410	0.0000	0.0000	11,118.0410

10.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Cropland	0 / 13.3	82.4600	0.0000	0.0000	82.4600
Grassland	0 / 10.8	46.5480	0.0000	0.0000	46.5480
Grassland	151.7 / 0	-653.8270	0.0000	0.0000	-653.8270
Scrub	0 / 29.6	423.2800	0.0000	0.0000	423.2800
Trees	0 / 63.7	7,070.7000	0.0000	0.0000	7,070.7000
Total		**6,969.1610**	**0.0000**	**0.0000**	**6,969.1610**

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10.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	5860	4,148.8800	0.0000	0.0000	4,148.8800
Total		**4,148.8800**	**0.0000**	**0.0000**	**4,148.8800**

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APPENDIX 5.2-6

CalEEMod Output – Off-Site Pipeline

Los Valles Pipeline

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	15.84	1000sqft	0.36	15,840.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 15,840 sf of digging for the trenching of the pipeline, 3 feet by one mile. Used non-asphalt surfaces/parking as use.

Construction Phase - Grading and trenching for 55 days starting in January 2018.

Construction Off-road Equipment Mitigation - water 3X a day

Grading - 0.36 acres disturbed

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	55.00
tblConstructionPhase	PhaseEndDate	6/1/2018	3/16/2018
tblConstructionPhase	PhaseStartDate	3/17/2018	1/1/2018
tblGrading	AcresOfGrading	0.00	0.36
tblProjectCharacteristics	OperationalYear	2014	2024

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	2.2414	18.8143	18.8353	0.0297	1.5955	1.2314	2.8269	0.6285	1.1756	1.8041	0.0000	2,788.2606	2,788.2606	0.4745	0.0000	2,798.2260
Total	**2.2414**	**18.8143**	**18.8353**	**0.0297**	**1.5955**	**1.2314**	**2.8269**	**0.6285**	**1.1756**	**1.8041**	**0.0000**	**2,788.2606**	**2,788.2606**	**0.4745**	**0.0000**	**2,798.2260**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	2.2414	18.8143	18.8353	0.0297	1.1321	1.2314	2.3635	0.3757	1.1756	1.5512	0.0000	2,788.2606	2,788.2606	0.4745	0.0000	2,798.2260
Total	**2.2414**	**18.8143**	**18.8353**	**0.0297**	**1.1321**	**1.2314**	**2.3635**	**0.3757**	**1.1756**	**1.5512**	**0.0000**	**2,788.2606**	**2,788.2606**	**0.4745**	**0.0000**	**2,798.2260**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**29.05**	**0.00**	**16.39**	**40.23**	**0.00**	**14.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4144	1.0000e-005	1.6100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.4700e-003	3.4700e-003	1.0000e-005		3.6600e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4144**	**1.0000e-005**	**1.6100e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.4700e-003**	**3.4700e-003**	**1.0000e-005**	**0.0000**	**3.6600e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4144	1.0000e-005	1.6100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.4700e-003	3.4700e-003	1.0000e-005		3.6600e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4144**	**1.0000e-005**	**1.6100e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.4700e-003**	**3.4700e-003**	**1.0000e-005**	**0.0000**	**3.6600e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2018	3/16/2018	5	55	
2	Trenching	Trenching	1/1/2018	3/16/2018	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.36

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching				0.00	14.70	6.90				
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7597	0.0000	0.7597	0.4145	0.0000	0.4145			0.0000			0.0000
Off-Road	2.1060	18.6432	16.6990	0.0241		1.2279	1.2279		1.1724	1.1724		2,347.7129	2,347.7129	0.4536		2,357.2393
Total	**2.1060**	**18.6432**	**16.6990**	**0.0241**	**0.7597**	**1.2279**	**1.9876**	**0.4145**	**1.1724**	**1.5869**		**2,347.7129**	**2,347.7129**	**0.4536**		**2,357.2393**

3.2 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1354	0.1711	2.1363	5.6600e-003	0.8358	3.5000e-003	0.8393	0.2140	3.2400e-003	0.2172		440.5477	440.5477	0.0209		440.9867
Total	**0.1354**	**0.1711**	**2.1363**	**5.6600e-003**	**0.8358**	**3.5000e-003**	**0.8393**	**0.2140**	**3.2400e-003**	**0.2172**		**440.5477**	**440.5477**	**0.0209**		**440.9867**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2963	0.0000	0.2963	0.1617	0.0000	0.1617			0.0000			0.0000
Off-Road	2.1060	18.6432	16.6990	0.0241		1.2279	1.2279		1.1724	1.1724	0.0000	2,347.7129	2,347.7129	0.4536		2,357.2393
Total	**2.1060**	**18.6432**	**16.6990**	**0.0241**	**0.2963**	**1.2279**	**1.5242**	**0.1617**	**1.1724**	**1.3340**	**0.0000**	**2,347.7129**	**2,347.7129**	**0.4536**		**2,357.2393**

3.2 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1354	0.1711	2.1363	5.6600e-003	0.8358	3.5000e-003	0.8393	0.2140	3.2400e-003	0.2172		440.5477	440.5477	0.0209		440.9867
Total	**0.1354**	**0.1711**	**2.1363**	**5.6600e-003**	**0.8358**	**3.5000e-003**	**0.8393**	**0.2140**	**3.2400e-003**	**0.2172**		**440.5477**	**440.5477**	**0.0209**		**440.9867**

3.3 Trenching - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

3.3 Trenching - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.500896	0.060060	0.182665	0.141426	0.043874	0.006936	0.016418	0.036027	0.001989	0.002515	0.004233	0.000560	0.002402

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4144	1.0000e-005	1.6100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.4700e-003	3.4700e-003	1.0000e-005		3.6600e-003
Unmitigated	0.4144	1.0000e-005	1.6100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.4700e-003	3.4700e-003	1.0000e-005		3.6600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1006					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3136					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.5000e-004	1.0000e-005	1.6100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.4700e-003	3.4700e-003	1.0000e-005		3.6600e-003
Total	**0.4144**	**1.0000e-005**	**1.6100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.4700e-003**	**3.4700e-003**	**1.0000e-005**		**3.6600e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1006					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3136					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.5000e-004	1.0000e-005	1.6100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.4700e-003	3.4700e-003	1.0000e-005		3.6600e-003
Total	**0.4144**	**1.0000e-005**	**1.6100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.4700e-003**	**3.4700e-003**	**1.0000e-005**		**3.6600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Los Valles Pipeline

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	15.84	1000sqft	0.36	15,840.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Approximately 15,840 sf of digging for the trenching of the pipeline, 3 feet by one mile. Used non-asphalt surfaces/parking as use.

Construction Phase - Grading and trenching for 55 days starting in January 2018.

Construction Off-road Equipment Mitigation - water 3X a day

Grading - 0.36 acres disturbed

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	55.00
tblConstructionPhase	PhaseEndDate	6/1/2018	3/16/2018
tblConstructionPhase	PhaseStartDate	3/17/2018	1/1/2018
tblGrading	AcresOfGrading	0.00	0.36
tblProjectCharacteristics	OperationalYear	2014	2024

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0615	0.5180	0.5143	8.1000e-004	0.0434	0.0339	0.0773	0.0172	0.0323	0.0495	0.0000	69.0365	69.0365	0.0118	0.0000	69.2851
Total	**0.0615**	**0.5180**	**0.5143**	**8.1000e-004**	**0.0434**	**0.0339**	**0.0773**	**0.0172**	**0.0323**	**0.0495**	**0.0000**	**69.0365**	**69.0365**	**0.0118**	**0.0000**	**69.2851**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.0615	0.5180	0.5143	8.1000e-004	0.0307	0.0339	0.0645	0.0102	0.0323	0.0426	0.0000	69.0364	69.0364	0.0118	0.0000	69.2850
Total	**0.0615**	**0.5180**	**0.5143**	**8.1000e-004**	**0.0307**	**0.0339**	**0.0645**	**0.0102**	**0.0323**	**0.0426**	**0.0000**	**69.0364**	**69.0364**	**0.0118**	**0.0000**	**69.2850**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**29.34**	**0.00**	**16.50**	**40.48**	**0.00**	**14.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0756	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0756**	**0.0000**	**2.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.9000e-004**	**3.9000e-004**	**0.0000**	**0.0000**	**4.1000e-004**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0756	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0756**	**0.0000**	**2.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.9000e-004**	**3.9000e-004**	**0.0000**	**0.0000**	**4.1000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2018	3/16/2018	5	55	
2	Trenching	Trenching	1/1/2018	3/16/2018	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.36

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching				0.00	14.70	6.90				
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0209	0.0000	0.0209	0.0114	0.0000	0.0114	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0579	0.5127	0.4592	6.6000e-004		0.0338	0.0338		0.0322	0.0322	0.0000	58.5698	58.5698	0.0113	0.0000	58.8074
Total	**0.0579**	**0.5127**	**0.4592**	**6.6000e-004**	**0.0209**	**0.0338**	**0.0547**	**0.0114**	**0.0322**	**0.0436**	**0.0000**	**58.5698**	**58.5698**	**0.0113**	**0.0000**	**58.8074**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5600e-003	5.3200e-003	0.0551	1.5000e-004	0.0225	1.0000e-004	0.0226	5.7700e-003	9.0000e-005	5.8600e-003	0.0000	10.4667	10.4667	5.2000e-004	0.0000	10.4777
Total	**3.5600e-003**	**5.3200e-003**	**0.0551**	**1.5000e-004**	**0.0225**	**1.0000e-004**	**0.0226**	**5.7700e-003**	**9.0000e-005**	**5.8600e-003**	**0.0000**	**10.4667**	**10.4667**	**5.2000e-004**	**0.0000**	**10.4777**

3.2 Grading - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.1500e-003	0.0000	8.1500e-003	4.4500e-003	0.0000	4.4500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0579	0.5127	0.4592	6.6000e-004		0.0338	0.0338		0.0322	0.0322	0.0000	58.5697	58.5697	0.0113	0.0000	58.8074
Total	**0.0579**	**0.5127**	**0.4592**	**6.6000e-004**	**8.1500e-003**	**0.0338**	**0.0419**	**4.4500e-003**	**0.0322**	**0.0367**	**0.0000**	**58.5697**	**58.5697**	**0.0113**	**0.0000**	**58.8074**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5600e-003	5.3200e-003	0.0551	1.5000e-004	0.0225	1.0000e-004	0.0226	5.7700e-003	9.0000e-005	5.8600e-003	0.0000	10.4667	10.4667	5.2000e-004	0.0000	10.4777
Total	**3.5600e-003**	**5.3200e-003**	**0.0551**	**1.5000e-004**	**0.0225**	**1.0000e-004**	**0.0226**	**5.7700e-003**	**9.0000e-005**	**5.8600e-003**	**0.0000**	**10.4667**	**10.4667**	**5.2000e-004**	**0.0000**	**10.4777**

3.3 Trenching - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.500896	0.060060	0.182665	0.141426	0.043874	0.006936	0.016418	0.036027	0.001989	0.002515	0.004233	0.000560	0.002402

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0756	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004
Unmitigated	0.0756	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0184					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0572					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004
Total	**0.0756**	**0.0000**	**2.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.9000e-004**	**3.9000e-004**	**0.0000**	**0.0000**	**4.1000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0184					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0572					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	2.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.9000e-004	3.9000e-004	0.0000	0.0000	4.1000e-004
Total	**0.0756**	**0.0000**	**2.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.9000e-004**	**3.9000e-004**	**0.0000**	**0.0000**	**4.1000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

APPENDIX 5.3-1

Biological Resources section prepared by Rachael Tierney Consulting for Taylor and Company for Previously (2002) Approved Project, including Appendices

4.7 Biological Resources

4.7.1 Setting

Studies of the Proposed Project site and surrounding area biological resources were conducted by Rachel Tierney Consulting in the summer of 1997 and the spring of 1998. The report of these studies is presented in its entirety in APPENDIX E hereto as "Biological Resources Assessment, Hasley Canyon Project, Vesting Tentative Tract 52584." The report of biological resources includes background research on potentially-occurring sensitive plant and animal species, in-season site survey results, description of potential impacts of the Proposed Project upon sensitive species and, mitigation measures. The report follows the policies, practices, protocols and guidelines of the Los Angeles County Department of Regional Planning, California Department of Fish and Game (CDFG), the US Fish and Wildlife Service (USFWS), the California Native Plant Society (CNPS) and the California Environmental Quality Act and Guidelines (CEQA). Plant community classifications system follows R. Holland, 1986. Discussions and subsections that follow are derived from the full report, its cited references are contained in APPENDIX E and direct field observations by the County Biologist. Topographical elevations at the project site range from approximately 1,200 to 1,700 feet mean sea level (MSL). The majority of the site can be described as a series of north-south running ridgelines and drainages, with numerous fingers running east to west. The predominant orientation of the land formation changes to east-west ridgelines and swales in the far eastern section of the site.

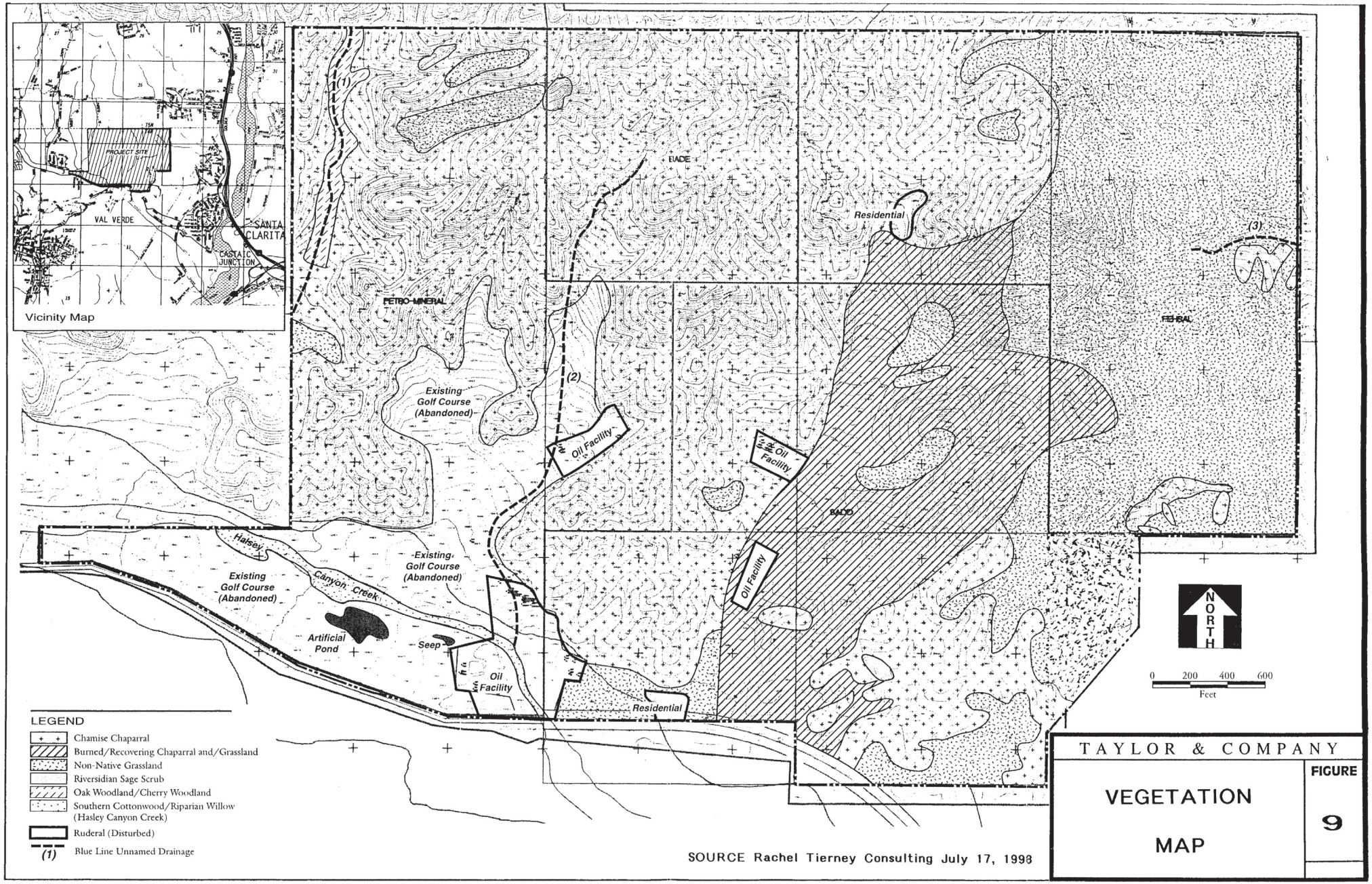
Four intermittent "blue-line streams" are identified on the USGS map: Hasley Canyon Creek, which runs from west to east through the southern edge of the property (draining into Castaic Creek, just upstream from the confluence of the Santa Clara River); two unnamed intermittent tributaries (draining south into Hasley Canyon Creek); and one ephemeral tributary (draining east to Castaic Creek). The three unnamed drainages are numbered (# 1-3) on FIGURE 9 herein.

As shown on FIGURE 9, five natural plant communities are present onsite: non-native grassland; chamise chaparral; Riversidian sage scrub; mainland cherry/oak woodland and a very open southern cottonwood-willow riparian woodland associated with Hasley Canyon Creek. The site also contains an abandoned golf course (consisting of non-native grassland and planted mature trees), dirt roadways, and active and abandoned oil facilities -- these oil facilities are "Not a Part" of the Proposed Project or ownership. Resources found within these disturbed areas are described under "ruderal communities." Two aquatic habitats are present: a small concrete pond and nearby seep.

In general, slopes in the west portion of the site are vegetated with chamise chaparral. The shrub cover becomes sparser towards the east, forming a mosaic of grassland and shrubs, and gradually shifts into a complete non-native grassland cover in the far eastern section of the site. 50 native oak trees dot the chamise-covered swales, where species diversity increases. APPENDIX E contains a listing of all plant and wildlife species observed during the field survey or, in the case of wildlife, expected to occur at the project site, and the Oak Tree Report with the Proposed Project Oak Tree Permit 98-034 application filed July 27, 2000.

Existing Habitats

Knowledge of the distribution of habitats within the region is critical to an understanding of the status and distribution of the wildlife species found there. This is because animals are known to adapt to a set of biotic and abiotic conditions which often coincide with specific plant community types. In general, wildlife utilize a specific habitat because it provides food, shelter and/or a place to rear its young.


Vicinity Map
PROJECT SITE
VAL VERDE
SANTA CLARITA
CASTAIC JUNCTION
(1)
(2)
(3)
PETRO-MINERAL
BADE
Residential
Existing Golf Course (Abandoned)
Oil Facility
Oil Facility
Oil Facility
Oil Facility
BALD
Hasley
Canyon Creek
Existing Golf Course (Abandoned)
Existing Golf Course (Abandoned)
Artificial Pond
Seep
Residential
NORTH
0 200 400 600
Feet
LEGEND
Chamise Chaparral
Burned/Recovering Chaparral and/Grassland
Non-Native Grassland
Riversidian Sage Scrub
Oak Woodland/Cherry Woodland
Southern Cottonwood/Riparian Willow (Hasley Canyon Creek)
Ruderal (Disturbed)
(1) Blue Line Unnamed Drainage
SOURCE Rachel Tierney Consulting July 17, 1998
TAYLOR & COMPANY
VEGETATION MAP
FIGURE 9

Non-Native Grassland

118.1 acres of non-native grasslands are present throughout the site. This community is found in the most continuous and largest expenses on the eastern portion of the site. Towards the west, grasslands become commingled with shrublands, eventually forming small patches in the openings of denser shrub cover. Grasslands remain more prominent on south and east facing slopes throughout the site. Species found within the non-native grasslands include common European grasses such as: wild oats (*Avena barbata; A. fatua*); ripgut brome (*Bromus diandrus*); soft chess (*Bromus hordeaceus*); foxtail (*Bromus madritensis ssp. rubens*) and glaucus barley (*Hordeum murinum ssp. glaucum*). Spring-flowering herbs include: fiddleneck (*Amsinckia menziesii ssp. intermedia*); popcorn flower (*Plagiobothrys nothofulvus*); wild heliotrope (*Phacelia distans*); Agoseris (*Agoseris apargioides*); yellow pincushion (*Chaenactis glabriuscula*); goldfields (*Lasthenia californica*) and sun cups (*Camissonia bistorta*). Native grasses, such as purple needle grass (*Nassella pulchra*) and pine bluegrass (*Poa secunda ssp. secunda*) are intergraded with this habitat.

Grasslands, with their assortment of reptiles and small mammals, provide important foraging areas for loggerhead shrikes and for a variety of raptors and carnivores. A few of the more common animals associated with non-native grasslands at the project site include western fence lizard, western skink, gopher snake, common kingsnake, western rattlesnake, American kestrel, red-tailed hawk, turkey vulture, Say's phoebe (winter only), western meadowlark, black-tailed jackrabbit, California ground squirrel, Botta's pocket gopher, western harvest mouse, California vole, coyote, long-tailed weasel and mule deer. Sensitive species known or expected to frequent this habitat in the project area include northern harrier, prairie falcon, burrowing owl, loggerhead shrike, grasshopper sparrow and pallid bat.

Riversidian Sage Scrub

The species composition of sage scrub communities in Southern California varies from coastal to inland areas, with inland areas such as Hasley Canyon supporting a higher proportion of desert-adapted species than coastal areas. Sage scrub is usually found on steep slopes with well drained soils or on clay soils that hold water tightly. The community consists of small-leaved shrubs which are typically less than 5 feet in height. Very little sage scrub (3.8 acres) is present onsite, although it occurs just north of the site. Several knoll tops, situated in the north central section of the site, have uncharacteristically sandy soils. Here, the vegetation is exceedingly sparse, consisting mainly of scattered California sagebrush (*Artemisia californica*). Small pockets of sage scrub are also found on some ridgelines and southeast facing slopes. Dominate woody species include: California sagebrush; encelia (*Encelia californica*); California buckwheat (*Eriogonum fasciculatum*); deerweed (*Lotus scoparius*); wishbone bush (*Mirabilis californica*); white and black sage (*Salvia apiana, S. mellifera*) and Spanish bayonet (*Yucca whipplei*). Non-native grasses and spring annuals, described above, are also present.

Very steep (almost vertical), eroded slopes in the southeastern corner of the site also harbor a sparse cover shrub species. Among the more common in this area is Nevin's bricklebush (*Brickellia nevinii*), which was considered under the CNPS Category 4 listing but recently rejected (February 1994) because it is believed to be too common.

The sparse vegetative cover and moderate level of biomass found in this habitat combine to make coastal sage scrub an important habitat for wildlife. The open character of scrub vegetation in this habitat provides foraging opportunities for a variety of raptors which prey upon exposed small

animals (e.g., mice, rats, small birds, snakes and lizards). While amphibians tend to be scarce in this habitat due to its arid aspect, the mammal, bird and reptile faunas are relatively diverse. Some of the more common species expected to frequent this habitat include western fence lizard, side-blotched lizard, western whiptail, western rattlesnake, striped racer, red coachwhip, California quail, Anna's and Costa's hummingbirds, bushtit, Bewick's wren, California thrasher, spotted and California towhees, California ground squirrel, desert cottontail, California pocket mouse, deer mouse, desert woodrat, bobcat, coyote, striped skunk and mule deer. Sensitive wildlife expected to frequent this habitat at the project site include coastal silvery legless lizard, western whiptail California horned lizard, coast patch-nosed snake, and southern California rufous-crowned sparrow. The Federally-listed threatened California gnatcatcher (*Polioptila californica*) is known to prefer this habitat in coastal areas of southern California from the Los Angeles Basin south into northern Baja California. The closest known occurrence is to the south, near Moorpark, Ventura County. There are no records of this species from the general area of Hasley Canyon. Due to the very limited amount of suitable habitat, these birds are not expected to occur at the project site.

Chamise (/Mixed) Chaparral

The chaparral community is characterized by woody, generally tall and leathery-leaved shrub species. This habitat occupies the majority of the site (259 acres), in varying proportions with non-native grassland. On most slopes, the shrub community is overwhelmingly dominated by chamise (*Adenostoma fasciculatum*). In swales and drainages, shrub species composition becomes more diverse and the community approaches a mixed chaparral. Additional shrub species may include: squaw bush (*Rhus trilobata*); elderberry (*Sambucus mexicana*); holly-leaved cherry (*Prunus ilicifolia*) and yerba santa (*Eriodictyon crassifolium*). These subshrubs, chaparral nightshade (*Solanum xanti*) and wishbone bush (*Mirabilis californica*), are also common. Shrubs common to the sage scrub community, especially California sagebrush, are also present.

The understory of the chaparral varies considerably and is dependent upon slope facing. On moister, north and west-facing slopes, shrub cover ranges from 60-90%. The understory consists of a carpet of miner's lettuce (*Claytonia perfoliata*) with scattered sacapellote (*Acourtia microcephala*). The hotter and dryer south and east-facing slopes sustain a lower overall shrub cover (25-50%), with a non-native grassland understory. Spring flowering annual species are prevalent and include many plants found in the non-native grassland, especially wild heliotrope and popcorn flower. As mentioned above, the shrub cover decreases (as the grassland increases) towards the eastern portion of the site.

Due in part to the arid characteristics of this habitat, amphibians are uncommon. However, a variety of reptiles are known or expected to inhabit chaparral at the project site, including California horned lizard, western fence lizard, side-blotched lizard, western whiptail, striped racer, red coachwhip, common kingsnake, gopher snake and western rattlesnake. Chaparral supports of relatively depauperate bird fauna composed of a few ubiquitous species. Characteristic breeding birds of this community include California quail, greater roadrunner, Anna's and Costa's hummingbirds, western scrub-jay, Bewick's wren, wrentit, blue-gray gnatcatcher, California thrasher, orange-crowned warbler, spotted and California towhees and lesser goldfinch. A variety of small mammals inhabit chaparral due in part to the dense protective scrub cover which this habitat provides. The most common species include brush rabbit, Botta's pocket gopher, California pocket mouse, agile kangaroo rat, deer mouse, California mouse, pinyon mouse and dusky-footed woodrat. A variety of predators are attracted to chaparral due in part to the wide diversity and abundance of available small mammal and reptile prey. A few of the more common species include coyote, gray fox, bobcat, long-detailed weasel, raccoon, and striped skunk. California horned lizard, coast patch-nosed snake,

Bell's sage sparrow, southern California rufous-crown sparrow and mountain lion are the only sensitive wildlife species expected to frequent chaparral at the project site.

Oak and Mainland Cherry Woodland

Portions of unnamed blue-line drainage #1, in the western section of the site, sustains a small mainland cherry woodland comprising 3 acres. Lining the sandy stream banks, along with holly-leaved cherry (*Prunus ilicifolia*), are coast live oak (*Quercus agrifolia*), squawbush, chamise and chaparral honeysuckle (*Lonicera subspicata var. denudata*). In this community, the normally shrub-like cherry maintains a tree-like aspect and grows to over 15 feet in height. Cherry woodland is uncommon in California and is described below in the section on sensitive habitats.

Oak/cherry woodlands at the project site support relatively diverse resident and migratory vertebrate fauna. Because of the more mesic characteristics of this habitat, amphibians such as blackbelly slender and arboreal salamanders and Pacific chorus frog expected to frequent this habitat at the project site. Other animals found to be associated with oak woodlands include silvery legless lizard, western skink, southern alligator lizard, ringneck snake, gopher snake, acorn, downy and Nuttall's woodpeckers, Pacific-slope flycatcher (summer only), western scrub-jay, oak titmouse, bushtit, the white-breasted nuthatch, house wren, western bluebird, Hutton's vireo, orange-crowned warbler, dark-eyed junco, broad-footed mole, brush rabbit, California mouse, brush mouse, dusky-footed woodrat, coyote, striped skunk, bobcat and mule deer. Raptors (e.g., northern harrier, red-tailed, Cooper's and red-shouldered hawks, great-horned owl and western screech owl), cavity nesting birds and several species of bats are expected to nest and/or roost in larger oaks on the property. Sensitive wildlife that may frequent this habitat for foraging, roosting and/or breeding include silvery legless lizard, San Bernardino ringneck snake, northern harrier, Cooper's hawk, pallid bat and mountain lion.

Southern Cottonwood/Willow Riparian (Hasley Canyon Creek)

The broad, sandy stretch of Hasley Canyon Creek extending along the southern portion of the site contains very little vegetation and except for a few mulefat along edge of the incised banks. Scattered trees, including the native Fremont cottonwood (*Populus fremontia*), as well as cultivated pines and spruce, dot the edges of the wash. In some sections of the creek these trees are located within the active bed, having been surrounded by scoured banks and deposited sediment, as the creek has meandered. The creek banks are fortified with concrete boulders near the buildings. Although this stretch of Hasley Canyon does not attain the cover and native diversity of a true southern cottonwood/willow riparian forest, it fits closest into this habitat classification, and comprises 2.8 acres.

Since there are only a few scattered willow and cottonwood trees situated along the segment of Hasley Creek which traverses the project site and around a small man-made pond south of Hasley Creek, only depauperate assemblage of the wildlife species which normally frequent riparian woodlands is expected to use this degraded riparian habitat. A few of the more common wildlife species observed or expected to use this habitat include Pacific chorus frog, western toad, side-blotched and western fence lizards, common flicker, Nuttall's woodpeckers, ash-throated flycatcher, western kingbird, bushtit, black-headed grosbeak, Bullock's oriole, Brewer's blackbird, Virginia opossum, dusky-footed woodrat, raccoon and mule deer. Cooper's hawk is the only sensitive wildlife species expected to roost in larger cottonwood and willow trees found at the project site. None of the sensitive riparian obligate wildlife species which have been recorded elsewhere within the project region (e.g., white-tailed kite, yellow-billed cuckoo, long-eared owl, southwestern willow

flycatcher, least Bell's vireo, yellow warbler, yellow-breasted chat or blue grosbeak) are expected to utilize degraded riparian habitat at the project site.

Aquatic

Hasley Canyon Creek was dry along its entire length through the project site at the time of the field survey, as were the three small ephemeral drainages that transact the project site. The only aquatic habitat (totally 0.9 acres) identified is a man-made pond situated south of Hasley Canyon Creek, and a small seep located due east of the pond adjacent to an oil well pad. This pond is an oil facility process water reservoir fed by an off-site well, operated by Petrominerals Corporation, and is not part of the Proposed Project. The seep is the result of pond overflow discharges. The man-made pond, present within the abandoned golf course, is concrete lined and encircled by an assortment of trees. These include the native Fremont cottonwood, arroyo willow and elderberry (*Sambucus mexicana*), along with cultivated varieties of alder, pine and oleander. Giant reed (*Arundo donax*), an invasive perennial grass, is also present.

The small seep, with mulefat, arroyo willow and willow smartweed (*Polygonum lapathifolium*), is just east of the pond and adjacent to storage and office buildings associated with the oil wells. This feature is the result of overflow from the pond. Aerial photographs show a line of disturbance from the pond to the seep, reminiscent of an old pipeline corridor. Wildlife species observed at this pond included Pacific chorus frog, western toad, killdeer, black phoebe and several species of bats. Other wildlife expected to frequent this project include common yellowthroat, song sparrow, Brewer's blackbird, opossum and raccoon. None of the sensitive/declining aquatic wildlife species recorded elsewhere within the project region (e.g., unarmored threespine stickleback, arroyo chub, Santa Ana sucker, California red-legged frog, arroyo toad, southwestern pond turtle, two-striped gartersnake and tricolored blackbird) are expected to inhabit any of the degraded aquatic habitat found at the project site.

Other Resources (Ruderal)

Past improvements are evident within two major north-south running valleys, located above Hasley Canyon Creek. An abandoned golf course occupies the western valley, which forks north of Hasley Canyon and continues south of the creek corridor. The easternmost valley also contains a single residence, accessed by Hasley Canyon Road by a maintained dirt road. Numerous, less maintained dirt roads crisscross the site. This category includes man-altered habitats. Active oil storage tanks and buildings associated with the petroleum facilities located in the south of the Project site are "Not a Part" of, or controlled by, the Proposed Project.

Given the nature of past and ongoing disturbances associated with these modified habitats, the wildlife fauna found to frequent these areas tends to be depauperate. A few of the more common wildlife species expected include western fence and side-blotched lizards, common kingsnake, gopher snake, American kestrel, red-tailed hawk, rock dove, European starling, white-crowned sparrow, house sparrow, black-tailed jackrabbit, Botta's pocket gopher, California ground squirrel and coyote. Except for an occasional foraging raptor (e.g., northern harrier, Cooper's hawk and prairie falcon) and foraging bats (e.g., pallid bat and Townsend's big-eared bat), no sensitive wildlife is expected to frequent rudural habitats at the project site.

Wildlife Movement and Overall Biological Value of the Site

The project site lies within a major floral and faunal transition zone between the California and Transmontane Floristic Provinces. The Transverse Ranges, which include the San Gabriel and San

Rafael Mountains, link these provinces. Consequently, coastal and desert subspecies of a number of plant and animal taxa, as well as coastal and desert species within the same genus, are sympatric or occur in close proximity to one another, in the vicinity of the project site [e.g., coast horned lizard (*Phrynosoma coronatum*) and desert horned lizard (*P. platyrhinos*) co-occur in Soledad Canyon].

The upper Santa Clara River watershed is composed of a network of major and minor drainages such as Castaic, Hasley, Bouquet, San Francisquito, Sand, Vasquez, and Plum Canyons. These drainages dissect arid and semi-arid uplands that contain diverse plant communities with coastal and desert elements. The drainages themselves support riparian, riparian scrub, alluvial fan sage scrub and desert wash habitats. Although the upper watershed has been severely modified in the vicinity of Castaic, Santa Clarita, Saugus and Newhall, adjacent areas still support an important mosaic of desert, coastal and riparian habitat components for wildlife in this region.

Seasonal and permanent drainages, including Hasley Canyon Creek, are important to the overall biotic diversity of the region because (1) they support a fairly wide diversity and abundance of wildlife; (2) they provide critical breeding and/or foraging habitat for a number of sensitive or restricted wildlife species; (3) they provide a temporary or permanent source of fresh water for wildlife during the dry season; (4) they provide food and protective cover for wildlife; and (5) they are used as corridors for movement and dispersal of wildlife.

Upland, scrub and grassland habitats within the project site are connected to similar adjacent habitats to the west and north, eventually leading to extensive open space in the Los Padres National Forest. The dense vegetative cover provided by scrub habitats in the area, along with an abundance of available food make these habitats ideal for wildlife. Connection to the west via upper Hasley Canyon and low foothills is still good, due to the less intensive rural residential nature of development. As such there is some potential for limited wildlife exchange along this corridor between the project site and the southeastern corner of Los Padres National Forest. However, these connections are limited due to the rural residential developments that are occurring along this corridor and the construction of additional paved roads in the area. Viable upland connections to the east and southeast are very restricted by recent intensive urban and industrial development, the I-5 freeway, and the continued development of the Castaic area (Villa and Hasley Canyons). Such barriers act to limit the potential movement of species between the project site and undeveloped lands in the Angeles National Forest east of the project site.

The biological value of the project site is "intermediate" due to the occurrence of regionally rare plant community, Mainland Cherry Woodland, which is associated with the northern most intermittent drainage on the project site, as well as a number of sensitive animal species that are declining regionally due to loss of habitat.

Sensitive Biological Resources

A "sensitive biological resource" refers to any rare, threatened or endangered plant or animal species. Habitats are also considered sensitive if they exhibit a limited distribution, have high wildlife value, contain sensitive species or are particularly susceptible to disturbance.

TABLE 14 is a list of potentially-occurring sensitive species (plants, animals and plant communities) whose natural ranges include the project site as compiled from: the California Department of Fish and Game (CDFG), Natural Diversity Data Base (NDDB), the California Native Plant Society Inventory (CNPS), and reportings from other recent surveys in the area.

Sensitive species include state and federally-listed rare, threatened, endangered and proposed-for-

listing plants and animals, as well as CDFG "species of special concern" and CNPS-listed plants. Sensitive faunal species are either California Species of Concern (CSC), Federal Migratory Nongame Birds of Management Concern (MC) or are California Fully Protected Species (FPS). They were directly or indirectly observed on or adjacent to the project site or may be expected to occur on the project site because of the presence of suitable habitat and their known occurrence in the vicinity.

No sensitive plant or animal species were located on the Proposed Project site during 1997 or 1998 field surveys.

The following subsections detail referenced "Sensitive Species" and "Sensitive Habitats."

State and Federally-Listed and Proposed Plant Species

Berberis nevinii (Nevin's Barberry)
STATUS: Federal-endangered[1]; State-listed, endangered; CNPS-List 1B

Nevin's barberry is known from San Diego, San Bernardino, Riverside and Los Angeles Counties, occurring in chaparral, coastal sage scrub and alluvial fan sage scrub communities. The distinctive, prickly compound leaves of this shrub can be recognized at any time of year. Less than six localities of native, occupied habitat are known. Sightings have been recorded in the foothills of the Transverse and Peninsular Ranges, on steep north-facing slopes or on more gentle-sloped sandy washes below 2,000 feet. The closest known occurrence is east of the site, in San Francisquito Canyon. This is among one of the original locations where this species was noted and it continues to occur there. Another formerly known occurrence is south of the City of San Fernando. This population may have been extirpated. Suitable habitat is located within the project site. However, it was not located during either survey.

Dodecahema leptoceras (Slender-horned Spineflower)
STATUS: Federal-listed, endangered; State-listed, endangered; CNPS-List 1B

Slender-horned spineflower is a small, annual herb found on alluvial substrates in chaparrals and sage scrubs. It is historically known from 20 small and widely scattered populations, ranging from: Tujunga Valley at the western edge of the San Fernando Valley; eastward to Bee Canyon and the Santa Ana Wash near Redlands; southward to the San Jacinto River floodplain near Hemet; and Temescal Canyon near Elsinore. Only five of these populations have been relocated during subsequent surveys conducted by the CDFG.

A population has recently been located in Bee Canyon, north of Soledad Canyon Road. The species was also previously recorded in Mint Canyon in 1937. Mint Canyon was searched for the species in 1979 and it was not relocated. It has probably been extirpated in much of Los Angeles County as a result of habitat disturbances such as grazing and flood control.

Suitable habitat (alluvial scrub) is not present within the project site, although a focused survey of the sandy knolls and drainages was undertaken. It was not located during either survey.

[1] Nevin's Barberry listed as endangered. Federal Register October 13, 1998.

Federal Plant "Species of Concern" (formally C2) and CNPS List 1B

Calystegia peirsonii (Peirson's Morning Glory)
STATUS: Federal-Species of Concern; State-none; CNPS-List 1B

Peirson's morning glory is a trailing perennial vine found in Los Angeles County. It is. common throughout the project area. It has been located in the Mint Canyon quadrangle in several locations east of the project site (within 2 miles of Bouquet Canyon Road, and in Marple Canyon, San Francisquito Canyon and Valencia, adjacent to Highway 5). It occurs in the grassy interface of coastal sage scrub and chaparral habitats. It was not encountered during the 1997 or 1998 site surveys, however, it is likely to be found in the Hasley Canyon area.

Chorizanthe parryi var. fernandina (San Fernando Spineflower)
STATUS: Federal-Species of Concern; State-none; CNPS 1A

San Fernando spineflower is a small annual last seen in 1940 and presumed extinct. It was formally known from Los Angeles, Orange and San Diego Counties. Most of the historic habitat is now heavily urbanized. The most likely site of rediscovery would be northwestern Los Angeles County. It has been located on sandy substrate in chaparral and scrub habitat. It was not found during surveys of the site.

TABLE 14

Hasley Canyon

SENSITIVE SPECIES

PLANTS (Known Within Val Verde and/or Adjacent Quads)
Slender-Horned Spineflower (*Dodecahema leptoceras*) FE, SE, CNPS 1B
San Gabriel Bedstraw (*Galium grande*) SC, CNPS 1B
Short-joint Beavertail (*Opuntia basilaris var. brachyclada*) SC, CNPS 1B
Peirson's Morning Glory (*Calystegia peirsonii*) SC, CNPS 1B
San Fernando Spineflower (*Chorizanthe parryi var. fernandina*) SC, CNPS 1A
Nevin's Barberry (*Berberis nevinii*) SE, FE, CNPS 1B
Davidson's Bush Mallow (*Malacothamnus davidsonii*) SC, CNPS 1B
REPTILES
Coast horned lizard (*Phrynosoma coronatum*) CSC
Coastal silvery legless lizard (*Anniella nigra argentea*) CSC
Coast patch-nosed snake (*Salvadora hexalepis virgultea*) CSC
Western whiptail (*Cnemidophorus tigris multiscutatus*) CSC
BIRDS
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) CSC
Bell's sage sparrow (*Amphispiza belli belli*) MC, CSC
Cooper's hawk (*Accipiter cooperi*) CSC
Prairie falcon (*Falco mexicanus*) CSC
Yellow warbler (*Dendroica petechia*) CSC
Northern harrier (*Circus cyaneus*) CSC
Burrowing owl (*Speotyto cunicularia*) MC, CSC
Loggerhead shrike (*Lanius ludovicianus*) MC, CSC
Grasshopper sparrow (*Ammodramus savannacrum*) MC, CSC

TABLE 14 (Concluded)

SENSITIVE SPECIES

MAMMALS
Pallid bat (*Antrozous pallidus*) CSC
Spotted bat (*Euderma maculatum*) CSC
Greater western mastiff bat (*Eumops perotis californicus*) CSC
Pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*) CSC
Mountain lion (*Felis concolor*) State Fully Protected Species
SENSITIVE HABITATS
Non-Native Grassland - NA
Riversidian Sage Scrub - NA
Chamise (/Mixed) Chaparral - NA
Oak and Mainland Cherry Woodland - NA
Southern Cottonwood/Willow Riparian - California Department of Fish and Game "Sensitive"
Aquatic - California Department of Fish and Game "Sensitive"
Ruderal - NA

Status:

FE = Federally-Listed: Endangered
SE = State-Listed: Endangered
F1 = Federal Candidate for Listing (formerly Category 1 candidates for Federal listing)
SC = Species of Concern (formerly Category 2 candidates for Federal listing)
FP = Species Proposed for Federal listing
CSC = California Department of Fish and Game "Species of Special Concern"
CNPS 1A = California Native Plant Society - presumed extinct
CNPS 1B = California Native Plant Society - rare in California and elsewhere
CNPS 4 = California Native Plant Society - watch list
EPA = Federal Eagle Protection Act
MC = Federal Migratory Nongame Bird Management Concern
NA = Not Applicable State, Federal or California Native Plant Society (CNPS) status

Galium grande (San Gabriel Bedstraw)
STATUS: Federal-Species of Concern; State-none; CNPS-List 1B

San Gabriel bedstraw is a sprawling and climbing, woody-perennial subscrub. In is known from fewer than 10 localities in chaparral and open woodlands in the San Gabriel Mountains of Los Angeles County southeast of the project site. A population was also recorded to the northeast of the site on the Warm Springs Mountain quadrangle. This locale is somewhat disjunct from the other known populations. Suitable habitat (chaparral) is present onsite. It was not located during the site surveys.

Malacothamnus davidsonii (Davidson's Bush Mallow)
STATUS: Federal-Species of Concern; State-none; CNPS-List 1B

Davidson's bush mallow is known from sandy flats and washes in the Burbank, Van Nuys, San Fernando, and Sunland USGS quadrangles in Los Angeles County. It appears again in northern San Luis Obispo and southern Monterey Counties. It has been found in several locations to the north and south of Route 210, southeast of the project site. Suitable habitat is present onsite, however, this species was not encountered during the site surveys.

Opuntia basilaris var. brachyclada (Short-joint Beavertail)
STATUS: Federal-Species of Concern; State-none; CNPS-List 1B

Short-joint beavertail is a diminutive cactus found in chaparral, Joshua tree woodland, pi™on juniper woodland and Mohave desert scrub in San Bernardino and Los Angeles Counties. The closest recorded siting is south of the project site in the Mint Canyon quadrangle, on the south side of Quigley Canyon, east of the town of Newhall. This species is more often associated with drier, desert habitats, however, the potential for its occurrence cannot be ruled out. It was not located during the site surveys.

Sensitive Wildlife

REPTILES

Anniella nigra argentea (Coastal Silvery Legless Lizard)
STATUS: Federal-none; State-Species of Special Concern

The Silvery legless lizard ranges from San Francisco Bay southward to northwestern Baja California Norte, Mexico. It is a highly specialized sedentary, fossorial lizard. In occurs in a variety of coastal and inland habitats, including coastal sand dunes, dune scrub, coastal sage scrub, chaparral, riparian scrub and oak woodland. The wide habitat affinities of this lizard belie narrow microhabitat requirements, which include a loose, sandy substrate in which to burrow, and abundant leaf litter beneath trees and shrubs. This lizard may be active near the ground surface beneath cover objects or at the interface between the leaf litter layer and underlying soil throughout the year in some coastal areas. At inland locations this species is typically active near the surface between early November and late May, avoiding the high surface temperatures and low soil moisture regimes of the summer and early fall months.

This species was not sighted on the project site during the field surveys. However, suitable habitat for this lizard occurs in sandy soils associated with the Hasley Canyon Creek floodplain. Local sightings in habitats similar to that found on the project site include Mint, Charlie, San Francisquito, Sand and Bouquet Canyons which are all situated east of the project site. It is likely that this secretive lizard occurs over much of the project site.

Phrynosoma coronatum (Coast Horned Lizard)
STATUS: Federal-none; State-Species of Special Concern

Two subspecies of this species apparently intergrade within northern Ventura and Los Angeles Counties in the vicinity of the project site. The California horned lizard (*P.c. frontale*) has a more northerly distribution and reaches its southern limits in eastern Ventura and western Los Angeles Counties. The San Diego horned lizard (*P.c. blainvillii*) ranges from eastern Ventura County and northwestern Los Angeles County southward to northwestern Baja California. Because of the difficulty in distinguishing these subspecies in the field, and the fact that both subspecies are afforded the same degree of protection, this report addresses both species.

Coast horned lizards are associated with sandy or gravelly substrates in a variety of semi-arid and arid, open scrub habitats, including grassland, chaparral, coastal sage scrub, and sandy soils along river floodplains and washes. Critical characteristics of habitats frequented by this species include open bare soil areas for basking, loose (sandy) soils for burrowing and presence of native harvester ants for foraging. They forage on the ground in open areas that have sandy soils with scattered shrubs and ant nests (esp. harvester ants). Besides ants, horned lizards are known to eat wasps, grasshoppers, flies and caterpillars. Horned lizards are active above-ground from late April through late September. However, its activity patterns appear to be closely associated with specific air and soil temperatures. They are most active in April and May, with juveniles emerging in July and August. During the remainder of the year they hibernate underground in mammal burrows or beneath cover objects such as boulders and logs or in rock crevices.

Although not sighted within the project site during the 1998 field survey, this species has been found in similar habitats at a number of localities in the project region, including Piru Creek (Frenchman's Flat), West Fork Liebre Gulch, Soledad Canyon, Hungry Valley, Placerita Canyon, Vasquez Rocks State Park and Mint Canyon. Based on suitable habitat, this species is expected to occur throughout the project site in open grassland and scrub habitats especially along Hasley Canyon Creek.

Salvadora hexalepis virgultea (Coast Patch-nosed Snake)
STATUS Federal-none; State-Species of Special Concern

This subspecies is distributed from southern Kern County southward through northwestern Baja California Norte, Mexico, west of the deserts. It is typically associated with coastal sage scrub habitats, but is also found in chaparral and grasslands adjacent to chaparral, where it is usually found on rocky or gravelly substrates. It is active above-ground from mid-April through September and overwinters in mammal burrows and rock crevices. Coast patch-nosed snakes appear to feed extensively on whiptail lizards, which they capture while the lizards are inactive in their overnight retreats.

This snake was formally common in the Santa Clarita Valley, but has declined drastically in numbers due to the urbanization of natural habitats. Patch-nosed snakes were not sighted on the project site, but suitable habitat occurs throughout the site. Local records include West Fork Liebre Gulch, Placerita State Park and Bouquet Canyon County Park.

BIRDS

Circus cyaneus (Northern Harrier)
STATUS: Federal-none; State-Species of Special Concern

This species is distributed throughout California in meadows, marshes, grasslands, open rangelands,

open scrub habitats, and fresh and saltwater wetlands. Like an owl, it locates its prey by sound while flying low over the ground. It feeds mostly on voles, small mammals and birds which it captures by diving on while in flight. It generally builds a flimsy nest on the ground or in thick low-growing vegetation along the edges of emergent wetlands, but occasionally nests in grasslands which are several miles from available water. It has declined as a breeding species throughout much of southern California due to destruction of wetland habitats, native grassland and moist meadows.

In the project area, this species is an uncommon winter visitor and a rare summer breeder. It was not observed at the project site during the field survey. However, it is expected to occasionally forage over grasslands and open scrub habitats at the project site during the fall and winter. There are observations of this species from south of the project site along the Santa Clara River and from Middle Potrero Canyon.

Accipiter cooperi (Cooper's Hawk)
STATUS: Federal-none; State-Species of Special Concern

In Ventura and northwestern Los Angeles Counties, this species is a fairly common transient and winter visitor to woodland and scrub habitats, and an uncommon and local summer resident. It nests in oak woodland habitats and in cottonwood-willow riparian woodlands. In the project area it is a resident of oak and riparian woodlands where it preys on small birds and mammals. It is uncommon throughout its range and appears to be declining regionally due to loss of relatively undisturbed riparian and oak woodland habitats.

This species was not observed at the project site during the field survey however, it is expected to occasionally forage over the project area from nest and roost sites along the Santa Clara River. Potential roosting habitat for this species is present at the project site in the cottonwood, oak and willow trees that are found along the Hasley Canyon floodplain and in planted trees in the abandoned golf course.

Falco mexicanus (Prairie Falcon)
STATUS: Federal-none; State-Species of Special Concern

This residence falcon typically forages in hilly, open country, including grasslands and scrub habitats. It also frequents marshes and ocean shorelines. Nests are usually constructed on ledges and in small caves on vertical cliffs.

Roosting or nesting habitat for this species does not occur on the project site. However, prairie falcons are expected to forage over the project site from off-site nests and roosts. Excellent foraging habitats and potential nesting sites occur in the Los Padres National Forest, north and west of the project site. There is a recent observation of this species from near the junction of Potrero Canyon and the Santa Clara River which is approximately 5 miles south of the project site.

Speotyto cunicularia (Burrowing Owl)
STATUS: Federal-Migratory Nongame Bird of Management Concern; State-Species of Special Concern

This small, ground-dwelling owl lives in ground squirrel and other mammal burrows that it appropriates and enlarges for its purposes. It typically is found in short-grass grasslands, open scrub habitats, and a variety of open, human-altered environments, such as golf courses, airport runways and agricultural fields. This owl is active at twilight, feeding on insects, amphibians, reptiles and small mammals. Burrowing owls have shown significant declines throughout California in recent years due principally to the conversion of grassland and pasturelands to agricultural and urban uses,

and to poisoning programs to control California ground squirrels. This species was not observed at the project site during the field survey. However, it has a moderate potential for occurrence at the project site during the fall and winter given the presence of suitable grasslands in the eastern third of the project site.

Lanius ludovicianus (Loggerhead Shrike)
STATUS: Federal-Migratory Nongame Bird of Management Concern; State-Species of Special Concern

Loggerhead shrikes are a widespread breeding species in North America, occurring from southern Canada south across most of the United States and into Mexico. While its populations east of the Mississippi River have shown rather dramatic declines, populations in California have shown only a slight decline. This species is still a fairly common resident in open areas throughout much of southern California, where it tends to be more widespread and abundant during the fall and winter due to an influx of birds from more northern populations. It is generally absent from more heavily wooded and heavily urbanized areas in southern California.

Loggerhead shrikes inhabit a variety of open and semi-open habitats with sparse shrubs and trees including grasslands, oak savannah, chaparral, coastal sage scrub and even agricultural fields. This species was not seen during the field survey. However, it is expected to forage in open habitats at the project site especially during the fall and winter.

Aimophila ruficeps canescens (Southern California Rufous-crowned Sparrow)
STATUS: Federal-none; State-Species of Special Concern

This subspecies is resident from eastern Ventura and northwestern Los Angeles Counties southward into northwestern Baja California Norte, Mexico. Its range is concentrated primarily along the coastal slope where it is typically found on moderate to steep, rocky, south and west-facing slopes vegetated with an open cover of coastal sage scrub or chaparral with bare ground and a moderate cover of grasses. The subspecies apparently avoids dense, unbroken stands of coastal sage scrub and chaparral. It has apparently declined throughout southern California due in part to the destruction of coastal sage scrub habitat for urban, industrial and agricultural expansion. Currently, it is uncommon and local resident of semi-open stands of coastal sage scrub and chaparral.

This species was observed in several locations at the project site during the field survey. It was found in small pockets of Riversidian sage scrub located on ridgelines, and southeast and southwest facing slopes along the northern perimeter of the project site. These observations suggest that this species is an uncommon and locally distributed resident species at the Hasley Canyon project site.

Ammodramus savannacrum (Grasshopper Sparrow)
STATUS: Federal-Migratory Nongame Bird of Management Concern; State-Species of Special Concern

Grasshopper sparrows are a widespread but sparsely and irregularly distributed species in California. They occur in native grasslands west of the desert and the high Sierra Nevada. For breeding, grasshopper sparrows prefer a fairly continuous stand of native bunchgrass with occasionally taller weedy stems or shrubs for singing perches. They are typically found on gentle well-drained hillsides and coastal mesas that support this type of grassland. Grasshopper sparrows seem to prefer short to middle-height grasslands that have a fairly thick but low cover of grasses and a variety of taller forbs. Their populations have apparently declined in California due to the loss of perennial grasslands from overgrazing, draught and intense competition from introduced annual grasses. Grasshopper sparrow

populations probably fluctuate in response to structural changes in the grassland community brought on by succession, grazing pressure, variable rainfall, fires and a variety of other disturbances.

In the project area, grasshopper sparrows are an uncommon and very local summer resident, and an uncommon spring and fall migrant. No grasshopper sparrows were heard or observed at the project site during the field survey. They are expected to visit grasslands at the project site during their annual spring and fall migratory movements through the region. They are not expected to nest at the project site as there are no well developed stands of perennial grasslands.

Amphispiza belli belli (Bell's Sage Sparrow)
STATUS: Federal-Migratory Nongame Bird of Management Concern; State-Species of Special Concern

The Bell's sage sparrow is essentially a sedentary race which does not migrate. This is the only subspecies of sage sparrow expected to occur in the immediate vicinity of the project site. The distribution of this resident subspecies of sage sparrow in southern California closely parallels that of the southern California rufous-crowned sparrow. In the project region Bell's sage sparrows are an uncommon to fairly common local resident in low, dense chaparral on interior foothills and mesas. This race seems to have a marked preference for relatively compact stands of chamise chaparral which range in height from 2 to 5 feet, but it is also known to occur sparingly in dry coastal sage scrub which has stands of cactus and which is dominated by Baccharis and Artemisia brush.

Bell's sage sparrows breed from late March through mid-August with the bulk of nesting occurring during April and May. The average clutch size for this race is four eggs. Bell's sage sparrows construct a small cup shaped nest of dry twigs and herb stems which is usually placed from 6 to 24 inches off the ground in a shrub. Sage sparrows feed primarily on insects, spiders and seed during the nesting season, and on seeds and green foliage during the winter months. This species tends to forage under the protective cover of dense stands of chamise chaparral or other dry shrub habitats. The Bell's sage sparrow is nonmigratory and as such remains on its breeding grounds throughout the year.

Though not observed in field surveys onsite, this species likely occurs on the project site because of the presence of suitable habitat and its known occurrence in similar habitats north, south, and east of the project site.

MAMMALS

Euderma maculatum (Spotted Bat)
STATUS: Federal-none; State-Species of Special Concern

Spotted bats are distributed throughout much of the western United States, with its range extending from southern British Columbia south into Durango, Mexico. In California, they have been recorded from the eastern and southern portions of the state, central Sierra Nevada, Klamath Mountains of northwestern California, and from the foothills of the Sierra Nevada in the San Joaquin Valley. Within this range, spotted bat distribution appears to be patchy and geomorphically determined (i.e., limited to areas with appropriate roosting habitat). This species generally roosts in small crevices on cliff faces.

Spotted bats appear to prefer arid deserts, open pine forests and grasslands, in association with rocky, rough terrain. Spotted bats prefer to roost in rock crevices on cliffs but can occasionally be found roosting in caves and buildings. This species probably occurs throughout California in suitable habitat.

The type specimen (the individual first used to describe this species) was collected at the mouth of Castaic Creek, approximately four miles east of the project site. Because there is no rock crevice habitat and only limited degraded riparian woodland habitat present at the project site, spotted bats are only expected to occasionally forage over the project site from off-site roosts. As such, they are probably a rare transient visitor to the project site during migration. This bat was not located onsite during surveys.

Corynorhinus townsendii pallescens (Pale Townsend's Big-eared Bat)
STATUS: Federal-none; State-Species of Special Concern

This bat is locally common in coastal and lower montane habitats throughout California, although details of its distribution are uncertain. There are two subspecies of Townsend's big-eared bats found in California. The subspecies townsendii inhabit the humid coastal regions of northern and central California. The subspecies pallescens, inhabits the remainder of the state. The latter subspecies probably inhabits the vicinity of the project site.

This subspecies occurs in a variety of habitats from the coastal conifer and broad-leaf forests to semi-arid scrubland and grasslands of the desert and eastern Sierra Nevada foothills. They feed primarily on small moths which they capture in flight or glean from vegetation and other soft-bodied insects. This species is primarily a cave dweller, and has been found roosting in limestone caves, lava tubes, mine tunnels, buildings and a variety of other man-made structures. This species has very restrictive roost requirements, such as suitable wintering sites free from human disturbance and in close proximity to a source of water.

Townsend's big-eared bats are extremely sensitive to disturbance due to its habit of roosting on cave walls and other exposed surfaces, rather than in protective crevices. They hibernate between October and April. Males roost singly or in small clusters and are probably not as sensitive as females are to human disturbance. Females form large maternity roosts which may be abandoned following a single visit by humans. This species exhibits a high degree of roost site fidelity, with more than half of the young females returning to the same roost where they were born.
Several specimens of this species have been collected from abandoned mine tunnels near Acton in Soledad Canyon in the early 1940s. This site is approximately 25 miles east of the project site. This species has also been observed in Mint Canyon, which is due east of the project site. Since there is no suitable roosting habitat for this species on the project site, Townsend's big-eared bats are only expected to forage over the project site from off-site roosts. This bat was not located onsite during surveys.

Antrozous pallidus (Pallid Bat)
STATUS: Federal-none; State-Species of Special Concern

Pallid bats are distributed in coastal and lower montane habitats throughout the Pacific States. This species is highly social and forms single-species or mixed-species aggregations in rock crevices, caves, mines, tunnels, tree holes, bridges and buildings. This bat has been most commonly observed in open, dry habitats such as grasslands, oak savannah and open scrublands. Pallid bats forage primarily on large arthropods, caught on the ground or gleaned off vegetation. Discarded large arthropod remains commonly found in pallid bat roosts include scorpions, long-horned beetles, cicadas and Jerusalem crickets (*Stenopalmatus fuscus*). Historic specimen records for this species include Acton, Soledad Canyon and Castaic, as well as Vasquez Rocks Park. Pallid bats are expected to utilize the project site as foraging habitat from off-site roosts. This bat was not located onsite during surveys.

Eumops perotis californicus (Greater Western Mastiff Bat)
STATUS: Federal-none; State-Species of Special Concern

Mastiff bats are the largest North America bat. In California, they are distributed in low-elevation habitats from central California southward through the coastal basins of central and southern California and western portions of the deserts, and southeastward into central Mexico. Populations have declined dramatically in the past few decades and many previous localities no longer support this species.

Mastiff bats occur in low-elevation, rugged, rocky areas where large crevices are available for day roosts. The crevices must open downward to allow individuals to free-fall 6-10 feet prior to taking flight. Exfoliating slabs of granite and sandstone provide excellent roosting habitat. They also roost in buildings and have been known to roost in urban environments (e.g., downtown Los Angeles).

These bats regularly forage 100-200 feet above the ground, but may forage as high as 2,000 feet. They typically travel up to 15 miles along riparian corridors while foraging and will forage for up to 6 to 7 hours per night. Mastiff bats feed on a variety of insects caught in flight, but apparently prefer nocturnal membrane-winged insects.

The recorded locality for this species is Alhambra, Los Angeles County, approximately 40 miles southeast of the project site. The majority of specimen or sighting records for mastiff bats are from the southwestern portions of the state. There is a specimen record from 3 miles south of the town of Newhall, approximately 11 miles southeast of the project site. This species has also been sighted foraging over riparian and oak woodlands associated with the Santa Clara River near Fillmore and Piru and along the Piru Creek riparian corridor. Suitable roosting habitat is not found on the project site. However, this species may occasionally forage over the project site from off-site roosts in the Sespe Condor Sanctuary (Los Padres National Forest), Pyramid Lake Recreation area and Vasquez Rocks Park. This bat was not located onsite during surveys.

Felis concolor (Mountain Lion)
STATUS: Federal-none; State-Fully Protected Species

Mountain lions are widely distributed in California, inhabiting most of the larger mountain ranges throughout the state. They frequent a wide variety of wooded and bushy habitats including chaparral, oak and riparian woodlands, and coniferous forests. Their preferred habitat in steep inaccessible slopes which are vegetated with a dense cover of chaparral. Mule deer, the mountain lion's principal prey species, is an essential element of mountain lion habitat. In 1988, the minimum statewide population estimate was 5,100 animals. Along the central coast of California, mountain lions occur at a density of 5-7 lions per 100 square miles.

Within the project region mountain lions are uncommon, frequenting the more remote areas of Ventura and northwestern Los Angeles Counties. They are still reasonably common throughout remote areas of the Los Padres and Angeles National Forest west and north of the project site. They also occur in the Santa Susana Mountains south of the project site. Although this species was not observed at the project site during the field survey, it is expected to frequent the property as a casual visitor.

Sensitive Habitats
Sensitive habitats found onsite include: Hasley Canyon Creek; the artificial pond and seep; the mainland cherry woodland; and oak trees (either in the woodlands or individually). Stream courses

are federally-protected under Section 404 of the Clean Water Act. Any proposed disturbance to wetlands or "waters of the US" must be examined by the Army Corps of Engineers, which oversees permitting under the Clean Water Act. Hasley Canyon Creek and one of the unnamed blue-line drainages (#1) would fall under the jurisdiction of this agency.

Hasley Canyon Creek and the unnamed drainage #1 are also protected under the CDFG, which administers stream alteration and agreements, specified under Chapter 1600 of the Department's code. The CDFG requires permitting for any activity that may disturb the natural flow within blue-line streams. Two of the unnamed drainages (#2 and 3) have similar vegetation to the surrounding slopes and no incised bank, and are therefore not regulated by either agency.

Unnamed drainage #1 sustains a coast live oak and mainland cherry woodland. Cherry woodland was believed to be extirpated until recent years and is considered sensitive by the CDFG. It is characterized by holly-leaf cherry as the dominant woody vegetation in stands of particularly large trees. Native oak trees are protected under Los Angeles County Ordinance 82-0168. Oak trees are scattered in other parts of the site.

Man-made ponds at the project site also provide wildlife with an important source of standing water, which provides wildlife at the project site with the only long-term source of standing fresh water. This water will be utilized by many of the birds onsite as well as by the larger mammals that forage in the area.

4.7.2 Impacts

Significance Threshold Criteria

Appendix G on the California Environmental Quality Act (CEQA) Guidelines defines a significant effect on the biological environment as those changes that "substantially affect a rare or endangered species of animal or plant or the habitat of the species; . . . interfere substantially with the movement of any resident or migratory fish or wildlife species; . . . [or] substantially diminish habitat for fish, wildlife, or plants."

This section describes the potential impacts on vegetation communities, wildlife, and sensitive plant and wildlife species that could result from development of the Hasley Canyon Project. **The Proposed Project, with the suggested mitigation measures, would result in no unavoidable, significant impacts to sensitive or protected species or habitats.** The types of impacts that would be expected to occur as a result of the Proposed Project include:

Direct Impacts

- Loss of native vegetation;
- Loss of the mainland cherry habitat;
- Loss of native oak trees;
- Loss of potential habitat for four sensitive wildlife species;
- Loss of foraging and roosting habitat for four sensitive raptors and four sensitive bats.

Indirect Impacts

- Disturbance to other wildlife populations and corridors outside of the Project boundaries, due to increased human activity in the vicinity of surrounding natural open space.

Impacts to Vegetation

Grassland, Scrub and Chaparral Habitats - Loss of Natural Open Space: Project improvements will disturb 338.7 acres (85%) of the natural habitats including: non-native grassland, Riversidian sage scrub and chaparral habitat. TABLE 15 lists the approximate acres and percentages of each habitat that will be impacted by project buildout.

This loss would not be considered significant, as the region would still contain large expenses of undisturbed habitat. However, the grasslands contribute to foraging area for several raptors species. The loss of this forage area would be a locally-important impact, though not regionally significant.

The impact would contribute to the incremental loss of open space in the area, which is rapidly becoming a scarcity in Southern California. Though not significant in itself, the loss of open space contributes to the cumulative loss of undeveloped land in the rapidly expanding North Los Angeles County urban area. This adverse impact is the unavoidable result of large-scale development outside city borders.

TABLE 15

IMPACTS TO VEGETATION/HABITATS*

NATURAL HABITAT TYPES	TOTAL (Acres)	DISTURBED BY PROJECT	UNDISTURBED BY PROJECT	
Chaparral (includes recovering habitat)	259.0	232.4(88%)	26.6	(10%)
Non-Native Grassland	118.1	102.9(85%)	15.1	(13%)
Riversidian Sage Scrub	3.8	3.2(84%)	0.6	(16%)
Hasley Canyon Creek	2.8	0.0(0%)	2.8	(100%)
Aquatic (seep and artificial pond)	0.9	0.0(0%)	0.9	(100%)
Drainage #1 and Cherry Woodland	3.0	0.2(7%)	2.8	(93%)
NATURAL HABITATS IMPACTS	387.6 ac.	338.7 ac. (85%)	48.8 ac.	(13%)
Existing (abandoned) Golf Course	43.5			
Other disturbed areas	1.9			
TOTAL	433.0 ac.			

Source: Rachel Tierney Consulting, June 19, 1998.
*T&C revised Dec. 2000 for 209-Unit Development and Design Modifications.

Hasley Canyon Creek: Habitat value along the creek is low due to a lack of vegetation. Maintenance roads and/or golf cart paths will be spanned from the incised banks, resulting in no permanent impacts. Protection measures developed to lessen sedimentation deposit into the creek during construction will reduce temporary disturbance to insignificant levels.

Mainland Cherry Woodland - Loss of Sensitive Habitat: A portion of the mainland cherry woodland would be lost to site development (0.2 acres or 7%). The loss of this habitat is significant for two reasons: the regional extent of mainland cherry woodland is limited and declining; and the

community is also a type of riparian habitat, which is considered sensitive all over Southern California. This cluster of trees is one of only a few known locations of mainland cherry woodland or forest in Los Angeles County. The loss of 0.2 acres of mainland cherry woodland is considered adverse, significant and mitigable.

Impacts to Oak Trees: Present plans call for the removal of approximately 24 coast live oaks (out of 50 existing trees) located within the site – see APPENDIX E Oak Tree Report and Permit Application. This loss of 24 oak trees is considered adverse, significant and mitigable.

Loss of Sensitive Flora: Sensitive plant species are known from the project vicinity -- see TABLE 14. However, no rare or otherwise sensitive plant species were found on the project site, despite the fact that the surveys were timed appropriately to detect such species. Based on the results of the 1997 and 1998 field surveys, the Proposed Project will not result in impacts (significant or otherwise) to sensitive plant species.

Impacts to Wildlife

Displacement of Wildlife Species: The immediate impact on wildlife would be that construction activity would displace all wildlife from the graded areas. Many species would move to adjacent areas having similar habitat. Most of the displaced wildlife are expected to perish due to lack of unoccupied territory. Species of low mobility, particularly salamanders, frogs, and borrowing reptiles and mammals, will probably be eliminated from all graded areas onsite. This impact is considered significant because the site represents an island surrounded by existing and approved projects. Upon project completion, some displaced wildlife species may return to the remaining islands of natural habitat on the site. Among the animals known to occur near human habitation are western fence lizard, southern alligator lizard, opossum, coyote, raccoon striped skunk and several bird species.

The proposed Tract 52584 is surrounded by existing or approved developments on its northern, southeastern and eastern borders; consequently the value of wildlife habitat in this parcel is limited by neighboring use. This parcel currently contains sufficient habitat to support viable populations of a variety of small vertebrates, but its size and isolated character lessens support of viable populations of large mammals such as bobcat, mountain lion, coyote, gray fox and mule deer.

Indirect Effects and Surrounding Wildlife Populations: Maintaining isolated patches of native habitat as open space within particular areas of the project site will not prevent direct impacts to wildlife and their habitats due to noise and increased human activity from adjacent parcels. Impacts would include habitat degradation due to off-highway vehicles and bicycles, predation of animals by domestic cats and dogs, and collecting and/or harassment of animals, resulting either in direct mortality or abandonment of the site.

Night lighting may be detrimental to animals in nearby areas for a variety of reasons including disruption of circadian rhythms and avoidance due to light sensitivity in species with exceptional night vision. Some insectivorous species, such as bats, benefit from night lighting because it attracts and concentrates large numbers of insects for feeding purposes. However, the typical net effect of lighting is that adjacent areas are utilized less than to their fullest extent. These impacts are considered adverse but not significant.

Loss of Migration Corridor: The loss of scrub and grassland habitats at the Hasley Canyon project site will eliminate an area of native habitat which allows wildlife to move between lower Hasley Canyon and Castaic Creek north and east into the Los Padres and Angeles National Forests. Loss of

this corridor is adverse but not significant given that Tract 52584 is surrounded by existing or approved development tracts. The impact would be incremental in light of the approved projects that surround the site.

Retention of the Hasley Canyon Creek would maintain a limited narrow corridor of connection between habitats on this parcel and those along the rest of Hasley Canyon and the Castaic Creek watershed. The quality and use of this narrow corridor of open space as a wildlife dispersal corridor is unknown.

Loss of Sensitive Wildlife Species: A number of sensitive wildlife species are likely to occur on the project site. The known or potential occurrence of these species was discussed in detail in the previous section. None of these species are State or Federally Threatened or Endangered and therefore project-related impacts would not be a violation of the Federal or California Endangered Species Acts or the California Department of Fish and Game Code. However, the California Environmental Quality Act (CEQA) provides that any impact that reduces the habitat or individuals of a sensitive species may be considered significant. In this regard, project implementation will result in significant impacts to several of these sensitive species through habitat loss, habitat alteration and loss of foraging and/or roosting habitat. Loss of chaparral and Riversidian Sage Scrub habitat, which is probably inhabited by several sensitive wildlife species, is considered adverse, significant and mitigable.

Loss of Foraging and Roosting Habitat for Sensitive Raptors and Bats: This project will result in the conversion of more then 85% of the natural habitats onsite to urban and recreational uses. This will eliminate most of the broad expanses of natural habitats which are expected to be utilized by a variety of sensitive raptors and bats for foraging. Also, removal of a number of coast live oaks and assorted non-native trees onsite will eliminate possible roost sites for several sensitive raptors and bats. This impact is considered adverse, significant and mitigable.

4.7.3 Mitigation

The following mitigation measures will reduce impacts to less than significant levels:

1. A Habitat Preservation Plan shall be prepared for DRP review and approval prior to issuance of the grading permit and shall contain the following sections:

- Hasley Canyon Creek Restoration Plan

  Hasley Canyon Creek within the project site (approximately 2.8 acres) shall be revegetated with suitable riparian trees and shrubs in all areas that would not disturb the line of golf play. A revegetation program shall be developed and implemented that includes native trees and shrubs. Plantings shall be monitored for at least three years and shall be compatible with the Project Landscaping Plan and consistent with jurisdictional permitting requirements of the US Army Corps of Engineers and California Department of Fish and Game as outlined in subsections that follow. The golf course facilities will operate under a DRP-approved "Integrated Pest Management Plan," with herbicides and pesticide application by state-licensed personnel.

- Oak Protection and Replacement

  An Oak Tree Protection Program (APPENDIX E hereto) shall be implemented to minimize disturbance to oaks. 24 of 50 oak trees impacted will be replaced by planting 64 oak trees

onsite per the Oak Tree Permit. This Plan shall contain the results of the Oak Tree Report and comply with conditions of pending Oak Tree Permit 98-034.

- Mainland Cherry Woodland Preservation and Relocation

Within the area of Unnamed Drainage #1 and the mainland cherry woodland, maximum effort shall be taken during golf course final design and construction phase and prior to final map approval to limit earth movement operations and other construction disturbances impacting mainland cherry woodland onsite. Site walk-over prior to construction will determine the least damaging alternatives, protection measures to be implemented during construction (such as fencing, retaining walls, minimizing grading, construction monitoring) and transplanting to relocate impacted mainland cherry trees into in-kind quality habitat in the northwest corner of the site. A professional contractor, with experience and proven success in transplanting large trees, will be contracted to relocate the mainland cherry. The final determination on the number of trees to be relocated will be made prior to transplanting, based on the onsite area available for relocation and the potential for survival. Receiving locations will be determined in the field based on aesthetics, biological enhancement and technical feasibility, and subject to DRP review and approval. Pruning (to reduce leaf area, not height) may be required prior to transplanting. The side and bottom boxing process often takes several months and should be planned well in advance of grading. Post-transplant maintenance will consist of twice weekly watering during warmer weather, and weekly watering during the cooler weather for the first year as specified in the Proposed Project Landscaping Plan.

2. Erosion Control

A Storm Water Pollution Prevention Plan (SWPPP) shall be developed prior to issuance of grading permits. This Plan shall detail temporary erosion control structures and measures to eliminate any entry of sediment resulting from construction into drainage courses consistent with Clean Water Act Section 402 National Pollutant Discharge Elimination System (NPDES) requirements administered by the Los Angeles Regional Water Quality Control Board.

3. Night Lighting

The potentially-adverse effect of night lighting on surrounding open space shall be mitigated by the use of the following measures: 1) street lighting only at intersections; 2) low intensity street lamps; 3) low elevation lighting poles; and 4) internal silvering of the globe or external opaque reflectors which direct light away from natural areas. The degree to which these measures are utilized should be dependent upon the distance of the light source from the urban edge. Use of private sources of illumination around homes shall also be directed/shaded to minimize glare adjacent to open space area.

4. Relocation of Sensitive Reptiles

A survey for California horned lizard, western whiptail, coastal silvery legless lizards, and coast patch-nosed snakes shall be conducted prior to grading and submitted to DRP. Individuals shall be mapped and relocated to appropriate habitat within an on- or off-site, open space area.

Implementation of the foregoing mitigation measures will reduce Proposed Project biological resources impacts to less than significant levels.

US Army Corps of Engineers (COE) and California Department of Fish and Game (CDFG) Jurisdictional Waters

Six potentially-jurisdictional features are present onsite: Hasley Canyon Creek, three unnamed drainages (# 1-3); a small seep and an artificial pond. All features are mapped on FIGURE 9. Three of these features were found to be under the authority and jurisdiction of the COE and/or the CDFG:

Hasley Canyon Creek: Intermittent stream with COE jurisdictional "Water on the US" present and measured from incised bank to incised bank. No wetlands were noted.

Proposed improvements for the project (cart paths and service roads) shall be designed to span the creek from bank to bank and shall not impact jurisdictional "waters." Any bank protection developed for flood control would require a 404 (and Regional Water Quality Control Board Section 401) permit. Under the CDFG methods, disturbance within the incised creek bed of the Hasley Canyon Creek and the adjacent riparian habitat (willow and cottonwood trees) would be considered under a 1603 Agreement. Direct impact to Hasley Canyon Creek is not presently anticipated as a result of Proposed Project implementation.

Unnamed Drainage #1: Intermittent stream with "Water of the US" present and measured from incised bank to incised bank, which is an average of 15 feet wide. No wetlands were noted.

Development of the golf course will result in the permanent disturbance of 425 linear feet of this drainage. Approximately 6,375 square feet of "waters" will be filled.

Disturbance to the unnamed drainage (streambed), and flanking riparian habitat (in this case oak and cherry totaling 0.2 acres), would also require an agreement with the CDFG. The determination of exactly where the authority would end is difficult to determine since there is no clearly defined boundary between riparian and non-riparian trees in the field. The demarcation has been drawn to include those oak and cherry trees that are immediately adjacent to the incised creek bank.

Unnamed Drainage #2: Would not fall under the COE or CDFG jurisdiction. No scour line or incised bank within drainage (no high water mark present). No wetland or riparian vegetation is present.

Unnamed Drainage #3: Would not fall under the COE or CDFG jurisdiction. No incised bank (high water mark) present. No wetland or near wetland vegetation present. No riparian vegetation present.

Artificial Pond: The COE and the CDFG do not usually reserve discretionary authority for disturbance to artificially-created ponds unless they represent an exceptional aquatic resource. This feature shall be reviewed by the agencies before development to determine authority. Present development plan would remove this feature and create another similar retention pond within the golf course.

Seep: The small seep sustains 200 square feet of jurisdictional wetlands, under authority of the COE. Isolated wetlands are not typically under the authority of the CDFG unless they represent an exceptional aquatic resource. This feature shall be reviewed by the agencies before development to determine the requirements from the CDFG.

The Applicant shall acquire permits and provide requisite mitigation measures for permanent and temporary impacts of the Proposed Project upon water resources under the jurisdictions of the US Army Corps of Engineers Los Angeles District, the California Department of Fish and Game Region 5 and the Los Angeles Regional Water Quality Control Board prior to construction within their respective jurisdictional areas.

APPENDIX E

Habitat Preservation Plan

DRAFT HASLEY CANYON CREEK

Habitat Restoration and Protection Plan

November 2001

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DRAFT HASLEY CANYON CREEK HABITAT RESTORATION AND PROTECTION PLAN

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DRAFT HASLEY CANYON CONCEPTUAL CREEK HABITAT RESTORATION AND PROTECTION PLAN

I. PROJECT DESCRIPTION AND IMPACTS

A. INTRODUCTION

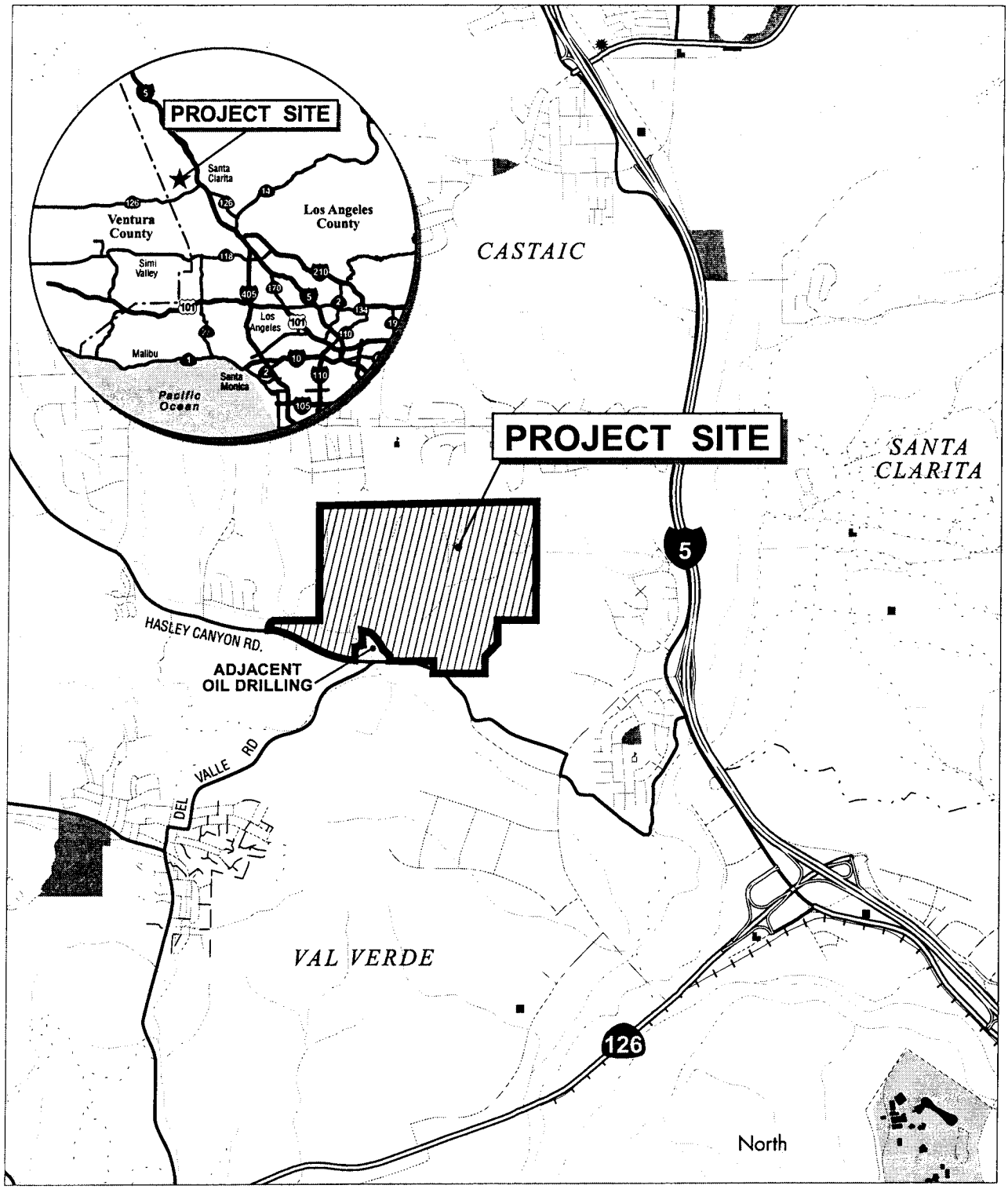
The Hasley Canyon Project (Project) involves a residential and golf course development on approximately 430 acres located in Los Angeles County, west of the Castaic Valley. The site is located on the USGS 7.5 minute Val Verde quadrangle. Five natural plant communities are present onsite: non-native grassland; chamise chaparral; Riversidian sage scrub; mainland cherry/oak woodland and a very open southern cottonwood-willow riparian woodland associated with Hasley Canyon Creek.

The broad, sandy stretch of Hasley Canyon Creek extends along the southern portion of the site and contains very little vegetation except for a few mulefat (*Baccharis salicifolia*) along the edge of the incised banks. Scattered trees, including the native Fremont cottonwood (*Populus fremontii*), as well as cultivated pines and spruce, dot the edges of the wash. In some sections of the creek these trees are located within the active bed, having been surrounded by scoured banks and deposited sediment as the creek has meandered. The creek banks are fortified with concrete slabs near extant buildings.

Although this stretch of Hasley Canyon Creek does not attain the cover and native diversity of a true southern cottonwood/willow riparian forest, it is arguable (from observations of similar reaches of the creek upstream from the Project) that the creek corridor has the potential to be restored to this plant community, with resulting benefits for wildlife.

Project construction activities would result in direct impacts to riparian habitat under the jurisdiction of the California Department of Fish and Game (CDFG) through Section 1603 of the Fish and Game Code. Most of these impacts will occur at the edges of golf course fairways. This conceptual restoration and mitigation plan is submitted in support of Part B of the Streambed Alteration Notification Form FG-2023. It will also be included in the CWA 404 Permit Application Pre-Construction Notification (PCN) documentation and, pending CDFG review and approval, incorporated into a Streambed Alteration Agreement. This plan is conceptual in nature and is not intended to set forth detailed specifications for implementation but to provide an overview of the restoration and mitigation plan suitable for the CEQA phase of the planning process. A detailed restoration design, complete with planting and irrigation system specifications, as well as a detailed mitigation monitoring plan will be developed in the course of the permit application and approval process.

Note: This is a draft version. The final plan must be approved by the Department of Regional Planning prior to the issuance of any grading permits.



SOURCE: Thomas Bros. Maps

Hasley Canyon Habitat Restoration and Protection Plan / 201370 ■

Figure 1
Project Location

B. ASSESSMENT OF IMPACTS ON STREAMBANK AND BED

Table 1 displays impacts to all vegetation communities and natural habitats. Calculated areas are based on current information.

TABLE 1: VEGETATION COMMUNITIES AND NATURAL HABITAT AT THE HASLEY CANYON SITE AFFECTED BY PROJECT IMPLEMENTATION

NATURAL HABITAT TYPES	TOTAL (Acres)	DISTURBED BY PROJECT (Approximate)	UNDISTURBED BY PROJECT	
Chaparral (includes recovering habitat)	259.0	232.4 (88%)	26.6	(10%)
Non-Native Grassland	118.1	102.9 (85%)	15.1	(13%)
Riversidian Sage Scrub	3.8	3.2 (84%)	0.6	(16%)
Hasley Canyon Creek **(Corps jurisdiction)**	4.11	0.1 (2%)	4.01	(98%)
Aquatic (seep and artificial pond)	0.025	0.0 (0%)	0.025	(100%)
Drainage #1 **(Corps jurisdiction)**	0.495	0.0 (0%)	0.495	(100%)
NATURAL HABITATS IMPACTS	385.5 ac.	338.6 ac. (88%)	46.9 ac	(12%)

II. RESTORATION

A. RIPARIAN VEGETATION

The "restoration area," as the term is used below, stretches from the Ordinary High Water Mark of the extant creek to an average distance of 50 feet. Within the restoration area, plant species to replace non-natives include, but are not limited to, the species listed in Table 2. These and any other species used should be selected for their rooting ability and hardiness. General guidelines for planting are given below.

TABLE 2: PLANT SPECIES TO BE USED IN THE HASLEY CANYON CREEK HABITAT RESTORATION AND PROTECTION PLAN

Common Name	Scientific Name	Spacing on-center
Trees		
Fremont cottonwood	*Populus fremontii*	25 feet
Arroyo willow	*Salix lasiolepis*	15 feet
Red willow	*Salix laevigata*	15 feet
Shrubs		
Sagebrush	*Artemisia tridentata*	5 feet
Mulefat	*Baccharis salicifolia*	10 feet
Scale-broom	*Lepidospartum squamatum*	5 feet
Holly-leaved cherry	*Prunus ilicifolia*	10 feet
Skunkbrush	*Rhus trilobata*	5 feet
Golden currant	*Ribes aureum*	5 feet
Blue elderberry	*Sambucus mexicana*	20 feet
Herbaceous		
Purple needlegrass	*Nasella pulchra*	1 foot

Trees

Vegetation sizes: Trees of five and ten gallon size will be used. This will ensure a greater survival rate for the plants in a new environment.

Installation: The appropriate hole size for revegetation is a depth 1 ½ times the root ball, with a width twice the root ball. A weed control barrier will be installed around the base of each tree. Slow-release tree and shrub fertilizer tablets (nine-month release) will be placed in each hole below the root zone to promote establishment and growth should have an analysis of 13-13-13 (Hasleyyard 1993). A four-inch high, hand compacted berm should be created along the forward

edge of the planting terrace for a watering basin. Plants should be irrigated immediately after installation to settle the soil. Mulch should be placed within the watering basin to control weeds that might compete with newly planted stock.

Shrubs

Vegetation size and installation: Shrubs of one gallon size, as well as willow pole cuttings, will be used. Willows planted from cuttings must have side branches removed and bark intact. Cuttings should be a minimum of three feet in length, range in diameter from ½ inch to 1 ½ inches, and be sufficiently long to extend into the soil with six-inches above grade and 12-inches below grade (Hasleyyard 1993). Cuttings should be taken from a variety of large, vigorous-growing shrubs/trees. Willows are dioecious (individuals bear either male or female reproductive structures). Therefore, care should be taken to collect and install cuttings from both male and female plants. It is recommended that a rooting hormone and fungicide should be applied and allowed to dry prior to placing in hole (Hasleyyard 1993).

B. IRRIGATION AND WATER SOURCE

A temporary directed drip irrigation system will be installed at the Hasley Canyon Creek site to provide new (planted) woody vegetation with sufficient water for a minimum of three years or until vegetation becomes established. The water source shall be either from a connection to an existing nearby water source or from water trucks. If a nearby water source is used, a 3/4-inch diameter (or other appropriate diameter) pipe connection to the source will be installed. If water trucks are used, one or more appropriate connections to the different sectors of the restoration area will be specified in the irrigation system design.

C. WEED AND HERBIVORE CONTROL

Planting stock should be protected from browsing by deer and rodents with Vexar tubing or an equivalent or with wire planting cages (above and below-ground), depending on the stock size. Plantings shall be mulched for weed control. Weeds that occur in the planting area in spite of mulching shall be removed by hand or mechanically during the first growing season. For subsequent seasons, an evaluation will be made at the time of monitoring. If it is determined that weeds are a threat to the attainment of performance standards, further weed control will be implemented.

Also, as part of this restoration plan, all stands of *Arundo donax* not eliminated as part of golf course landscaping will be removed.

D. PROTECTION

Fences will be erected and maintained surrounding the restoration area until all construction activity has ceased or for at least the first year of growth.

E. MEASURES TO MINIMIZE BIOLOGICAL IMPACTS

The project proponent (Proponent) shall, in addition to the mitigation measures described above, implement practices to minimize impacts and maximize the effectiveness of mitigation. Mitigation measures shall include those enumerated below, which are frequently included in Streambed Alteration Agreements (SAA) negotiated with CDFG, as well as additional measures proposed in the project EIR.

1. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream during construction and all rubbish shall be removed from the site at project completion.

2. All planting shall be done between October 1 and March 30 to take advantage of the winter rainy season.

3. Rock, gravel, and/or other materials shall not be imported to, taken from or moved within the bed or banks of the stream except as otherwise addressed in the SAA.

4. Fill length, width, and height dimensions shall not exceed those of the original installation or the original naturally occurring topography, contour, and elevation. Fill shall be limited to the minimal amount necessary to accomplish the agreed activities. Except as otherwise specified in the SAA, fill construction materials other than on-site alluvium, shall consist of clean silt-free gravel or river rock.

5. Disturbance or removal of vegetation shall not exceed the limits approved by CDFG. The disturbed portions of any stream channel or lake margin within the high water mark of the stream or lake shall be restored to their original condition or restored to native vegetation at the direction of CDFG.

6. Vehicles shall not be driven or equipment operated in water covered portions of a stream or lake, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in the SAA and as necessary to complete authorized work.

7. No equipment maintenance shall be done within 150 feet of any stream channel where petroleum products or other pollutants from the equipment may enter these areas under any flow.

8. When work in a flowing stream is unavoidable, the entire stream flow shall be temporarily diverted around the work area by a barrier, temporary culvert, new channel, or other means approved by CDFG. Location of the upstream and downstream diversion points shall be approved by CDFG. Construction of the barrier and/or the new channel shall normally begin in the downstream area and continue in an upstream direction, and the flow shall be diverted only when construction of the diversion is completed. Channel bank or barrier construction shall be adequate to prevent seepage into or from the work area. Channel banks or barriers shall not be made of earth or other substances subject to erosion unless first enclosed by sheet piling, rock riprap, or other protective material. The enclosure and the supportive material shall be removed when the work is completed and removal shall normally proceed from downstream in an upstream direction.

9. The Operator shall comply with all litter and pollution laws. All contractors, subcontractors and employees shall also obey these laws and it shall be the responsibility of the operator to ensure compliance.

10. The Proponent shall notify CDFG, in writing, at least five (5) days prior to initiation of construction (project) activities and at least five (5) days prior to completion of construction (project) activities. Notification shall be sent to:
CDFG, 4949 Viewridge, San Diego, CA 92123

III. VEGETATION MONITORING, MANAGEMENT AND PERFORMANCE CRITERIA.

Monitoring reports shall be submitted to the CDFG and Department of Regional Planning on or before July 1 of each year, beginning the year after mitigation is completed and continuing for five years. The annual reports shall include, at a minimum, the following information:

1. Methods;

2. General discussion of the site, including quantitative statistics (average growth by species and percentiles of cover, growth, and survival);

3. Analysis of success in relation to performance standards;

4. Photos of the mitigation areas from the same reference points on the ground, standardized with respect to direction, lens type, etc.;

5. A map of the area with relevant features;

6. Copies of all data sheets employed in the data gathering; and

7. A discussion of any corrective actions needed or undertaken (including weed control or replanting).

The monitoring reports will evaluate the success of the project against the performance criteria. The revegetation will be considered successful if, at the end of the fifth monitoring year, at least 85% of all trees and shrubs planted are alive and healthy.

IV. REFERENCES

Hasleyyard, D. 1993. Development and Implementation of a Plan. *In:* Revegetation/Restoration Planning: The Basics. Symposium by Society for Ecological Restoration, California Chapter. May 14.

APPENDIX 5.3-2

Vegetation and Special Status Plant Surveys

Vegetation and Special Status Plant Surveys of the Proposed Los Valles Residential Project Site in Hasley Canyon, Castaic, County of Los Angeles

February 11, 2014

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1 PROJECT DESCRIPTION

Residential development is proposed for about 433 acres of property in Hasley Canyon, located west of Interstate 5 in an unincorporated part of Castaic in northwestern Los Angeles County (Figure 1). Hasley Canyon is a tributary of the Santa Clara River. Site elevations are in the range of 1200 to 1700 feet (366 to 518 meters) above mean sea level.

Figure 2 shows a site plan provided by the applicant. The plan includes landscaped parks and trails, as well as dedicated equestrian and public trails in the Hasley Canyon flooplain in the southwest part of the property. Areas in the north, northwest, and west parts of the site surround a "significant ridgeline" and are designated as undisturbed natural open space except for a sand borrow area and new road that would connect the development to an offsite road (Barcelona Place). Landscaped open space areas include ponds near the site entrance at Hasley Canyon Road, a working vineyard, community garden, botanical garden, and citrus groves. A second water tank would be added in the northeast part of the site.

2 METHODS

Reviews of the California Natural Diversity Database and California Native Plant Society Inventory of Rare and Endangered Plants were conducted prior to field surveys. These databases were searched by 7.5-minute U.S. Geological Survey topographic quadrangles. The search region included the project quadrangles (Newhall, Val Verde) and the following adjacent quadrangles: Cobblestone Mountain, Green Valley, Mint Canyon, Oat Mountain, Piru, San Fernando, Simi, Warm Springs Mountain, and Whitaker Peak. In total, this search area encompasses about 720 square miles around the project site. A previous survey report for the site was also reviewed (Rachel Tierney Consulting, 1998). That report describes botanical field surveys conducted in July 1997 and April 1998. Soil data (NRCS, 2008) and fire history data available from the County of Los Angeles were reviewed to assess the extent to which these factors could affect vegetation communities and potential for rare plants.

Field surveys for special status plants were conducted by E. Read on April 29, May 16, and June 30, 2013. Vegetation communities were also mapped during these surveys, with additional site surveys on October 24 and November 15, 2013 to finalize community classifications. The April and May surveys included visits to a known population of slender-horned spineflower (*Dodecahema leptoceras*), an endangered plant species in lower Bee Canyon east of Santa Clarita, to assess detectability of this annual herb species. Surveys of the project site documented all plant species observed, following protocols of the California Native Plant Society and California Department of Fish and Wildlife. The taxonomic reference for all species was the current Jepson Manual (Baldwin et al., 2012). Vegetation types were classified according to the current manual for California (Sawyer et al., 2009).

Vegetation communities were mapped in the field using a 2010 aerial photograph and then digitized with Geographic Information System (GIS) software. Potential impacts of the project on vegetation communities were assessed by importing the applicant's AutoCAD drawing of the site plan into GIS and calculating the extent of temporary and permanent impacts. Temporary impacts were assumed to be equivalent to the grading limit footprint, and permanent impacts were assumed to be equivalent to the footprint of development and all areas not designated as undisturbed open space.

3 RESULTS AND DISCUSSION

Figure 3 shows vegetation types, trees, structural features, and reported burn limits of fires that extended into the project site during the period of 1979 to 2002. Figure 4 provides photographs of vegetation communities. Table 1 lists plant species observed. Table 2 lists acreages of vegetation communities and other existing features on the site, along with estimates of vegetation loss from the proposed project.

3.1 Disturbance, Fire History, and Soil

Most of the project site has a long history of intense disturbance. Indigenous vegetation across parts of the west half of the site, including Hasley Canyon Wash and unnamed tributaries to the wash, was eliminated by development of a golf course sometime between 1960 and 1969. To a lesser extent, oil facilities east of the golf course also eliminated vegetation. The Hasley Canyon Golf Course was abandoned, with the turf removed sometime after 1977. Botanical surveys conducted in 1997 found vegetation on the abandoned golf course to consist of non-native grassland and mature trees (Rachel Tierney Consulting, 1998).

Vegetation across the east half of the project site which was not impacted by development of the Hasley Canyon Golf Course, or oil facilities, was burned in fires that occurred in 1979, 1982, 1995, and 2002. Shrub vegetation visible in a 1977 aerial photograph was eventually eliminated by these frequent fires, such that surveys conducted in 1997 found much of the northeastern part of the site occupied by non-native grassland (Rachel Tierney Consulting, 1998).

Finally, most of the project site was graded sometime between September 2007 and July 2008 for a development that had been planned by the previous property owner. Subsequently, erosion control measures were implemented. These included ditches, detention basins, jute netting, and hydroseeding (evidenced by presence of wood fiber mulch on some slopes).

The Natural Resources Conservation Service (NRCS, 2008) classifies most of the soil on the site as Saugus loam. Minor soil types consist of Castaic-Balcom silty clay and Metz loamy sand. None of these soil types are rare or known to be specifically associated with rare plants or sensitive vegetation types.

3.2 Vegetation

Upland Communities

For the purpose of classification, upland vegetation communities are defined here as consisting primarily of plant species that are not dependent on stream flow, high soil moisture, or groundwater for survival under drought conditions.

Acmispon glaber Shrubland Alliance

Also referred to as deerweed scrub and (using former taxonomy) *Lotus scoparius* Shrubland Alliance, this community occupies most of the site. Its species composition appears to have mixed origins ranging from indigenous to introduced through revegetation and erosion control measures. The smallest stands of mulefat (*Baccharis salicifolia*) in ephemeral streambeds and gullies have been grouped into this alliance here for the purpose of mapping and impact analysis.

Deerweed is a drought-deciduous shrub commonly included in seed mixes for erosion control and is typically one of the first shrub species to colonize open ground (Sawyer et. al, 2009, p. 578). Depending on location, co-dominant shrubs may include California sagebrush (*Artemisia californica*) and leafy California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*). Another buckwheat variety, Mojave Desert California buckwheat (*E. f. polifolium*) is also present, but is outside of its typical range and possibly introduced with hydroseed. Surveys conducted in 1997 did not specify the variety of buckwheat observed.

Non-native annual grasses such as wild oat (*Avena* sp.) and brome (*Bromus* sp.) are frequent understory species in this community, along with native wildflowers such as California poppy (*Eschscholzia californica*). Shrub cover varies widely across the site, from less than 10 percent along graded roads to 100 percent on slopes.

Throughout the deerweed scrub community there are numerous detention basins created from earth berms, plastic sheets, and sandbags. Many of these

basins periodically support small stands of riparian vegetation alliances (see Riparian Communities section) that are periodically removed under an approved Stormwater Pollution and Prevention Plan (SWPP). We did not include these ephemeral stands of riparian vegetation on the map.

Adenostoma fasciculatum Shrubland Alliance

Also referred to as chamise chaparral, this community occupies steep slopes that are relatively undisturbed by previous grading. Other species in this community include bigpod ceanothus (*Ceanothus megacarpus*) and chaparral yucca (*Hesperoyucca whipplei*). Shrub cover is in the range of 50 to 100 percent.

Artemisia californica Shrubland Alliance

Also referred to as California sagebrush scrub, this community is limited to a steep south-facing slope in the east half of the project area and low-gradient flood deposits in Hasley Canyon. While California sagebrush is dominant, this community includes co-dominant species that are also common to the *Acmispon glaber* Shrubland Alliance, especially buckwheat. Shrub cover is highly variable and in the range of five to 80 percent.

Lepidospartum squamatum Shrubland Alliance

Also referred to as scale broom scrub, this community is limited to a small alluvial deposit at the southwest corner of the project area in Hasley Canyon. While scale broom is dominant, species common to the *Acmispon glaber* and *Artemisia californica* alliances are also present. Shrub cover is in the range of 30 to 50 percent.

Prunus ilicifolia Shrubland Alliance

Mainland holly leaf cherry (*Prunus ilicifolia* ssp. *ilicifolia*) is an evergreen shrub with spiny leaf margins. Although this species is fire-adapted, all individuals on the site occur outside of areas that have been disturbed by fire since 1979. Many of these individuals are isolated from one another, but small groups occur

in the northwest corner of the project site along an un-named ephemeral streambed that is a tributary to Hasley Canyon.

As a whole, these scattered groups of mainland cherry shrubs only marginally qualify as an "Alliance", with a total area of 0.36 acre. They are not dominant in the drainage. Mainland holly leaf cherry was classified as a sensitive habitat in a previous biological study (Rachel Tierney Consulting, 1998) because of its rarity in Los Angeles County. At that time, the Draft Environmental Impact Report for a proposed residential/golf course development project called for preservation of this plant community, which was estimated at 3.0 acres (Taylor & Company, 2001, p. 70)[1]. Subsequently, a later survey in 2008 by PCR (2009) estimated the area at 1.33 acres. Part of the reduction in acreage between 1998 and 2008 was attributed to mapping error, but in any case it appears that there has been some actual loss of this habitat, unrelated to the previous or current project. Presently the mainland cherry vegetation is in poor health, a condition most likely due to a combination of low rainfall and deep incision of the channel beyond the reach of many roots (see photographs in Figure 4). This erosion was noted in 2009 (PCR, 2009), and appears to have resulted from continuous runoff from residential development north of the property that occurred sometime in the early 2000s. A review of historical aerial photographs indicates that runoff from this development has resulted in a type-conversion of habitat in the north part of the drainage, from mainland cherry woodland with scattered oaks, to a dense riparian forest.

Semi-Natural Herbaceous Stands

The current vegetation classification system for California (Sawyer et al., 2009) uses the term "semi-natural" to refer to naturalized non-native vegetation, i.e. species that have colonized on their own and are not part of a cultivated

[1] A subsequent letter report by PCR (2009) stated the originally mapped area was 4.56 acres but we could not find the source of this information. The acreage in the DEIR (Taylor & Company, 2001) and biology appendix is 3.0 acres.

landscape. On the project site, there are two types of these stands that occur in uplands:

- Wild oat (*Avena* sp.) annual grassland. While occurring in small patches throughout the site, this vegetation is most prominent on an abandoned golf course area in the Hasley Canyon floodplain. This area is currently used for storing and irrigating boxed conifers.
- Mustard (*Brassica* sp.). Black mustard (*Brassica nigra*) and summer mustard (*Hirschfeldia incana*) occur in small stands on graded pads that have been disturbed and/or not seeded with natives.

"Oak Woodland"

California live oaks occur mainly as isolated trees within the *Acmispon glaber* Shrubland Alliance. Exceptions consist of six stands of trees, each of which has no more than three individuals but a canopy cover of more than 10 percent and therefore meets the definition of an "oak woodland" under the State Oak Woodlands Conservation Act. All of these stands are on the west side of the project area.

Riparian Communities

For the purpose of classification, riparian communities are defined here as consisting of plant species that are dependent on relatively high soil moisture or at least a consistent water supply to survive the summer months. This vegetation only occurs in drainages with available groundwater, summer runoff, and/or persistence of small ponds into the early summer (i.e. detention basins).

Baccharis salicifolia Shrubland Alliance

Also referred to as mulefat thickets by Sawyer et al. (2009), this shrub-dominated alliance occurs in small stands scattered throughout the survey area, within ephemeral streambeds on the site and often associated with detention basins. The vegetation map (Figure 3) shows only the largest of these stands. Mulefat is relatively drought tolerant compared to other riparian species and

tends to occur in seasonally or intermittently flooded habitats (Sawyer et al., 2009).

Populus fremontii Forest Alliance

Also referred to as Fremont cottonwood forest, this tree-dominated alliance occurs only in association with a perennial supply of surface water at two locations: an artificial pond in Hasley Canyon, and the north section of an un-named tributary to Hasley Canyon that receives summer runoff from a residential development north of the site. Fremont cottonwoods also occur as isolated mature individuals in the Hasley Canyon floodplain and immature (emergent) individuals in detention basins, but they are not dominant in these areas and therefore we have mapped them as individuals rather than an "Alliance." Arroyo willow (*Salix lasiolepis*) is a co-dominant in the Alliance and canopy cover is 100 percent.

Salix lasiolepis Shrubland Alliance

Also referred to as arroyo willow thickets by Sawyer et al. (2009), this vegetation occurs as a small stand adjacent to an earth berm, downstream of an artificial pond in the Hasley Canyon floodplain. Shrub cover is 100 percent.

Semi-Natural Herbaceous Stands

As described above for uplands, semi-natural herbaceous stands are dominated by naturalized non-native species. Riparian non-native vegetation on the project site consists of giant reed (*Arundo donax*). Giant reed is a highly invasive perennial grass. It is currently limited to thickets in the Hasley Canyon floodplain.

Aquatic and Emergent Marsh Communities

These communities are limited to an artificial, concrete-lined pond on an abandoned golf course in the Hasley Canyon floodplain. This water is supplied from pumped groundwater. A small spillway at the southwest end of the pond supports a small (5 ft x 10 ft) wetland (emergent marsh) occupied by immature

cattails (*Typha* sp.) and sedges (*Cyperus* sp.). This vegetation appears to be frequently trimmed or removed, along with algae and other aquatic vegetation in the pond. Leakage from the pond supports an adjacent forest of native and non-native trees. Water in the pond is pumped to irrigate mature, boxed non-native conifers that are stored west of the pond.

3.3 Special Status Plants

Table 3 summarizes our assessment of potential for rare plant occurrence on the site. No threatened, endangered, or other special status plant species were observed in 2013 or in surveys conducted in 1997-1998. Habitat for an endangered species of greatest potential concern prior to the 2013 surveys, slender-horned spineflower (*Dodecahema leptoceras*), is absent. This species typically occurs on old floodplain terraces that are infrequently flooded and not occupied by dense stands of non-native annual grasses. This type of habitat does not occur on the project site.

4 IMPACT ANALYSIS

Figure 5 shows an overlay of the project site plan onto the vegetation map. Table 2 lists native and non-native vegetation acreages impacted by the project. These impacts are summarized below. Where the site plan shows lot lines extending beyond the grading limits, we assumed that ornamental landscaping might replace native vegetation and therefore these areas were counted as a loss.

Sensitive Plant Species. No special status plant species were detected in several surveys conducted this year (2013) and in previous years (1997-1998). The proposed project would not impact such species.

Vegetation Communities. About 307 acres of California native upland vegetation communities are present within the proposed grading limits and lot lines, and therefore would be directly lost as a result of the proposed project. An additional 1.5 acres of riparian vegetation would be impacted, all of which

consists of mulefat.[2] It is possible that the mulefat could be salvaged and/or replaced elsewhere on the site, such as in the unnamed tributary to Hasley Canyon on the west side of the site. The loss of upland vegetation would be significant and not fully mitigable.

Oak Woodlands. All stands of California live oak that meet the State definition of an "oak woodland" are located on the west side of the project area, outside the grading limits, and would not be directly impacted by the project.

Streambeds and Wetlands. No wetlands would be impacted by the project, with the possible exception of an artificial pond that was part of the old golf course and is not shown on the current site plan. The project would impact an ephemeral streambed that has become exposed as fill from the old golf course has been eroded away. This streambed is occupied by scattered mulefat thickets and upland vegetation. Impacts to this feature could be fully mitigated through enhancement of ephemeral streambeds in undisturbed open space on the west side of the site.

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[2] Immature cottonwoods and willows that may appear and then be removed in the existing detention basins are not included in this calculation.

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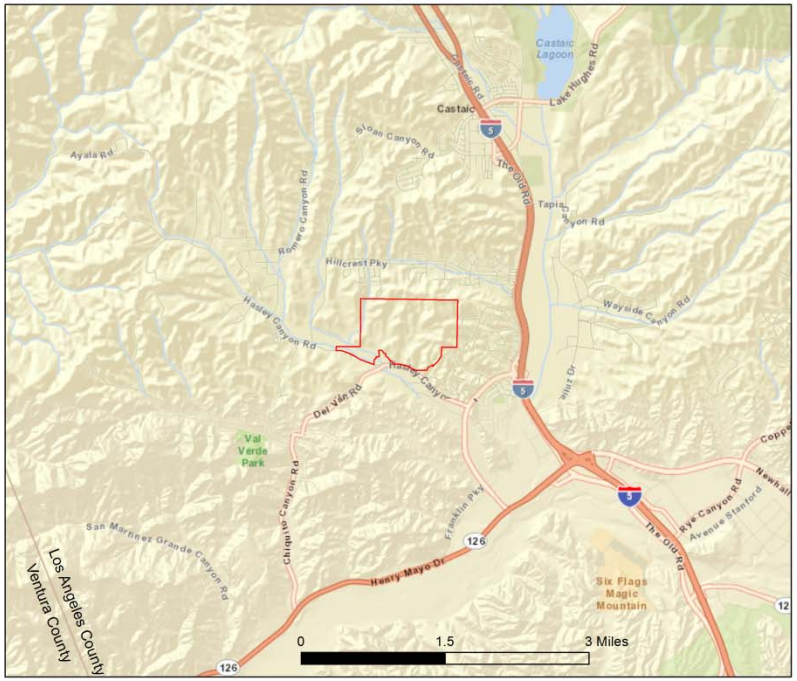
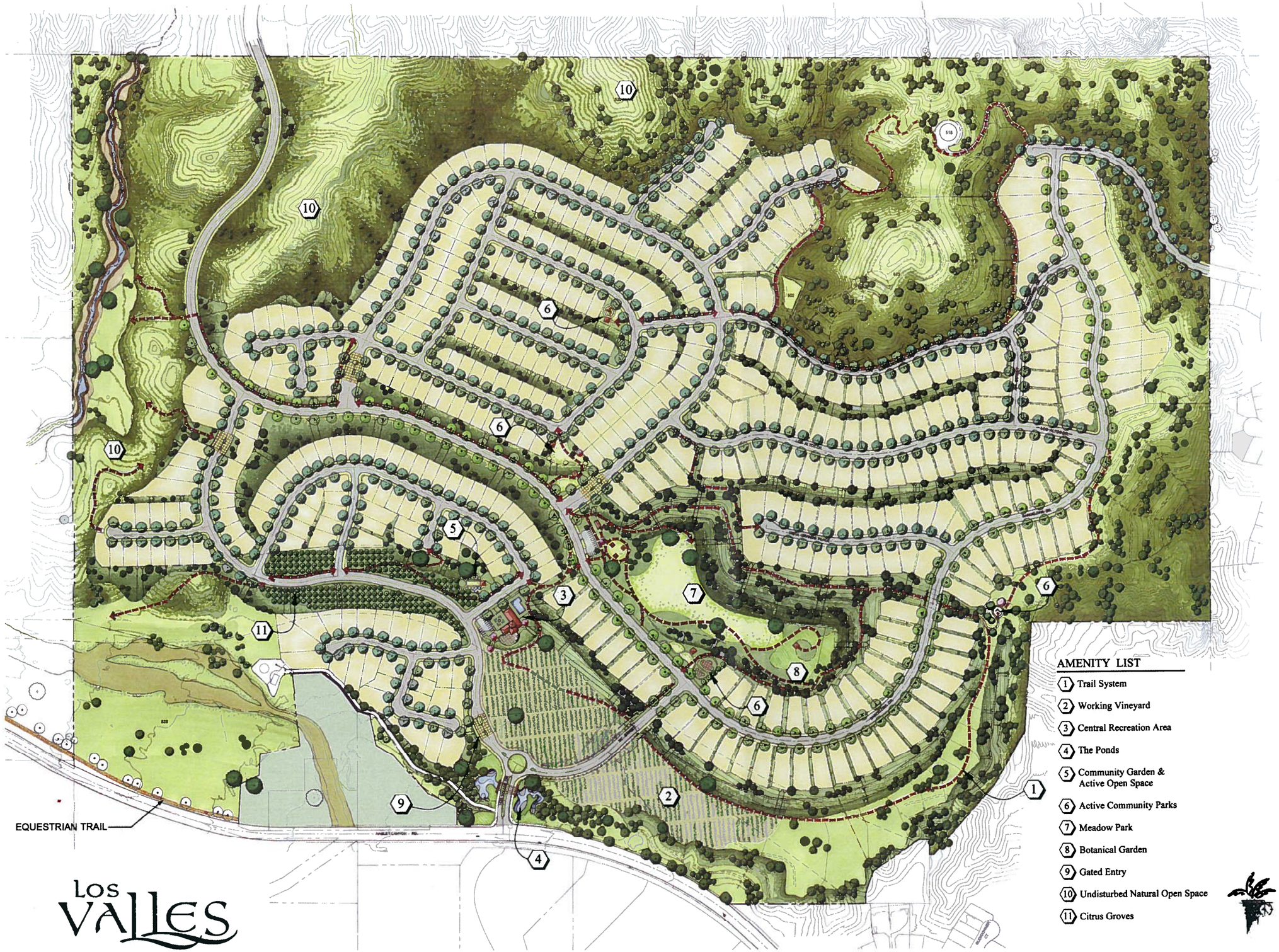


Figure 1. Project Location



LOS VALLES

AMENITY LIST

1. Trail System
2. Working Vineyard
3. Central Recreation Area
4. The Ponds
5. Community Garden & Active Open Space
6. Active Community Parks
7. Meadow Park
8. Botanical Garden
9. Gated Entry
10. Undisturbed Natural Open Space
11. Citrus Groves

0 100' 200' 400'

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JOB # 11-006

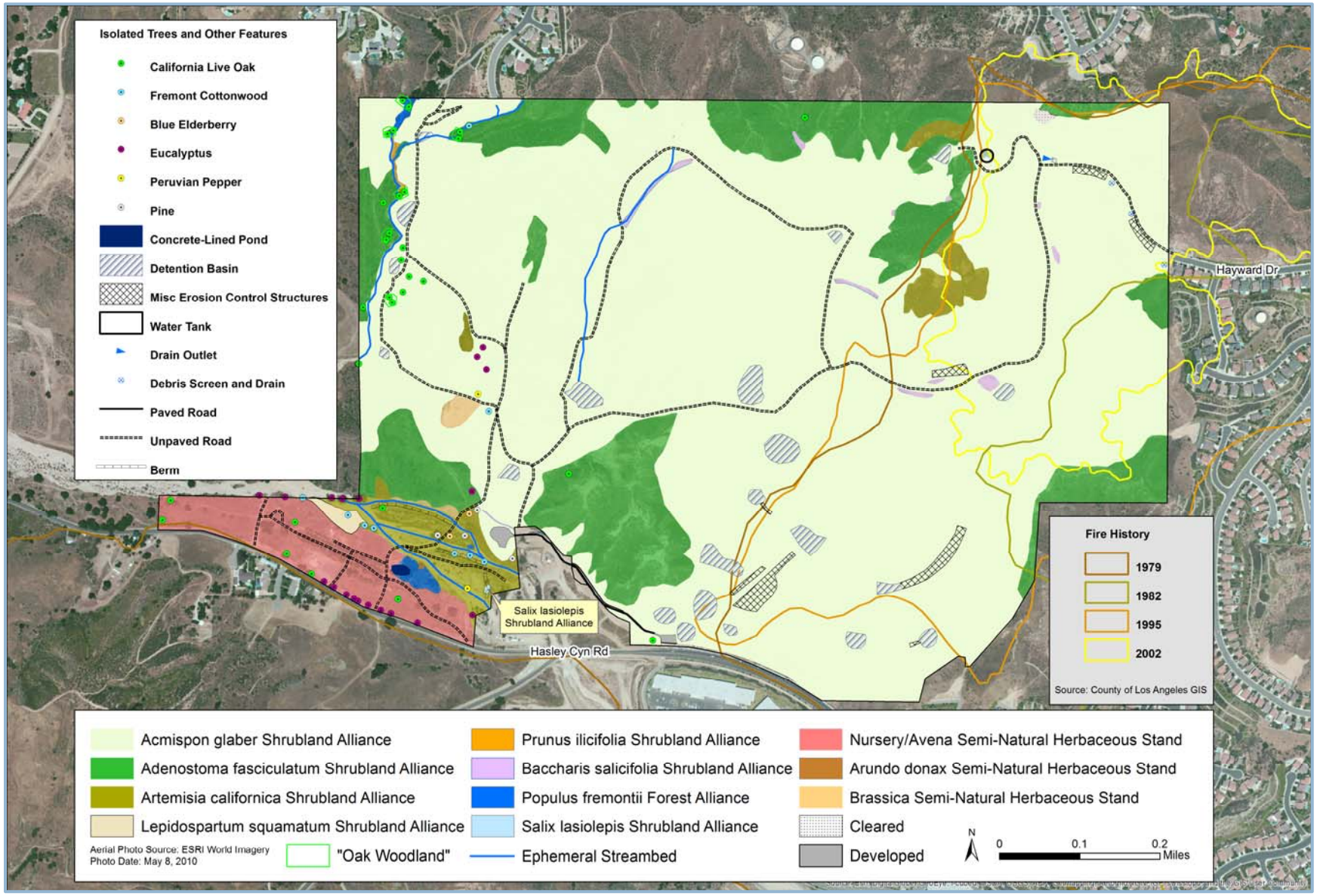

Figure 3. Vegetation Communities

Above Left: View south from water tank area. *Lotus scoparius* alliance in foreground, *Adenostoma fasciculatum* alliance on west-facing slope. The latter is one of the few stands of vegetation on the site that has not been subject to grading or fire since 1979. Above middle: View west from water tank area and of the *Lotus scoparius* alliance that covers most of the project site. Above right: View west in Hasley Canyon wash, which is lined with an *Artemisia californica* alliance and scattered riparian species such as Fremont cottonwood (*Populus fremontii*). Concrete rubble and earth berms confine stream flow to a relatively small portion of the historical floodplain.

Below: Un-named drainage, a tributary to Hasley Canyon, on the west side of the survey area. Left photo is a view north, showing mainland cherry (*Prunus ilicifolia*) in the foreground, California live oaks (*Quercus agrifolia*) in the background. Right photo is a view south, showing channel incision that has undermined the roots of vegetation.

Figure 4. Site Photographs

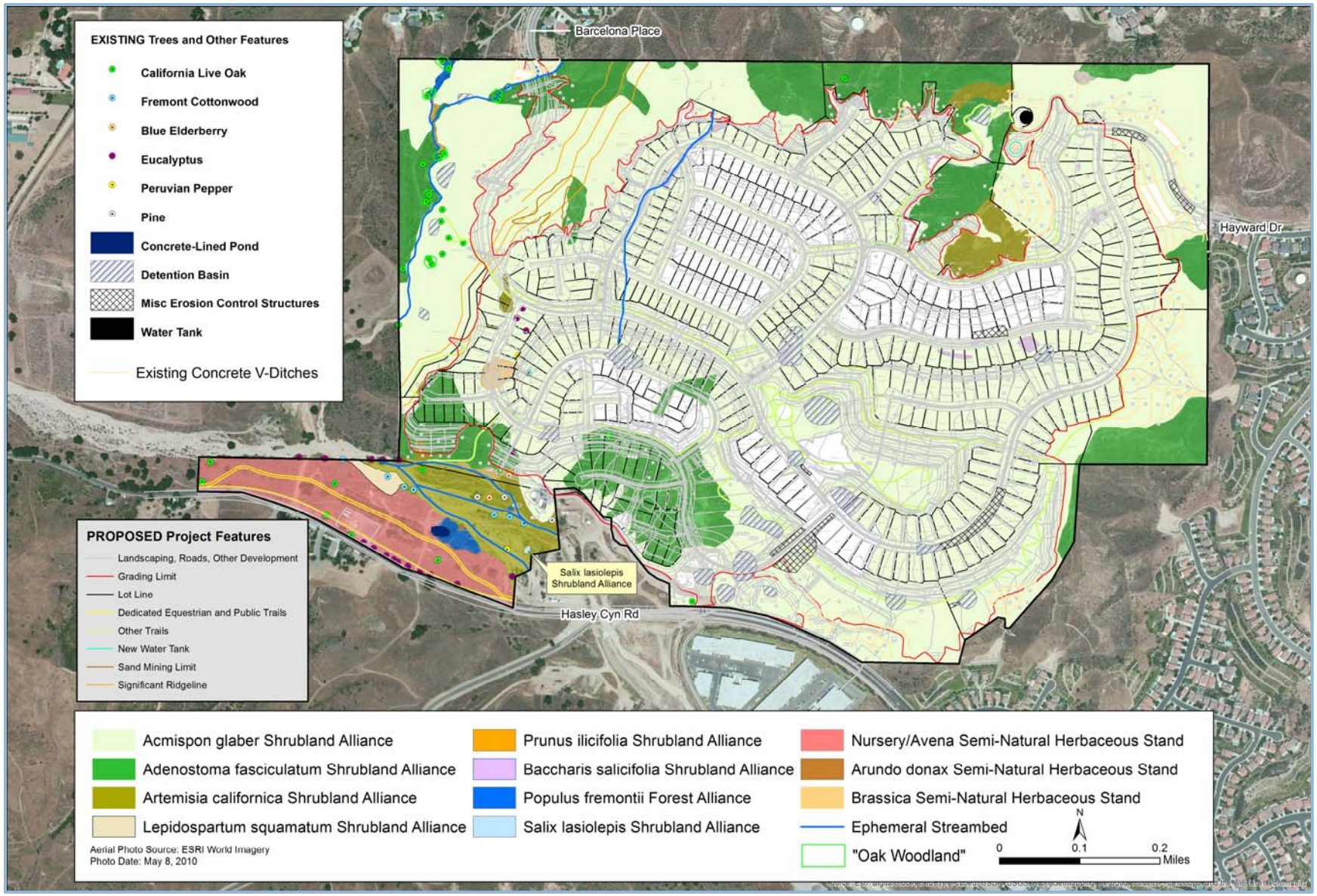

Figure 5. Vegetation Communities in Relation to Proposed Project Disturbance Limits

Table 1. Plant Species Observed

Non-native species indicated with an asterisk (*). Includes only naturalized species outside of the nursery.

Latin Name	Common Name
PTERIDOPHYTES	FERNS AND FERN ALLIES
Selaginellaceae	**Spike-Moss Family**
Selaginella bigelovii Underw.	Bigelow's moss fern
GYMNOSPERMS	CONIFERS
Pinaceae	**Pine Family**
Pinus sp.	ornamental pine
EUDICOTS	FLOWERING PLANTS
Adoxaceae	**Muskroot Family**
Sambucus nigra L.subsp. *caerulea* (Raf.) Bolli	blue elderberry
Anacardiaceae	**Sumac Family**
*Rhus trilobata*Torrey & A. Gray	skunkbrush
Schinus molle L.*	Peruvian pepper tree
Asteraceae	**Sunflower Family**
Ambrosia acanthicarpa Hook.	annual bursage
Artemisia californica Less.	California sagebrush
Baccharis pilularis DC.	coyote brush
Baccharis salicifolia (Ruiz Lopez & Pavon) Pers.	mule fat
*Centaurea solstitalis*L.*	yellow star-thistle
Chaenactis glabriuscula DC. var. *glabriuscula*	yellow pincushion
Chrysothamnus nauseosus(Pallas) Britton	rabbitbrush
Chrysothamnus nauseosus(Pallas) Britton ssp. *albicaulis* (Nutt.) H.M. Hall & Clements	white-stemmed rabbitbrush
Deinandra fasciculata(DC.) Greene	common tarplant
Gnaphalium californicum DC.	California cudweed, green everlasting
*Heterotheca grandiflora*Nutt.	telegraph weed
Lepidospartum squamatum (A. Gray) A. Gray	scale broom
Lessingia filaginifolia (Hook. & Arn.) M.A. Lane	California-aster
Pseudognaphalium californicum (DC.) Anderb.	ladies' tobacco
Stylocline gnaphaloides Nutt.	everlasting nest straw
Boraginaceae	**Borage Family**
Cryptantha intermedia (A.Gray) E. Greene	common cryptantha
Brassicaceae	**Mustard Family**
Brassica nigra (L.) W.D.J. Koch*	black mustard
Erysium capitatum (Douglas) E. Greene	western wallflower
Hirschfeldia incana (L.) Lagr.-Fossat*	wild mustard, shortpod mustard
Cactaceae	**Cactus Family**
Opuntia basilaris Engelm. & J.M. Bigelow var. *basilaris*	beavertail cactus
Opuntia littoralis (Engelm.) Cockerell	coastal prickly pear
Caryophyllaceae	**Pink Family**
Spergularia sp.	sand spurrey

Chenopodiaceae	**Goosefoot Family**
Salsola tragus L.*	Russian thistle, tumbleweed
Crassulaceae	**Stonecrop Family**
Crassula connata (Ruiz & Pav.) A. Berger	pygmy stonecrop
Dudleya lanceolata (Nutt.) Britton & Rose	lance-leaved dudleya
Euphorbiaceae	**Spurge Family**
Chamaesyce albomarginata(Torrey & A. Gray)	rattlesnake weed
Eremocarpus setigerus(Hook.) Benth.	dove weed
Fabaceae	**Legume Family**
Acmispon glaber (Vogel) Brouillet	deerweed, California broom
Lotus corniculatus L.*	bird's-foot trefoil
Lupinus bicolor Lindl.	miniature lupine
Lupinus succulentus W.D.J. Koch	arroyo lupine
Fagaceae	**Oak Family**
Quercus agrifolia Nee	California live oak
Geraniaceae	**Geranium Family**
Erodium cicutarium (L.) L'Her.*	red-stem filaree
Lamiaceae	**Mint Family**
*Marrubium vulgare*L.*	horehound *
*Salvia apiana*Jepson	white sage
*Salvia columbariae*Benth.	chia
Salvia mellifera E. Greene	black sage
Myrtaceae	**Myrtle Family**
Eucalyptus sp.*	eucalyptus
Papaveraceae	**Poppy Family**
Escholtzia californica Cham.	California poppy
Phyrmaceae	**Lopseed Family**
Mimulus aurantiacus Curtis	bush monkeyflower
Plantaginaceae	**Plantain Family**
Penstemon centranthifolius (Benth.) Benth	scarlet bugler
Polemoniaceae	**Phlox Family**
Eriastrum plurifolorum (A. Heller) H. Mason ssp. *pluriflorum*	many-flowered eriastrum
Linanthus californicus (Hook & Arn.) J.M. Porter & L.A. Johnson	prickly phlox
Polygonaceae	**Buckwheat Family**
Chorizanthe brevicornu Torr.	brittle spineflower
Chorizanthe staticoides Benth.	Turkish rugging
Eriogonum fasciculatum Benth. var. *fasciculatum*	coastal California buckwheat
Eriogonum fasciculatum Benth. var. *foliolosum* (Nutt.) Abrams	leafy California buckwheat
Polygonum arenastrum Boreau*	common knotweed
Rhamnaceae	**Buckthorn Family**
Ceanothus megacarpus Nutt.	big-pod ceanothus
Rosaceae	**Rose Family**
Adenostoma fasciculatum Hook. & Arn.	chamise
Prunus ilicifolia (Nutt.) Walp. ssp. *ilicifolia*	holly-leaved cherry
Salicaceae	**Willow Family**
*Populus fremontii*S. Watson	Fremont cottonwood
*Salix lasiolepis*Benth.	arroyo willow

Solanaceae	**Nightshade Family**
Nicotiana glauca Graham*	tree tobacco
Solanum xanti A. Gray	nightshade
Tamaricaceae	**Tamarix Family**
Tamarix sp.*	saltcedar
MONOCOTS	GRASSES AND ALLIES
Agavaceae	**Century Plant Family**
Hesperoyucca whipplei (Torr.) Trel.	chaparral yucca
Cyperaceae	**Sedge Family**
Cyperus sp.	sedge
Poaceae	**Grass Family**
*Arundo donax*L.*	giant reed
Avena fatua L.*	common wild oats
Bromus carinatus Hook. & Arnold	California brome grass
Bromus madritensis L. ssp. *rubens* (L.) Husnot*	red brome
Cortaderia selloana (Schultes) Asch. & Graebner*	pampas grass
Hordeum marinum Huds.	Mediterranean barley
*Polypogon monspeliensis**	rabbitsfoot grass
Schismus barbatus (L.) Thell.*	Mediterranean grass
Stipa pulchra Hitchc.	purple needlegrass
Typhaceae	**Cattail Family**
Typha sp.	cattail

Table 2. Acreages, Estimated Pre-and-Post Project

(*) Assumes Avena part of this area will remain and nursery trees will be used in project landscaping and/or sold.

(**) Pond not shown on site plan and therefore assumed to be removed.

Vegetation Type or Feature	Existing Acres	Post-Project Acres	Loss
Upland			
Acmispon glaber Shrubland Alliance	327.43	52.32	275.11
Adenostoma fasciculatum Shrubland Alliance	58.38	30.30	28.08
Artemisia californica Shrubland Alliance	14.66	10.72	3.94
Brassica Semi-Natural Herbaceous Stand (not native)	1.12	0.26	0.86
Lepidospartum squamatum Shrubland Alliance	0.80	0.80	0.00
Nursery/*Avena* Semi-Natural Herbaceous Stand (not native)	16.45	16.45*	0.00*
Prunus ilicifolia Shrubland Alliance	0.36	0.36	0.00
"Oak Woodland"	<1	<1	0.00
Total, Upland Vegetation	419.19	111.21	307.98
Riparian			
Arundo donax Semi-Natural Herbaceous Stand (not native)	0.05	0.05	0.00
Baccharis salicifolia Shrubland Alliance	1.50	0.03	1.47
Populus fremontii Forest Alliance	1.23	1.23	0.00
Salix lasiolepis Shrubland Alliance	0.04	0.04	0.00
Total, Riparian Vegetation	2.82	1.35	1.47
Aquatic and Emergent Marsh			
Concrete-Lined Pond/Emergent Marsh	0.16	0.00**	0.16**
Other Features			
Cleared	0.34		
Developed	0.78		
Detention Basin	6.90		
Misc Erosion Control Structures	2.79		
Water Tank	0.13		
Total, Other Features	10.93		
Total, All Vegetation and Features	**432.95**		

Table 3. Assessment of Potential for Special Status Plants

Code descriptions provided at end of table

Scientific and Common Name	Status			Habitat Requirements	Elevation Range, Life Form, and Flowering Period	Potential Occurrence
	Federal	State	CNPS			
Braunton's milkvetch *Astragalus brauntonii*	FE	--	1B.1	Chaparral, coastal scrub, valley and foothill grassland; recent burns or disturbed areas, usually sandstone with carbonate layers	4-640m PH January-August	**Moderate Potential, Not Observed.** Reported occurrence from one of the project quadrangles (Val Verde); substrate typically associated with this species is not present on site.
Nevin's barberry *Berberis nevinii*	FE	CE	1B.1	Chaparral, cismontane woodland, coastal scrub, riparian scrub; sandy or gravelly	274-825m S(e) March-June	**Low Potential, Not Observed.** Site probably too arid for this species; no reported occurrences in project quadrangles.
Round-leaved filaree *California macrophylla*	--	--	1B.1	Cismontane woodland, valley and foothill grassland; clay soils	15-1200m AH March-May	**Moderate Potential, Not Observed.** Reported from one of the project quadrangles (Newhall) but habitat on site is limited to areas not previously graded. Not observed in 1997-98 and 2013 surveys.
Slender mariposa lily *Calochortus clavatus* var. *gracilis*	--	--	1B.2	Chaparral, coastal scrub, valley and foothill grassland	360-1000m PH(b) March-June	**Moderate Potential, Not Observed.** Many occurrences in the region but not observed in 1997-98 and 2013 surveys.
Late-flowered mariposa lily *Calochortus fimbriatus*	--	--	1B.3	Chaparral, cismontane woodland, riparian woodland; often serpentinite substrate	275-1905m PH(b) June-August	**Low Potential, Not Observed.** Known only from areas in Los Angeles County that are outside the database search region; no serpentinite substrate on site.
San Fernando Valley spineflower *Chorizanthe parryi* var. *fernandina*	FC	CE	1B.1	Coastal scrub, valley and foothill grassland; sandy soils	150-1220m AH April-July	**Moderate Potential, Not Observed.** Historical occurrences in the region but not observed in 1997-98 and 2013 surveys.

Scientific and Common Name	Status			Habitat Requirements	Elevation Range, Life Form, and Flowering Period	Potential Occurrence
	Federal	State	CNPS			
Parry's spineflower *Chorizanthe parryi* var. *parryi*	--	--	1B.1	Coastal scrub, chaparral; dry sandy soils	40-1705 AH April-June	**Low Potential, Not Observed.** One historical occurrence in the far eastern part of the database search region (Green Valley), none reported from project area.
Santa Susana tarplant *Deinandra minthornii*	--	CR	1B.2	Chaparral and coastal scrub; associated with sandstone outcroppings and rocky areas.	280-760m S (d) July-November	**Not Expected, Not Observed.** No habitat typical of this species is present on site.
Slender-horned spineflower *Dodecahema leptoceras*	FE	CE	1B.1	Chaparral, cismontane woodland, coastal scrub (alluvial fan); sandy	200-760m AH April-June	**Not Expected, Not Observed.** No habitat typical of this species is present on site.
Conejo Dudleya *Dudleya parva*	FT	--	1B.2	Coastal scrub, valley and foothill grassland; rocky or gravelly, clay or volcanic	60-450m PH May-June	**Not Expected, Not Observed.** No habitat typical of this species is present on site.
San Gabriel bedstraw *Galium grande*	--	--	1B.2	Broadleaf upland forest, chaparral, cismontane woodland, lower montane coniferous forest	425-1500m S(d) January-July	**Moderate Potential, Not Observed.** Historical occurrence in the region but not observed in 1997-98 and 2013 surveys.
Newhall sunflower *Helianthus inexpectatus*	--	--	1B.1	Marshes and swamps, riparian woodland; freshwater, seeps.	None listed RH August-October	**Not Expected, Not Observed.** No habitat typical of this species is present on site.
Mesa horkelia *Horkelia cuneata* var. *puperula*	--	--	1B.1	Maritime chaparral, cismontane woodland, coastal scrub	70-810 PH February-September	**Low Potential, Not Observed.** Vegetation on site is not typical of the species; no reported occurrences in the project quadrangles.

Scientific and Common Name	Status			Habitat Requirements	Elevation Range, Life Form, and Flowering Period	Potential Occurrence
	Federal	State	CNPS			
Ross' pitcher sage *Lepechinia rossii*	--	--	1B.2	Chaparral, in soil derived from reddish fine-grained sedimentary rock.	305-790m S(e) May-September	**Not Expected, Not Observed.** No habitat typical of this species is present on site.
Davidson's bush-mallow *Malcothamnus davidsonii*	--	--	1B.2	Sandy washes in chaparral, cismontane woodland, coastal scrub, riparian woodland	185-855m S(d) June-January	**Moderate Potential, Not Observed.** Historical occurrence in the search region but not observed in 1997-98 and 2013 surveys.
Tehachapi monardella *Monardella linoides* ssp. *oblonga*	--	--	1B.3	Lower and upper montane coniferous forest; pinyon and juniper woodland	900-2470m RH June-August	**Not Expected, Not Observed.** No habitat typical of this species is present on site.
Spreading navarettia *Navarettia fossalis*	FT	--	1B.1	Vernal pools, chenopod scrub, marshes	30-665m AH April-June	**Not Expected, Not Observed.** No habitat typical of this species is present on site.
Ojai navarettia *Navarettia ojaiensis*	--	--	1B.1	Valley and foothill grassland, openings in chaparral and coastal scrub	275-620m AH May-July	**Not Expected, Not Observed.** No habitat typical of this species is present on site.
Piute Mountains navarettia *Navarettia setiloba*	--	--	1B.1	Cismontane woodland, pinyon-juniper woodland, valley and foothill grassland; red clay soils or gravelly loam	285-2100m AH April-July	**Not Expected, Not Observed.** No habitat typical of this species is present on site.
Short-joint beavertail *Opuntia basilaris* var. *brachyclada*	--	--	1B.2	Chaparral, Joshua tree woodlands, Mojavean desert scrub, pinyon and juniper woodland	425-1800m PSS April-August	**Moderate Potential, Not Observed.** Historical occurrence in the search region but not observed in 1997-98 and 2013 surveys.
California orcutt grass *Orcuttia californica*	FE	CE	1B.1	Vernal pools	15-660m AH April-August	**Not Expected, Not Observed.** No habitat typical of this species is present on site.

Scientific and Common Name	Status			Habitat Requirements	Elevation Range, Life Form, and Flowering Period	Potential Occurrence
	Federal	State	CNPS			
Lyon's pentachaeta *Pentachaeta lyonii*	FE	CE	1B.1	Chaparral (openings), coastal scrub, valley and foothill grassland; rocky.clay	30-630m AH March-August	**Moderate Potential, Not Observed.** Historical occurrence in the search region but not observed in 1997-98 and 2013 surveys.
Chaparral ragwort *Senecio aphanactis*	--	--	2B.2	Cismontane woodland, chaparral, coastal scrub; sometimes alkaline	15-800m AH Jan-April	**Moderate Potential, Not Observed.** Historical occurrences in the region but not observed in 1997-98 and 2013 surveys.
Greata's aster *Symphyotrichum greatae*	--	--	1B.3	Chaparral, cismontane woodland; mesic canyons	800-1500m RH June-October	**Not Expected, Not Observed.** No microhabitat typical of this species is present on site.

STATUS KEY:

Federal
FE: Federally Endangered
FT: Federally Threatened
FC: Federal Candidate for listing

State
CE: State Endangered
CR: State Rare

CNPS
List 1B: Plants rare and endangered in California and elsewhere
List 2B: Plants rare, threatened and endangered in CA but more common elsewhere
.1 : Seriously Endangered in California
.2 : Fairly Endangered in California
.3 : Not very threatened in California

LIFE FORM KEY:

AH: Annual Herb
PH: Perennial Herb
RH: Rhizomatous Herb
S: Shrub
PSS: Perennial stem succulent

(b): bulb
(d): deciduous
(e): evergreen

APPENDIX 5.3-3

Assessment of Impacts to Federal and State Jurisdictional Waters and Wetlands

Assessment of Impacts to Federal and State Jurisdictional Waters and Wetlands

Los Valles Residential Project

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LIST OF ACRONYMS

CEQA	California Environmental Quality Act
CDFW	California Department of Fish and Wildlife
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High Water Mark
RWQCB	Regional Water Quality Control Board
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture

1 PROJECT DESCRIPTION

Residential development is proposed for about 433 acres of property in Hasley Canyon, located west of Interstate 5 in an unincorporated part of Castaic in northwestern Los Angeles County (Figure 1). Site elevations are in the range of 1200 to 1700 feet (366 to 518 meters) above mean sea level.

Figure 2 shows a site plan provided by the applicant. The plan includes landscaped parks and trails, as well as dedicated equestrian and public trails in the Hasley Canyon flooplain in the southwest part of the property. Areas in the north, northwest, and west parts of the site surround a "significant ridgeline" and are designated as undisturbed natural open space except for a sand borrow area and new road that would connect the development to an offsite road (Barcelona Place) north of the property. Landscaped open space areas include ponds near the site entrance at Hasley Canyon Road, a working vineyard, community garden, botanical garden, and citrus groves. A second water tank would be added in the northeast part of the site.

2 METHODS

Document Review

Site-Specific Data. A desktop analysis of potential jurisdictional features was conducted for guidance in the field, based on 7.5-minute USGS topographic maps of the project area (Newhall, Val Verde) and aerial photographs. Shapefiles available online from the National Wetlands Inventory ("NWI") at the U.S. Fish and Wildlife Service web site (fws.gov; last updated March 5, 2013) were imported into GIS to assess proximity of mapped to the project site. Soil survey data and maps available from the National Cooperative Soil Survey (NRCS, 2008) were also reviewed, along with a jurisdictional delineation and other environmental studies conducted for a previously proposed project by Rachel Tierney Consulting (1998), Taylor & Company (2001), and Planning Consultants Research ("PCR", 2009).

Delineation Protocols. Documents consulted for delineation of Federal jurisdiction consisted of Lichvar and McColley (2008) regarding identification of "ordinary high water mark" in arid regions, the U.S. Army Corps of Engineers (USACE) guidelines for interpretation of Federal jurisdiction following the Rapanos, Carabell, and SWANCC

decisions (USACE, 2007; USACE and EPA, 2007), the USACE 1987 Wetland Delineation Manual (Environmental Laboratory, 1987), and USACE guidelines and forms for jurisdictional determination in the arid southwest (USACE, 2001, 2008). Delineation of California State jurisdiction (CDFW and RWQCB) was based on definitions and regulations specified by Sections 1600–1616 of the Fish and Game Code, Title 14 of the California Code of Regulations, and Section 13050 of the California Water Code. Additional references consisted of Richardson and Vepraskas (2001) and Tiner (1999) with respect to assessing wetland presence/absence under site conditions that are significantly disturbed or problematic.

Field Surveys

Field surveys for the delineation were conducted by E. Read in conjunction with vegetation community mapping and rare plant surveys on April 29, May 16, and June 30, 2013. Additional field surveys for the delineation were conducted on November 15 and December 9, 2013. An ortho-rectified and geo-referenced aerial photograph dated May 8, 2010 was used to map channel alignments and relevant site features. One soil pit was excavated at each of two locations where there was at least one hydrologic indicator of wetlands (cracked surface mud) and one biological indicator of wetlands (dominance of willows, *Salix* spp.). Determination of soil color was based on standard Munsell color charts (GretagMacbeth, 2000).

Plant taxonomy followed the current manual of the California flora (Baldwin et at., 2012). Plant community classification followed the current system for California (Sawyer et al., 2009) as much as possible, given the disturbed condition of the site. The wetland status of individual species was assigned based on the most recent available classifications for the Arid West of California (USACE, 2012).

Delineation Criteria

CDFW

At the State level, the California Department of Fish and Wildlife (CDFW; formerly CDFG) has jurisdictional authority over resources associated with rivers, streams, and lakes.[1] The California Code of Regulations define a stream as "a body of water that

[1] Fish & Game Code §§ 1600 – 1616

flows at least periodically or intermittently through a bed or channel having banks and supports fish and other aquatic life including watercourses having a surface or sub surface flow that supports or has supported riparian vegetation."[2] CDFG jurisdiction typically extends between the top of each bank or to the outer edge of contiguous riparian vegetation, whichever is greater.

USACE

At the Federal level, the USACE regulates placement of "dredge" and "fill" in waters of the U.S. including adjacent wetlands under the authority of Section 404 of the Clean Water Act.[3] The Code of Federal Regulations defines "waters of the U.S." as intrastate lakes, rivers, streams, mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds. Wetlands are defined as "areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Assessment of Federal jurisdiction is based on two main factors: 1) nexus or connectivity to "traditionally navigable waters" or "relatively permanent waters"; and 2) presence of "ordinary high water marks."

RWQCB

Federal authority over water quality under Section 401 of the Federal Clean Water Act is typically delegated to regional water quality control boards unless a project encompasses more than one region, in which case the State Water Resources Control Board may assert regulatory authority. The current Project falls under the authority of the Los Angeles Regional Water Quality Control Board. Section 401 of the Clean Water Act requires that "any applicant for a Federal permit for activities that involve a discharge to Waters of the U.S., shall provide the Federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act."

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[2] California Code of Regulations (C.C.R.), Title 14 § 1.72

[3] Clean Water Act of 1972 § 404. See also 33 U.S.C. § 1341

In addition to Section 401 of the Federal Clean Water Act, the RWQCB exerts authority over "Waters of the State" and water quality by means of State law. "Waters of the State" are broadly defined by sections of the California Water Code, known as the Porter-Cologne Water Quality Control Act, as "any surface water or groundwater, including saline waters, within the boundaries of the state."[4]

As of this writing, the State Water Resources Control Board is considering adoption of a Wetland Area Protection Policy and regulations governing the discharge of dredge or fill material into waters of the State that would apply at State and regional levels (California State Water Resources Control Board, 2013). This policy is intended to improve consistency in the definition of a wetland and regulatory mechanisms affecting wetland protection, and an approach for collecting and tracking aquatic resource monitoring data. One difference between existing regulations and the new policy is in the definition of a wetland, wherein wetland vegetation does not have to be present for a feature to qualify as a wetland. Specifically, an area will be defined as a wetland if, under normal circumstances, it: 1) is continuously or recurrently inundated with shallow water or saturated within the upper substrate; 2) has anaerobic conditions within the upper substrate caused by such hydrology; and 3) either lacks vegetation or the vegetation is dominated by hydrophytes. This definition is adopted in this study in anticipation of the new regulations.

3 RESULTS AND DISCUSSION

3.1 Overview

Figure 3 shows the relationship of Hasley Canyon and its tributaries to downstream jurisdictional features. Hasley Canyon is a tributary of Castaic Creek, which connects to the Santa Clara River south of Highway 126. The Santa Clara River ultimately flows into the Pacific Ocean at Ventura. Thus there is a Federal nexus to "traditionally navigable waters".

As the following sections discuss in detail, Federal and State jurisdictional features on site consist of non-wetland, relatively permanent Waters with seasonal flow. No

[4] California Water Code § 13050(e)

wetlands were observed, and the National Wetlands Inventory for California does not show any presence of wetlands on the site. A concrete-lined pond in the southwest corner of the site in Hasley Canyon is isolated and used to irrigate a small nursery of boxed conifers. This artificial pond, which appears to have originated as part of an old golf course, is not jurisdictional.

The above conclusions are consistent with the previous delineation accepted by permitting agencies (Rachel Tierney Consulting, 1998) and updated in 2009 (PCR, 2009), except for a "blue-line" tributary to Hasley Canyon that had been buried under an abandoned golf course and not evident at the time of that delineation. This feature and others are discussed in Section 3.3.

3.2 Disturbance History and Features Excluded From Jurisdiction

While application of delineation protocols and criteria described in Methods (Section 2) is normally straightforward, some factors make the situation more complex at this site. Most of the site has a long history of disturbance that has obscured physical indicators of jurisdiction in some areas (e.g. "ordinary high water mark", "top of bank"), while producing "false positive" indicators (e.g. erosion gullies, detention ponds) in other areas. Limited resolution and available dates of historic aerial photographs, and puzzling omissions from USGS topographic maps, add to the problem of sorting out natural vs. human-created features. This section first summarizes these issues and then provides examples of features <u>excluded</u> from jurisdiction.

Figure 4 shows a USGS topographic map of the site and an aerial photograph taken in the same year that most of the USGS base topography was reportedly compiled (1952). This year pre-dates most ground disturbance of the site. However, four ponds shown on the USGS map are not evident on the 1952 photograph, and a valley clearly visible in the 1952 photograph is not shown to include a "blue-line" streambed. The ponds do not show up on aerial photographs until after construction of the golf course sometime between 1960 and 1969 (Figure 5). Construction of oil facilities also impacted the site around this time, although to a lesser extent compared to the golf course. The Hasley Canyon Golf Course was abandoned, with the turf removed sometime after 1977. Botanical surveys conducted in 1997 found

vegetation on the abandoned golf course to consist of non-native grassland and mature trees (Rachel Tierney Consulting, 1998).

Eventually, most of the project site was graded sometime between September 2007 and July 2008 for a development that had been planned by the previous property owner. Subsequently, erosion control measures were implemented. These included ditches, detention basins, and jute netting. Hydroseeding, or at least hydro-mulching, was also conducted as evidenced by presence of wood fiber mulch on some slopes.

Figures 6A and 6B show examples of features excluded from jurisdiction, based on current lack of indicators and the historical review discussed above.

3.3 Jurisdictional Features and Potential Impacts

There are three Federal and State jurisdictional features on the site: Hasley Canyon wash and two un-named tributaries to Hasley Canyon wash. Figure 7 shows their locations relative to the site plan and vegetation communities. The following sections and Figures 8, 9, and 10 provide details of each feature. Potential project impacts are also quantified.

Hasley Canyon Wash

Figure 8 shows the extent of Federal and State jurisdiction in Hasley Canyon wash. Federal jurisdiction totals 8.8 acres and State jurisdiction totals 9.4 acres, both along a section of the wash that is about 1200 feet long. The wash is outside the grading limits of the project.

We classify the wash as multi-channel, riverine, relatively permanent waters with seasonal flow. A historical photograph from 1952 (Figure 4) indicates flood scour extending south to Hasley Canyon Road, and the USGS topographic map from that period shows a “blue-line” channel in this south area. However, later photographs indicate migration of the river north, even in areas upstream of the fill created by the old golf course. Therefore we place the present-day limits of Federal and State jurisdiction at the boundaries shown in Figure 8. The Federal jurisdictional area is larger here than in the previous delineations because in the case of a multi-channel wash, jurisdiction extends to the outer scour limits of the entire wash, not just to the

width of each individual channel. In addition, some of the channels are artificially defined by past attempts at directing flows with piles of concrete rubble and earth berms. These artificial barriers cannot be used to define limits of Federal or State jurisdiction.

Riparian species such as arroyo willow (*Salix lasiolepis* -- FACW) are present but scarce in the wash. No wetlands are present. A soil test pit was excavated to a depth of 21 inches at the location shown in Figure 8. This location was selected because of dominance by hydrophytes (arroyo willow, FACW) and cracked surface mud. This mud indicated periodic ponding, albeit artificially induced by an adjacent berm. The delineation conducted by Rachel Tierney Consulting (1998) mapped a seep at this location but no plot data were provided in the report. PCR (2009) did not mention the feature in their delineation. In our survey, we found that the soil had no indicators of present or past anaerobic conditions, and therefore we concluded that the feature does not qualify as a Federal or State jurisdictional wetland. The following soil properties were observed:

Depth, inches	Moist Color	Texture
0-6	10YR5/3	sand; no organics
6-7	10YR3/1	silty clay loam
7-21	10YR5/3	sand; no organics

Un-Named Tributary #1

Figure 9 shows the extent of Federal and State jurisdiction over an un-named tributary to Hasley Canyon wash, located on the west side of the project site. The main stem of this tributary is mapped by the USGS as a “blue-line” stream and was identified as jurisdictional in previous delineations, but we concluded that jurisdiction also includes a fork to the northeast that exhibits evidence of flows (see photo inset, Figure 9).

Most of un-named tributary #1 is classified as riverine, relatively permanent waters with seasonal flow. However, the northernmost section of the tributary main stem receives runoff from a residential development north of the site, and this runoff

appears to be perennial, supporting a dense forest of riparian vegetation that was not present historically. This runoff has also incised the channel to a depth below the root zone of mainland holly leaf cherry (*Prunus ilicifolia* ssp. *ilicifolia*) and other vegetation downstream of the riparian section.

Federal jurisdiction over un-named tributary # 1 totals 0.62 acre, of which an estimated 0.01 acre and 200 linear feet would be impacted by a new road. State jurisdiction totals 1.72 acres, of which 0.14 acre would be impacted by the new road. All of these impacts would occur in a northeast fork of the tributary occupied by chamise chaparral (*Adenostoma fasciculatum* Shrubland Alliance), which is an upland vegetation type.

Un-Named Tributary #2

Figure 10 shows the extent of Federal and State jurisdiction over a second un-named tributary that was connected historically to Hasley Canyon wash. This tributary was filled by construction of a golf-course that pre-dated Federal and State environmental regulations, and remained undetected when delineations were conducted in 1997-1998 and 2009. However, subsequent rains have exposed the feature, which was mapped by the USGS as a "blue-line" stream in 1952, and currently exhibits streambed structure that makes the feature different from simple eroded gullies. This tributary would be filled by the proposed project. Federal jurisdiction totals 0.28 acre and 1800 linear feet. State jurisdiction totals 1.81 acres.

The tributary is dominated by deerweed scrub (*Acmispon glaber* shrubland alliance), an upland vegetation type. Small stands of mulefat (*Baccharis salicifolia* – FAC) are scattered throughout but not dominant. Hydrologically, the tributary is isolated from Hasley Canyon wash by historical fill. Its downstream section terminates at a detention basin.

4 SUMMARY OF JURISDICTION AND IMPACTS

Table 1 below summarizes the conclusions of this delineation.

Table 1. Acreage Summary

Jurisdiction	Hasley Canyon Wash	Tributary 1	Tributary 2	Total
Federal				
Non-Wetland Waters				
Inside Grading Limits	0.00	0.01	0.28	0.29
Outside Grading Limits	8.80	0.61	0.00	9.41
Total	8.80	0.62	0.28	9.70
State				
Non-Wetland Waters				
Within Grading Limits	0.00	0.14	1.81	1.95
Outside Grading Limits	9.40	1.58	0.00	10.98
Total	9.40	1.72	1.81	12.93

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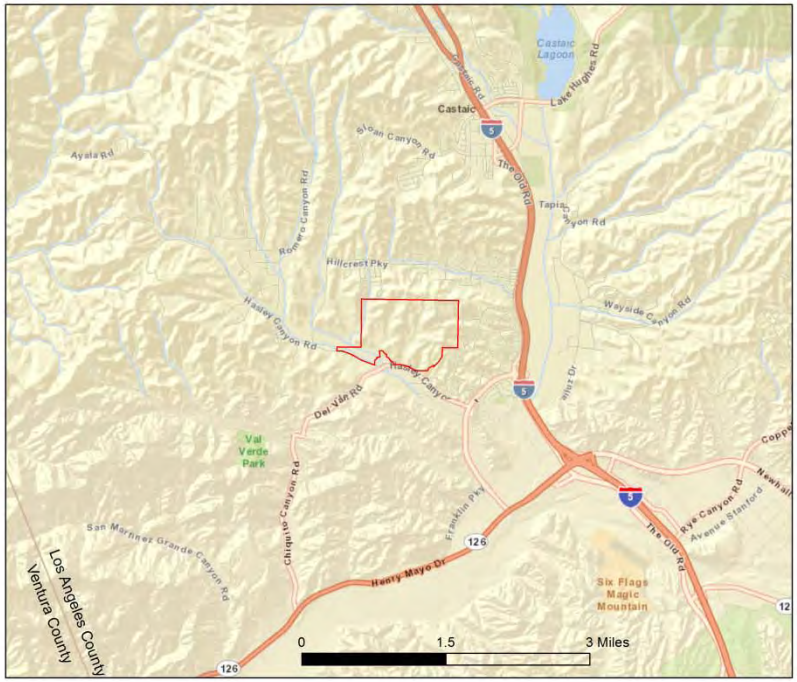

Figure 1. Project Location

LOS VALLES

AMENITY LIST

1. Trail System
2. Working Vineyard
3. Central Recreation Area
4. The Ponds
5. Community Garden & Active Open Space
6. Active Community Parks
7. Meadow Park
8. Botanical Garden
9. Gated Entry
10. Undisturbed Natural Open Space
11. Citrus Groves

0 100' 200' 400'

SITESCAPES
Landscape Architecture & Planning
3190-B Airport Loop Drive
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JOB # 11-006

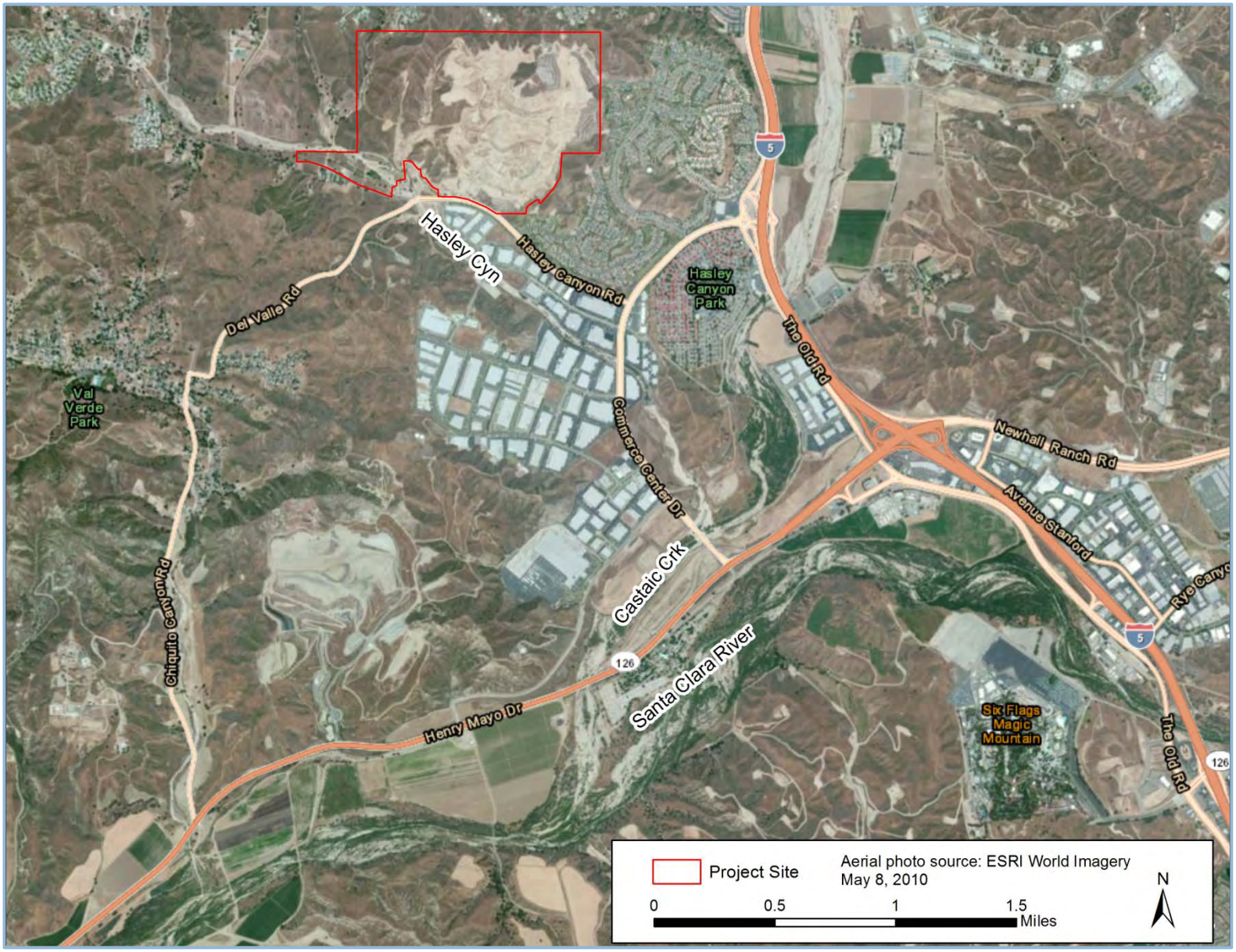


Figure 3. Drainage Connectivity

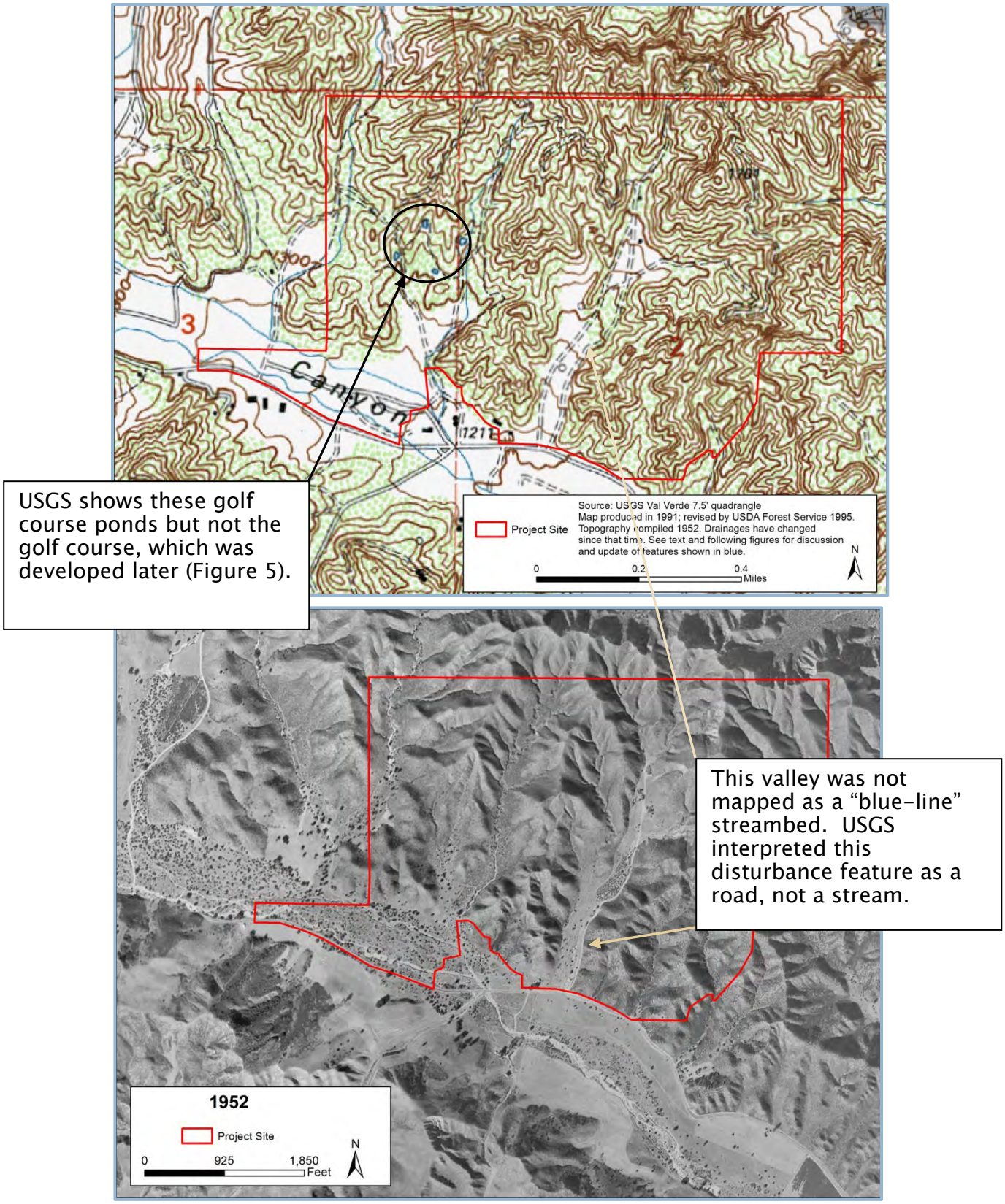
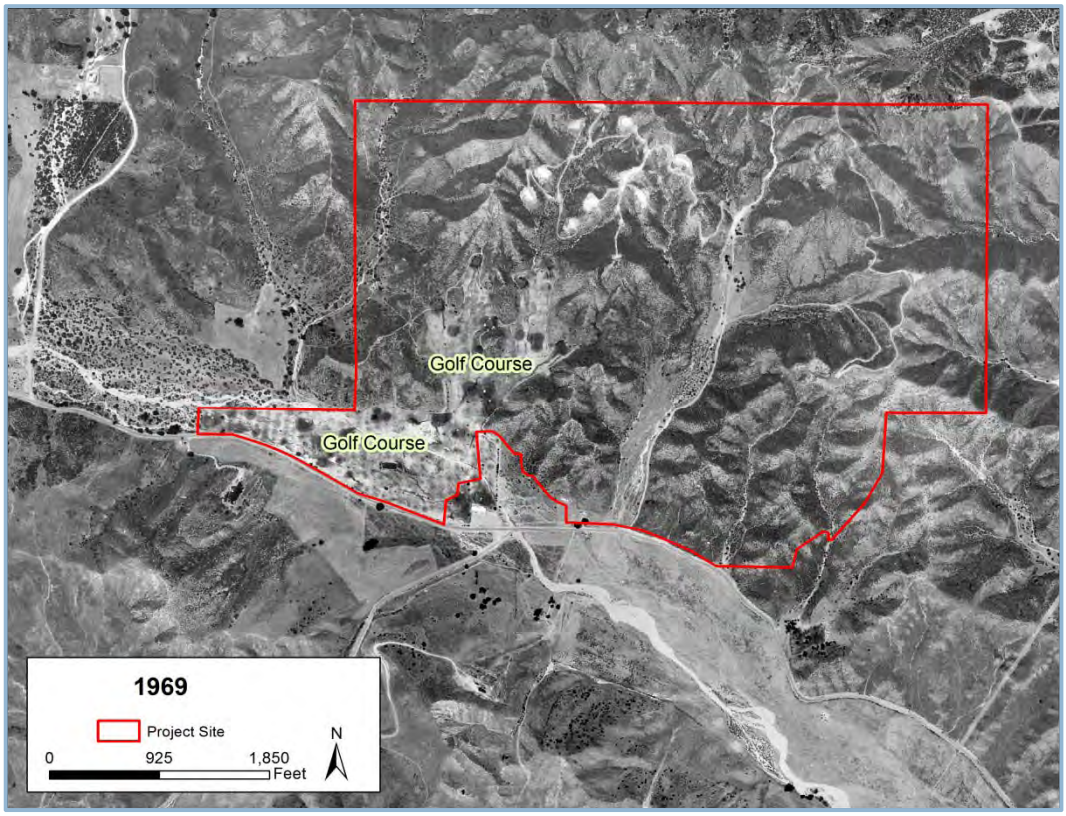


Figure 4. Historical Topography, 1952



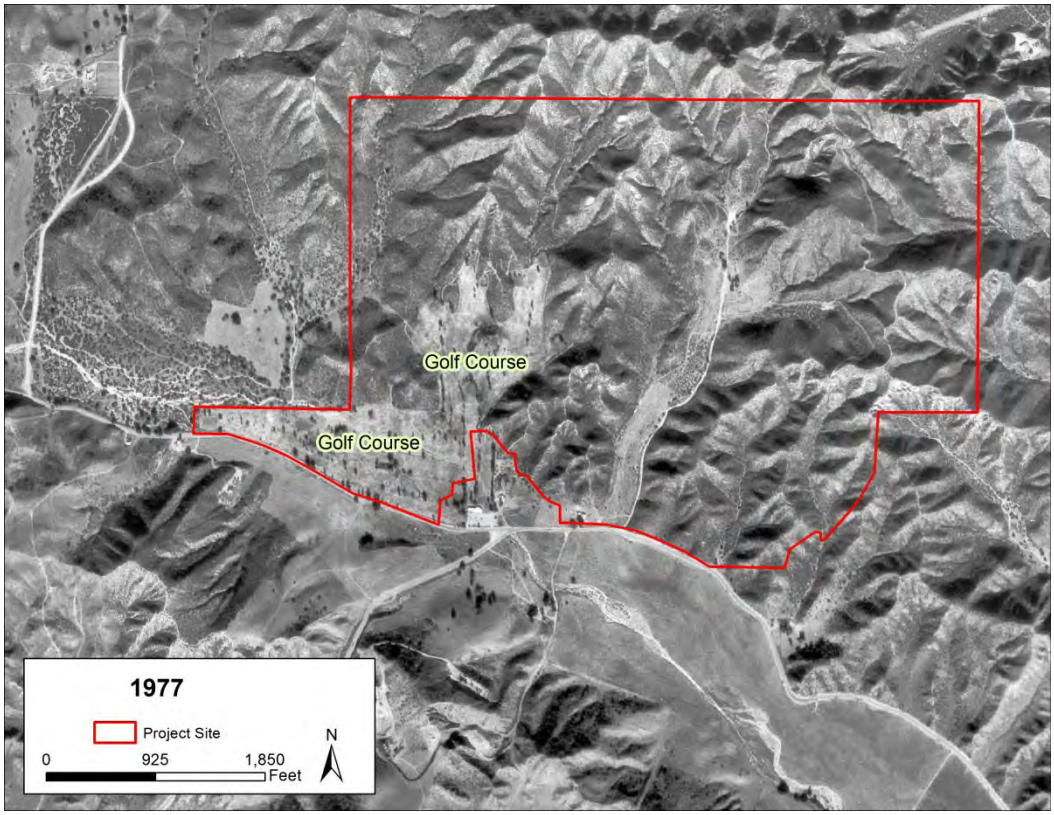
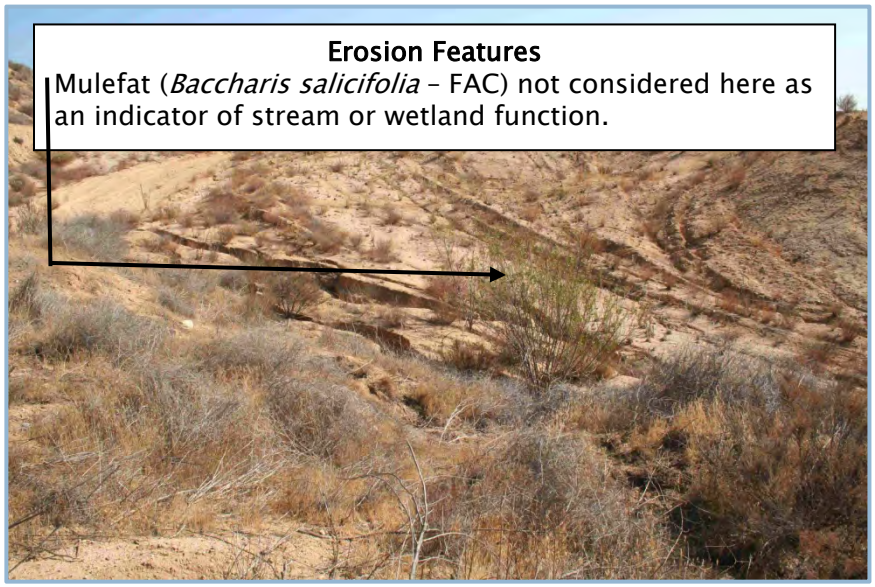
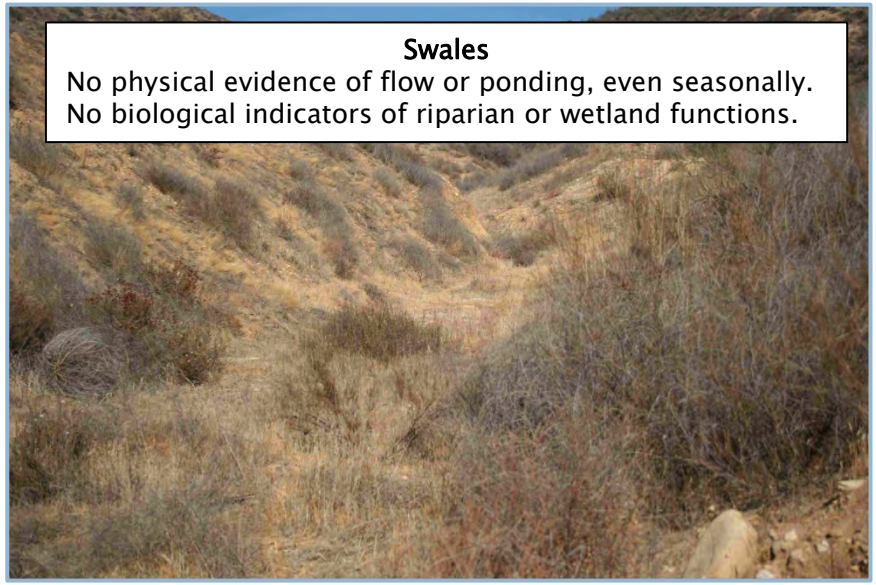
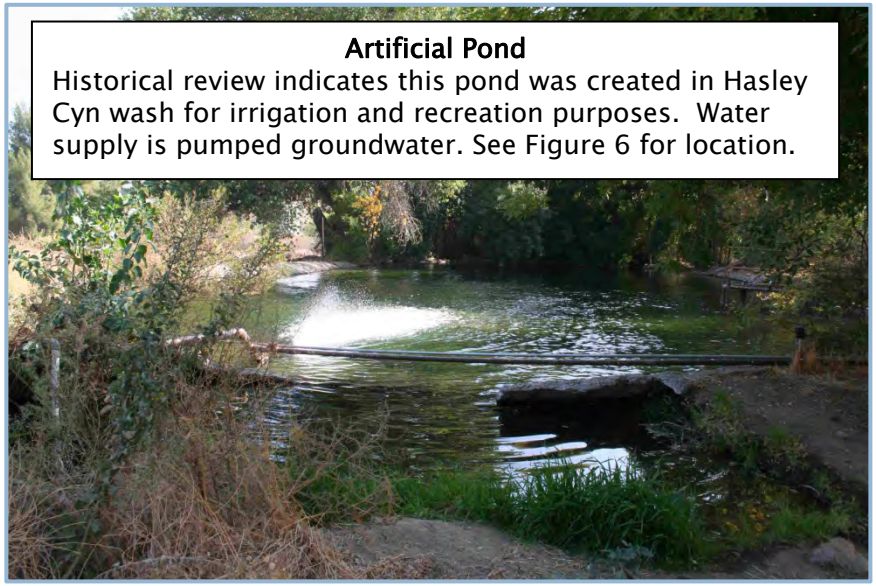


Figure 5. Historical Topography, 1969 and 1977







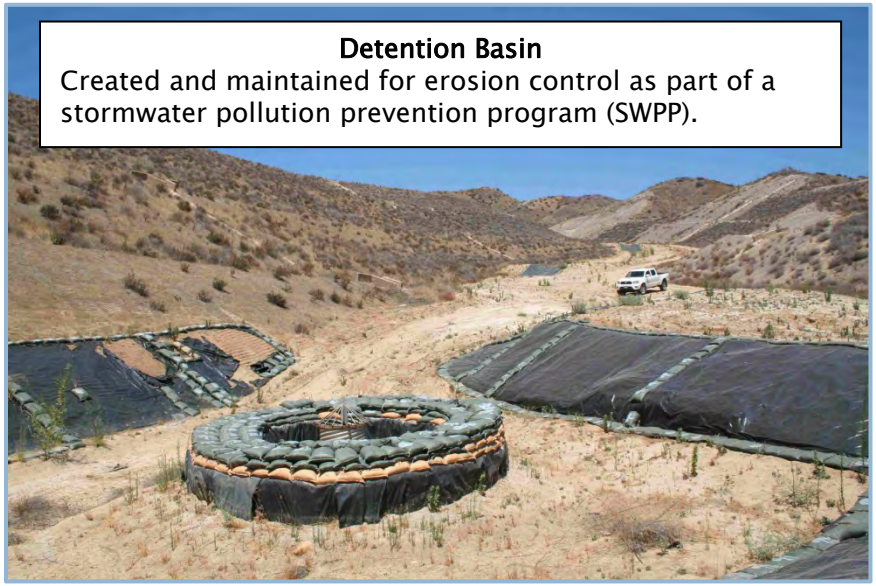
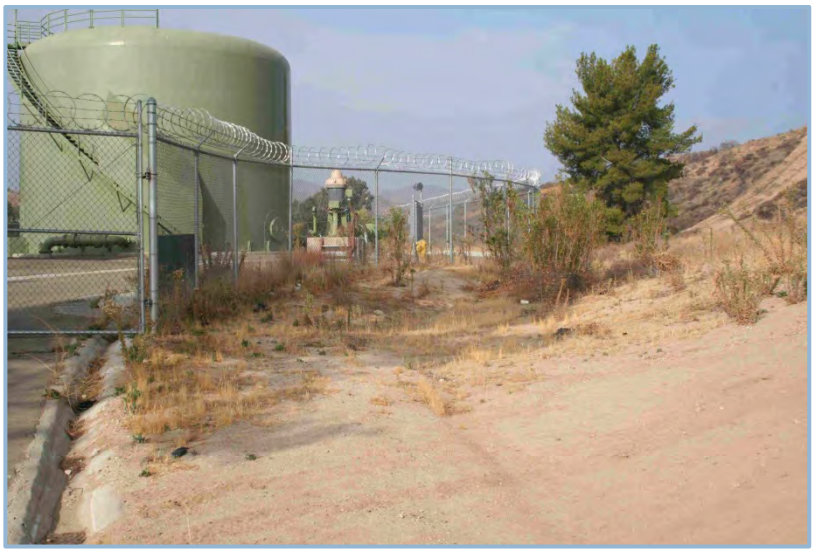


Figure 6A. Examples of Features Excluded from Federal and State Jurisdiction

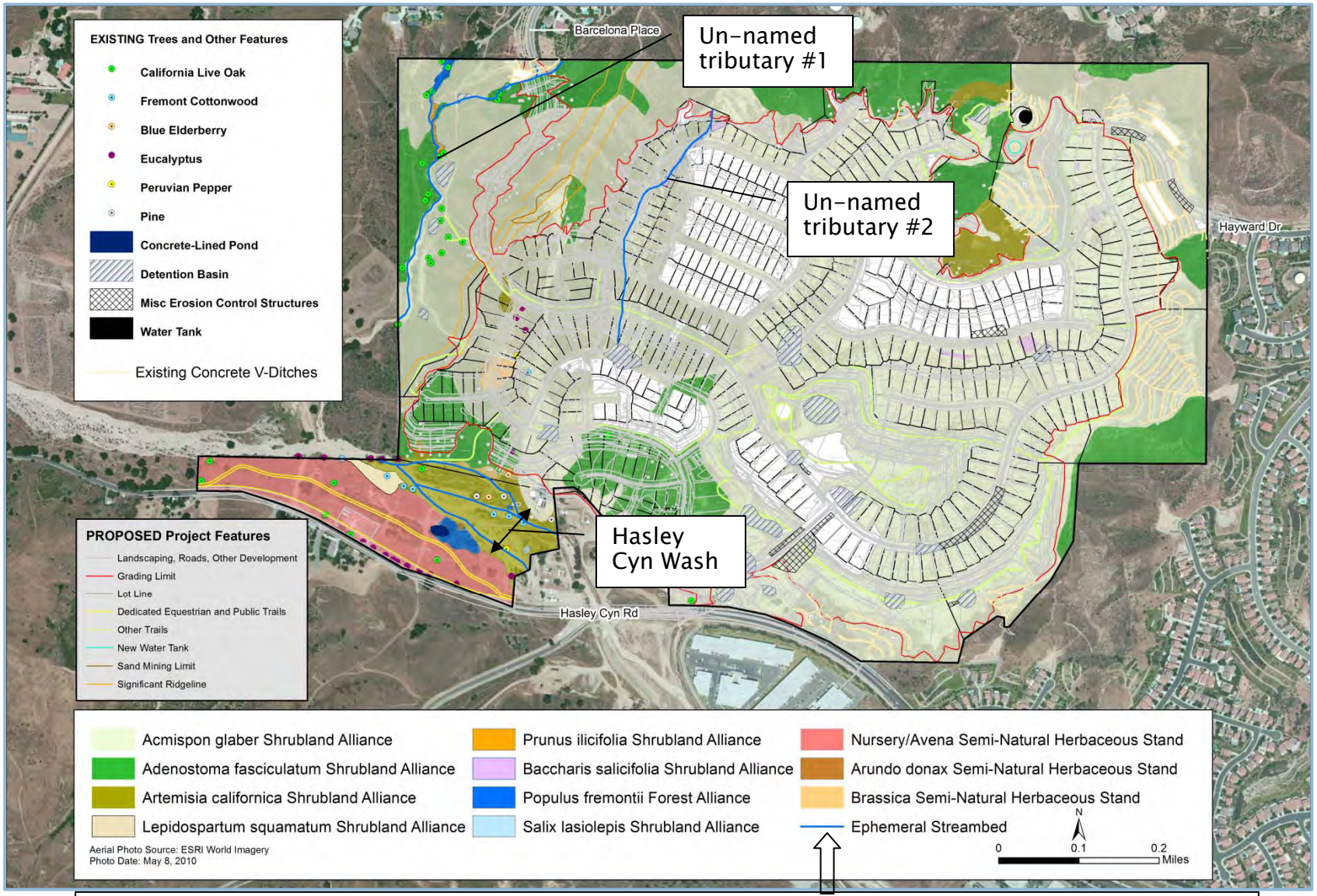
Earth Ditch
Created in uplands for drainage.



View west toward earth ditch shown in top photo.

Concrete V- Ditches
Created in uplands for drainage.

Figure 6B. Examples of Features Excluded from Jurisdiction – continued



Jurisdictional features consist of ephemeral streambeds, as labeled. Names correspond to previous delineations for consistency. See text and following figures for detailed description of each feature.

Figure 7. Site Plan, Vegetation, and Jurisdictional Features -- Overview

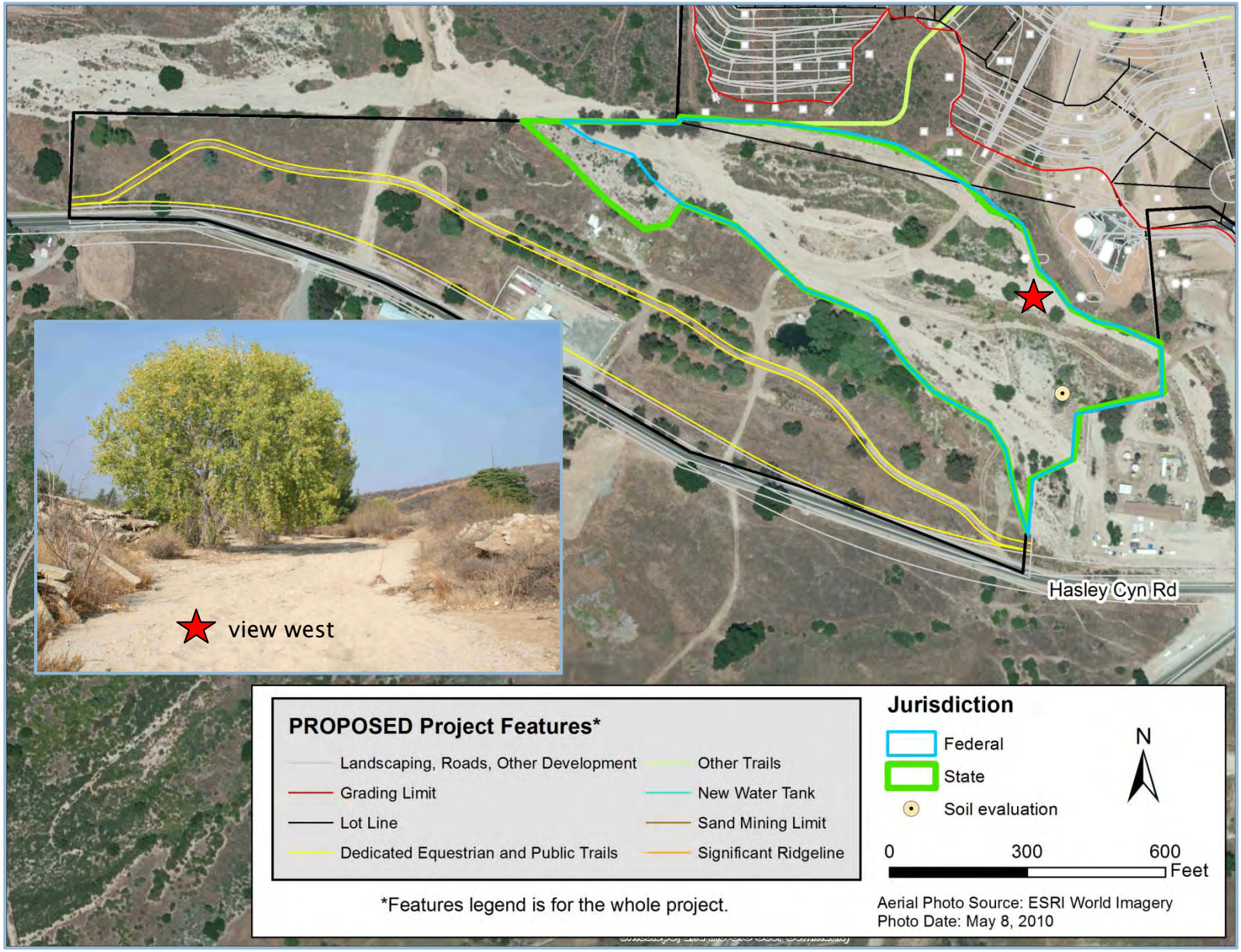


Figure 8. Federal and State Jurisdiction – Hasley Canyon Wash

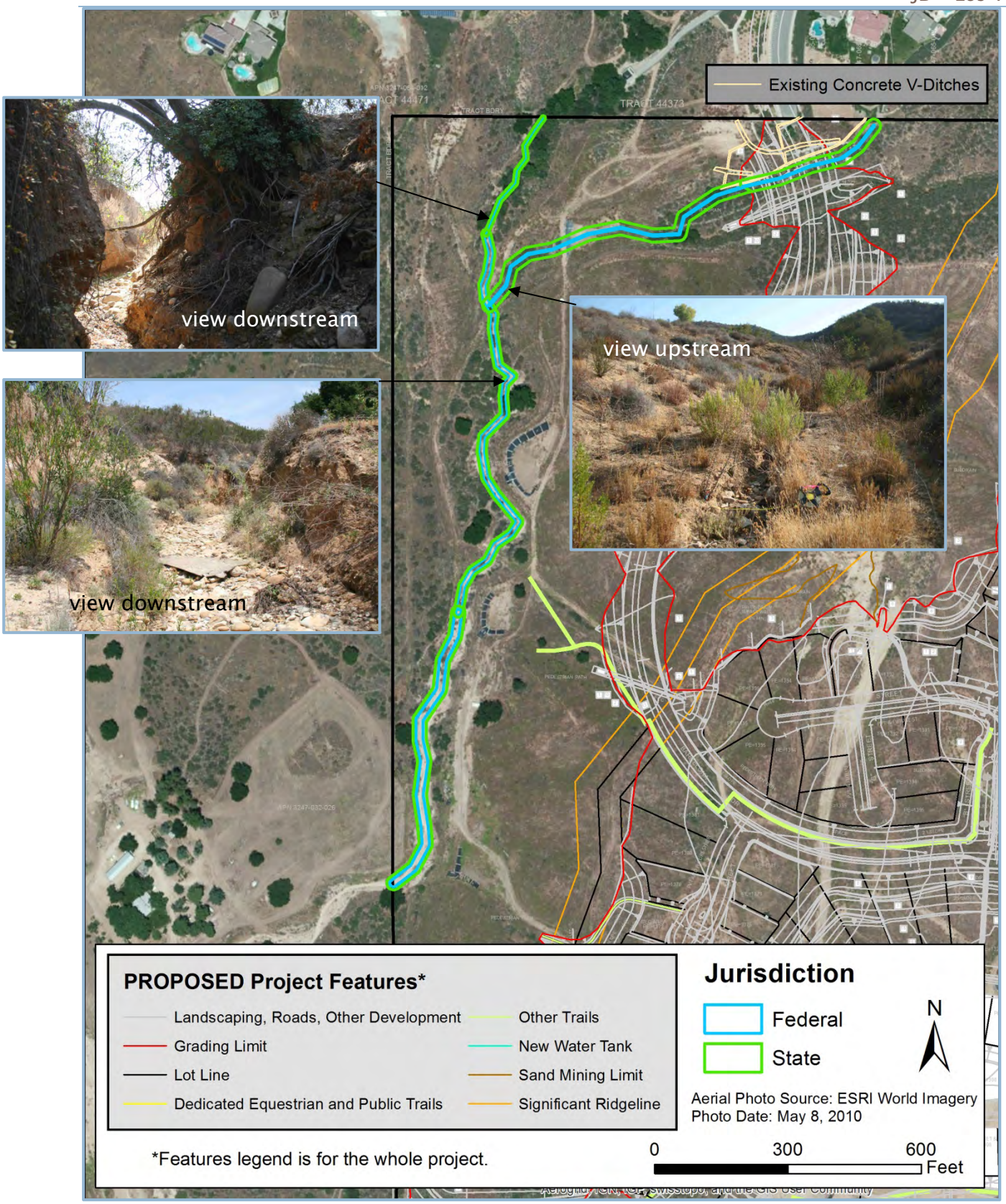


Figure 9. Federal and State Jurisdiction – Un-Named Tributary #1

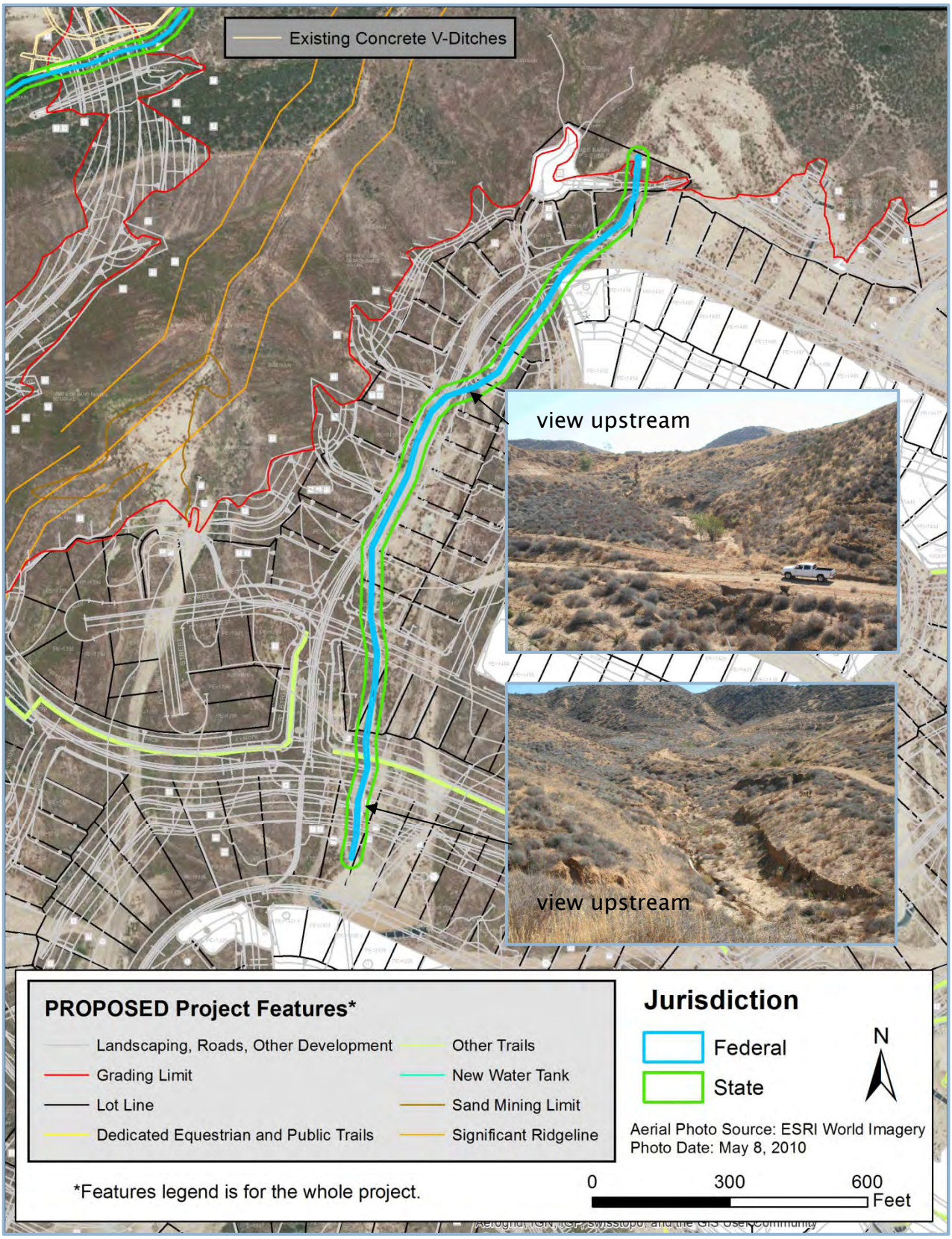


Figure 10. Federal and State Jurisdiction – Un-Named Tributary #2

APPENDIX 5.3-4

Oak Tree Report

OAK TREE REPORT

~

Revised VTTM 52584
Los Valles

Prepared For

SFI Los Valles LLC
10960 Wilshire Blvd., Suite 1260
Los Angeles, CA 90024

May 13, 2013

LDC

LAND DESIGN CONSULTANTS, INC.

Land Planning, Civil Engineering, Surveying & Environmental Services

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OAK TREE REPORT

Revised VTTM 52584

Applicant

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LDC Project No.: 11018-001

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INTRODUCTION

BRIEF PROJECT HISTORY

The subject property, VTTM 52584 (Revised), and its original project development was previously approved and amended in 2007. As part of the original entitlement, a project oak tree impact report was prepared by L. Newman Design Group in July 2000 for the 50 oak trees within the project development envelope. As part of the approved project conditions of approval, Oak Tree Permit No. 98-034-(5) allowed for the removal of 24 oak trees. However, not all of the 24 oak trees that were permitted to be removed were removed. It is unclear which of the permitted removal trees remain from the Newman report due to the original tags now missing.

EXISTING CONDITION

This updated oak tree report describes the general condition and potential impacts to the oak trees located within 200 feet of the proposed grading (project area) associated with the newly revised 526-lot development plan for VTTM 52584. The 430.4-acre site is located northerly along Hasley Canyon Road at the Del Valle Road intersection between Gibraltar Lane and Sloan Canyon Road, in the Castaic area of unincorporated Los Angeles County. A majority of the site was mass graded per the previous VTTM approval in 2006, but no development was ever constructed. A majority of the 24 oak trees permitted for removal were removed during the grading process at that time.

Under the newly proposed development plan, there are 22 ordinance-sized coast live oaks (*Quercus agrifolia*) including three (3) heritage-sized trees (Trees #20, 21, and 22) that are within 200 feet of the proposed impacted areas. Trees #21 and 22 are outside the 200-foot limit, but are included due to the potential future realignment of Hasley Canyon Road. Of the 22 ordinance-sized oak trees surveyed for this report, 21 will remain with no impact. Only one (1) oak tree, Tree #18, is proposed for removal. No oak trees are proposed to have an encroachment within its protected zone

Of the 22 oaks surveyed, one (1) oak tree (1%) received an "A" grade, seventeen (17) oak trees (81%) received a "B" grade, and four (4) oaks (18%) earned a "C' grade at the time

of the surveys. This report identifies the extent of the potential impacts and recommends management and/or mitigation measures where appropriate.

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)).

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 by the County of Los Angeles if the tree has been determined to have "significant historical or cultural importance to the community". Three (3) oak trees (Trees #20, 21, and 22) for this report meet the 36"-diameter size requirement for heritage (H) trees.

This oak tree report complies with the requirements set forth in 22.56.2090 (F)(1a-f), 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, slopes, future streets, etc.

The oak trees were visually surveyed and tagged by LDC in the field on April 22, 2013. The trees were numbered and tagged with a circular metal tag 1½" in diameter that, unless otherwise noted on the field data sheets, was placed on the north side of the trunk at breast height.

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 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 the dripline radius. 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. 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.

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.

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.

PROJECT IMPACTS

The applicant, SFI Los Valles LLC, is proposing a single-family residential development on the previously graded 430.4-acre site known as VTTM 52584. The proposed development of 526-lot project will consist of 497 single-family residential lots totaling 142.91 acres, 13 open space lots totaling 168.37 acres, 7 recreational lots totaling 44.14 acres, one (1) 19.48-acre public park, a 0.61-acre water tank site, seven (7) debris basin lots totaling 3.96 acres, . Illustrated on the Oak Tree Location and Impact Map are the location and canopies of the ordinance-sized oak trees located within 200 feet of the proposed grading and development. Twenty two (22) surveyed and tagged ordinance-sized oak trees fell within this limit. **One (1) oak tree (Tree #18) will be removed and the remaining 21 oak trees will remain with no impacts**

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 statement, if necessary. 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 VTTM 52584 (Revised)

Tree No.	Species	DBH (inches)	Overall Grade	Impact Status			Comment
				N I	R	E	
1	QA	9.5, 6, 5, 6, 7.5	B	X			
2	QA	11, 11	B	X			
3	QA	7, 10, 10, 10, 7.5	B	X			
4	QA	19, 13, 15, 15.5, 5.5, 13.5, 11	B	X			
5	QA	16, 9, 5	B	X			
6	QA	12, 13, 14	B	X			
7	QA	11, 6, 4, 12.5, 10, 10, 9, 8, 7	B	X			
8	QA	10, 5.5, 11.5, 12, 5, 2.5, 10, 12, 9, 8, 10, 6, 14.5	B	X			
9	QA	6.5, 4, 8, 6.5, 9, 7, 6, 7, 4, 2, 8.5	B	X			
10	QA	13.5, 11.5	B	X			
11	QA	8, 17	B	X			
12	QA	12.5, 4.5	C	X			
13	QA	9, 10.5	B	X			
14	QA	4, 8, 4	C-	X			
15	QA	8.5	C-	X			
16	QA	15, 26.5, 4.5	B	X			
17	QA	19.5, 15	B	X			
18	QA	7, 3, 5, 6, 7, 7, 6.5, 6, 3, 3.5	A		X		Removed due to project grading
19	QA	35	C-	X			
20 (H)	QA	32.5, 36	B	X			
21 (H)	QA	52.5	B	X			
22 (H)	QA	38, 31	B	X			
TOTAL							

NI = NO IMPACT R = REMOVAL E = ENCROACHMENT

DBH = Diameter at Breast Height PZ = Protected Zone H = Heritage Tree

QA = *Quercus agrifolia (Coast Live Oak)*

MITIGATION MEASURES

Only one (1) of the 22 oak trees surveyed is proposed for removal. 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 two (2), 15-gallon minimum replacement oak trees within the open space areas of VTTM 52584 (Revised) to replace the one (1) removal tree.** The mitigation trees shall consist of coast live 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, 90°-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 DATA WORKSHEETS

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 1**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 5 **Height (ft.):** 25	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 9.5, 6, 5, 6, 7.5	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[1]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[2]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[3]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	14	
NE		
E	14	
SE		
S	15	
SW		
W	15	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #317; one small 4" trunk dead.

[1] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[2] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[3] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 2**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.):** 35	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 11, 11	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[4]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[5]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[6]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	16	
NE		
E	5	
SE		
S	12	
SW		
W	20	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:
Impacts:
Mitigations:

Comments & Notes: Old tags #318 and #44.

[4] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[5] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[6] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 3**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 5 **Height (ft.):** 30	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 7, 10, 10, 10, 7.5	☐ stag-head
Existing Terrain: ☐ Flat ☒ Slope	**Crown Class[7]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[8]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[9]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	15	
NE		
E	18	
SE		
S	16	
SW		
W	9	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☒ Average ☐ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tags #319 and #45; dead branches

[7] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[8] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[9] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 4**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 7 **Height (ft.):** 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 19, 13, 15, 15.5, 5.5, 13.5, 11	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[10]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[11]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[12]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	18	
NE		
E	25	
SE		
S	23	
SW		
W	13	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☐ Minor ☐ Moderate ☒Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #316; woodrat nest; heart rot in branches.

[10] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[11] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[12] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 5**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 3 **Height (ft.):** 30	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 16, 9, 5	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[13]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[14]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[15]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	10	
NE		
E	5	
SE		
S	10	
SW		
W	16	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☐ Minor ☐ Moderate ☒Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Lots of ants.

[13] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[14] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[15] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 6**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 3 **Height (ft.):** 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 12, 13, 14	☐ stag-head
Existing Terrain: ☐ Flat ☒ Slope	**Crown Class[16]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[17]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[18]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	15	
NE		
E	0	
SE		
S	20	
SW		
W	16	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☐ Minor ☐ Moderate ☒Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Leaning over the drainage, lots of ants.

[16] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[17] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[18] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 7**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 9 **Height (ft.):** 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 11, 6, 4, 12.5, 10, 10, 9, 8, 7	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[19]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[20]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[21]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	19	
NE		
E	17	
SE		
S	19	
SW		
W	24	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Not tagged due to poison oak around the tree; trunk DBH and dripline radius were estimated. The tree has been previously fenced around the drlpline; sprouting around the base.

[19] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[20] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[21] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 8**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 12 **Height (ft.):** 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 10, 5.5, 11.5, 12, 5, 2.5, 10, 12, 9, 8, 10, 6, 14.5	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[22]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[23]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[24]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	20	
NE		
E	20	
SE		
S	26	
SW		
W	21	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #314

[22] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[23] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[24] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 9**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 11 **Height (ft.):** 25	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 6.5, 4, 8, 6.5, 9, 7, 6, 7, 4, 2, 8.5	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[25]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[26]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[27]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	18	
NE		
E	20	
SE		
S	20	
SW		
W	15	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☐ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Woodrat nest.

[25] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[26] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[27] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 10**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.):** 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 13.5, 11.5	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[28]:** ☐ Decurrent ☒ Excurrent
Aesthetic Rating[29]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[30]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	18	
NE		
E	12	
SE		
S	15	
SW		
W	17	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #320

[28] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[29] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[30] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 11**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.):** 25	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8, 17	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class**[31]**:** ☐ Decurrent ☒ Excurrent
Aesthetic Rating[32]**:** ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[33]**:** ☐A ☒B ☐C ☐D ☐F	☒ mature ☐ over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	12	
NE		
E	16	
SE		
S	16	
SW		
W	15	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #321; encluded bark

[31] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[32] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[33] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 12**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 25	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 12.5, 4.5	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class**[34]**:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[35]**:** ☐A ☐B ☒C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[36]**:** ☐A ☐B ☒C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	8	
NE		
E	9	
SE		
S	13	
SW		
W	10	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #322

[34] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[35] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[36] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 13**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.):** 30	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 9, 10.5	☐ stag-head
Existing Terrain: ☐ Flat ☒ Slope	**Crown Class[37]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[38]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[39]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	10	
NE		
E	11	
SE		
S	12	
SW		
W	14	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #323; sprouting at base.

[37] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[38] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[39] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 14**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 3 **Height (ft.):** 20	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 4, 8, 4	☐ stag-head
Existing Terrain: ☐ Flat ☒ Slope	**Crown Class**[40]**:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[41]**:** ☐A ☐B ☒C- ☐D ☐F	**Age Class:** ☐ immature ☒ semi-mature
Health Rating[42]**:** ☐A ☐B ☐C ☒D+ ☐F	☐ mature ☐ over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	12	
NE		
E	0	
SE		
S	12	
SW		
W	7	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☐ Minor ☒ Moderate ☐ Extensive ☐ None

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:
Impacts:
Mitigations:

Comments & Notes: Old tag #324; there are a 3" and a 4.5" dead trunks.

[40] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[41] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[42] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 15**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 30	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 8.5	☐ stag-head
Existing Terrain: ☐ Flat ☒ Slope	**Crown Class[43]:** ☐ Decurrent ☒ Excurrent
Aesthetic Rating[44]: ☐A ☐B ☒C- ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[45]: ☐A ☐B ☐C ☒D+ ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	8	
NE		
E	12	
SE		
S	9	
SW		
W	5	
NW		
CANOPY SPREAD (FEET):		

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:
Impacts:
Mitigations:

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

Comments & Notes: Old tag #325; previously fenced around dripline.

[43] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[44] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[45] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 16**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 3 **Height (ft.):** 40	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 15, 26.5, 4.5	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[46]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[47]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[48]: ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	22	
NE		
E	26	
SE		
S	12	
SW		
W	31	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tags #326 and #7; sprouting at base; one 4" trunk dead; previously fenced around the dripline.

[46] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[47] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[48] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 17**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height (ft.):** 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 19.5, 15	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class**[49]**:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[50]**:** ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[51]**:** ☐A ☒B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	4	
NE		
E	8	
SE		
S	22	
SW		
W	12	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tags #327 and #8.

[49] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[50] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[51] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 18**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 10 **Height (ft.):** 30	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 7, 3, 5, 6, 7, 7, 6.5, 6, 3, 3.5	☐ stag-head
Existing Terrain: ☐ Flat ☒ Slope	**Crown Class**[52]**:** ☐ Decurrent ☒ Excurrent
Aesthetic Rating[53]**:** ☒A ☐B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[54]**:** ☒A ☐B ☐C ☐D ☐F	☒ mature ☐over-mature/senescent
Overall Grade: ☒A ☐B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	12	
NE		
E	15	
SE		
S	15	
SW		
W	12	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #330; beetle infectation, wood-pecker holes.

[52] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[53] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree -- F = Dead
[54] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 19**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☒ No ☐ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 45	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 35	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[55]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[56]: ☐A ☐B ☒C- ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[57]: ☐A ☐B ☒C- ☐D ☐F	☐ mature ☒over-mature/senescent
Overall Grade: ☐A ☐B ☒C- ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	20	
NE		
E	18	
SE		
S	17	
SW		
W	17	
NW		
CANOPY SPREAD (FEET):		

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:
Impacts:
Mitigations:

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☐ Poor ☒ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☐ Branch ☒ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

Comments & Notes: Old tag #309; south side portion of the trunk is hollow with major cavity; lots of interior deadwood, bird nest.

[55] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[56] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[57] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 20**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☐ No ☒ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 2 **Height (ft.):** 50	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 32.5, 36	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[58]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[59]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[60]: ☐A ☒B ☐C ☐D ☐F	☐ mature ☒over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	25	
NE		
E	35	
SE		
S	33	
SW		
W	32	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☒ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☐ No ☒ Yes
Mechanical Damage:	☒ Trunk ☒ Branch ☐ None
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
Insects:	☒ Minor ☐ Moderate ☐Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tag #306.

[58] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[59] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[60] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 21**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☐ No ☒ Yes
	Form: ☒ symmetric ☐ minor asymmetry
Trunk Count: 1 **Height (ft.):** 50	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 52.5	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[61]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[62]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[63]: ☐A ☒B ☐C ☐D ☐F	☐ mature ☒over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	34	
NE		
E	36	
SE		
S	38	
SW		
W	27	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☒ Average ☐ Poor ☐ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☒ Trunk ☒ Branch ☐ None
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
Insects:	☐ Minor ☐ Moderate ☒Extensive ☐None

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:	
Impacts:	
Mitigations:	

Comments & Notes: Old tags #31 and #307; overhanging across Hasley Canyon Road, located on the south side of the street.

[61] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[62] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[63] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

OAK TREE FIELD DATA WORKSHEET *LDC Project No. 11018-001*

Survey Date: 4/22/2013 **Tree Number: 22**

GENERAL CHARACTERISTICS	
Species: ☒ *Q. agrifolia* ☐ *Q. lobata* ☐ *Other*	**Heritage Tree:** ☐ No ☒ Yes
	Form: ☐ symmetric ☒ minor asymmetry
Trunk Count: 2 **Height (ft.)**: 60	☐ major asymmetry ☐ stump sprout
Trunk DBH (in.): 38, 31	☐ stag-head
Existing Terrain: ☒ Flat ☐ Slope	**Crown Class[64]:** ☒ Decurrent ☐ Excurrent
Aesthetic Rating[65]: ☐A ☒B ☐C ☐D ☐F	**Age Class:** ☐ immature ☐ semi-mature
Health Rating[66]: ☐A ☒B ☐C ☐D ☐F	☐ mature ☒over-mature/senescent
Overall Grade: ☐A ☒B ☐C ☐D ☐F	

CANOPY CHARACTERISTICS		
	Dripline Radius (Feet)	Canopy to Grade (Feet)
N	24	
NE		
E	33	
SE		
S	23	
SW		
W	23	
NW		
CANOPY SPREAD (FEET):		

TREE HEALTH	
Wound Wood Development:	Excellent ☐ Average ☐ Poor ☒ None ☐
Foliage Density:	☒ Normal ☐ Sparse
Weak crotches:	☒ 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
Exudations:	☒ No ☐ Yes
Mechanical Damage:	☐ Trunk ☒ Branch ☐ None
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
Insects:	☐ Minor ☐ Moderate ☒Extensive ☐None

PROPOSED ACTIONS	
Monitor for Progress:	☐ Yes ☒ No
Treat Infestations:	☐ Yes ☒ No
Remove Deadwood:	☐ Yes ☒ No
Support Structure:	☐ Yes ☒ No

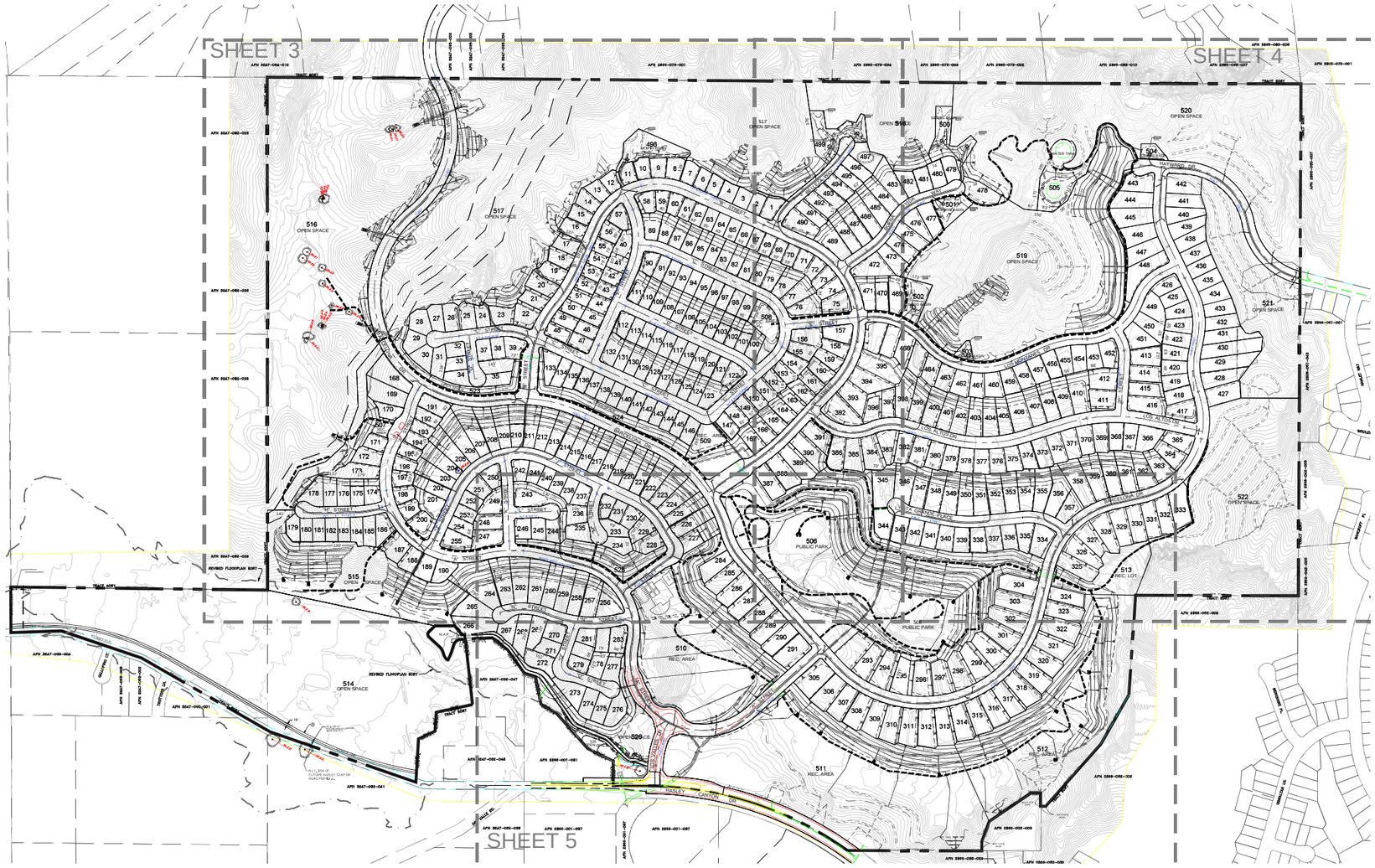
IMPACTS & MITIGATIONS	
In Impacted Area: ☐ Yes ☐ No	
Proposed Land Use:	
Impacts:	
Mitigations:	

Comments & Notes: Old tags #332 and #26; lots of ants

[64] Decurrent = Lacking Strong Central Leader. Excurrent = Strong Central Leader.
[65] Aesthetic (compared to standard tree of same species) : A = nearly symmetrical, healthy tree – F = Dead
[66] Health: A =Outstanding; B = Above Average; C = Average; D = Below Average; F = Dead

VESTING TENTATIVE TRACT MAP No. 052584

LOCATED IN THE UNINCORPORATED TERRITORY OF
THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA



INDEX MAP

SCALE : 1"=200'

GENERAL NOTES:

1. AREA.....2430.4 ACRES
2. EXISTING ZONING.....A-2-2
3. PROPOSED ZONING.....A-2-2
4. EXISTING SITE USE.....VACANT, ABANDONED GOLF COURSE
5. DEVELOPMENT TYPE..... RESIDENTIAL
6. TOTAL NUMBER OF SINGLE FAMILY LOTS.....497
7. MINIMUM RESIDENTIAL LOT SIZE.....7,000 SQ. FT.
8. DEVELOPMENT IS LOCATED IN FIRE ZONE 4.
9. STREET, PRIVATE AND FUTURE STREET, PRIVATE DRIVEWAY AND FIRE LANE GRADES MIN. 0.5%, MAX. 12% ON MAYBARO DRIVE.
10. TOPOGRAPHY IS BASED ON CONTROLLED TOPO W/ CONTOUR INTERVALS 2 FEET.
11. PUBLIC STREETS "A" THROUGH "F", LOS VALLES DR., BARCELONA DR., BELLEZA WAY, BUENA VIDA WAY, LOS MONTANES DR., LOS ALTOS DR., VISTA GRANDE PL., "P" STREET AND MAYBARO DR. ARE OFFERED FOR DEDICATION.
12. RESIDENTIAL STREETS "G" THROUGH "N", LAS VISTAS DR., LOS ARROYOS WAY AND BONITA VISTA DR. TO BE DESIGNATED AS "PRIVATELAND FUTURE STREETS". SUBDIVIDER RESERVES THE RIGHT TO CONSTRUCT GATES AND MEDIANS.
13. THE RIGHT IS RESERVED TO ADJUST STREET AND BUILDING PAD ELEVATIONS ON THE FINAL GRADING PLAN.
14. ALL SLOPES OVER 5 FEET IN HEIGHT ARE TO BE LANDSCAPED AND IRRIGATED WITH THE COUNTY APPROVED PLANTS AND GROUND COVER.
15. THE RIGHT IS RESERVED TO ADJUST LOT LINES AND MERGE LOTS ON THE FINAL MAP.
16. EXISTING AND PROPOSED COUNTYWIDE GENERAL PLAN.....URBAN
17. EXISTING SANTA CLARITA VALLEY AREAWIDE LOCAL PLAN (OVOV).....RE
18. GROSS DENSITY.....0.87 DU/AC
19. OAK TREES EXISTING WITHIN PROJECT BOUNDARY ARE SUBJECT TO A LOS ANGELES COUNTY OAK TREE PERMIT.
20. BOUNDARY LINE DIMENSIONS ARE TAKEN FROM RECORD DATA LOT AREAS SHOWN IN TABLE HEREON ARE GROSS ACREAGE.
21. SUBDIVIDER REQUESTS ALTERNATE STREET SECTIONS PER SECTION 21.24.090 OF LOS ANGELES COUNTY SUBDIVISION CODE TITLE 21.
22. SUBDIVIDER RESERVES THE RIGHT TO FILE MULTIPLE FINAL MAPS PER SECTION 66456.1 OF THE STATE MAP ACT.
23. NUMBER AND TYPE OF LOTS PROPOSED:

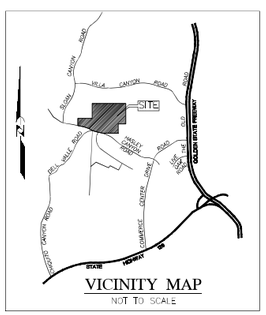
497	SINGLE FAMILY LOTS
7	REC. LOTS TO M.O.A.
13	OPEN SPACE LOTS
1	PARK LOTS
1	WATER TANK LOT
7	STORM DRAIN MAINTENANCE LOTS
526	TOTAL LOTS

24. PROPERTY LINE RETURN RADII TO BE 13 FT. AT ALL LOCAL STREET INTERSECTIONS, INCLUDING INTERSECTION OF LOCAL STREETS WITH PLANNED HIGHWAYS (THOSE ON THE COUNTY HIGHWAY PLAN), AND 27 FT. WHERE ALL PLANNED HIGHWAYS INTERSECT.
25. TOP & TOE OF SLOPES ARE SUBJECT TO CHANGE IN FINAL ENGINEERING.
26. A LANDSCAPE MAINTENANCE DISTRICT OR M.O.A. WILL BE ESTABLISHED FOR MAINTENANCE OF PRIVATE & FUTURE STREETS, OPEN SPACE SLOPES AND COMMON SLOPES OVER 5 FEET IN HEIGHT.
27. PERMISSION IS REQUESTED TO ABANDON ALL OF THE COUNTY EASEMENTS FOR DRAINAGE PURPOSES BY THE FINAL MAP PURSUANT TO SECTION 66499.20 OF THE STATE GOVERNMENT CODE (IF ANY).
28. TOTAL CUT: 4,400,000 C.Y. TOTAL FILL: 3,900,000 C.Y. (BALANCED ON SITE)
29. GRADE ELEVATIONS SHOWN IN THIS MAP AND ACCOMPANYING EXHIBIT "A" ARE APPROXIMATE. THE ELEVATIONS MAY CHANGE BY 5 FEET. ELEVATION CHANGES MAY BE GREATER THAN 5 FEET BUT ONLY IF DETERMINED BY DPW AND DRP THAT THE REVISIONS ARE CONSISTANT WITH THE INTENT OF THE SUBDIVISION MAP APPROVAL.
30. ALIGNMENT AND GEOMETRICS OF STREETS ARE APPROXIMATE. ADJUSTMENTS TO STREETS CAN BE MADE PROVIDED THE DEPARTMENT OF PUBLIC WORKS AND DRP DETERMINE THAT THE ADJUSTMENTS ARE CONSISTANT WITH THE INTENT OF THE SUBDIVISION APPROVAL.
31. BUILDING FOOTPRINTS THAT ARE SHOWN ON THE SUBDIVISION MAP OR ACCOMPANYING EXHIBIT MAP ARE ONLY FOR ILLUSTRATIVE PURPOSES. ACTUAL BUILDING LOCATIONS SHALL BE GRANTED PROVIDED THE PROPOSED BUILDING LOCATIONS SATISFY ALL EXISTING CODES AND ORDINANCES. THIS MINOR CHANGE DOES NOT, HOWEVER, INCLUDE THE CHANGE IN PROPOSED LAND USE OR RESIDENTIAL HOUSING PRODUCT.
32. LOT LINES CAN BE ADJUSTED PROVIDED NO ADDITIONAL LOTS ARE CREATED. THE REQUEST OF ADJUSTMENT SHALL BE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP ACT.
33. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL NOT REQUIRE THE OBLIGATION OF FEES, DEDICATIONS (I.E., PARKS-OR-MAY OR FARMS), EXACTIONS, OR INFRASTRUCTURE AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
34. 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.
35. PERMISSION IS REQUESTED FOR UNIT PHASING AND FILING OF MULTIPLE FINAL MAPS.
36. PERMISSION IS REQUESTED TO COMBINE LOTS.
37. PERMISSION IS REQUESTED TO RECORD ADDITIONAL OPEN SPACE LOTS.
38. PERMISSION IS REQUESTED TO RECORD ADDITIONAL UTILITIES LOTS, PROVIDED MAINTENANCE EASEMENTS ARE GRANTED TO THE SATISFACTION OF THE DRP AND DPW.
39. PROPOSED STREET GRADING IS APPROXIMATE ONLY AND SUBJECT TO ADJUSTMENTS PENDING DETERMINATION OF FINAL DEVELOPMENT LAYOUT AND PLANS.
40. REQUEST PERMISSION TO MASS GRADE.
41. REFER TO PROJECT DRAINAGE CONCEPT FOR WATER QUALITY TREATMENT DESIGN

UTILITIES AND SERVICES:

1. WATER.....COUNTY WATER DISTRICT NO. 36
2. SEWER.....SANTA CLARITA VALLEY
3. GAS.....SOUTHERN CALIFORNIA GAS COMPANY
4. ELECTRIC.....SOUTHERN CALIFORNIA EDISON COMPANY
5. TELEPHONE.....GENERAL TELEPHONE
6. CABLE TV.....TBD
7. SCHOOL.....CASTAIC SCHOOL DISTRICT
   & WILLIAM S. HART UNIFIED HIGH SCHOOL DISTRICT

GRAPHIC SCALE
(IN FEET)
200 100 0 200 400 600



VICINITY MAP

NOT TO SCALE

DRAINAGE NOTES

1. – STORM DRAIN EASEMENT TO BE DEDICATED TO L.A. COUNTY
2. – PROPOSE STORM DRAIN LINE
3. – CONCRETE SWALE TO BE MAINTAINED BY H.O.A. PER DETAILS SEE HEREON
5. –BULK FLOW INLET STRUCTURE
6. – DESILTING INLET STRUCTURE
7. – PROPOSED FEE–TITLE LOT TO LACFCD
8. – CONCRETE TERRACE DRAIN TO BE MAINTAINED BY H.O.A.
9. – CATCH BASIN INSERT
10. – OUTLET STRUCTURE / RIP–RAP PAD
11. – RIP–RAP PAD
12. –EXISTING LACFCD EASEMENT
13. –15' WIDE ACCESS ROAD TO BE DEDICATED TO L.A. COUNTY
14. –MINI DEBRIS BASIN TO BE MAINTAINED BY H.O.A.

LEGEND:

- P.L. – PRIVATE DRIV AND FIRE LANE
- (EX) – EXISTING STRUCTURE TO BE REMOVED
- (1) – EASEMENT NOTES
- BVC – BEGINNING OF VERTICAL CURVE
- C.B. – CATCH BASIN
- ℄ – CENTER LINE
- DRWY – DRIVEWAY
- EL/ELEV – ELEVATION
- EVC – END OF VERTICAL CURVE
- EX./EXIST. – EXISTING
- FL – FLOW LINE
- FS – FINISH SURFACE
- GB – GRADE BREAK
- HP – HIGH POINT
- MIN. – MINIMUM
- MH – MANHOLE
- O.S. – OPEN SPACE
- PE – PAD ELEVATION
- PI – POINT OF INTERSECTION
- P.L. – PROPERTY LINE
- STD. – STANDARD
- TW – TOP OF WALL
- – DIRECTION OF FLOW
- E.F.H. – EX. FIRE HYDRANT
- – TRACT BOUNDARY
- 1390 – PROPOSED CONTOURS
- (1400) – EXISTING CONTOURS
- – STREET & DRIVEWAY CENTERLINE
- – DAYLIGHT LINE
- 2:1 – PROPOSED SLOPE AS INDICATED
- – PROP. CONC. WALL
- – PROP. PEDESTRIAN PATH (LOCATION PER PLAN)
- – POWER POLE
- – TREE
- 10 – LOT #
- – EX. STREET LIGHT
- S – PROPOSED SEWER LINE
- W – PROPOSED WATER LINE
- * – EASEMENT TO REMAIN
- ** – EASEMENT TO BE ABANDONED AND QUITCLAIMED (PRIOR TO RECORDATION OF FINAL MAP)
- *** – EASEMENT TO BE REMOVED
- – EXISTING OIL WELL LOCATION

OAK TREE LEGEND

- – OAK TREE WITH 5' PROTECTED ZONE
- – OAK TREE TO REMAIN (#1–#7 & #19–#22)
- – OAK TREE TO BE REMOVED (#18)
- – OAK TREE TO BE ENCROACHED (---)

PROPERTY APN
2866-062-032, -033
3247-032-052

BENCH MARK

NEWHALL 1995 L 5274
DESCRIPTION: DPW BM TAG IN TOP OF FLAT ROCK & CONC 19 M S/O C/L HARLEY CYN RD & YM E/O C/L DEL VALLE RD 5.2 M N/O FIRE HYD.
ELEVATION 1211.458

DRAWN BY M.S.			
CHECKED BY C.G.			
DESIGNED BY M.S.			
	DATE	CHANGED BY	REVISION

OWNER/DEVELOPER:
SFI LOS VALLES LLC
10960 WILSHIRE BOULEVARD, SUITE 1260, LOS ANGELES, CA 90024
PH: (310) 315-5566 FAX: (310) 315-7017

LEGAL DESCRIPTION:
SEE SHEET 2

OAK TREE LOCATION AND IMPACT MAP

MAJOR LAND DIVISION
REVISED
VESTING TENTATIVE TRACT MAP NO.
052584
IN THE UNINCORPORATED TERRITORY OF COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

PREPARED BY:
LAND DESIGN CONSULTANTS, INC.
Land Planning, Civil Engineering, Surveying & Environmental Services
2700 E Foothill Blvd, Suite 200, Pasadena, California 91107
Ph.: (626) 578-7000, Fax: (626) 578-7373
http://www.ldcla.com

Charles A. Gibson, R.C.E. No. C34155 — 02-26-2015 DATE

LDC
Proj. No. 110118-001
SHEET 1 OF 5

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LOT SCHEDULE

Lot Table			Lot Table			Lot Table			Lot Table			Lot Table			Lot Table			Lot Table		
Lot No.	Area (SF) Gross	PAD AREA (SF)	Lot No.	Area (SF) Gross	PAD AREA (SF)	Lot No.	Area (SF) Gross	PAD AREA (SF)	Lot No.	Area (SF) Gross	PAD AREA (SF)	Lot No.	Area (SF) Gross	PAD AREA (SF)	Lot No.	Area (SF) Gross	PAD AREA (SF)	Lot No.	Area (SF) Gross	PAD AREA (SF)
1	9,569	8,677	78	14,298	8,298	155	10,064	8,969	232	8,205	6,977	309	16,375	13,439	386	13,696	12,172	463	10,816	9,280
2	7,301	7,135	79	11,549	6,222	156	13,315	11,719	233	9,677	9,062	310	17,662	14,351	387	16,040	12,938	464	10,901	9,267
3	7,888	7,864	80	10,281	5,988	157	12,623	11,246	234	10,297	10,125	311	17,527	14,466	388	16,888	13,611	465	12,172	10,225
4	7,944	7,934	81	10,239	5,926	158	9,794	7,911	235	11,128	10,394	312	17,882	14,756	389	18,296	14,006	466	13,370	11,336
5	7,064	6,529	82	10,081	6,278	159	10,138	7,816	236	10,300	9,308	313	17,947	14,552	390	18,534	12,077	467	12,267	11,040
6	7,442	6,867	83	9,978	6,273	160	10,831	6,891	237	9,156	8,016	314	17,419	14,019	391	14,869	9,594	468	15,609	11,226
7	8,685	7,752	84	9,982	6,218	161	9,581	5,920	238	7,693	7,687	315	16,714	13,615	392	21,226	13,087	469	15,232	9,907
8	10,202	9,007	85	9,899	6,158	162	9,697	5,649	239	7,093	7,093	316	16,662	13,731	393	15,307	13,396	470	12,526	9,255
9	8,472	7,905	86	9,765	5,985	163	10,154	5,871	240	7,085	7,085	317	16,830	13,732	394	18,378	15,703	471	14,068	8,795
10	8,399	7,640	87	10,709	6,052	164	10,406	6,255	241	7,800	7,800	318	18,110	14,524	395	25,466	15,743	472	17,849	14,858
11	8,729	6,905	88	10,713	5,826	165	11,222	6,681	242	9,031	7,376	319	17,242	14,180	396	12,886	7,557	473	13,108	10,562
12	7,848	6,895	89	12,378	7,159	166	11,536	6,881	243	26,383	11,443	320	17,129	13,661	397	10,560	8,184	474	12,728	10,009
13	8,827	7,600	90	9,436	6,509	167	11,751	6,589	244	13,604	9,050	321	18,435	14,661	398	19,874	10,516	475	12,681	10,403
14	9,729	8,267	91	7,565	7,057	168	21,274	19,314	245	8,529	8,523	322	19,443	15,452	399	16,726	7,618	476	12,412	10,394
15	8,835	7,532	92	7,609	7,607	169	20,420	18,527	246	9,181	7,501	323	16,582	13,337	400	16,436	7,616	477	14,356	13,460
16	11,212	7,590	93	7,679	7,620	170	9,291	8,016	247	14,445	9,965	324	12,600	12,848	401	13,335	7,317	478	17,483	11,264
17	10,578	8,088	94	7,620	7,620	171	8,642	7,466	248	11,556	8,084	325	16,987	15,082	402	14,419	9,151	479	9,494	9,490
18	10,248	7,831	95	7,620	7,620	172	11,727	9,873	249	12,419	8,951	326	17,114	12,477	403	15,189	9,703	480	10,339	9,793
19	12,174	7,708	96	7,731	7,214	173	17,353	15,923	250	9,901	8,044	327	15,158	10,651	404	14,967	10,338	481	9,589	8,923
20	12,882	9,250	97	7,729	7,214	174	10,851	6,996	251	9,798	8,932	328	17,531	13,834	405	12,974	8,510	482	10,770	10,134
21	10,885	7,866	98	7,705	7,138	175	9,747	7,225	252	7,863	7,422	329	16,086	13,565	406	19,144	12,461	483	19,152	11,591
22	14,399	8,678	99	8,253	8,065	176	9,993	7,599	253	7,603	7,142	330	15,394	12,816	407	15,238	9,818	484	13,996	9,299
23	12,159	10,089	100	9,553	5,831	177	10,619	8,358	254	8,804	8,339	331	14,201	11,648	408	15,606	10,151	485	15,042	10,622
24	8,520	7,408	101	9,311	5,663	178	12,905	10,424	255	13,391	9,326	332	14,769	12,114	409	16,117	10,232	486	16,390	10,821
25	11,416	8,352	102	9,596	5,126	179	8,565	8,242	256	16,162	10,404	333	18,983	18,471	410	21,566	10,730	487	16,109	10,554
26	11,293	9,483	103	9,515	5,450	180	7,894	7,856	257	16,913	10,291	334	15,939	12,894	411	14,639	10,342	488	14,471	9,590
27	10,039	9,542	104	9,491	5,491	181	7,930	7,930	258	16,356	10,448	335	11,703	9,913	412	15,913	11,657	489	18,758	11,886
28	12,164	11,892	105	9,489	5,490	182	7,995	7,995	259	16,449	10,500	336	10,210	9,972	413	15,284	12,748	490	17,184	11,109
29	10,296	10,296	106	9,600	6,000	183	8,125	8,125	260	16,026	9,616	337	10,434	10,136	414	13,701	11,120	491	11,215	8,972
30	10,861	10,846	107	9,600	6,000	184	9,057	8,938	261	20,065	10,335	338	10,782	10,260	415	13,508	10,262	492	10,486	8,728
31	11,238	11,238	108	9,541	5,880	185	10,169	10,156	262	20,953	10,290	339	10,841	10,331	416	17,464	12,881	493	10,100	8,727
32	7,451	7,451	109	9,611	6,004	186	11,787	9,203	263	21,872	10,023	340	10,775	10,249	417	14,894	8,397	494	9,703	8,269
33	7,732	7,732	110	9,654	5,635	187	15,694	10,414	264	39,673	12,644	341	10,295	9,780	418	10,548	9,982	495	9,734	8,813
34	9,316	9,316	111	11,766	5,368	188	11,050	9,394	265	15,735	15,669	342	10,543	10,015	419	9,856	9,710	496	10,321	9,670
35	8,760	8,712	112	10,264	7,502	189	10,958	10,495	266	17,823	16,890	343	10,774	10,249	420	9,786	9,666	497	14,690	14,057
36	11,572	11,572	113	7,740	7,740	190	11,009	10,322	267	9,595	9,577	344	14,378	15,677	421	10,070	9,987	498	37,258	-
37	8,439	8,139	114	7,680	7,620	191	12,236	11,020	268	14,015	14,015	345	22,322	19,147	422	10,388	10,355	499	40,187	-
38	7,908	7,488	115	7,679	7,618	192	8,699	7,893	269	11,690	11,690	346	19,069	11,586	423	10,291	9,481	500	36,175	-
39	10,790	8,256	116	7,679	7,620	193	7,632	6,684	270	10,415	9,570	347	16,772	10,070	424	9,883	8,922	501	19,455	-
40	10,507	8,110	117	7,679	7,620	194	7,317	6,203	271	9,290	8,949	348	17,438	9,928	425	9,503	9,407	502	23,804	-
41	7,963	5,169	118	7,696	7,636	195	7,988	6,579	272	13,541	11,779	349	17,314	10,619	426	10,462	8,436	503	7,114	-
42	7,500	5,469	119	7,502	7,502	196	8,577	6,712	273	14,244	14,244	350	16,279	10,486	427	16,613	13,809	504	8,518	-
43	7,500	5,259	120	7,615	6,606	197	8,749	6,347	274	11,019	11,019	351	16,398	10,215	428	16,405	14,805	505	65,421	-
44	8,620	6,154	121	7,611	6,849	198	8,941	5,930	275	10,564	10,564	352	16,417	9,339	429	20,169	19,654	506	848,665	-
45	7,591	5,938	122	10,888	6,252	199	8,410	5,942	276	13,551	13,361	353	16,113	9,403	430	22,200	22,107	507	87,147	-
46	7,984	6,743	123	13,664	7,3.64	200	13,577	7,257	277	12,125	10,406	354	18,046	9,191	431	16,995	16,995	508	29,027	-
47	9,439	7,150	124	9,485	5,681	201	15,320	8,449	278	10,857	9,969	355	18,090	10,457	432	12,214	11,822	509	58,917	-
48	10,379	6,400	125	9,598	5,574	202	11,915	7,587	279	8,151	7,117	356	20,618	12,837	433	11,526	11,526	510	426,780	-
49	8,933	6,635	126	9,404	5,390	203	16,028	7,774	280	7,700	7,347	357	12,852	8,936	434	12,429	12,429	511	764,295	-
50	8,140	7,786	127	9,421	5,824	204	17,336	8,365	281	8,266	8,283	358	22,989	13,813	435	10,471	10,471	512	478,502	-
51	7,539	5,780	128	9,421	6,048	205	19,231	9,136	282	8,765	8,227	359	21,104	11,781	436	10,758	10,758	513	77,940	-
52	7,170	5,291	129	9,421	6,836	206	22,123	11,096	283	12,277	10,745	360	18,585	10,674	437	11,169	11,128	514	1,238,111	-
53	7,003	5,403	130	9,420	7,080	207	22,407	9,761	284	14,178	13,998	361	18,690	9,686	438	12,466	12,363	515	295,424	-
54	7,000	5,555	131	9,360	7,080	208	17,779	7,507	285	15,535	13,199	362	16,256	8,880	439	13,169	13,118	516	1,285,012	-
55	7,702	5,867	132	12,686	8,471	209	16,332	7,646	286	16,706	13,247	363	14,878	8,092	440	13,309	13,304	517	1,418,949	-
56	9,314	6,558	133	11,395	10,055	210	16,136	7,631	287	17,244	13,374	364	13,819	8,732	441	13,461	12,972	518	217,243	-
57	10,944	8,412	134	9,314	8,421	211	16,221	7,827	288	16,885	13,335	365	13,098	9,396	442	18,096	10,691	519	787,540	-
58	10,578	6,755	135	8,232	7,436	212	16,569	8,075	289	16,903	13,476	366	14,537	14,076	443	15,822	13,384	520	877,376	-
59	7,281	6,156	136	7,575	7,072	213	15,571	7,563	290	15,367	13,466	367	9,922	9,921	444	18,322	18,322	521	275,168	-
60	7,744	6,638	137	7,520	7,520	214	14,050	8,014	291	19,483	15,297	368	10,736	10,134	445	20,230	20,225	522	613,248	-
61	7,265	6,455	138	7,558	7,500	215	14,077	8,065	292	20,401	15,870	369	12,066	10,564	446	17,108	17,108	523	27,624	-
62	7,335	7,167	139	7,559	7,500	216	14,093	8,046	293	18,053	12,384	370	11,815	10,621	447	16,725	16,725	524	54,863	-
63	7,345	7,280	140	7,522	7,522	217	14,109	8,076	294	19,304	13,071	371	12,072	10,835	448	24,343	22,175	525	57,285	-
64	7,280	7,280	141	7,528	7,026	218	14,125	8,092	295	18,197	13,010	372	12,033	10,790	449	13,877	13,268	526	147,692	-
65	7,326	7,297	142	7,504	7,003	219	14,141	8,047	296	17,670	12,575	373	12,007	10,774	450	13,116	12,591			
66	7,336	7,270	143	7,363	6,866	220	14,157	7,883	297	17,464	12,318	374	10,554	9,665	451	15,003	14,154			
67	7,197	7,108	144	7,429	6,935	221	15,483	7,503	298	18,035	12,623	375	10,459	9,664	452	12,644	9,753			
68	7,204	6,637	145	7,684	7,166	222	17,414	7,122	299	18,883	13,399	376	10,470	9,703	453	9,756	9,723			
69	7,249	6,482	146	9,216	8,659	223	17,283	7,266	300	19,413	13,416	377	10,472	9,691	454	10,320	10,320			
70	7,265	6,486	147	8,710	7,974	224	17,253	7,159	301	19,464	13,633	378	10,435	9,658	455	10,126	10,126			
71	8,113	7,069	148	8,507	7,536	225	16,233	6,702	302	19,050	14,014	379	10,468	9,692	456	10,332	9,749			
72	7,993	6,621	149	8,221	6,817	226	16,364	6,774	303	18,429	14,134	380	11,621	10,158	457	11,058	10,230			
73	8,353	7,108	150	8,299	6,846	227	18,523	7,302	304	16,532	16,074	381	12,439	10,139	458	10,392	9,587			
74	9,529	7,954	151	8,254	6,600	228	12,212	7,220	305	22,262	16,633	382	12,972	10,737	459	10,133	9,088			
75	14,516	9,359	152	8,138	6,160	229	11,522	9,970	306	17,489	15,678	383	14,219	9,749	460	11,970	10,389			
76	15,311	9,004	153	8,293	6,541	230	8,630	7,443	307	16,289	13,783	384	17,370	12,536	461	9,656	8,377			
77	14,844	9,141	154	9,850	8,592	231	7,142	6,710	308	16,862	13,734	385	15,795	13,562	462	11,621	10,325			

LOTS 1-497 ALL S.F. RESIDENTIAL LOTS

FEE-TITLE LOTS TO LACFCD

WATER TANK LOT

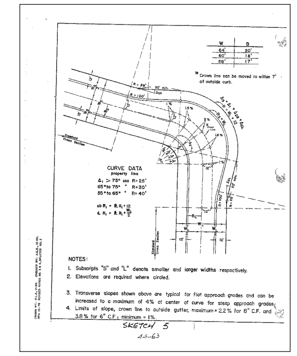
PUBLIC PARK

RECREATIONAL AREA LOTS TO H.O.A.

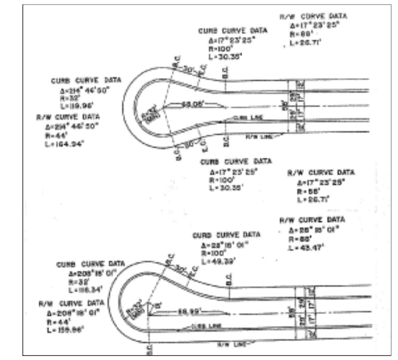
OPEN SPACE LOTS

LOT SUMMARY

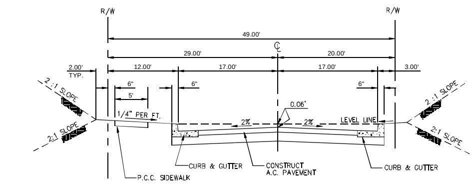
DESIGNATION	LOT NO.	NO. OF LOTS	(S.F.) (APPROX.)	(A.C.) (APPROX.)
SINGLE FAMILY LOTS	1-497	497	6,224,833	142.91
STORM DRAIN MAINTENANCE LOTS	498-504	7	172,511	3.96
WATER TANK	505	1	26,772	0.61
PUBLIC PARK	506	1	848,665	19.48
REC. AREA	507-513	7	1,922,608	44.14
OPEN SPACE	514-526	13	7,334,185	168.37
HASLEY CANYON ROAD	-	-	43,560	1.0
STREET AREA	-	-	2,175,090	49.93
TOTAL		526	18,748,224	±430.4



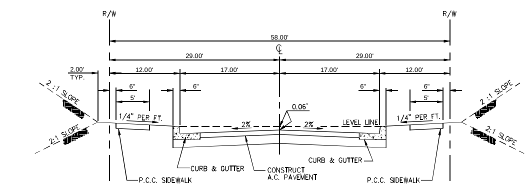
TYPICAL RESIDENTIAL KNUCKLE DETAIL
NOT TO SCALE
PER L.A.C.D.P.W. LAND DEVELOPMENT DIVISION HANDBOOK, VOLUME 5, CHAPTER 44, PAGE 44-63



TYPICAL RESIDENTIAL CUL-DE-SAC DETAIL
NOT TO SCALE
PER L.A.C.D.P.W. LAND DEVELOPMENT DIVISION HANDBOOK, VOLUME 5, CHAPTER 44, PAGE 44-38



TYPICAL SECTION 49' R/W
BELLEZA WAY
NOT TO SCALE



TYPICAL SECTION 58' R/W
STREET "C", "G", "H", "L", "M", "N" & "Q"
BUENA VIDA WAY
NOT TO SCALE

EASEMENTS:

1. Easement(s)for the purpose(s) shown below and rights incidental thereto as set forth in a document;
Purpose: Road purposes and incidental purposes
Recorded: Book 5595, Page 332, of Official Records
Affects: That portion of said land more particularly described therein.and recorded: Book 5682, Page 306, of Official Records

2. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document;
Purpose: Electrical supply systems and communication systems and incidental purposes
Recorded: August 21, 1991, Instrument No. 91-1312408, of Official Records
Affects: That portion of said land more particularly described therein.

3. Castaic Property Holdings, LLC, a California limited liabilty company and its assigns with the right to grant the same to the County of Los Angeles/Los Angeles County Flood Control District, or other appropriate agency forGrading and debris basin and incidental purposes recorded July 17, 2000, Instrument No. 00-1085593, of Official Records

4. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document;
Purpose: Drainage and incidental purposes
Recorded: October 24, 2000, Instrument No. 00-1663987, of Official Records
Affects: That portion of said land as more particularly described therein.

5. Easement(s)for the purpose(s) shown below and rights incidental thereto as set forth in a document;
Purpose: Flood control purposes and incidental purposes
Recorded: October 24, 2000, Instrument No. 00-1663990, of Official Records
Affects: That portion of said land as more particularly described therein.

6. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document;
Purpose: Slopes and incidental purposes
Recorded: October 24, 2000, Instrument No. 00-1663991, of Official Records
Affects: That portion of said land as more particularly described therein.

7. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document;
Purpose: Public road and highway purposes and incidental purposes
Recorded: October 24, 2000, Instrument No. 00-1663986, of Official Records
Affects: That portion of said land as more particularly described therein.

8. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.
Purpose: Flood control purposes as dedicated to the Los Angeles County Flood Control District
Affects: Lots 53, 56 and 58 as shown on the Map of said Tract 52584-01.

9. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.
Purpose: Bridge access purposes as dedicated to the County of Los Angeles
Affects: Lots 56, 57, 58 and 60 as shown on the Map of Tract 52584-01.

10. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.
Purpose: Bridge maintenance purposes as dedicated to the County of Los Angeles
Affects: Lots 56, 57 and 58 as shown on the Map of said Tract 52584-01.

11. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.
Purpose: Sanitary sewer purposes as dedicated to the County of Los Angeles
Affects: Lots 51, 52 and 54 as shown on the Map of said Tract 52584-01.

12. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.
Purpose: Air space visibility purposes as dedicated to the County of Los Angeles
Affects: Lots 43 and 51 as shown on the Map of Tract 52584-01.

13. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.
Purpose: Private driveway and fire lane
Affects: As shown on the Map of Tract 52584-01.

14. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.
Purpose: Covered storm drain purposes as dedicated to the Los Angeles County Flood Control
Affects: Lots 51, 52, 59, 60, 61 and 62 as shown on the Map of Tract 52584-01.

15. Easement(s) for the purpose(s) shown below and rights incidental thereto as delineated or as offered for dedication, on the map of said tract.
Purpose: Water pipelines and appurtenances with ingress and egress as dedicated to the County of Los Angeles
Affects: Lots 51, 52, 53, 59 and 62 as shown on the Map of Tract 52584-01.

16. Easement(s) for the purpose(s) shown below and rights incidental thereto as granted in a document.
Granted to: Pacific Bell Telephone Company, a corporation dba AT&T California
Purpose: Public utilities
Recorded: December 19, 2008, Instrument No. 20082233802, of Official Records

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1: (APN 2866-001-017 & PORTIONS OF 2866-001-096; AND 3247-032-001, 035, & PORTIONS OF 3247-032-051)
PARCEL 1 OF CERTIFICATE OF COMPLIANCE FOR LOT LINE ADJUSTMENT NO. 101,922, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, WHICH RECORDED MAY 24, 2002 AS INSTRUMENT NO. 02-1208159 OF OFFICIAL RECORDS.
EXCEPTING THERE FROM THAT PORTION LYING WITHIN TRACT NO. 52584-01, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 1329, PAGES 53 THROUGH 68, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.
ALSO EXCEPT THEREFROM THAT PORTION LYING WITHIN PARCEL 2 OF CERTIFICATE OF COMPLIANCE FOR LOT LINE ADJUSTMENT NO. 101,922, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, WHICH RECORDED MAY 24, 2002 AS INSTRUMENT NO. 02-1208159 OF OFFICIAL RECORDS.
ALSO EXCEPT THEREFROM THAT PORTION LYING WITHIN PARCEL 5 OF CERTIFICATE OF COMPLIANCE FOR LOT LINE ADJUSTMENT NO. 101,923, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, WHICH RECORDED AUGUST 17, 2001 AS INSTRUMENT NO. 01-1524850 OF OFFICIAL RECORDS.

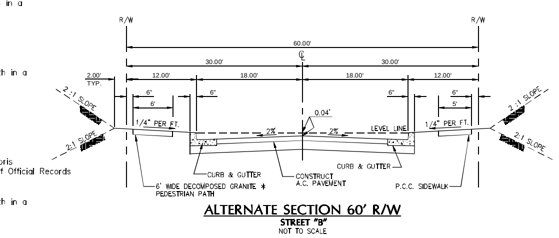
PARCEL 2: (APN PORTIONS OF 3247-032-051)
PARCEL 2 OF CERTIFICATE OF COMPLIANCE FOR LOT LINE ADJUSTMENT NO. 101,922, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, WHICH RECORDED MAY 24, 2002 AS INSTRUMENT NO. 02-1208159 OF OFFICIAL RECORDS.
EXCEPTING THERE FROM THAT PORTION LYING WITHIN TRACT NO. 52584-01, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 1329, PAGES 53 THROUGH 68, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 3: (APN PORTIONS OF 2866-001-096)
PARCEL 5 OF CERTIFICATE OF COMPLIANCE FOR LOT LINE ADJUSTMENT NO. 101,923, [N THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, WHICH RECORDED AUGUST 17, 2001 AS INSTRUMENT NO. 01-152850 OF OFFICIAL RECORDS.

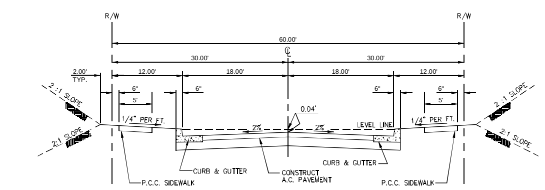
EXCEPTING THERE FROM THAT PORTION LYING WITHIN TRACT NO. 52584-01, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 1329, PAGES 53 THROUGH 68, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 4: (APN 2866-001-015, 016, & PORTIONS OF 2866-001-096)
LOTS 2 AND 3 AND THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 2, TOWNSHIP 4 NORTH, RANGE 17 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT OF SAID LAND FILED IN THE DISTRICT LAND OFFICE SEPTEMBER 6, 1880.
EXCEPTING THERE FROM THAT PORTION LYING WITHIN TRACT NO. 52584-01, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 1329, PAGES 53 THROUGH 68, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 5:
LOTS 1 TO 61, INCLUSIVE, OF TRACT NO. 52584-01, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 1329, PAGES 53 THROUGH 68, INCLUSIVE, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.



ALTERNATE SECTION 60' R/W
STREET "B"
NOT TO SCALE
∗ LOCATION PER PLAN



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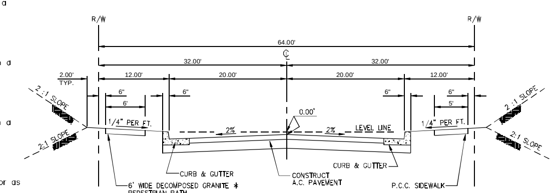
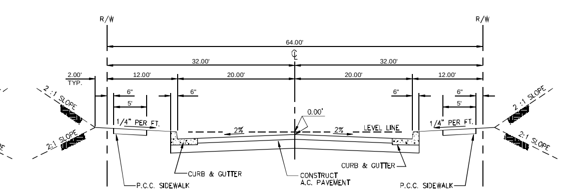
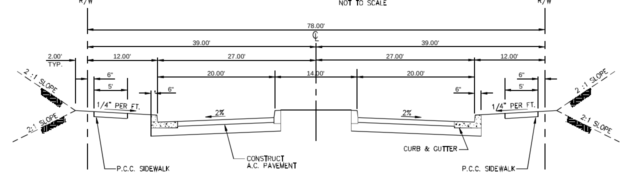
STREET "C", "D", "K", "N" & "P"
VISTA GRANDE PLACE & LOS MONTANES DR.
NOT TO SCALE



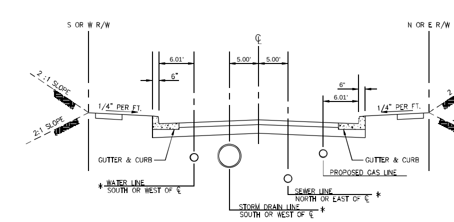
ALTERNATE SECTION 64' R/W
STREET "A"
BARCELONA DR., LOS ALTOS DR.,
NOT TO SCALE
∗ LOCATION PER PLAN



TYPICAL SECTION 64' R/W
STREET "A", "B", "C", "E", "F" & "J"
BARCELONA DR., HAYWARD DR.
& LOS ALTOS DR.
NOT TO SCALE



TYPICAL SECTION 78' R/W
LOS VALLES DRIVE
NOT TO SCALE



TYPICAL UTILITY LOCATION
NOT TO SCALE
∗ PIPE SIZE AND DEPTH PER ENGINEERING

DRAWN BY	M.S.
CHECKED BY	C.G.
DESIGNED BY	M.S.

DATE CHANGED	CHANGED BY	REVISION

OWNER/DEVELOPER:

SFI LOS VALLES LLC
10960 WILSHIRE BOULEVARD, SUITE 1260, LOS ANGELES, CA 90024
PH: (310) 315-5566 FAX: (310) 315-7017

LEGAL DESCRIPTION:

SEE LEFT HEREON

OAK TREE LOCATION AND IMPACT MAP

MAJOR LAND DIVISION
REVISED
VESTING TENTATIVE TRACT MAP NO.
052584

IN THE UNINCORPORATED TERRITORY OF COUNTY OF LOS ANGELES, STATE OF CALIFORNIA.

PREPARED BY:

LAND DESIGN CONSULTANTS, INC.
Land Planning, Civil Engineering, Surveying & Environmental Services
2700 E Foothill Blvd, Suite 200, Pasadena, California 91107
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Charles A. Gilman, R.C.E. No. C54155

05-16-2013
DATE

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SHEET 2 OF 5

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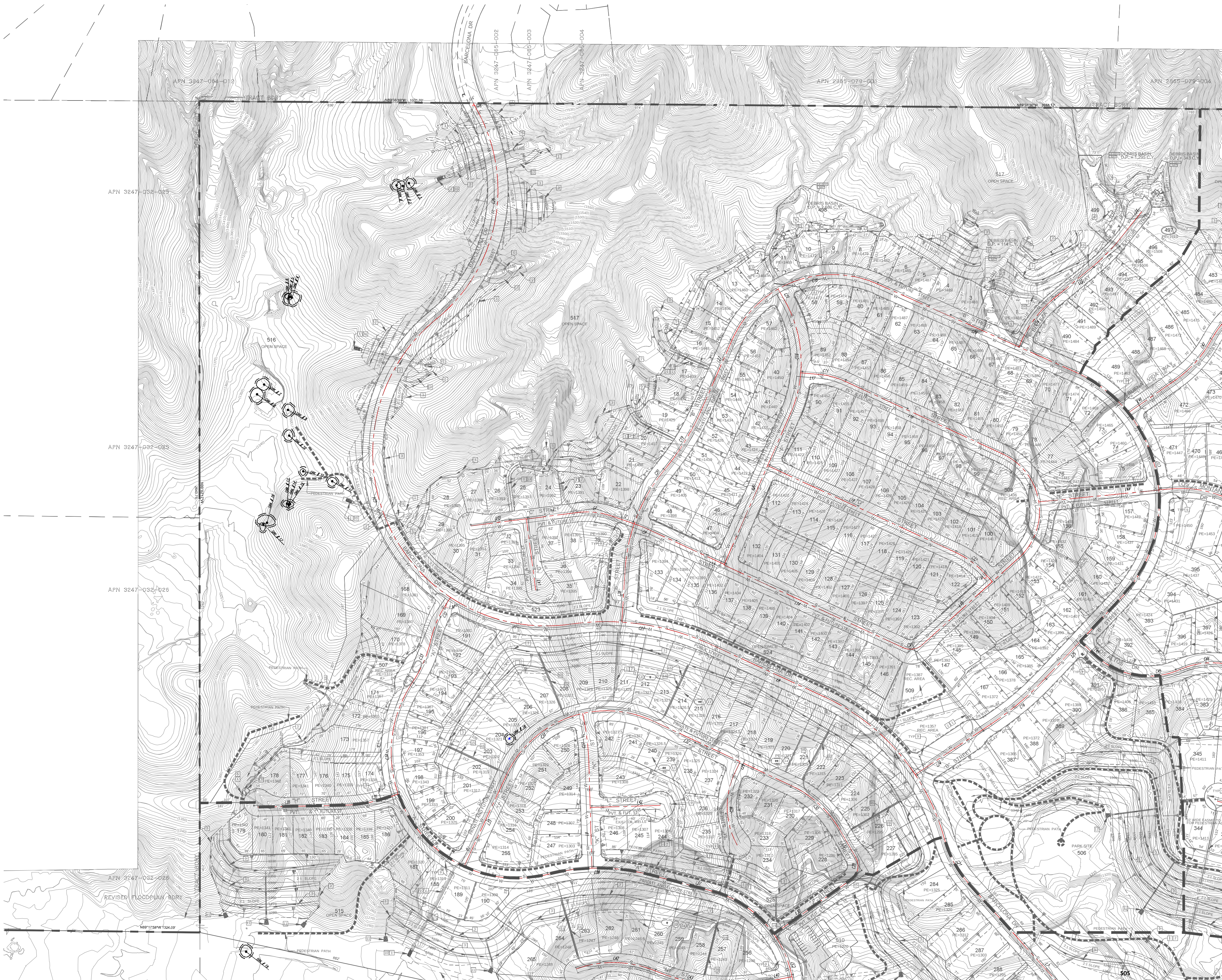

SEE SHEET NO. 4

SEE SHEET NO. 5

Line Table: Alignments

Line #	Length	Direction
L1	201.23	S3° 25' 26"W
L2	309.82	S25° 53' 30"E
L3	82.37	S10° 50' 52"W
L4	89.79	S15° 24' 13"E
L5	151.43	S77° 17' 25"W
L6	235.63	S13° 31' 55"W
L7	717.23	N41° 56' 33"W
L8	395.06	N65° 13' 24"W
L9	337.63	N1° 41' 59"W
L10	178.15	N82° 38' 37"E
L11	161.00	N82° 38' 37"E
L12	73.58	S70° 59' 57"E
L13	266.49	S65° 13' 24"E
L14	626.72	S65° 13' 24"E
L15	411.99	N47° 59' 24"E
L16	552.12	N65° 13' 24"W
L17	57.68	N85° 16' 10"W
L18	658.64	S65° 13' 24"E
L19	28.91	S42° 00' 36"E
L20	527.00	N23° 41' 47"E
L21	41.61	N29° 43' 56"W
L22	159.36	N50° 31' 55"E
L23	110.82	N38° 43' 09"E
L24	289.72	N56° 19' 12"E
L25	348.88	N43° 18' 31"E
L26	688.40	N66° 01' 20"W
L27	242.96	S23° 41' 47"W
L28	168.66	S3° 35' 33"W
L29	41.30	S25° 01' 52"W
L30	298.60	N54° 51' 18"E
L31	100.06	N30° 09' 13"W
L32	484.69	N64° 58' 08"W
L33	322.63	S24° 52' 48"W
L34	25.48	N33° 21' 21"E
L35	270.03	N88° 46' 12"E
L37	203.55	N75° 19' 29"W
L40	93.60	N79° 06' 53"E
L42	223.43	N88° 18' 01"E
L43	229.24	S7° 21' 23"E
L44	383.47	N84° 23' 13"E
L45	62.58	S46° 41' 29"E
L46	181.83	N55° 08' 08"E
L47	177.26	N73° 29' 03"E

Curve Table: Alignments

Curve #	Radius	Length
C1	350.00	179.08
C2	360.00	230.84
C3	350.00	160.36
C4	400.00	647.13
C5	450.00	500.76
C6	610.00	1325.76
C7	250.00	115.00
C8	475.00	47.73
C9	57.00	66.44
C10	200.00	395.19
C11	250.00	87.47
C12	300.00	121.54
C13	400.00	373.00
C14	370.23	192.17
C15	600.00	123.70
C16	1000.00	227.09
C17	450.00	858.68
C18	350.00	551.50
C19	800.00	222.71
C20	550.00	346.10
C21	350.00	163.38
C22	700.00	611.18
C23	800.00	460.03
C24	550.00	1431.72
C25	525.00	738.75
C26	350.00	19.90
C27	800.00	156.32
C28	250.00	237.03
C29	55.00	81.60
C30	350.00	212.67
C31	350.00	550.70
C32	350.00	124.97
C33	400.00	146.87
C34	400.00	964.49
C35	500.00	180.74
C37	350.00	531.93
C38	650.00	327.77
C39	400.00	964.49
C42	351.00	257.09
C43	599.00	142.76
C44	600.00	206.68
C45	250.00	292.81
C46	250.00	176.10
C47	375.00	176.69
C48	275.00	217.64

OAK TREE LEGEND

- OAK TREE # — OAK TREE WITH 5' PROTECTED ZONE
- ◉ — OAK TREE TO REMAIN (#1–#17 & #19–#22)
- ▲ — OAK TREE TO BE REMOVED (#18)
- ■ — OAK TREE TO BE ENCROACHED (--)

GRAPHIC SCALE (IN FEET)
100 50 0 100 200 300

OWNER/DEVELOPER:

SFI LOS VALLES LLC
10960 WILSHIRE BOULEVARD, SUITE 1260, LOS ANGELES, CA 90024
PH: (310) 315-5566 FAX: (310) 315-7017

LEGAL DESCRIPTION:

SEE SHEET 2

OAK TREE LOCATION AND IMPACT MAP

MAJOR LAND DIVISION
REVISED
VESTING TENTATIVE TRACT MAP NO.

052584

IN THE UNINCORPORATED TERRITORY OF COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

PREPARED BY:

LAND DESIGN CONSULTANTS, INC.
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SHEET 3 OF 5

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CHECKED BY C.G.			
DESIGNED BY M.S.			
	DATE CHANGED	CHANGED BY	REVISION

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Line Table: Alignments		
Line #	Length	Direction
L1	153.68	N86° 34' 34"W
L2	81.41	N86° 34' 34"W
L3	181.83	N05° 08' 08"E
L4	177.26	N73° 29' 01"E
L5	43.96	N89° 22' 38"E
L6	184.30	N66° 20' 19"E
L7	90.00	N64° 08' 30"E
L8	62.58	S46° 47' 29"E
L9	298.98	S77° 26' 22"E
L10	209.14	N72° 24' 48"E
L11	280.06	S77° 56' 22"E
L12	31.27	N60° 39' 57"W
L13	205.14	S84° 19' 19"W
L14	246.17	N78° 08' 00"W
L15	33.32	S35° 29' 17"E
L16	297.19	S2° 48' 03"W
L17	235.63	S15° 31' 55"W
L18	151.43	S77° 17' 25"W
L19	339.82	S25° 51' 30"E
L20	201.21	S2° 25' 26"W
L21	348.88	N47° 16' 31"E
L22	158.36	N05° 11' 55"E
L23	110.82	N38° 43' 09"E

Curve Table: Alignments		
Curve #	Radius	Length
C1	350.00	420.44
C2	350.00	466.39
C3	375.00	178.69
C4	275.00	217.64
C5	350.00	235.57
C6	380.00	490.37
C7	475.00	201.58
C8	300.00	373.78
C9	250.00	196.66
C10	250.00	292.81
C11	250.00	176.10
C12	700.00	417.79
C13	875.00	452.25
C14	270.00	212.12
C15	700.00	274.35
C16	200.00	130.17
C17	450.00	502.76
C18	400.00	647.15
C19	350.00	160.38
C20	360.00	230.84
C21	350.00	179.08
C22	450.00	898.68
C23	570.23	192.17
C24	600.00	123.70

OAK TREE LEGEND

- OAK TREE WITH 5' PROTECTED ZONE
- OAK TREE TO REMAIN (#1-#7 & #13-#22)
- OAK TREE TO BE REMOVED (#8)
- OAK TREE TO BE ENCROACHED (--)

GRAPHIC SCALE
(IN FEET)
100 50 0 100 200 300

OWNER/DEVELOPER:

SFI LOS VALLES LLC
10960 WILSHIRE BOULEVARD, SUITE 1260, LOS ANGELES, CA 90024
PH: (310) 315-3366 FAX: (310) 315-7017

LEGAL DESCRIPTION:

SEE SHEET 2

OAK TREE LOCATION AND IMPACT MAP

MAJOR LAND DIVISION
REVISED
VESTING TENTATIVE TRACT MAP NO.
052584
IN THE UNINCORPORATED TERRITORY OF COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

DRAWN BY M.S.
PREPARED BY C.C.
DESIGNED BY M.S.

DATE	CHECKED	DRAWN BY	REVISION

PREPARED BY:

LAND DESIGN CONSULTANTS, INC.
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SHEET 4 OF 5

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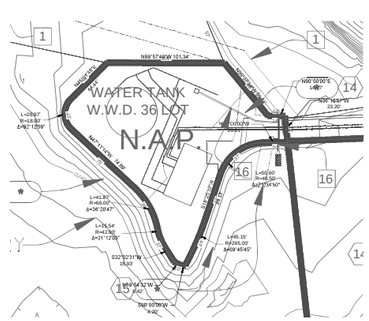
SEE SHEET NO. 4

OAK TREE LEGEND

ON PAD #	– OAK TREE WITH 5' PROTECTED ZONE
◉	– OAK TREE TO REMAIN (#1–#7 & #19–#22)
▲	– OAK TREE TO BE REMOVED (#18)
■	– OAK TREE TO BE ENCROACHED (---)



LEGAL DESCRIPTION:
LOT 62 OF TRACT NO. 52584-01 AS RECORDED IN BOOK 1329, PG. 53 THROUGH 68 INCLUSIVE OF MAPS.

DETAIL 1
SCALE: 1" = 40'

GRAPHIC SCALE
(IN FEET)
150 50 0 100 200 300

DRAWN BY M.S.			
CHECKED BY C.C.			
DESIGNED BY M.S.			
	DATE CHECKED	DRAWN BY	REVISION

OWNER/DEVELOPER:
SFI LOS VALLES LLC
10960 WILSHIRE BOULEVARD, SUITE 2260, LOS ANGELES, CA 90024
PH: (310) 315-5566 FAX: (310) 315-7707

LEGAL DESCRIPTION:
SEE SHEET 2

OAK TREE LOCATION AND IMPACT MAP

MAJOR LAND DIVISION
REVISED
VESTING TENTATIVE TRACT MAP NO.
052584
IN THE UNINCORPORATED TERRITORY OF COUNTY OF LOS ANGELES, STATE OF CALIFORNIA.

PREPARED BY:
LAND DESIGN CONSULTANTS, INC.
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Charles A. Gibson, R.C.E. No. C34955 — 08-14-2020 DATE

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Proj. No. 110118-001

SHEET 5 OF 5

APPENDIX 5.4

Phase I Cultural Resources Report Prepared by W&S Consultants

INTENSIVE PHASE I ARCHAEOLOGICAL SURVEY OF THE LOS VALLES STUDY AREA, LOS ANGELES COUNTY CALIFORNIA

Prepared For:

Ms. Susan Tebo
Impact Sciences, Inc.
803 Camarillo Road, Suite C
Camarillo, CA 93012

Prepared By:

W & S Consultants
2242 Stinson Street
Simi Valley, California 93065
805-581-3577

6 August 2013

MANAGEMENT SUMMARY

An intensive Phase I archaeological survey was conducted for the Los Valles study area, a 432 acres parcel located in Hasley Canyon, northern Los Angeles County, California. This investigation involved an archival records search, a review of existing published and unpublished references on local prehistory and history, and an intensive, on-foot survey of the study area. No archaeological sites had been previously recorded nor were any discovered within the study area. Based on the absence of archaeological sites of any kind, prehistoric or historical, development and use of this property does not have the potential to result in adverse impacts to archaeological resources. It is recommended that no additional archaeological work be required within the study area.

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2.0 BACKGROUND STUDIES	1
2.1 Project Location & Environment	1
2.2 Ethnographic Background	2
2.3 Archaeological Background	5
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INTENSIVE PHASE I ARCHAEOLOGICAL SURVEY OF THE LOS VALLES STUDY AREA, LOS ANGELES COUNTY, CALIFORNIA

1.0 INTRODUCTION

Pursuant to a request from Ms. Susan Tebo, an intensive Phase I archaeological survey was conducted by W&S Consultants for the Los Valles study area. This 432 acres parcel is located in Hasley Canyon immediately north of the intersection of Del Valle Road and Hasley Canyon Road, northwestern Los Angeles County, California (Figure 1). The survey of this study area was conducted in July, 2013. It was intended to identify all cultural resources (prehistoric and historical archaeological sites) within the study area.

This document summarizes the background research conducted as part of the study; outlines the field techniques employed to intensively survey the parcel; describes the results of the survey; and makes final recommendations for the study area. We begin with a discussion of the background studies, before considering these additional topics in turn.

2.0 BACKGROUND STUDIES

2.1 Project Location and Environment

The study area consists of a 432 acres parcel located on the northern side of Hasley Canyon, near Castaic, northern Los Angeles County, California (Figure 1). It thus falls within the general Castaic Junction area, with Hasley Canyon forming part of the upper Santa Clara River watershed. The property consists of a portion of the alluvial bottom of the canyon, the heavily dissected ridges and hills forming the northern side of the canyon, and intervening arroyos. Most of the canyon sides are steep and, given ongoing colluvial and alluvial activity, the conditions for

archaeological preservation at this locale are very poor.

Vegetation within the study area has been altered by recent activities, including extensive grading in the eastern half of the parcel and surface disturbance from off-road vehicles. Most of the study area appears to have originally consisted of marginal Oak Savannah in the canyon bottom, with sage scrub on the canyon sides. Much if not the vast majority of the study area has been disked and grubbed, probably related to the existence of an active oil field and abandoned golf course in this portion of Hasley Canyon. Non-native species, particularly foreign grasses and a variety of planted trees (particularly pines) resulting from the old golf course, are prevalent in this disturbed area, so that it currently consists of a mosaic of native and non-native plants, with non-natives predominating.

A modern ranch house (built on a concrete slab) is located along Hasley Canyon, and currently serves as the headquarters for the oil production activities within the study area. Many of the introduced plants probably date from this original occupation of the property, which may be inferred to have occurred sometime during the mid to late 1960s.

2.2 Ethnographic Background

The Upper Santa Clara Valley region, including the Hasley Canyon study area, appears to have been inhabited during the ethnographic past by an ethnolinguistic group known as the Tataviam. Based on a few existing word lists, descriptions provided by early travelers, mission placenames, and the recollections of aboriginal informants, the Tataviam are generally accepted as the aboriginal inhabitants of this region. Their language is believed to represent a member of the Takic branch of the Uto-Aztecan linguistic family (King and Blackburn 1976). In this sense, it was related to other Takic languages in the Los Angeles County region, such as Gabrielino/Fernandeño of the Los Angeles Basin proper, and Kitanemuk of the Antelope Valley.

The Tataviam are thought to have inhabited the upper Santa Clara River drainage from about Piru eastwards to just beyond the Vasquez Rocks/Agua Dulce area; southwards as far as Newhall and the crests of the San Gabriel and Santa Susana Mountains; and northwards to include the

middle reaches of Piru Creek, the Liebre Mountains and the southwesternmost fringe of the Antelope Valley (ibid; Kroeber 1925; Earle 1990; Johnson and Earle 1990). Their northern boundary most likely ran along the northern foothills of the Liebre Mountains (i.e., the edge of the Antelope Valley), and then crossed to the southern slopes of the Sawmill Mountains and the Sierra Pelona, extending as far east as Soledad Pass (Earle 1990:94). Ethnographically, at least, the Tataviam do not appear to have controlled the Leona Valley or areas to the north, with the Elizabeth Lake area proper a zone of uncertainty.

Known Tataviam villages during the historic period include: pi?irukung and ?akavaya, both near modern Piru; tsavayu(?u)ng, San Francisquito; etseng, kuvung and huyung, on Piru Creek above Piru; tochonanga, near Newhall; kwarung, Elizabeth Lake; and tsawayung, near Castaic Junction. At kamulus, near modern Rancho Camulos, a mixed Chumash-Tataviam population lived (King and Blackburn 1976:535-6). Because the name kamulus is unquestionably Chumash and not Tataviam, however, the toponym has been viewed as problematical (Johnson and Earle 1990:197); that is, as not reflecting the original (Tataviam) name for this village. Regardless of original name, however, the Spanish missionary Señan, writing in 1804, indicated that the Chumash inhabitants of the village of sécpey had migrated to kamulos, accounting for this admixture (Señan 1962:15). Sécpey is of course now known as Sespe, near the modern town of Fillmore.

The putative historical Tataviam village of tsawayung, also known as chaguayabit or tacuyamam, has generated interest, due to its reported location at Castaic Junction and its association with Asistencia de San Francisco (cf. Henshaw 1955:196; King and Blackburn 1976:536; Johnson 1978; Johnson and Earle 1990). This Tataviam placename is controversial (or at least ambiguous) on two counts. First, the exact location of it was never precisely identified in the historical records. Although it has been widely presumed to be at or immediately adjacent to the Asistencia, no archaeological or other evidence of such has yet been forthcoming. Second, and moreover, Henshaw (1955:196) argued that it was not the site of a major village where ceremonies were conducted, as many later authors have also assumed. However, John Johnson (personal communication, 1993) has mentioned that there are a significant number of entries in the San Fernando Mission registrar, noting births, baptism,

marriages and deaths from persons originally inhabiting this locale, and suggesting that it was once a village of some size. Thus, it remains somewhat enigmatic. Our best interpretation of its original location, based on a variety of lines of evidence, places it in approximately one-half mile east of the intersection of Rye Canyon Road and Interstate-5.

Culturally-speaking, the Tataviam were in most respects similar to their Fernandeño and Chumash neighbors, to the south and west, respectively (King and Blackburn 1976). In this sense, they were hunters-gatherers, with subsistence emphasizing yucca, acorns, juniper berries, sage seeds and islay. Game was also hunted, with small animals, such as rabbits/hares and rodents, probably representing more significant contributions of meat protein than larger game, such as deer.

Almost nothing is known of Tataviam social and political organization. Based on analogies with surrounding groups, however, it can be suggested that they were organized in a series of tribelets, similar to the naciones described by Earle (1990) for the Antelope Valley, and found to be characteristic of much of California aboriginal socio-political organization (cf. Kroeber 1925). The tribelet represented an autonomous land-holding unit, minimally controlled by a head-chief or big-man. They usually included one large, 'capital' village, sometimes occupied year-around, and a series of smaller, seasonally inhabited hamlets. Whether the Tataviam may have had exogamous clans and moieties, like the Cahuilla and Serrano to the east, is unknown. However, it is estimated that the Tataviam population was less than 1000 people at the time of Euro-American contact, and that only two or three of the largest villages throughout their territory were inhabited at any given time (King and Blackburn 1976).

It is also likely that Tataviam religion followed the patterns of their surrounding neighbors. In this case, shamanism would have functioned as the central element. This posits a direct and personal relationship between each individual and the supernatural world, with this relationship enacted by entering a trance or hallucinatory state (usually based on the ingestion of psychoto-mimetic plants, such as jimsonweed or native tobacco). Shamans, per se, who were considered individuals with an unusual degree of supernatural power, served as ritual specialists: ceremonies and rites were infrequent in occasion and limited in type.

Perhaps most importantly, shamans served as healers or curers, with the etiology of disease as well as its cure held to lie in the supernatural world. Shamans are also known to have produced the rock art of this region (Whitley 1992), which depicted the hallucinations and spirits they observed in their vision quests.

Although the Tataviam were one of the earliest groups contacted by Spanish missionaries, with a number of their villages described by members of the Portolá expedition of 1769, a general lack of information on this group exists because, by 1810, all Tataviam had been baptized at Mission San Fernando and were quickly absorbed by other groups through intermarriage. The last speaker of Tataviam died in 1916 (King and Blackburn 1976).

2.3 Archaeological Background

Archaeologically speaking, more information is available on the Upper Santa Clara River area, although here, too, less is known than for many of the surrounding regions of southern California. In general terms, the prehistory of this inland area appears to parallel that of the Santa Barbara Channel/southern California coastal zone (cf. McIntyre 1990), with William Wallace's (1955) cultural historical framework appropriate as a chronological system of reference.

Correspondingly, the earliest evidence for human occupation of this region corresponds to Wallace's Early Millingstone Period (or, alternatively, the Early Horizon), dated from about 7000 to 4000 years before present (B.P.). This represents a period during which subsistence and adaptation are said to have emphasized the collecting and processing of hard seeds, with inland artifact assemblages, correspondingly, dominated by mullers and millingstones known as manos and metates. Evidence for an Early Millingstone occupation of the Upper Santa Clara Valley region is, admittedly, very limited, and has been found at only two sites. Both of these are located near Vasquez Rocks, with temporal attribution based on the presence of a small number of Olivella barrel beads (McIntyre 1990). Such bead types have subsequently proven unreliable temporal indicators, throwing doubt on human inhabitation of this region before about 4000 years ago. Further, recent excavations at

one of these putative early locales, the Escondido Canyon Site, failed to uncover evidence for occupation prior to about 2700 years B.P. (Love 1990).

The second temporal unit in Wallace's chronology is the Intermediate Period (or Middle Horizon), dated from 3500 to 1500 years B.P. It is marked by a shift to the mortar and pestle, with an increased emphasis on hunting and hunting tools in artifact assemblages. Population appears to have increased during this period, with more temporary camps founded. Evidence for Intermediate Period occupation of the Upper Santa Clara Valley region is substantial, in that it has been found at a number of sites and has been based on radiocarbon, obsidian hydration and typological dating (McIntyre 1990). The Agua Dulce village complex, for example, includes occupation extending back to the Intermediate Period, at which time population of the village may have been 50 or more people (King et al n.d.). Furthermore, the Intermediate Period appears to represent a time during which a substantial exploitation of mid-altitude environments first began, with considerable use, for example, of portions of the nearby Hathaway Ranch (located to northwest of the study area) beginning at this time.

Assuming that the Upper Santa Clara River region was first significantly occupied during the Intermediate Period, as existing evidence now suggests, a parallel can be drawn with the inland Ventura County region, where a similar pattern has been identified (Whitley and Beaudry 1991), as well as possibly the Antelope Valley and western Mojave Desert (Sutton 1988a, 1988b). In all of these areas a major expansion in settlement, the establishment of large site complexes, and an increase in the range of environments exploited, appear to have occurred sometime roughly around 3000 years ago. Although most efforts to explain this expansion have focussed on very local circumstances and events, it is increasingly clear that this was a major southern California-wide occurrence, and therefore that explanation of it must be sought at a larger level of analysis.

There is a continuity in the inland regions between the Intermediate Period and subsequent times, labeled the Late Prehistoric Period, lasting from 1500 years B.P. to historic contact, at about 200 years B.P. Site complexes first occupied in the Intermediate Period continued to be

inhabited, although they increased in size, with more specialized and diversified sites added to the kinds of sites present. In fact, the principal distinction between Intermediate and Late Prehistoric sites in the inland regions is a change in certain diagnostic artifact types (notably, projectile points, with a shift from spear points to bow and arrow points). This change in fact may not signify consequential changes in culture, adaptation or subsistence, although the trends begun in the Intermediate accelerate over time during the Late Prehistoric. For example, a large number of Late Prehistoric Period sites are known from the Upper Santa Clara River/Agua Dulce region (cf. McIntyre 1990), with the Agua Dulce village complex estimated to have grown to a population of 200 to 300 people around A.D. 1500 - 1600 (King et al n.d.). Sometime during this period the Tataviam can be hypothesized to have occupied this region, although it is possible that they may have appeared somewhat earlier. However, the important point is that, during the Late Prehistoric Period, the patterns of lifeways recorded for the ethnographic period were fully in operation.

During the Historic Period, the aboriginal population appears to have dropped considerably. This, without doubt, can be attributed to the effects of missionization and its attendant relocation of the aboriginal population to centralized locales, along with the depredations of introduced Old World diseases. The Upper Santa Clara River region appears to be one of those inland zones, like the Antelope Valley to the north, that quickly and completely lost its aboriginal population. In particular, the aboriginal population from the Upper Santa Clara Valley was moved into Mission San Fernando, in the San Fernando Valley, and the area was effectively depopulated.

2.4 Historical Background

As noted previously, Euro-American mention of the upper Santa Clara River Valley region first occurred in the chronicles of the Portolá expedition of 1769, which passed through the San Fernando Valley to Newhall, then to the Castaic Junction area, and then down the Santa Clara River, to Ventura, on its way to Monterey (Bolton 1971; Boneau Companys 1983; Brandes 1970; Cleland 1940). Portolá, in fact, camped at the confluence of the Santa Clara and Castaic Creeks - modern Castaic

Junction - and suggested this locale as an appropriate spot for a mission. Portolá described Castaic Junction as follows:

> The country...is delightful and beautiful in the plain, although the mountains that surround it are bare and rough. In the plain we saw many tall and thick cottonwoods and oaks; the watering place [Castaic Junction] consists of an arroyo with a great deal of water which runs in a moderately wide valley, well grown with willows and cottonwoods. We stopped on the bank of the arroyo, where we found a populous village in which people lived without any cover, for they had no more than a light shelter fenced in like a corral...As soon as we arrived they gave us many baskets of different kinds of seeds, and a sort of sweet preserve like little raisins, and another resembling honeycomb, very sweet and purging, and made of the dew which sticks to the reed grass. It is a very suitable site for a mission, with much good land, many palisades, two very large arroyos of water, and five large villages close by.
>
> (Bolton 1971:153)

This description, which bears the ledger entry of Tuesday, August 8, 1769, apparently describes a temporary, late summer encampment of Tataviam, judging from the description of the corral-like huts of the village's inhabitants.

Although the Upper Santa Clara Valley region was traversed by a number of Spanish explorers in subsequent years, it initially remained isolated due to rugged topography, even though Portolá had suggested it as a locale for a mission. With the establishment of Missions San Buenaventura, in 1782, and San Fernando, in 1797, late-18th century historical events largely occurred in areas to the west and south of the Upper Santa Clara Valley proper, particularly inasmuch as the Camino Real - the Spanish Royal Road - was eventually established through the Conejo Corridor rather than down the Santa Clara Valley.

However, as the missions increased in size and their herds grew, it became necessary for many of them to establish mission ranchos, or estancias, to allow their cattle to graze some distance from the mission vineyards and fields, per se. With this geographical expansion of mission

influence and activities, the Upper Santa Clara Valley region became important, if not pivotal, in a number of events central to the development of southern California. San Francisco Xavier served as the estancia for Mission San Fernando. It comprised the upper reaches of the Santa Clara Valley down to Piru (Cleland 1940; Perkins 1957; Smith 1977) - essentially what would become the Newhall Ranch - and was established in 1804, a few years after the founding of the mission itself. The headquarters of Estancia San Francisco Xavier was constructed at Castaic Junction, on a bluff overlooking the confluence of the Santa Clara and Castaic Creeks from the south. Eventually it was raised from the status of Estancia to Asistencia, or sub-mission.

The Asistencia de San Francisco Xavier represents the first European settlement of the Castaic Junction region. During this period, its primary function was as a ranching and perhaps agricultural out-station, although it undoubtedly served as a religious outpost as well. Placed at the location suggested for a mission earlier by Father Crespi of the Portolá expedition, it consisted of two rectangular adobe buildings, measuring 105 by 17 feet and 107 by 22 feet, respectively, in size, one of which included a tiled sacristy (Reynolds 1992:17). Eventually a third adobe structure, referred to as the "Old Milk House", was constructed downhill from the main structures, an undated photo of which was published by Perkins (1957:112).

William Lewis Manly, for reasons discussed below, provided a description of the Asistencia in 1849. At that time it was no longer an adjunct to Mission San Fernando but had transferred in ownership to Antonio del Valle when the Asistencia's land was granted as Rancho San Francisco to del Valle by Governor Alvarado in 1839. Notably, Antonio del Valle had served as majordomo and later administrator of Mission San Fernando and its lands from 1834 to 1837, and the family had made supplications to the governor in 1835 and 1837 to obtain a grant in the Santa Clara Valley (Newhall 1958:36; Perkins 1957). When finally awarded, the rancho contained slightly more than 46,000 acres which, as Smith (1977) acknowledges, was just under the maximum of 11 square leagues then legally allowed.

Manly's description pertains to the period when the Asistencia buildings served as a ranch headquarters for one of a number of del Valle's

properties, while he and his family continued to live in Los Angeles. Manly described the Asistencia, his first sighting of California mission architecture, as follows:

> A house on higher ground soon appeared in sight. It was low, of one story with a flat roof, gray in color, and of a different style of architecture from any we had ever seen before. There was no fence around it, and there were no animals or wagons or persons to be seen...but a mule tied to a post told us there was some one about...The house...was built of sun-dried bricks about one by two feet in size, and one end was used as a storehouse...down the hill...[was a]...small, poorly, fenced field which was sometimes cultivated.
>
> (Manly 1924:178-179)

In 1845 the rancho passed to Antonio del Valle's son, Ygnacio. Ygnacio del Valle ultimately became a prominent politician in southern California, serving as Alcalde (mayor) of Los Angeles during the Mexican period, as a member of the Territorial Deputation when California was admitted into the Union in 1850, and in the State Legislature. Forced to fight off efforts by Pedro Carrillo to obtain the western portions of Rancho San Francisco, Ygnacio built a corral at Camulos (the approximate site of the Chumash-Tataviam village of kamulus) in 1841, and finally the Camulos Adobe in 1864, as well as one of the first commercial wineries in the state in 1867 (Smith 1977). The Camulos Adobe, which then became the del Valle family home, was visited by Helen Hunt Jackson in 1882, and served as the setting for her famous early California novel Ramona. (The D.W. Griffith film "Ramona", starring Mary Pickford, was also filmed at the adobe in 1911).

However, prior to the development of Camulos, the Del Valle ranch headquarters remained at the old site of the Asistencia de San Francisco, above Castaic Junction. Furthermore, it was to the Asistencia that the lead group of the Manly-Walker party - the "Death Valley '49ers" - first emerged out of the wilderness from their efforts to cross the Mojave Desert (Manly 1924:178-179). Manly's description of the Asistencia's buildings, quoted above, represent not only his first sighting of California mission architecture, but his first encounter with civilization, after his

harrowing escape from Death Valley.

Following established California agrarian practices, Rancho San Francisco was employed by the del Valles primarily for raising cattle, although Mexican law also required the establishment of an orchard and other agricultural endeavors to validate a land grant (Smith 1977). Perkins (1957:107), for example, recorded that del Valle raised 600 head of cattle on the ranch and planted wheat in a marshy area below Camulos. Notably, however, the original diseño or land grant map for Rancho San Francisco, drawn in 1843, labels the Santa Susana Mountains and hills, south of the Santa Clara River and west of Castaic Junction, as lomas esterilas, "sterile hills" (Smith 1977: frontispiece; Johnson and Earle 1990: Figure 2) which, presumably, was of marginal use to them.

Rancho San Francisco is, ultimately, the origin for the Newhall Ranch and the Newhall Land and Farming Company. Because the history of this ranch is very well documented, with complete published accounts provided by Newhall (1958), Perkins (1957), Reynolds (1992), Rolle (1991) and Smith (1977), we provide only a brief summary here.

As is discussed below, del Valle sold the majority of Rancho San Francisco in 1865 for $1.25/acre, retaining only 1500 acres around Rancho Camulos. This 1865 sale was precipitated by the discovery of tar seeps in Pico Canyon, immediately to the south of the original land grant, where oil had been discovered in 1859. The purchasers of the ranch were Thomas A. Scott and Thomas Bard, representing the Philadelphia and California Petroleum Company. Because they believed that ranching and oil were incompatible activities, Scott and Bard subsequently sold 39,503 acres of the ranch to Henry Mayo Newhall, a San Francisco financier, in January, 1875, for $2.20/acre (Newhall 1958; Rolle 1991; Smith 1977). According to Thompson and West (1880:104), shortly thereafter Newhall placed 7000 acres of the ranch under cultivation for wheat and barley, and raised 700 head of cattle and 10,000 sheep. Headquarters for the ranch was adjacent to the Asistencia, in the area of the modern Magic Mountain parking lot. Note that this is adjacent to but outside of the current study area.

The town of Newhall was created the following year, as a result of the Southern Pacific Railroad Company's move to place a rail line down the

Santa Clara Valley to the coast at Ventura. Although the original development was unsuccessful - due to frequent sandstorms the town's six buildings and name of Newhall were moved three miles to the south in 1878, with the original townsite becoming known as Saugus – ultimately the rail line provided an outlet for the agricultural and ranching products of the ranch, and greatly stimulated oil production in the immediate area (Franks and Lambert 1985:7). For obvious reasons, both circumstances stimulated the commercial development of the Newhall Ranch.

Henry Mayo Newhall was thrown from his horse on the ranch and died, in San Francisco, in 1883. The ranch then passed to his heirs. According to Rolle (1991:145), the Newhall financial empire subsequently went into decline, coming close to liquidation in 1930. At that point Athol McBean, son-in-law of William Mayo Newhall, was appointed chairman. McBean reorganized the Newhall Land and Farming Company and, aided by a restitution award of three-quarters of a million dollars resulting from the Saint Francis Dam catastrophe (see below), moved the ranch and company back onto sound financial footing. The company has continued as the major agricultural/ranching and land development concern in the region to the present time.

The upper reaches of the Santa Clara Valley also figured in three other important episodes in southern California history, two of which are landmarks in the economic history of the state. The first of these is the discovery of gold. Although the history of gold discovery and exploitation in California is often linked with James Marshall's 1848 discovery of gold in John Sutter's Coloma mill-race, it is a well-known fact that gold was found earlier in California 1842, in Placerita Canyon, by Francisco Lopez, Manuel Cota and Domingo Bermudez (Smith 1977; Outland 1986; Reynolds 1992). But it is by no means clear that even this well-documented incident represents the first true discovery of gold in the state. Instead, a variety of lines of historical evidence suggest that gold may have been mined in the Santa Clara Valley region one to three decades earlier (e.g., see Clark 1970:176).

According to an account published by Outland (1986), a local tale indicates that a group of about 20 men, led by one Santiago Feliciano, left Mission San Fernando in 1820 to explore the Castaic region. After reaching the Castaic Junction area, they headed up Hasley Canyon, and

traveled up it about 10 miles. There they discovered gold, and a mining camp, "San Feliciano" (from which San Feliciano Canyon apparently gets its name), was born. The region from San Feliciano to Soledad Canyon was subsequently prospected and mined (mostly for placer deposits) for a number of years, with little record of these efforts presumably resulting because of the legal complications involved in recording gold claims in Mexican California: while the granting of land for agricultural purposes could be effected by the Governor of California, the recording of a gold claim under Mexican law required a trip to Mexico City, an effort none were apparently willing to gamble.

Although, as Outland notes, there is no clear verification for this tale (which ultimately derives from the prominent early settler and local historian S.P. Guiberson), there is nonetheless fairly strong evidence that the Placeritas discovery in 1842 was by no means the first in this region (Smith 1977; Outland 1986; Clark 1970). In 1832, for example, Ewing Young discovered an old ore smelting oven in San Emigdio Canyon (Outland 1986), suggesting that gold mining in the area had occurred for one or two decades prior to the 1842 event, and a number of other sources indicate that the presence of gold in the area was known at least a few years prior to the famous 1842 Placeritas Canyon incident (Smith 1977:32-33), in which gold was discovered by Francisco Lopez.

Lopez's discovery is often trivialized as accidental: a fortuitous event resulting from digging up a wild onion. In fact, Lopez had been educated at a mining college in Mexico City, and was known to have been systematically prospecting the region prior to the 1842 discovery. As the uncle of Antonio del Valle's widow, he had leased portions of Rancho San Francisco for cattle, and was headquartered at the old Asistencia. There is every reason to assume, thus, that this "official" discovery of gold resulted from intentional prospecting activities, carried out by the then-resident of the Asistencia.

Be this as it may, the 1842 discovery did have one important repercussion: it caused Lopez to continue to look further afield for gold, resulting in his second gold discovery of the state in San Feliciano Canyon (Perkins 1958). In turn, this led to the granting of Rancho Temescal to Lopez and Jose Arellanes, in 1843. This grant included most of Piru Creek, as well as Placerita and San Feliciano Canyons, and totaled over 13,000

acres. Apparently, the legality of this grant under Mexican law has always been a point of some question for, as noted previously, the Governor of California only held the right to award agricultural but not mining grants. However, Thompson and West (1886:74) record that the area was worked by miners from Sonora, Mexico, between 1842 and 1846, at which time they returned to Mexico, and that they extracted between six and eight thousand dollars of gold per year during that period. Nonetheless, about a dozen years later, Rancho Temescal was acquired by Ygnacio del Valle and added to his Rancho San Francisco holdings.

Thus, not only was this region the first in California in which gold was discovered, it was also the first where true oil drilling occurred (Smith 1977), which was the second historical event of statewide importance in the region. This led to discoveries of oil on Rancho San Francisco and, ultimately, throughout the Santa Clara Valley region. This first major discovery of oil resulted when Ygnacio del Valle sold the majority of his Rancho San Francisco holdings to Thomas Bard, representing Senator Thomas A. Scott, in 1865. Seven weeks later, the first oil well came in on the south side of the Santa Clara River, on property acquired by Bard, near the del Valle adobe (Smith 1977). This discovery was instrumental in the regional oil boom that ensued.

Following the discovery of oil in the valley, and with the depletion of the (relatively small) placer gold deposits in the region by the 1880s, the Upper Santa Clara Valley region became renowned both for its oil and (ultimately) for its citrus crops.

The third local event of historical importance was the collapse of Los Angeles Department of Water and Power's St. Francis Dam and the resulting flood of the Santa Clara River Valley on March 12 and 13, 1928. With the failure of dam close to midnight on March 12, water raged down San Francisquito Canyon to Castaic Junction, which it effectively leveled, and then on to Fillmore, Santa Paula and ultimately to the Pacific, causing great loss of life and destruction along the way. At Castaic Junction, the only survivor of the flood was George MacIntyre, son of the owner of McIntyre's motel and gas station. George was washed northwards by a great arc of the floodwaters, towards Castaic Canyon, where he was able to grab hold of a power pole and avoid drowning; the bodies of his father and one brother were found in Santa Paula; another brother's body was

never recovered. All told, at least 336 known deaths were caused by the flood, 101 individuals were missing and can now be presumed dead, 909 homes were destroyed, and countless acres of orchards were flattened (Outland 1963).

Within the larger Newhall Ranch at Blue Cut in Ventura County the flood waters rose to the level of the highway. The restriction of the Santa Clara River stream course at this spot momentarily bottled the flood, resulting in a temporary upsurge of waters against the flood current, creating a whirlpool. An Edison Company work camp of tents housing 150 men had been established at the railroad siding of Kemp, immediately east of Blue Cut, which was inundated by the upsurge. When the flood waters receded, 84 of these men had been drowned by the catastrophe (Outland 1963:106-107).

In retrospect, it is interesting to note that the Newhall Land and Farming Company had independently hired Harmon Bonte, a consulting engineer, to review the suitability of the Saint Francis Dam in 1924, prior to its construction. Arguing against LADWP's William Mulholland, Bonte contended on the part of his clients that the conglomerate bedrock at the proposed dam site was unfit for dam anchorage. His report was widely published after the disaster, as an indictment of Mulholland's engineering studies (Outland 1963:43), and no doubt contributed to Mulholland's subsequent decision to retire from professional and public life.

Val Verde itself was first developed in the early 20th century and, during the Prohibition era, was the location of resorts that catered to the African-Americans population of greater Los Angeles. Since that time it has developed into a small suburban enclave. In the 2000 census it numbered almost 1500 residents.

In summary, the study area is in an upland area that fell outside of any earlier development or use.

3.0 ARCHIVAL RECORDS SEARCH

An archival records search of the 432 acres Los Valles study area was completed by the California State University, Fullerton, Archaeological Information Center (AIC) staff to determine whether any prehistoric or historical sites were known on the property, and/or whether all or portions of it had been previously systematically surveyed by archaeologists.

A complete copy of the records search is included as Appendix A to this report. In summary, eleven previous archaeological studies have been conducted within a 1/8 mile radius of the study area. Of these studies, three are located within the subject property and no archaeological sites were known to exist on the property or within a 1/8 mile radius of the study area.

Examination of the 1903 and 1941 Santa Susana 15' topographic quadrangles showed no evidence of structures or early land use in the study area.

In summary, the records search indicates that the study area has no known sites and a low sensitivity for archaeological resources.

4.0 SURVEY METHODS

The intensive Phase I survey of the 432 acres study area was conducted in July 2013. Project staff included Joseph M. Simon and Robert L. Snibley.

Field procedures involved spacing the crew at approximately 10 - 15 meter intervals and then walking the property in transects. The groundsurface was examined during these transects to identify evidence of prehistoric sites. Such evidence might include surface artifacts, dark

organically rich midden soils, fire-cracked rock resulting from earth ovens and roasting pits, and shell and bone that might represent remnants of dietary remains. Alternatively historical remains in the form of metal, glass and ceramic were also considered possible finds within the study area.

During the survey special attention was paid to geomorphological conditions that affect the preservation of archaeological remains. Road or bank-cuts that expose subsurface stratigraphy, for example, along with stable geomorphic and depositional environments were carefully examined for evidence of cultural remains. Furthermore, rodent backdirt piles were carefully examined inasmuch as they can reveal the presence of buried archaeological deposits.

5.0 FIELD RESULTS

Field conditions for the intensive Phase I survey of the 432 acres study area were good. There was a light density of groundcover but much of the study area showed evidence of previous groundsurface disturbance. This consisted of extensive grading and off-road vehicle use. Flat portions of the study area comprise either the alluvial flood plain of Hasley Canyon, which represents an abandoned golf course, and/or areas of surficial grading and active oil drilling. The upland portions of the property are generally razorback ridges with widespread grading in the eastern half of the parcel. Combined with the absence of natural water sources within the study area, conditions were considered marginal for the existence or preservation of archaeological remains.

No archaeological sites of any kind, prehistoric or historical, were found within the study area during the systematic survey.

6.0 SUMMARY AND RECOMMENDATIONS

An intensive Phase I archaeological survey was conducted for the Lo Valles study area, northwestern Los Angeles County, California. This involved an on-foot survey of the 432 total acres property and a review of written and unpublished documents on the archaeology, history and ethnography of the region. No cultural resources of any kind had been previously recorded or were discovered during the current study.

6.1 Recommendations

Based on the fact that no archaeological sites of any kind have been found within the Los Valles study area, development of this property does not have the potential to result in adverse impacts to known archaeological resources. We recommend that no additional archaeological work be required for this property. However, in the unlikely event that cultural resources are encountered during excavation or grading, it is recommended that an archaeologist be contacted to evaluate and assess the remains.

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8.0 Figures

List of Figures

1 - Location of the Los Valles study area , northwestern Los Angeles County, California.

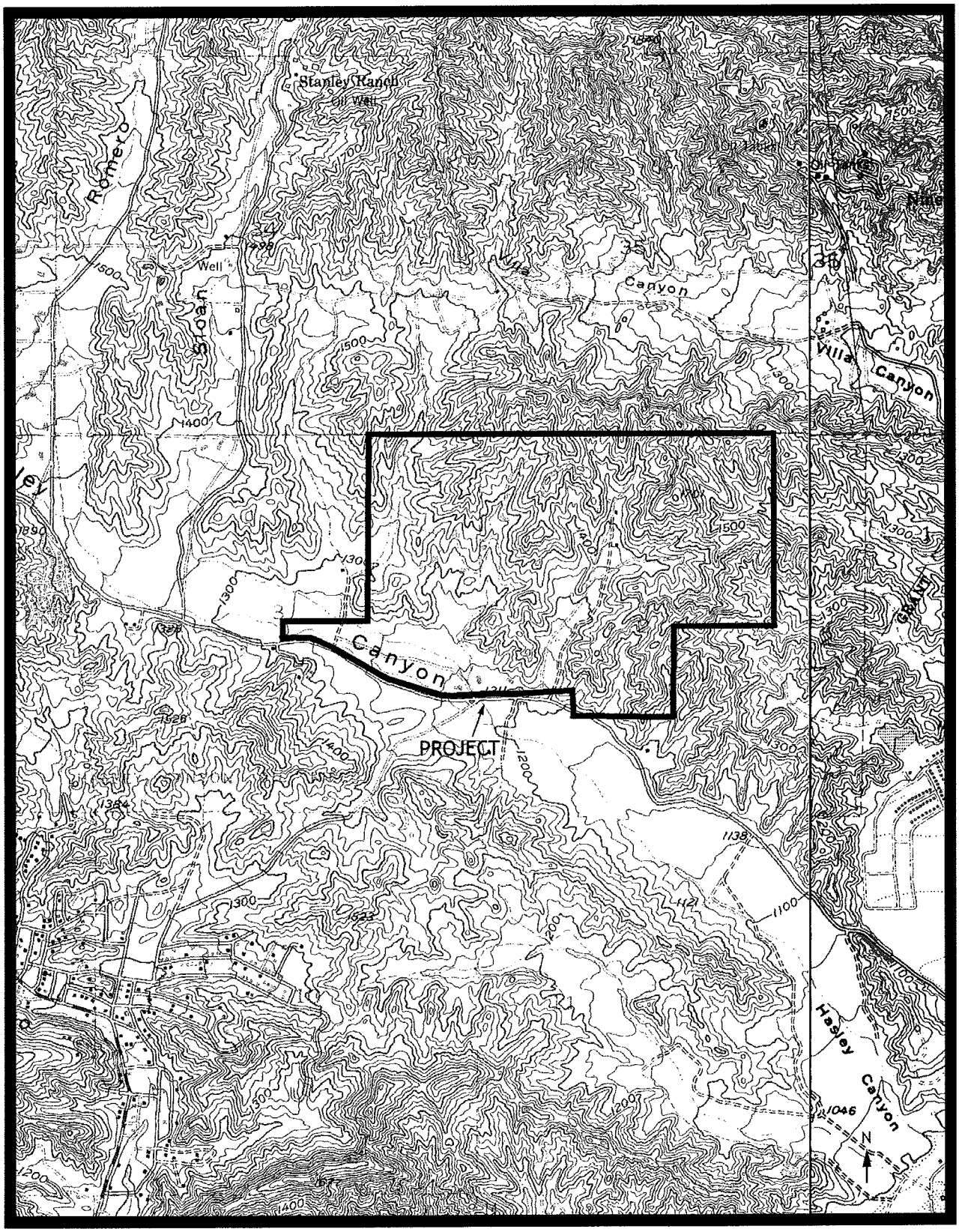


Figure 1: Project location on Val Verde & Newhall, CA. 1:24 000 USGS quadrangles (1952/pho. rev. 1988).

9.0 APPENDIX A: ARCHIVAL RECORDS SEARCH

South Central Coastal Information Center
California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
657.278.5395 / FAX 657.278.5542
anthro.fullerton.edu/sccic.html - sccic@fullerton.edu
California Historical Resources Information System
Orange, Los Angeles, and Ventura Counties

June 24, 2013 SCCIC #13158.9842

Mr. Joseph Simon
W and S Consultants
2242 Stinson St
Simi Valley, CA 93065
(805) 581-3577

RE: Records search for an update Phase I archaeological survey for the Los Valles project area (425 ac.), Hasley Canyon, Los Angeles County, California

Dear Mr. Simon,

As per your request received on June 23, 2013, a records search was conducted for the above referenced project. The search includes a review of all recorded archaeological sites within a 1/8-mile radius of the project site as well as a review of cultural resource reports on file. In addition, the California Points of Historical Interest (SPHI), the California Historical Landmarks (SHL), the California Register of Historical Resources (CAL REG), the National Register of Historic Places (NRHP), and the California State Historic Resources Inventory (HRI) listings were reviewed for the above referenced project. The following is a discussion of the findings.

Newhall, CA and Val Verde, CA USGS 7.5' Quadrangles

MAPPED ARCHAEOLOGICAL RESOURCES:

No archaeological sites have been identified on our maps within a 1/8-mile radius of the project site. No archaeological sites are located within the project site. No sites are listed on the Archaeological Determination of Eligibility (DOE) list. No isolates have been identified within a 1/8-mile radius of the project site. No isolates are located within the project site.

MAPPED HISTORIC BUILT-ENVIRONMENT RESOURCES:

No above-ground historic resources have been identified on our maps within a 1/8-mile radius of the project site. No above-ground historic resources are located within the project site.

ADDITIONAL CULTURAL RESOURCES (all other listings)

The **California Historic Resources Inventory (HRI)** lists no properties that have been evaluated for historical significance within a 1/8-mile radius of the project site. These are

additional resources that are listed in the Historic Property Data File and are located either within the project site or within the search radius.

The **California Point of Historical Interest (SPHI)** of the Office of Historic Preservation, Department of Parks and Recreation, lists no properties within a 1/8-mile radius of the project site.

The **California Historical Landmarks (SHL)** of the Office of Historic Preservation, Department of Parks and Recreation, lists no properties within a 1/8-mile radius of the project site.

The **California Register of Historical Resources (CAL REG)** lists no properties within a 1/8-mile radius of the project site. These are properties determined to have a National Register of Historic Places Status of 1 or 2, a California Historical Landmark numbering 770 and higher, or a Point of Historical Interest listed after 1/1/1998.

The **National Register of Historic Places (NRHP)** lists no properties within a 1/8-mile radius of the project site.

HISTORIC MAPS:

Copies of our historic maps – Santa Susana, CA (1903 & 1941) 15′ USGS - are enclosed for your review.

PREVIOUS CULTURAL RESOURCES INVESTIGATIONS:

Eleven studies (LA1223, LA1318*, LA1785, LA2154, LA2723, LA4739, LA5993*, LA10112, LA10119*, LA10481, LA11713) have been conducted within a 1/8-mile radius of the project site. Of these, three are located within the project site. There are eleven additional investigations located on the Newhall, CA and Val Verde, CA 7.5′ USGS Quadrangles that are potentially within a 1/8-mile radius of the project site. These reports are not mapped due to insufficient locational information.
(= Located within the project site)*

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you **do not include** resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at 657.278.5395 Monday through Thursday 9:00 am to 3:30 pm.

Should you require any additional information for the above referenced project, reference the SCCIC number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Sincerely,
SCCIC

Lindsey Noyes
Lead Staff Researcher

Enclosures:

(X) Maps – Newhall, CA & Val Verde, CA 7.5′ USGS Quadrangles, Santa Susana, CA (1903 & 1941) 15′ USGS Quadrangle – 7 pages
(X) Bibliography – 7 pages
(X) Invoice #13158.9842

SCCIC Bibliography: Los Valles Project: Hasley Canyon

LA-01223

Author(s): Romani, Gwendolyn R.
Year: 1980
Title: A Survey of Cultural Resources and Assessment of Impacts for Tentative Tract No. 34031, Hasley Canyon, Los Angeles County, California
Affliliation: Northridge Archaeological Research Center, CSUN
Resources:
Quads: VAL VERDE
Pages:
Notes:

LA-01318

Author(s): Tartaglia, Louis J.
Year: 1983
Title: Preliminary Archaeological Reconnaissance-hasley Canyon
Affliliation:
Resources:
Quads: NEWHALL, VAL VERDE
Pages:
Notes:

LA-01785

Author(s): Tartaglia, Louis J.
Year: 1989
Title: Cultural Resources Archaeological Survey Hasley Canyon, California Tentative Tract No. 45084
Affliliation:
Resources:
Quads: NEWHALL, VAL VERDE
Pages:
Notes:

LA-02154

Author(s): Lerch, Michael K.
Year: 1990
Title: Cultural Resource Assessment of Tract 44471, Sloan Canyon, Map Number 21161) on Decker Road Off Encimal Canyon, Santa Monica Mountains, California
Affliliation: Michael K. Lerch & Associates
Resources:
Quads: VAL VERDE
Pages:
Notes:

LA-02723

Author(s): Salls, Roy A.
Year: 1990
Title: Report of Archaeological Reconnaissance Survey Of: Tentative Tract 49048 Castaic, California.
Affliliation: Northridge Center for Public Archaeology, CSUN
Resources: 19-000324
Quads: VAL VERDE
Pages:
Notes:

SCCIC Bibliography: Los Valles Project: Hasley Canyon

LA-04739

Author(s): Maki, Mary K.
Year: 1999
Title: Negative Phase I Archaeological Survey and Impact Assessment of 70 Acres for the Sloan Canyon Greystone Homes Project Vesting Tentative Tract No. 52475 Los Angeles County, California
Affliliation: Conejo Archaeological Consultants
Resources:
Quads: VAL VERDE
Pages:
Notes:

LA-05993

Author(s): Duke, Curt
Year: 2002
Title: Cultural Resource Assessment at & T Wireless Services Facility No. 05020a Los Angeles County, California
Affliliation: LSA Associates, Inc.
Resources:
Quads: TORRANCE
Pages:
Notes:

LA-10112

Author(s): McKenna, Jeanette A.
Year: 2003
Title: A Phase I Cultural Resources Investigation of the Proposed Wshuhsd Hasley-sloan School Sites in the Hasley Canyon Area of Northern Los Angeles County, California
Affliliation: McKenna et al.
Resources:
Quads: VAL VERDE
Pages:
Notes:

LA-10119

Author(s): Whitley, David S.
Year: 2003
Title: Phase I Archaeological Survey of the 325 Acres Del Valle Specific Plan Study Area, Los Angeles County, California
Affliliation: W & S Consultants
Resources:
Quads: VAL VERDE
Pages:
Notes:

SCCIC Bibliography: Los Valles Project: Hasley Canyon

LA-10481

Author(s): Romani, Gwen R.
Year: 2010
Title: Phase I Cultural Resources Investigation for the proposed William S. Hart Union High School District, Hasley-Sloan High School Site, Located in the Castaic Area of Los Angeles County, California
Affliliation: Compass Rose Archaeological, Inc.
Resources:
Quads: VAL VERDE
Pages: 31
Notes:

LA-11713

Author(s): Schmidt, James
Year: 2012
Title: Archaeological Survey Report for Southern California edison Company's Replacement fo Two Deteriorated Power Pole Structures on the Bouquet 16kV and Trumpet 16 kV Distribution Circuits, Santa Clarita, Los Angeles County, CA
Affliliation: Compass Rose Archaeological
Resources: 19-187557
Quads: MINT CANYON, VAL VERDE
Pages: 13
Notes:

SCCIC Bibliography: Newhall & Val Verde Unmappables

LA-00700

Author(s): McIntyre, Michael J.
Year: 1979
Title: A Cultural Resource Management Program for the Upper Santa Clara River Valley, Los Angeles and Ventura Counties, California
Affiliation: Department of Anthropology
Resources: 19-000036, 19-000324, 19-000361, 19-000362, 19-000363, 19-000364, 19-000365, 19-000369, 19-000370, 19-000371, 19-000381, 19-000393, 19-000394, 19-000396, 19-000438, 19-000440, 19-000582, 19-000618, 19-003890, 19-186538, 19-186541, 19-186567
Quads: ACTON, AGUA DULCE, ALAMO MOUNTAIN, BLACK MTN, BURNT PEAK, COBBLESTONE MTN, DEL SUR, DEVILS HEART PEAK, FRAZIER MOUNTAIN, GREEN VALLEY, LAKE HUGHES, LEBEC, LIEBRE MTN, MINT CANYON, NEWHALL, OAT MOUNTAIN, PACIFICO MOUNTAIN, PALMDALE, PIRU, RITTER RIDGE, SAN FERNANDO, SANTA SUSANA, SIMI, SLEEPY VALLEY, SUNLAND, VAL VERDE, WARM SPRINGS MOUNTAIN, WHITAKER PEAK
Pages: 163
Notes: Formerly unmappable, now mapped in 'Other Reports'.

LA-02816

Author(s): King, Chester
Year: 1993
Title: Native American Placenames in the Vicinity of the Pacific Pipeline: Part 2: Gaviota to the San Fernando Valley: Draft
Affiliation: Topanga Anthropological Consultants
Resources:
Quads: BURBANK, FILLMORE, HOLLYWOOD, MINT CANYON, NEWHALL, OXNARD, PIRU, PITAS POINT, SAN FERNANDO, SANTA PAULA, SATICOY, SUNLAND, VAL VERDE, VAN NUYS, VENTURA, WHITE LEDGE PEAK
Pages: 84
Notes: Also VN-02627. Mapped to relevant quads in Other Reports layer.

LA-02886

Author(s): Walker, Edwin Francis
Year: 1952
Title: A Cemetery at the Sheldon Reservoir Site in Pasadena - Five Prehistoric Archaeological Sites in Los Angeles County, California
Affiliation: Southwest Museum
Resources: 19-000026
Quads: PASADENA
Pages: 11
Notes:

SCCIC Bibliography: Newhall & Val Verde Unmappables

LA-03511

Author(s): Romani, John F.
Year: 1977
Title: Assessment of the Archaeological Impact by the Development of the Waste Water Facilities Plan W.o. 31389
Affiliation: Northridge Archaeological Research Center, CSUN
Resources: 19-000009, 19-000043, 19-000053, 19-000055, 19-000056, 19-000057, 19-000058, 19-000061, 19-000062, 19-000064, 19-000065, 19-000068, 19-000203, 19-000204, 19-000206, 19-000211, 19-000212, 19-000343
Quads: ACTON, ADOBE MTN, AGUA DULCE, ALPINE BUTTE, AZUSA, BALDWIN PARK, BEVERLY HILLS, BLACK MTN, BURBANK, BURNT PEAK, CALABASAS, CANOGA PARK, CHILAO FLAT, COBBLESTONE MTN, CONDOR PEAK, CRYSTAL LAKE, DEL SUR, EL MIRAGE, EL MONTE, FAIRMONT BUTTE, FRAZIER MOUNTAIN, GLENDORA, GREEN VALLEY, HI VISTA, HOLLYWOOD, INGLEWOOD, JACKRABBIT HILL, JUNIPER HILLS, LA HABRA, LA LIEBRE RANCH, LAKE HUGHES, LANCASTER EAST, LANCASTER WEST, LEBEC, LIEBRE MTN, LITTLE BUTTES, LITTLEROCK, LONG BEACH, LOS ALAMITOS, LOS ANGELES, LOVEJOY BUTTES, MALIBU BEACH, MESCAL CREEK, MINT CANYON, MOUNT SAN ANTONIO, MT BALDY, MT WILSON, NEENACH SCHOOL, NEWHALL, OAT MOUNTAIN, ONTARIO, PACIFICO MOUNTAIN, PALMDALE, PASADENA, POINT DUME, REDMAN, REDONDO BEACH, RITTER RIDGE, ROGERS LAKE SOUTH, ROSAMOND, ROSAMOND LAKE, SAN DIMAS, SAN FERNANDO, SAN PEDRO, SANTA SUSANA, SLEEPY VALLEY, SOUTH GATE, SUNLAND, THOUSAND OAKS, TOPANGA, TORRANCE, TRIUNFO PASS, VAL VERDE, VALYERMO, VAN NUYS, VENICE, WARM SPRINGS MOUNTAIN, WATERMAN MTN, WHITAKER PEAK, WHITTIER, YORBA LINDA
Pages: 18
Notes: Mapped to entire LA County in Other Reports layer, GIS

LA-03656

Author(s): Greenwood, Roberta S.
Year: 1976
Title: Archaeological Investigation Report for Draft Eir Victorville-Rinaldi 500 Kv Transmission Line
Affiliation:
Resources:
Quads: AGUA DULCE, EL MIRAGE, LITTLEROCK, LOVEJOY BUTTES, MINT CANYON, NEWHALL, PALMDALE, RITTER RIDGE, SAN FERNANDO, SLEEPY VALLEY
Pages:
Notes: Removed from unmappable file - mapped as accurately as possible to map provided, USGS, and aerial views.

LA-04103

Author(s): Unknown
Year: 1995
Title: Draft Cultural Resources Report for the Santa Clara River Enhancement and Management Plan
Affiliation: CH2M Hill
Resources:
Quads: ACTON, AGUA DULCE, FILLMORE, MINT CANYON, MOORPARK, NEWHALL, OXNARD, PIRU, SANTA PAULA, SATICOY, VAL VERDE
Pages: 49
Notes: Also VN-1630 - removed from unmappable folder, mapped as Other Reports to general Santa Clara river area using aerial photos and USGS boundaries.

SCCIC Bibliography: Newhall & Val Verde Unmappables

LA-04323

Author(s): Hill, James N.
Year: 1985
Title: Cultural Evolution in the Archaic/mesolithic: a Research Design for the Los Angeles Basin
Affiliation: Archaeological Resource Management Corp.
Resources:
Quads: ACTON, ADOBE MTN, AGUA DULCE, ALPINE BUTTE, AZUSA, BALDWIN PARK, BEVERLY HILLS, BLACK MTN, BURBANK, BURNT PEAK, CALABASAS, CANOGA PARK, CHILAO FLAT, COBBLESTONE MTN, CONDOR PEAK, CRYSTAL LAKE, DEL SUR, EL MIRAGE, EL MONTE, FAIRMONT BUTTE, FRAZIER MOUNTAIN, GLENDORA, GREEN VALLEY, HI VISTA, HOLLYWOOD, INGLEWOOD, JACKRABBIT HILL, JUNIPER HILLS, LA HABRA, LA LIEBRE RANCH, LAKE HUGHES, LANCASTER EAST, LANCASTER WEST, LEBEC, LIEBRE MTN, LITTLE BUTTES, LITTLEROCK, LONG BEACH, LOS ALAMITOS, LOS ANGELES, LOVEJOY BUTTES, MALIBU BEACH, MESCAL CREEK, MINT CANYON, MOUNT SAN ANTONIO, MT BALDY, MT WILSON, NEENACH SCHOOL, NEWHALL, OAT MOUNTAIN, ONTARIO, PACIFICO MOUNTAIN, PALMDALE, PASADENA, POINT DUME, REDMAN, REDONDO BEACH, RITTER RIDGE, ROGERS LAKE SOUTH, ROSAMOND, ROSAMOND LAKE, SAN DIMAS, SAN FERNANDO, SAN PEDRO, SANTA SUSANA, SLEEPY VALLEY, SOUTH GATE, SUNLAND, THOUSAND OAKS, TOPANGA, TORRANCE, TRIUNFO PASS, VAL VERDE, VALYERMO, VAN NUYS, VENICE, WARM SPRINGS MOUNTAIN, WATERMAN MTN, WHITAKER PEAK, WHITTIER, YORBA LINDA
Pages: 124
Notes: Mapped to entire LA County (except islands) in Other Reports.

LA-07570

Author(s): Noiron, Judy
Year: 2005
Title: Historic Context Statement the Southern California Transmission/distribution Line Systems Within the Angeles National Forest
Affiliation: U.S. Forest Service
Resources:
Quads: ACTON, AGUA DULCE, AZUSA, BLACK MTN, BURNT PEAK, CHILAO FLAT, COBBLESTONE MTN, CONDOR PEAK, CRYSTAL LAKE, DEL SUR, GLENDORA, GREEN VALLEY, JUNIPER HILLS, LAKE HUGHES, LEBEC, LIEBRE MTN, MESCAL CREEK, MINT CANYON, MOUNT SAN ANTONIO, MT BALDY, MT WILSON, NEWHALL, PACIFICO MOUNTAIN, PASADENA, PIRU, SAN FERNANDO, SLEEPY VALLEY, SUNLAND, VALYERMO, WARM SPRINGS MOUNTAIN, WATERMAN MTN, WHITAKER PEAK
Pages: 28
Notes: Previously unmappable, mapped as Other Report and removed from unmappable folder

LA-11747

Author(s): Sakai, Rodney
Year: 2006
Title: Programmatic Agreement Compliance Report, twenty-first Reporting Period, July 1, 2005-- March 31, 2006
Affiliation: Historic Resources Group
Resources:
Quads: ACTON, ADOBE MTN, AGUA DULCE, ALPINE BUTTE, AZUSA, BALDWIN PARK, BEVERLY HILLS, BLACK MTN, BURBANK, BURNT PEAK, CALABASAS, CANOGA PARK, CHILAO FLAT, COBBLESTONE MTN, CONDOR PEAK, CRYSTAL LAKE, DEL SUR, EL MIRAGE, EL MONTE, FAIRMONT BUTTE, FRAZIER MOUNTAIN, GLENDORA, GREEN VALLEY, HI VISTA, HOLLYWOOD, INGLEWOOD, JACKRABBIT HILL, JUNIPER HILLS, LA HABRA, LA LIEBRE RANCH, LAKE HUGHES, LANCASTER EAST, LANCASTER WEST, LEBEC, LIEBRE MTN, LITTLE BUTTES, LITTLEROCK, LONG BEACH, LOS ALAMITOS, LOS ANGELES, LOVEJOY BUTTES, MALIBU BEACH, MESCAL CREEK, MINT CANYON, MOUNT SAN ANTONIO, MT BALDY, MT WILSON, NEENACH SCHOOL, NEWHALL, OAT MOUNTAIN, ONTARIO, PACIFICO MOUNTAIN, PALMDALE, PASADENA, POINT DUME, REDMAN, REDONDO BEACH, RITTER RIDGE, ROGERS LAKE SOUTH, ROSAMOND, ROSAMOND LAKE, SAN DIMAS, SAN FERNANDO, SAN PEDRO, SANTA SUSANA, SLEEPY VALLEY, SOUTH GATE, SUNLAND, THOUSAND OAKS, TOPANGA, TORRANCE, TRIUNFO PASS, VAL VERDE, VALYERMO, VAN NUYS, VENICE, WARM SPRINGS MOUNTAIN, WATERMAN MTN, WHITAKER PEAK, WHITTIER, YORBA LINDA
Pages: 80
Notes: Mapped to entire LA County in Other Reports layer

SCCIC Bibliography: Newhall & Val Verde Unmappables

LA-11748

Author(s): Sakai, Rodney
Year: 2003
Title: Programmatic Agreement Compliance Report Fifteenth Reporting Period July 1-- December 31, 2002
Affiliation: SHPO & Advisory Council on Hitsoric Preservation
Resources:
Quads: ACTON, ADOBE MTN, AGUA DULCE, ALPINE BUTTE, AZUSA, BALDWIN PARK, BEVERLY HILLS, BLACK MTN, BURBANK, BURNT PEAK, CALABASAS, CANOGA PARK, CHILAO FLAT, COBBLESTONE MTN, CONDOR PEAK, CRYSTAL LAKE, DEL SUR, EL MIRAGE, EL MONTE, FAIRMONT BUTTE, FRAZIER MOUNTAIN, GLENDORA, GREEN VALLEY, HI VISTA, HOLLYWOOD, INGLEWOOD, JACKRABBIT HILL, JUNIPER HILLS, LA HABRA, LA LIEBRE RANCH, LAKE HUGHES, LANCASTER EAST, LANCASTER WEST, LEBEC, LIEBRE MTN, LITTLE BUTTES, LITTLEROCK, LONG BEACH, LOS ALAMITOS, LOS ANGELES, LOVEJOY BUTTES, MALIBU BEACH, MESCAL CREEK, MINT CANYON, MOUNT SAN ANTONIO, MT BALDY, MT WILSON, NEENACH SCHOOL, NEWHALL, OAT MOUNTAIN, ONTARIO, PACIFICO MOUNTAIN, PALMDALE, PASADENA, POINT DUME, REDMAN, REDONDO BEACH, RITTER RIDGE, ROGERS LAKE SOUTH, ROSAMOND, ROSAMOND LAKE, SAN DIMAS, SAN FERNANDO, SAN PEDRO, SANTA SUSANA, SLEEPY VALLEY, SOUTH GATE, SUNLAND, THOUSAND OAKS, TOPANGA, TORRANCE, TRIUNFO PASS, VAL VERDE, VALYERMO, VAN NUYS, VENICE, WARM SPRINGS MOUNTAIN, WATERMAN MTN, WHITAKER PEAK, WHITTIER, YORBA LINDA
Pages: 55
Notes: Mapped to entire LA County in Other Reports layer

LA-11778

Author(s): Contreras, Thomas
Year: 2011
Title: Santa Clara Watershed Invasive Plant Treatment Project on the Santa Clara river/Mojave Ranger District
Affiliation: Forest Service
Resources:
Quads: ACTON, AGUA DULCE, AZUSA, BLACK MTN, BURNT PEAK, CHILAO FLAT, COBBLESTONE MTN, CONDOR PEAK, CRYSTAL LAKE, DEL SUR, GLENDORA, GREEN VALLEY, JUNIPER HILLS, LAKE HUGHES, LEBEC, LIEBRE MTN, MESCAL CREEK, MINT CANYON, MOUNT SAN ANTONIO, MT BALDY, MT WILSON, NEWHALL, PACIFICO MOUNTAIN, PASADENA, PIRU, SAN FERNANDO, SLEEPY VALLEY, SUNLAND, VAL VERDE, VALYERMO, WARM SPRINGS MOUNTAIN, WATERMAN MTN, WHITAKER PEAK
Pages: 30
Notes: Mapped in GIS/Other Reports to entire boundary of Angeles National Forest

APPENDIX 5.6-1

Geology and Soils section prepared by Taylor and Company for Previously (2002) Approved Project, including Appendices

4.0 ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION

4.1 Geotechnical Hazard

This section analyzes the Proposed Project relative to geological and soils impacts. Geotechnical issues identified in the Initial Study include slope stability and substantial grading in hillside management area. A preliminary geotechnical report has been prepared by Allan E. Seward Engineering Geology, Inc. dated July 13, 1998 and is provided in its entirety in APPENDIX A hereto.

4.1.1 Setting

The subject site is located in the Transverse Range geologic province of Southern California in the eastern portion of the Ventura Basin, near the convergence of the San Gabriel and Holser Fault zones. The Ventura Basin has been tectonically downwarped in the geologic past to produce a large-scale synclinal structure, which has developed a thick accumulation of Cenozoic sediments.

The subject parcel is located on the north side of Hasley Canyon about 11 miles west of the confluence with Castaic Creek. Most of the site consists of a series of northeasterly trending ridges separated by narrow drainages tributary to Hasley Canyon. Approximately 40 acres at the southwest corner of the property is located on the alluvial floodplain of Hasley Canyon Creek. This creek drains a tributary area of about 7,700 acres and includes the drainages of Romero and Sloan Canyons. Details of the site are illustrated on FIGURE 6 geomorphology and earth units Geotechnical Map, with legend symbols fully described in the subsections that follow.

Bedrock

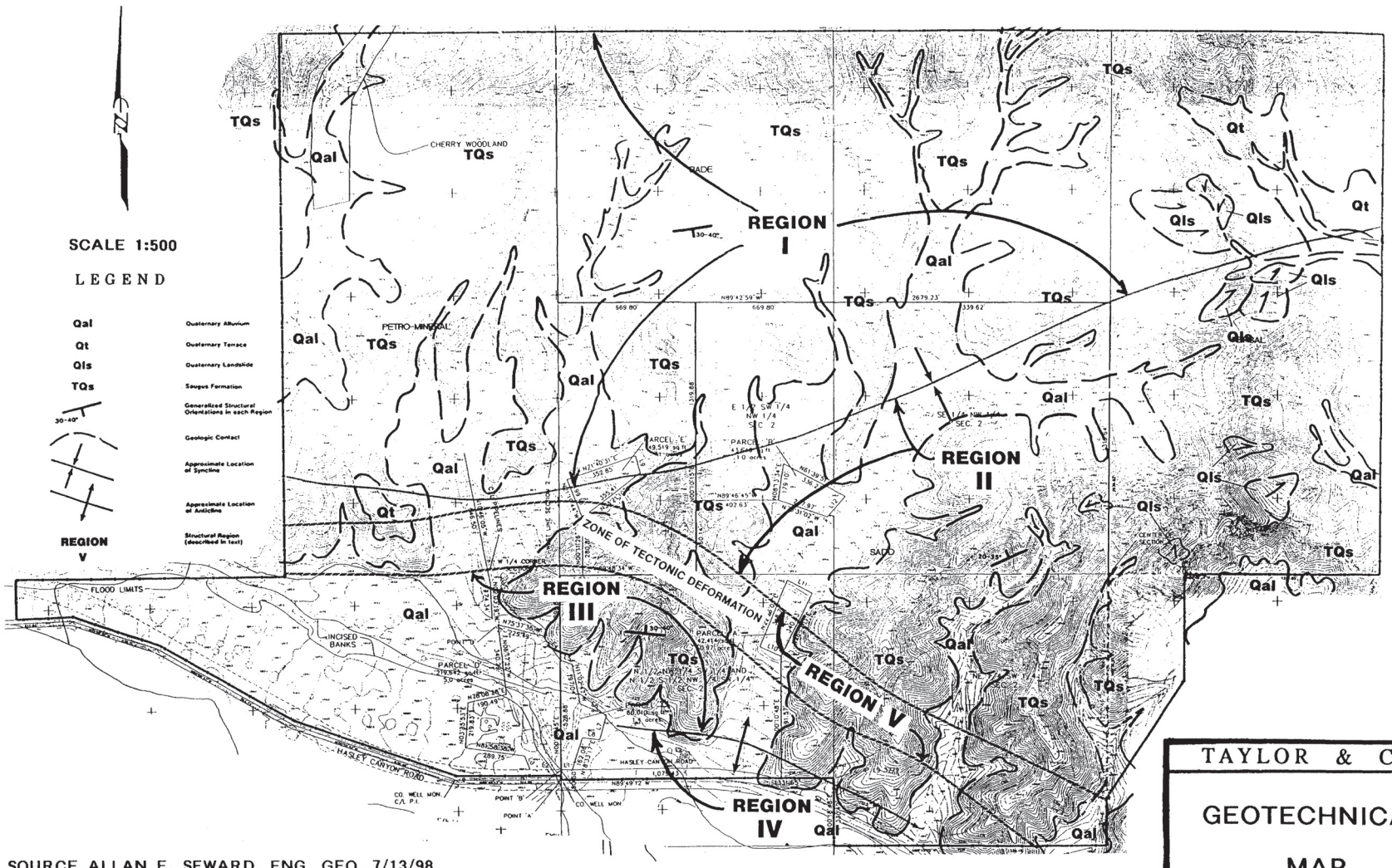
Saugus Formation (TQs)

Bedrock present beneath the property consists of Plio-Pleistocene, non-marine sediments of the Saugus Formation. These sediments include light-gray to pale yellowish-brown massive sandstone and pebble conglomerate, pale reddish-brown to greenish-gray silty sandstone, and reddish-brown mudstone.

Quaternary Terrace Deposits (Qt)

Quaternary Terrace Deposits occur at the northeast corner of the property and as isolated outliers along the crests of some ridges.

These terrace deposits rest unconformable upon Saugus Formation and consists of fine-to-medium-grained gravel, friable sandstone with interbedded pebble to cobble conglomerate end clayey siltstone. A basal cobble to small boulder conglomerate is typically present along the basal terrace contact. Bedding within these terrace deposits generally dip at very low angles or are near horizontal. These deposits may be more highly deformed where they extend into the area of techtonic deformation near the western property boundary.



SOURCE ALLAN E. SEWARD, ENG. GEO. 7/13/98

TAYLOR & COMPANY

GEOTECHNICAL MAP

FIGURE 6

Surficial Deposits

Recent Alluvium (Qal)

The Recent Alluvium consists of lensing interbedded silty sands, sands and gravels, deposited in Hasley Canyon Creek, and the northeast-trending tributaries on the subject site.

Slopewash (Sw)

Slopewash is a non-bedded, heterogeneous accumulation of soil and weathered bedrock deposited by gravity on all but the steepest slopes. The maximum thickness of Slopewash encountered on the site was 7.5 feet with an average of 2.5 feet. Slopewash has been noted on our geologic logs but has not been differentiated on our Geologic Map.

Soil

The soil that mantles the subject site consists of a loose to firm, light to medium brown silty sand, with occasional scattered pebbles, with an average thickness of one foot.

Artificial Fill

Small amounts of artificial fill related to past oil drilling operations and the construction of a presently abandoned golf course are present on the property and consist of varying accumulations of the native earth materials described above.

Geologic Structure

The site has been uplifted and deformed by techtonic processes in the past. Regional mapping by Kew and Weber places the axis of a northeast-trending syncline traversing the central portion of the site, such that bedding below the northern part of the site dips Southerly, and bedding below the Southern part of the site dips Northerly.

Mapping completed for this study indicates that this relatively simple structural pattern is interrupted by a zone of tectonic deformation about 200 to 300 feet wide that trends northwest to west across the southern part of the site. An anticline is mapped for a short distance just inside the southern boundary of the property.

Structural elements of the project site shown on FIGURE 6 can be separated into five general "regions."

Landslides

A number of areas characterized by subdued topography have been identified as possible landslides. With the exception of one larger feature in the northeast corner of the property, most of these are anticipated to be minor features and of limited significance with respect to the proposed development. Designed mitigation may be required for the larger area identified as a possible landslide. Deep-seated bedrock landslides have not been identified on the property.

Cut-Slopes

Due to the friable and only moderately consolidated nature of the sediments within the Saugus Formation, all cut-slopes will be designed at 2:1 gradients. Cut-slopes which expose the daylighted bedding conditions will likely require evaluation and stabilization.

Proposed Fills

All fill slopes will be constructed at 2:1 gradients.

Shrink and Swell Characteristics of Earth Materials

Typically the alluvial deposits shrink in volume when removed and recompacted, and the bedrock volume swells. Detailed analyses of the shrink/swell potential of onsite materials will be completed prior to tentative tract approval.

Hydrogeology

No springs or seeps were noted on the subject site or within the exploratory trenches. The review of groundwater data obtained from wells in the immediate area (see TABLE 3) indicates historic groundwater highs approximately 40 to 50 feet below the existing ground surface in the Hasley Canyon drainage. It should be noted that the water table fluctuates up and down in response to natural recharge and pumping requirements. Both of these factors are altered in response to the urbanization of an area. Canyon subdrains will be required in all major canyon fills.

TABLE 3

HISTORIC HIGH GROUNDWATER RECORDS

Well No.	Elevation*	Date	Highest Measured Water Surface* (Depth of Water*)
6953A	1262	10/28/67	1164.7 (97.3)
6964	1201	11/30/65	1156.0 (45)
6954A	1252	10/28/67	1181.9 (70.1)

* All elevations and depths reported in feet. Data from records maintained by L.A. Co. Flood Control District.
Source: Allan E. Seward, Eng. Geo. 7/13/98.

A hydrogeologic assessment for onsite water well development yields was conducted in February 2001 by Stetson Engineers, and is contained in APPENDIX A hereto. Stetson finds that the quantity and quality of a new water well installed in the central portion of the Proposed Project site would provide the estimated 595 acre feet per year (AF/yr.) water demand for the proposed golf facilities. The water well would draw from groundwaters of the Saugus Formation which ranged from 4,200 ft. to 4,300 ft. in thickness at the project site, with a base of fresh water ranging from 3,900 to 4,100 ft. below ground surface (bgs). The Proposed Project residential and golf clubhouse facilities water demands will be served by Los Angeles County Waterworks District #36, from existing water lines south and west from the Proposed Project site along Hasley Canyon Road and Sloan Canyon Road, respectively.

Seismicity

The subject property is within the Transverse Ranges Geomorphic Province of Southern California. The Transverse Ranges consist of a series of west-trending mountains and intervening valleys, which is contrary to the northwest geomorphic trend that is typical of most of California and reflects the underlying structural (geologic) trend. These ranges are largely the result of north-south compression which has resulted in east-west-trending folds and thrust faults. Associated faults in the vicinity of the site include the Santa Susana, San Fernando, Del Valle and Holser reverse/thrust faults. The January 17, 1994 Northridge (M6.8) Earthquake occurred on a south-dipping thrust fault which uplifted the Santa Susana Mountains at least 40 cm.

The Southern California region is traversed by the San Andreas Fault, which is a transform boundary between the Pacific Plate and the North American Plate. The San Andreas Fault is part of the San Andreas system of northwest-striking, and right-lateral faults. The faults of this system are generally historically active, as evidenced by the June 28, 1992 Landers (M7.6) Earthquake (see Fault and Earthquake Epicenter Location Map, FIGURE 2 in APPENDIX A).

The Southern California region is seismically and commonly experiences strong ground shaking resulting from earthquakes along active faults. Earthquakes along these faults are part of a continuous, naturally occurring process which has contributed to the characteristic landscape of the region.

Three common types of the geologic hazards may be produced during a seismic event (earthquake). These include:

1. Ground Rupture;
2. Ground Motion; and
3. Liquefaction.

4.1.2 Impacts

Significance Threshold Criteria

The CEQA Guidelines defines a "significant effect" as a "...substantial. or potentially substantial. adverse change in any of the physical conditions within the area affected by the project..." (Section 15382). In order to assist in determining whether a project will have a significant effect on the environment, the CEQA Guidelines have identified criteria which may be deemed to constitute a significant physical, social, and/or economic change to the environment. Specifically. Appendix G (r) of the Guidelines states that a project will normally have a significant effect on the environment if it will "expose people or structures to major geologic hazards."

Seismic Hazard

The geotechnical seismic hazard to the proposed residential and recreational development is strong ground shaking associated with possible earthquakes. Design in accordance with the latest Uniform Building Code and current state-of-the-industry practices would reduce seismic-related impacts to a less than significant level. Since there are no known active or potentially active faults at the Proposed Project site and the probability of surface rupture is considered low, there should be no significant planning constraints relative to ground surface rupture.

Cut Slopes

Cut and fill grading would be required in order to accommodate the proposed roadways and building pads, and for slope stabilization. The total earth movement as cut and fill grading quantity is estimated at 6.8 million cubic yards. Cut slopes would not exceed 2:1 (horizontal to vertical), and fill slopes would not exceed 2:1.

Landslides

The geologic record, as interpreted by the geomorphology of the site in conjunction with the lithology of the surficial soils and bedrock along with the thickness of the surficial deposits, indicates that the potential for landslides (surficial debris flow, including mudslides) is generally low. The existing soils and bedrock are very porous and permeable, thus reducing the potential for a saturated surficial zone to develop.

Liquefaction

Shallow groundwater (within 30 feet of the ground surface) can cause liquefaction under seismic events. Shallow groundwater is present on the site within the Hasley Canyon Creek alluvium. Site groundwater lies below a depth of 30 feet; therefore, liquefaction of soils above groundwater is not expected to be a significant impact in the elevated areas proposed for development. Proposed Project impacts to groundwater quality are analyzed in Section 4.5 herein.

Hydroconsolidation

Areas underlain by Quaternary Alluvium or colluvium may be subject to settlement due to hydroconsolidation (hydrocompaction) of the underlying material. The potential for hydroconsolidation is increased if the materials become saturated due to infiltration of surface water. Where feasible, surficial materials should be removed to firm bedrock in hillside areas to receive fill. Areas where complete removal is not feasible will require additional detailed exploration and analysis to evaluate the potential for hydroconsolidation and appropriate removal depths.

Expansive Bedrock

A few of the reddish-brown clayey siltstones and clayey conglomerate lenses within the Quaternary Terrace Deposits and red beds within the Saugus Formation are potentially expansive. If these potentially expansive beds are encountered in the final pad grades, and/or in the future foundations, the foundations should be designed accordingly, unless the pads are over excavated and replaced with certified fill.

Cumulative Impact

The potential geologic impacts associated with the implementation of the Proposed Project are site specific. Therefore, implementation of the Proposed Project would not have a cumulative effect on the surrounding geotechnical area.

4.1.3 Mitigation

The following mitigation measures are recommended by the consulting geologist. Specific mitigation for a hydroconsolidation and liquefaction will be prescribed by the consulting geologist prior to tentative tract approvals.

1. In areas to be graded or to receive compacted fill, all artificial fill, loose or soft soils and loose alluvium, surficial slump and landslide debris will be removed to competent bedrock as determined by the geologist and/or soils engineer.

2. Keyway excavations for buttress fills, stabilization fills, sliver fills and fill-over-cuts will be approved by the geologist prior to any fill placement.

3. Graded surfaces will be sacrified and compacted in accordance with American Standards for Testing Materials (ASTM) Section D-1557-78.

4. All grading will be in accordance with the County of Los Angeles Grading Codes and recommendations of the engineering geologist.

5. No drainage or irrigation surcharge flows will be allowed to flow over the slopes, other than incidental rainfall, in order to mitigate potential indirect effects. No alteration of pad gradients will be allowed, which will prevent pad and roof runoff from be directed to approved disposal areas.

6. All onsite structures will be designed in accordance with the latest Uniform Building Code and with building practices which are standard in the industry.

7. The project soils engineer or licensed geologist will be present onsite during all grading operations to verify proper clearing operations, placement end compaction of fill.

8. Stabilization of landslide structures will be required. Stabilization will include the use of shear keys, buttresses or geogrid material.

9. National Pollutant Discharge Elimination System (NPDES) "Best Management Practices" precautions for storm water containment and diversion will be taken during all site clearing, earthwork and grading to protect the work site from flooding, ponding or inundation. Cut slopes will be revegetated with deep-rooted plants for surficial erosion control and/or fitted with stabilizing structures. Cut slopes exposing daylighted bedding, buttresses, retaining walls and/or stability equivalents may be required.

10. The potentially expansive "red beds" within the bedrock will require selective grading procedures and/or special foundation designs to be approved prior to tentative tract map approval.

11. All canyon fills, buttresses, stability fills, shear keys and retaining walls will receive subdrains and/or backdrains. Irrigation water well will be installed, operated and monitored per Los Angeles County Dept. of Public Works and Health Services, and L.A. Regional Water Quality Control Board, requirements.

12. Liquefaction potential will be mitigated by removal and recompaction, grouting, vibrocompaction, dynamic compaction, vibroflotation, gravel drains and/or upgraded foundation designs.

13. Surficial debris flow potential will be mitigated by surficial material removal, diverter slough walls, construction walls, runoff control and/or vegetative cover.

Implementation of the foregoing mitigation measures will reduce Proposed Project geotechnical hazard impacts to less than significant levels.

APPENDIX A

GEOTECHNICAL AND WATER RESOURCES REPORTS

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

REGISTERED GEOLOGIST 571
ENGINEERING GEOLOGIST 246

July 13, 1998 Job No: 98-1617-9

Dan Palmer Investments
1999 Avenue of the Stars
15th Floor
Los Angeles, CA 90067

Attention: **Mr. Dan Palmer**

Subject: **GEOLOGIC SUMMARY**
Vesting Tentative Tract 52584
Saugus, California

Gentlemen:

This report presents our opinions regarding the existing geologic conditions on Vesting Tentative Tract 52584. The site consists of approximately 430 acres located northerly of the intersection of Del Valle Road and Hasley Canyon Road, Castaic, California. It is our understanding that this data will be used in the preliminary EIR. The map utilized for this report was prepared by Land Design Consultants, Inc. at a scale of 1" = 200' and dated April, 1998.

GEOLOGY

General

The subject site is located in the Transverse Range geologic province of Southern California in the eastern portion of the Ventura Basin, near the convergence of the San Gabriel and Holser Fault zones. The Ventura Basin has been tectonically downwarped in the geologic past to produce a large-scale synclinal structure, which has developed a thick accumulation of Cenozoic sediments.

Geomorphology

The subject parcel is located on the north side of Hasley Canyon about 1½ miles west of the confluence with Castaic Creek. Most of the site consists of a series of northeasterly trending ridges separated by narrow drainages tributary to Hasley Canyon. Approximately 40 acres at the southwest corner of the property is located on the alluvial flood plain of Hasley Canyon Creek. This creek drains a tributary area of about 7700 acres and includes the drainages of Romero and Sloan Canyons. Details of the site topography are illustrated on the attached Geologic Constraints Map.

Bedrock

Saugus Formation (TQs)

Bedrock present beneath the property consists of Plio-Pleistocene, non-marine sediments of the Saugus Formation. These sediments include light-gray to pale yellowish-brown massive sandstone and pebble conglomerate, pale reddish-brown to greenish-gray silty sandstone, and reddish-brown mudstone.

Quaternary Terrace Deposits (Qt)

Quaternary Terrace Deposits occur at the northeast corner of the property and as isolated outliers along the crests of some ridges.

These terrace deposits rest unconformable upon Saugus Formation and consist of fine-to medium-grained gravel, friable sandstone with interbedded pebble to cobble conglomerate and clayey siltstone. A basal cobble to small boulder conglomerate is typically present along the basal terrace contact. Bedding within these terrace deposits generally dip at very low angles or are near horizontal. These deposits may be more highly deformed where they extend into the area of tectonic deformation near the western property boundary.

Surficial Deposits

Recent Alluvium (Qal)

The Recent Alluvium consists of lensing interbedded silty sands, sands and gravels, deposited in Hasley Canyon Creek, and the northeast-trending tributaries on the subject site.

Slopewash (Sw)

Slopewash is a non-bedded, heterogeneous accumulation of soil and weathered bedrock deposited by gravity on all but the steepest slopes. The maximum thickness of Slopewash encountered on the site was 7.5 feet with an average of 2.5 feet. Slopewash has been noted on our geologic logs but has not been differentiated on our Geologic Map.

Soil

The soil that mantles the subject site consists of a loose to firm, light to medium brown silty sand, with occasional scattered pebbles, with an average thickness of one foot.

Artificial Fill

Small amounts of artificial fill related to past oil drilling operations and the construction of a presently abandoned golf course are present on the property and consist of varying accumulations of the native earth materials described above.

ENGINEERING GEOLOGY

Geologic Structure

The site has been uplifted and deformed by tectonic processes in the past. Regional mapping by Kew and Weber places the axis of a northeast-trending syncline traversing the central portion of the site, such that bedding below the northern part of the site dips Southerly, and bedding below the Southern part of the site dips Northerly.

Mapping completed for this study indicates that this relatively simple structural pattern is

interrupted by a zone of tectonic deformation about 200 to 300 feet wide that trends northwest to west across the southern part of the site. An anticline is mapped for a short distance just inside the southern boundary of the property.

Structural elements of the property can be separated into five general regions as follows:

Region I

Includes approximately the northwestern half of the property. Bedding in this structural region typically strikes northeasterly to due east, and dips southward at moderate angles which range from about 15 to 55 degrees. In most areas, bedding is inclined at angles ranging from about 30 to 40 degrees.

Region II

Includes the southeastern corner of the property northeast of the "Zone of Tectonic Deformation" (Region V). Bedding in this structural region typically strikes northeasterly and dips northward at angles which range from about 10 to 50 degrees. In most areas, bedding is inclined at angles ranging from about 20 to 35 degrees.

Region III

Includes elevated areas south of the zone of deformation, and north of the anticlinal axis that extends along Hasley Canyon Road. Bedding in this structural region typically strikes approximately due east, and dips northward at angles which range from about 30 to 40 degrees.

Region IV

Includes the floodplain of Hasley Canyon Creek, and elevated areas between Hasley Canyon Road and the anticlinal axis located just north of the road. The floodplain is underlain by modern alluvial materials that typically consist of sand, silt and gravel interfingered in near-horizontal layers. Bedrock exposed in cut-slopes along Hasley Canyon Road generally dips to the south at angles ranging up to about 40 degrees.

Region V

Includes the Zone of Tectonic Deformation, which occurs in a band about 200 to 300 feet wide which extends form the southeast to the southwest corners of the property. Bedrock in this zone typically dips north at steep angles, and is locally sheared along small faults.

Landslides

A number of areas characterized by subdued topography have been identified as possible landslides. With the exception of one larger feature in the northeast corner of the property, most of these are anticipated to be minor features and of limited significance with respect the proposed development. Designed mitigation may be required for the larger area identified as a possible landslide. Deep-seated bedrock landslides have not been identified on the property.

Cut-Slopes

Due to the friable and only moderately consolidated nature of the sediments within the Saugus Formation, it is our understanding that all cut-slopes will be designed at 2:1 gradients. Cut-slopes which expose daylighted bedding conditions will likely require evaluation and stabilization.

Proposed Fills

It is our understanding that all fill slopes will be constructed at 2:1 gradients.

Shrink and Swell Characteristics of Earth Materials

Typically the alluvial deposits shrink in volume when removed and recompacted, and the bedrock volume swells. Detailed analyses of the shrink/swell potential of on-site materials will be completed at a later stage of our investigation.

Ground Water

No springs or seeps were noted on the subject site or within the exploratory trenches.

Our review of ground water data obtained from wells in the immediate area (See Figure I and Table II) indicates historic ground water highs approximately 40 to 50 feet below the existing ground surface in the Hasley Canyon drainage.

It should be noted that the water table fluctuates up and down in response to natural re-charge and pumping requirements. Both of these factors are altered in response to the urbanization of an area.

Canyon subdrains will be required in all major canyon fills.

Historic High Groundwater Records

Well No.	Elevation*	Date	Highest Measured Water Surface* (Depth of Water*)
6953A	1262	10/28/67	1164.7 (97.3)
6964	1201	11/30/65	1156.0 (45)
6954A	1252	10/28/67	1181.9 (70.1)

*All elevations and depths reported in feet. Data from records maintained by L. A. Co. Flood Control District.

Drainage

Water should not be allowed to stand or pond on the graded building pads, but should be conducted to the natural courses and/or the streets.

Surficial Debris Flows

The geologic record, as interpreted by the geomorphology of the site in conjunction with the lithology of the surficial soils and bedrock along with the thickness of the surficial deposits, indicates that the potential for surficial debris flow is generally low. The existing soils and

bedrock are very porous and permeable, thus reducing the potential for a saturated surficial zone to develop.

We will evaluate in detail the potential for debris flow hazards at the Grading Plan stage, when an appropriate scale (40-Scale) topographic base map is available, along with details of proposed lot configurations.

The following measures (if required) are available to mitigate potential debris flow hazards:

1. Remove loose surficial material.
2. Construct diverter slough walls.
3. Construct impact walls.
4. Construct debris walls.
5. Control runoff drainage.
6. Planting of selective deep-rooted vegetation

Erosional Potential

The geomorphic landforms that have developed over geologic time in a semi-arid environment (sparse vegetation) on the subject site indicate that the potential for erosion in the existing soils and bedrock is low.

The existing provisions in the Grading Ordinance for planting and irrigation of cut-slopes and fill slopes will reduce the potential for surficial erosion more than the existing natural vegetation has over the years prior to the activities of man.

Sewage Disposal

It is our understanding that sewage disposal will be by sewers.

Rippability

The granular and only slight to moderately consolidated nature of the bedrock (TQs and Qt) indicates that grading operations can be performed with conventional equipment. No blasting is anticipated.

Expansive Bedrock

A few of the reddish-brown clayey siltstones and clayey conglomerate lenses within the Quaternary Terrace Deposits and red beds within the Saugus Formation are potentially expansive. If these potentially expansive beds are encountered in the final pad grades, and/or in the future foundations, the foundations should be designed accordingly, unless the pads are over excavated and replace with certified fill.

Hydroconsolidation

Areas underlain by Quaternary Alluvium or colluvium may be subject to settlement due to consolidation of the underlying material. The potential for consolidation is increased if the materials become saturated due to infiltration of surface water. Where feasible, surficial materials should be removed to firm bedrock in hillside areas to receive fill. Areas where complete removal is not feasible will require additional detailed exploration and analysis to evaluate the potential for hydroconsolidation and appropriate removal depths.

Oil Wells

The subject property surrounds four areas where oil wells are currently pumping. These areas have been excluded from the subject property. Should any oil well casings be encountered during the future grading operations, their location should be accurately surveyed. Such casings will need to be identified by the California Division of Oil and Gas, and evaluated for conformance with current abandonment procedures.

Seismicity

Introduction

The subject property is within the Transverse Ranges Geomorphic Province of Southern California. The Transverse Ranges consist of a series of west-trending mountains and intervening valleys, which is contrary to the northwest geomorphic trend that is typical of most of California and reflects the underlying structural (geologic) trend. These ranges are largely the result of north-south compression which has resulted in east-west-trending folds and thrust faults. Associated faults in the vicinity of the site include the Santa Susana, San Fernando, Del

Valle and Holser reverse/thrust faults. The January 17, 1994 Northridge (M6.8) Earthquake occurred on a south-dipping thrust fault which uplifted the Santa Susana Mountains at least 40 cm.

The Southern California region is traversed by the San Andreas Fault, which is a transform boundary between the Pacific Plate and the North American Plate. The San Andreas Fault is part of the San Andreas system of northwest-striking, right-lateral faults. The faults of this system are generally historically active, as evidenced by the June 28, 1992 Landers (M7.6) Earthquake (**See Fault and Earthquake Epicenter Location Map, Figure 2 in Appendix**).

The Southern California region is seismically active and commonly experiences strong ground shaking resulting from earthquakes along active faults. Earthquakes along these faults are part of a continuous, naturally occurring process which has contributed to the characteristic landscape of the region.

Three common types of geologic hazards may be produced during a seismic event (earthquake). These include:

1. Ground Rupture;
2. Ground Motion; and
3. Ground Failure

Ground Rupture

No known active faults traverse the subject tract.

Ground Motion

Potential ground motions from future earthquakes on nearby faults have been evaluated utilizing the procedures outlined in the California Department of Conservation, Division of Mines and Geology Guidelines described in Special Publication 117. Table I summarizes our ground motion evaluation, which utilized fault parameters from Peterson, et al. (1996) and computer programs by Thomas F. Blake. A peak horizontal ground acceleration of 0.535 g from a potential maximum magnitude 7.0 earthquake on the San Gabriel Fault will be utilized in our liquefaction analysis based on deterministic fault evaluations.

Ground Failure - Liquefaction

The potential for secondary seismic hazards (liquefaction) on the property is limited to the unconsolidated alluvial materials in Hasley Canyon Creek. Inasmuch as the historic high groundwater levels lie below a depth of 30 feet, the potential for liquefaction is low. However, geotechnical analysis and a detailed evaluation of the liquefaction and settlement potential is currently in progress. Appropriate recommendations for mitigation if required will be presented in our geologic/geotechnical report for the Tentative Tract Map. The following are measures for the mitigation of potential liquefaction phenomena:

1. Removal and recompaction
2. Increase foundation design, based upon settlement analysis and calculations
3. Vibro floatation
4. Vibro compaction
5. Construction gravel drains
6. Dynamic compaction

LIMITATIONS

This report has been prepared for the exclusive use of Palmer Investments and their design consultants for the specific site discussed herein. This report should not be considered transferable. Prior to use by others, we should be notified, as additional work may be required to update this report.

In the event that any modifications in the design or location of the proposed development, as discussed herein, are planned, the conclusions and recommendations contained in this report will require a written review by this firm with respect to the planned modifications.

This study was conducted according to generally accepted engineering geologic practice for studies of this magnitude. Our conclusions and recommendations are based on the data available and our interpretation of the data based on our experience and background. Hence, our **conclusions** and **recommendations** are **professional opinions** and are **not meant** to be a control of nature; therefore, **no warranty** is herein **expressed** or **implied**.

It should be noted that faulting is normally confined to the area immediately adjacent to a known fault, or within a few feet of the last fault movement. Regardless of what criteria are used however, absolute assurance against future fault displacement or strong ground motion cannot be obtained in tectonically active areas. New faults can form, as the orientation and magnitude of deformational forces in the earth's crust change with time. Therefore the location of new breaks or ground motions during a seismic event cannot be located or anticipated.

This report may not be duplicated without the written consent of this firm.

Conclusions and Recommendations

CONCLUSIONS AND RECOMMENDATIONS

1. The proposed commercial and residential development of the subject property is geologically feasible, provided our recommendations are incorporated in the design and construction.

2. All landslides will be totally removed and/or stabilized.

3. The zone of tectonic deformation along the southern portion of the site will be placed within a Restricted Use Area on the final map. No habitable structures will be constructed within the Restricted Use Area.

4. The potential for hydroconsolidation and liquefaction will be evaluated based upon subsurface data prior to completion of our geologic/geotechnical report for the tentative map.

5. If potential hydroconsolidation is identified, these areas can be mitigated by removal and recompaction of the adverse materials.

6. The following measures are available for mitigation of liquefaction potential:

   a. Removal and recompaction of susceptible sediments
   b. Compaction grouting
   c. Vibro compaction
   d. Dynamic compaction
   e. Vibro flotation
   f. Construction of gravel drains
   g. Increase foundation design based upon settlement analyses and calculations.

7. The geoseismic parameters relative to faults and associated ground motions that could affect the subject site are presented in Table I.

8. The "red beds" within the bedrock are potentially very expansive and will require selective grading procedures and/or special foundation designs.

9. If cut-slopes expose daylighted bedding, buttresses, retaining walls and/or stability equivalents may be required.

10. All canyon fills, buttresses, stability fills, shear keys and retaining walls will require subdrains and/or backdrains.

11. The potential for debris flow hazard is considered generally low. Additional evaluation will be required on a lot-by-lot basis at the Grading Plan stage of development.

12. Sewage disposal will be by sewers.

13. The existing provisions in the Grading Ordinance for planting and irrigation of cut-slopes and fill slopes will be sufficient mitigation for the future grading operations within the area.

14. The potential for flood hazards relative to Hasley Canyon Creek are being evaluated by the supervising civil engineer.

15. Grading operations will be conducted under periodic geologic inspections.

This opportunity to be of service is appreciated. If you have any questions concerning this report, please give us a call.

Respectfully submitted,

Allan E. Seward, President
Certified Engineering Geologist, 246

Enclosure:	**Geologic Constraints Map - VTT 52584**	Plate I	(In Pocket)
	Vesting Tentative Map - VTT 52584	Plate II	(In Pocket)

APPENDIX

References

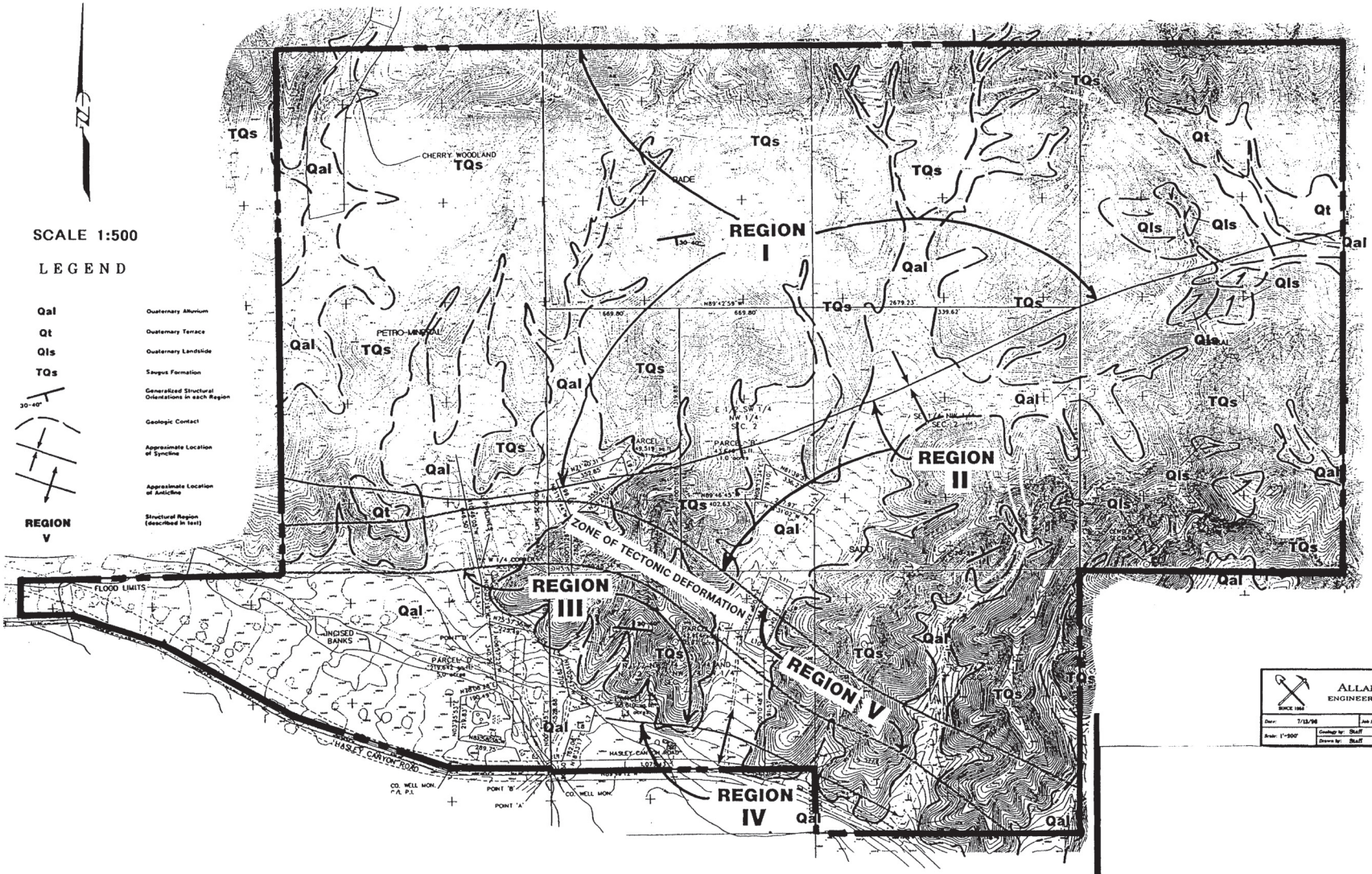
Water Well Location Map — Figure 1

Fault and Earthquake Epicenter Location Map	Figure 2
Ground Motion Evaluation (GeoSeismic Parameters)	Table I

Distribution: (2) Addressee
(1) Land Design Consultants
Attn: Mr. Henry Walsh
(1) Taylor & Company
Attn: Mr. Paul Taylor
(1) Oscar and Antoinette Fehsel
(1) Petrominerals Corporation
Attn: Mr. Paul L. Howard, President
(1) Edith Newman c/o Mr. Wayne Newman
(1) Steven S. Sadd, Esquire

GEOLOGIC CONSTRAINTS MAP

PLATE I

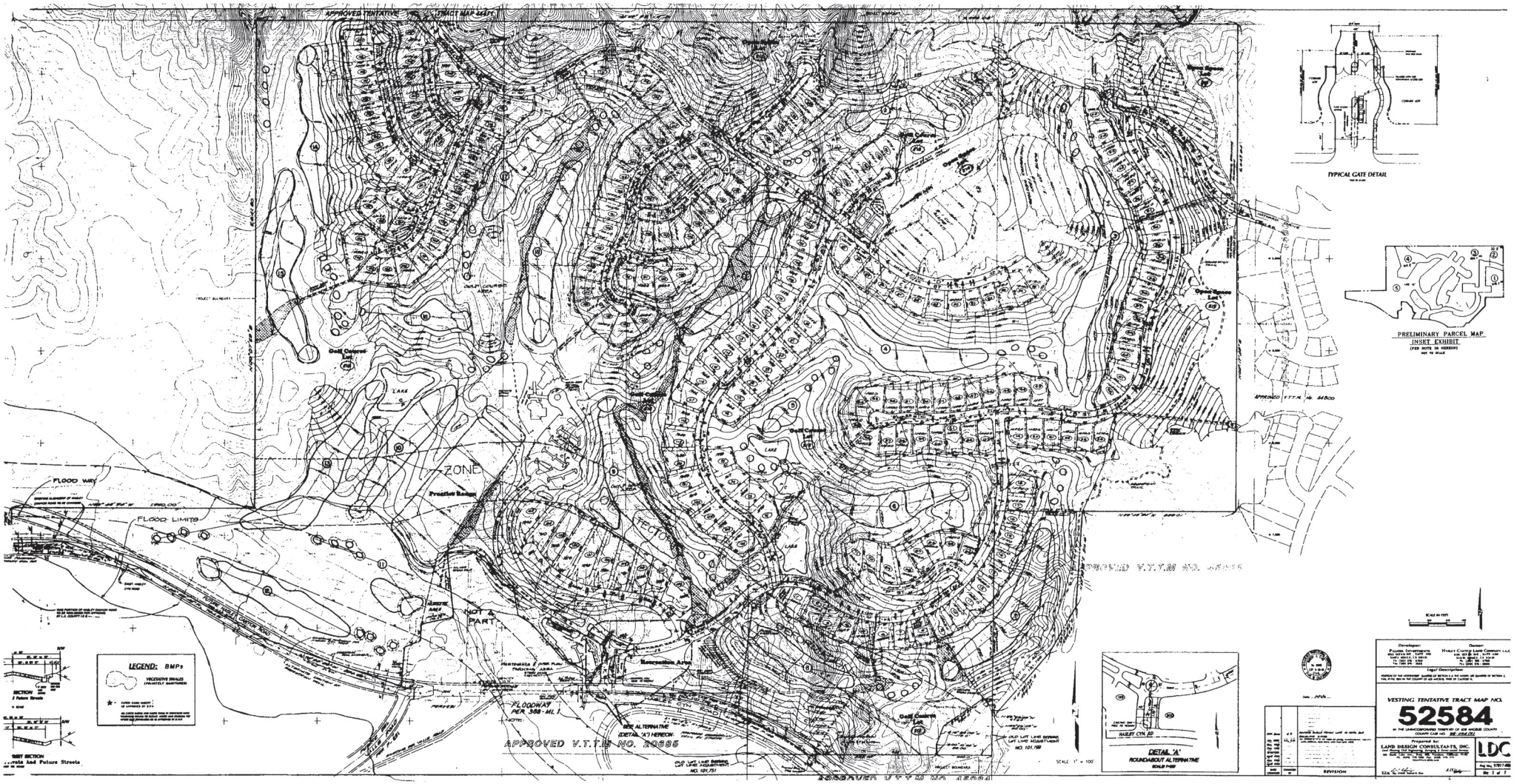


ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
SINCE 1964

Date: 7/13/98		Job No.: 98-1617-9	
Scale: 1"=200'	Geologist by: Staff	Revised:	
	Drawn by: Staff		

FIGURE

PLATE II


APPROVED TENTATIVE TRACT MAP 24371
FLOOD WAY
FLOOD LIMITS
ZONE
Practice Basins
NOT A PART
FLOODWAY PER 388-ML
APPROVED V.T.T.M NO. 20855
SEE ALTERNATIVE DETAIL 'A' HEREON
Golf Course Lot
Open Space Lot
LAKE
TYPICAL GATE DETAIL
PRELIMINARY PARCEL MAP INSET EXHIBIT
DETAIL 'A' ROUNDABOUT ALTERNATIVE
HALEY CYN RD
LEGEND: BMPs
VEGETATIVE SWALES (PRIVATELY MAINTAINED)
SECTION 1 Future Streets
SECTION 2 Existing And Future Streets
SCALE 1" = 100'
Developer:
Owner:
Legal Description:
VESTING TENTATIVE TRACT MAP NO.
52584
IN THE UNINCORPORATED TERRITORY OF SAN MIGUEL COUNTY
Prepared by:
LAND DESIGN CONSULTANTS, INC.
LDC
REVISION

Appendix

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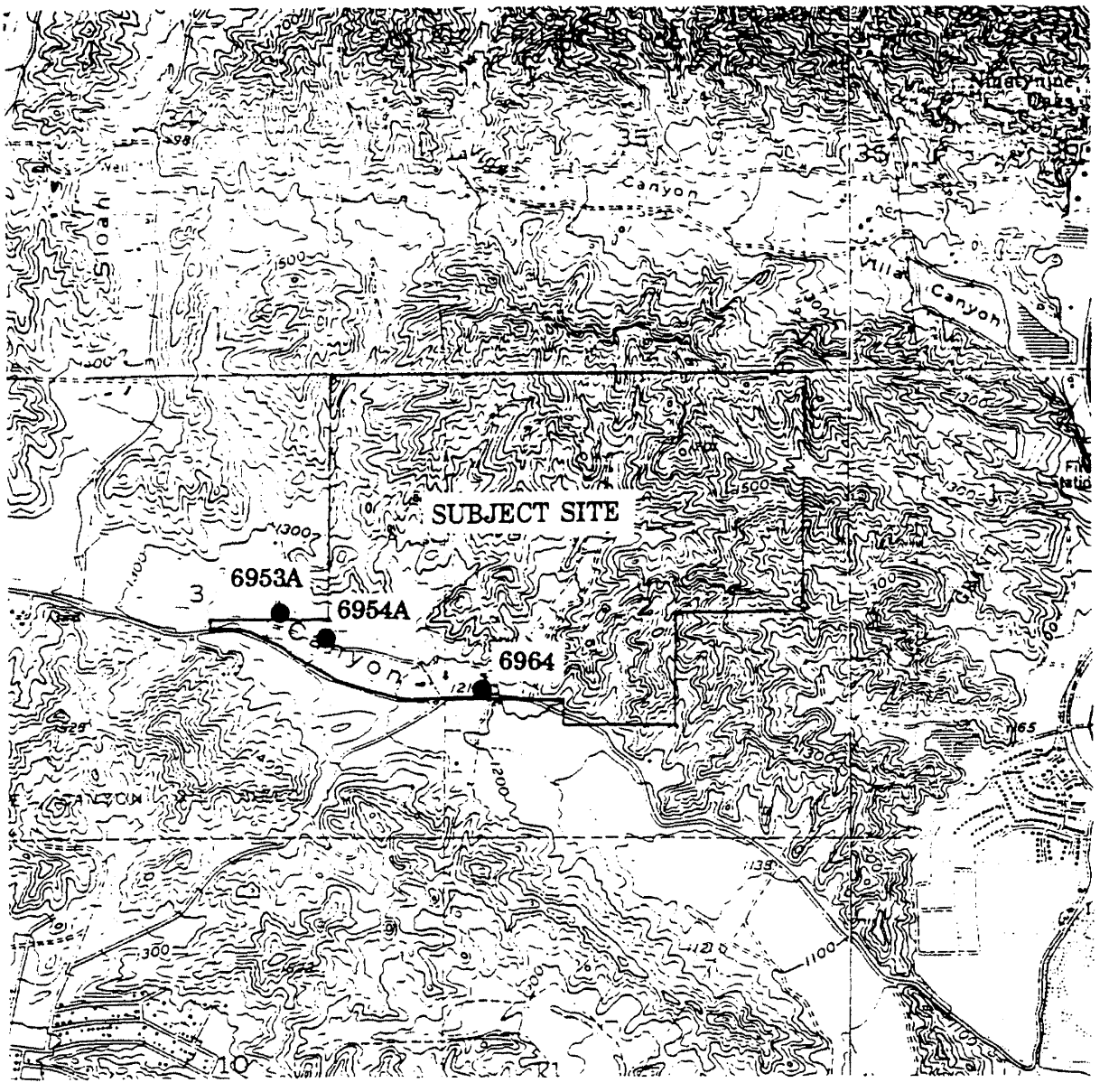


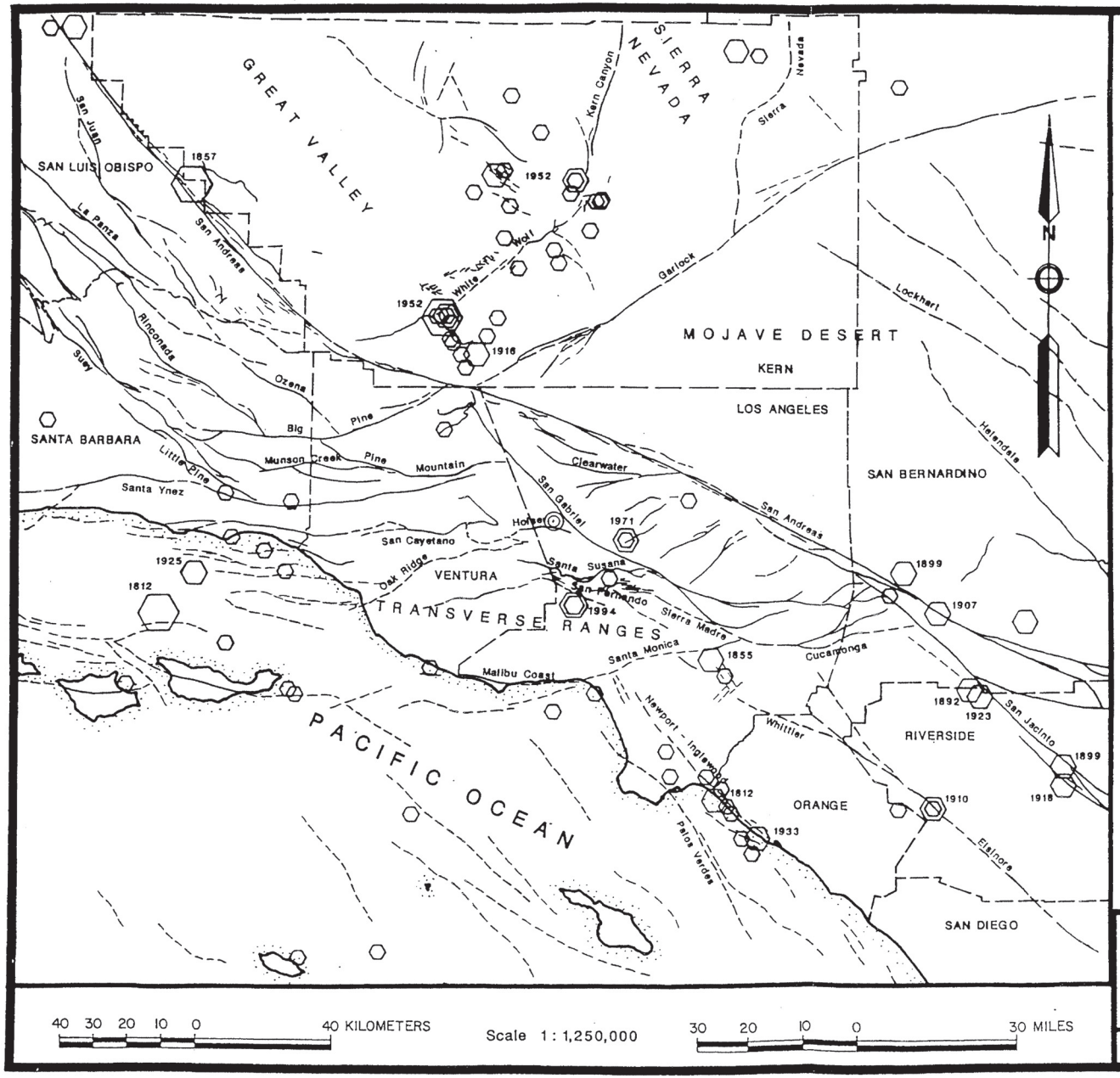
WATER WELL LOCATION MAP

6964
●

L.A. County Flood Control
District Well Numbers

ALLAN E. SEWARD ENGINEERING GEOLOGY		
JOB NUMBER: 98-1617-9	DATE: 7/13/98	
SCALE: 1"=2000'		DRAWN BY: Staff REVISED:

Figure 2



FAULT AND EARTHQUAKE EPICENTER LOCATION MAP

Explanation

FAULTS – Dashed where uncertain or concealed

San Andreas

EARTHQUAKE EPICENTERS

Location	Magnitude
⬡	5.0 – 5.9
⬢	6.0 – 6.9
⬢	7.0 – 7.9

SUBJECT SITE

◎

Compiled from: Jennings, 1988, Real and others, 1978, Yerkes, 1985, Zlony and Jones, 1989 and Shakal and others, 1994

SINCE 1958

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.

Date: 7/13/98	Job No.: 98-1617-9

TABLE I

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*************************************
*                                   *
*          E Q F A U L T            *
*                                   *
*            Ver. 2.20              *
*                                   *
*                                   *
*************************************
```

(Estimation of Peak Horizontal Acceleration
From Digitized California Faults)

SEARCH PERFORMED FOR: Palmer Investments

DATE: Tuesday, July 14, 1998

JOB NUMBER: 98-1617-9

JOB NAME: Hasley Canyon Golf Course/Residential

SITE COORDINATES:
LATITUDE: 34.457 N
LONGITUDE: 118.633 W

SEARCH RADIUS: 50 mi

ATTENUATION RELATION: 3) Boore et al. (1993a) Horiz. - Random - Site Class C

UNCERTAINTY (M=Mean, S=Mean+1-Sigma): M

SCOND: 0

COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: AESFLT.DAT

SOURCE OF DEPTH VALUES (A=Attenuation File, F=Fault Data File): A

DETERMINISTIC SITE PARAMETERS

ABBREVIATED FAULT NAME	APPROX. DISTANCE mi (km)	MAX. MAGNITUDE EVENT MAX. MAG.	PEAK SITE ACC. g	SITE INTENS MM
ANACAPA	36 (58)	7.30	0.134	VIII
ARROYO PARIDA - MORE RANCH	28 (46)	6.70	0.117	VII
BIG PINE	33 (53)	6.70	0.086	VII
CHANNEL IS. THRUST (EAST)	38 (61)	7.40	0.203	VIII
CLAMSHELL-SAWPIT	40 (65)	6.50	0.080	VII
CLEARWATER	11 (17)	7.00	0.284	IX
COMPTON-LOS ALAMITOS	33 (54)	6.80	0.162	VIII
ELYSIAN PARK SEISMIC ZONE	32 (51)	6.70	0.107	VII
FRAZIER MOUNTAIN	25 (41)	6.50	0.114	VII
GARLOCK (West)	29 (47)	7.10	0.115	VII
HOLSER	1 (1)	6.50	0.528	X
MALIBU COAST	30 (47)	6.70	0.113	VII
MID-CHANNEL	45 (72)	7.50	0.125	VII
MONTALVO THRUST	41 (66)	6.60	0.125	VII
NEWPORT-INGLEWOOD (NORTH)	30 (49)	6.90	0.101	VII
NORTHRIDGE HILLS	13 (21)	6.50	0.191	VIII
OAK RIDGE (Eastern Blind)	7 (11)	6.90	0.371	IX
OAK RIDGE (Offshore)	32 (52)	6.90	0.118	VII
OAK RIDGE (Western Onshore	10 (15)	6.90	0.291	IX
OZENA	44 (71)	7.00	0.097	VII
PALOS VERDES HILLS	44 (70)	7.10	0.085	VII
PINE MOUNTAIN	14 (22)	7.00	0.233	IX
PITAS POINT THRUST	40 (65)	6.80	0.141	VIII
PLEITO	35 (56)	7.20	0.130	VIII
RAYMOND	33 (53)	6.50	0.094	VII

DETERMINISTIC SITE PARAMETERS

ABBREVIATED FAULT NAME	APPROX. DISTANCE mi (km)	MAX. MAGNITUDE EVENT MAX. MAG.	PEAK SITE ACC. g	SITE INTENS MM
RED MOUNTAIN	38 (62)	6.80	0.097	VII
SAN ANDREAS (Mojave)	18 (29)	7.80	0.244	IX
SAN CAYETANO (East)	7 (11)	6.80	0.348	IX
SAN CAYETANO (West)	17 (27)	6.80	0.185	VIII
SAN GABRIEL	2 (3)	7.00	0.535	X
SANTA MONICA - HOLLYWOOD	30 (48)	6.40	0.097	VII
SANTA MONICA MTNS. THRUST	26 (41)	6.60	0.179	VIII
SANTA SUSANA	3 (4)	6.60	0.477	X
SANTA YNEZ (East)	17 (28)	7.00	0.164	VIII
SIERRA MADRE-SAN FERNANDO	15 (24)	6.70	0.189	VIII
SIMI - SANTA ROSA	10 (17)	6.70	0.244	IX
VENTURA - PITAS POINT	33 (54)	6.80	0.109	VII
VERDUGO	17 (28)	6.70	0.170	VIII
WHITE WOLF	44 (70)	7.20	0.109	VII
WHITTIER - NORTH ELSINORE	35 (56)	6.80	0.086	VII
WILSHIRE ARCH	31 (50)	5.70	0.096	VII

-END OF SEARCH- 41 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE HOLSER FAULT IS CLOSEST TO THE SITE.
IT IS ABOUT 0.9 MILES AWAY.

LARGEST MAXIMUM-MAGNITUDE SITE ACCELERATION: 0.535 g

STETSON
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2171 E. Francisco Blvd., Suite K • San Rafael, California 94901 • (415) 457-0701
FAX: (415) 457-1638 • email: sr@stetsonengineers.com

2659 W. Guadalupe Rd., Suite D213 • Mesa, Arizona 85202 • (480) 839-5910
FAX: (480) 839-6560

SERVING CLIENTS SINCE 1957

Reply to:

TECHNICAL MEMORANDUM

TO: LINDA J. BOZUNG
BROBECK PHLEGER AND HARRISON

FROM: STETSON ENGINEERS INC.

SUBJECT: PRELIMINARY REVIEW OF POTENTIAL WATER RESOURCES FOR THE HASLEY CANYON PROJECT

JOB NO.: 1905

DATE: FEBRUARY 2001

I. INTRODUCTION

The Hasley Canyon Project (Project), a proposed development by the Hasley Canyon Land Company, L.L.C. (HCLC), is located at 28801 Hasley Canyon Road in the Castaic area in Los Angeles County, California just west of the Golden State Freeway (I-5) and north of Saugus Ventura Road (SR 126), as shown on Plate 1. The Project covers 433 acres and includes 220 single-family dwelling units, facilities for an 18-hole public golf course, park and recreation lots, an equestrian trail, two man-made lakes, and open spaces. The tentative development plan for the Project is shown on Plate 2. Average water demands for the Project have been estimated at approximately 740 acre-feet per year (af/yr) or 460 gallons per minute (gpm). It is anticipated that approximately 145 acre-feet per year of water will be supplied by Los Angeles County Water Works District No. 36 (Taylor, January 2001). The remaining supply, approximately 595 acre-feet per year, is proposed to be from a well on the project site (Taylor, January 2001).

On January 19, 2001, Stetson Engineers Inc. (Stetson) was authorized to conduct a preliminary review to investigate the availability of potential water resources in the vicinity of the Project area. The review was conducted using data and information provided by HCLC, consisting primarily of work done by Richard C. Slade & Associates, LLC. Information obtained by Stetson staff during a field trip to the Project area on January 25, 2001 was also used for this review. This Technical Memorandum was prepared to present the review findings.

II. PRELIMINARY REVIEW OF POTENTIAL WATER RESOURCES

II.1. Description of the Project Area

The Project area is located in the northwest portion of Los Angeles County just north of Hasley Canyon, as shown on Plate 1. Except for a small portion located within the alluvial valley of Hasley Canyon Creek in the southwest, the area is characterized by rugged terrain with ground surface elevations ranging from approximately 1,200 feet to 1,700 feet above mean sea level (msl) (U.S. Geological Survey (USGS). 1995). A view of the southwest portion of the Project area taken from the intersection of Hasley Canyon Road and Galloping Court is shown on Plate 3.

II.2. Geology

The Project area is underlain entirely by sedimentary rocks of the Saugus Formation. Within Hasley Canyon Valley, the Saugus Formation is overlain by shallow alluvial sediments predominantly composed of interbedded, unconsolidated layers and lenses of silt, sand, and gravel. Along Hasley Canyon Valley in the Project area, these sediments may reach a maximum thickness of approximately 75 to 100 feet. The Saugus Formation is comprised of interbedded claystone, siltstone, sandstone, and pebble conglomerate of non-marine origin (Richard C. Slade & Associates LLC. July 1998).

According to the California Department of Water Resources (DWR) designation, the Project area is located within the Eastern Hydrologic Subarea of the Upper Santa Clara River Hydrologic Subunit (Easter Basin) (DWR. August 1966). The watershed tributary to the Eastern Basin contains sedimentary formations of marine and non-marine origin, some volcanic rocks, and large areas of granitic and metamorphic rocks, as shown on Plate 4. Of these formations, the Saugus Formation and Quaternary Alluvium are of principal interest. The Saugus formation in the Eastern Basin has a maximum thickness of 2,500 feet. The formation consists of poorly cemented materials, primarily continental sand and clay, that has been faulted, folded, and eroded. In the valley areas, the Saugus formation is overlain by up to 100 feet of alluvial sand and gravel with some clay and silt.

Information from the water well driller's report for a nearby well, located within the Hasley Canyon Creek valley, suggests that the thickness of the alluvium sediments of the Hasley Canyon Valley may exceed 200 feet and the thickness of the Saugus Formation may exceed 2,000 feet in the vicinity of the Project area. The alluvium sediments include sand and gravel interbedded with clay layers. The primary formations of the Saugus Formation include gravel, rock, and clay.

II.3. Hydrology

The Project area is drained by Hasley Canyon Creek which runs along the southern boundary of the Project area. Hasley Canyon Creek is a tributary of Castaic Creek, which discharges into the Santa Clara River approximately 4,500 feet downstream of the confluence with Hasley Canyon Creek. Based on historic precipitation data at the

Saugus station from 1883 through 1998, the annual precipitation in the Project area is averaged at approximately 18 inches (Richard C. Slade & Associates, LLC. November 16, 2000). Except for periods during and after heavy rains, there is no flow in Hasley Canyon Creek.

The surface water flow in Castaic Creek was monitored by the USGS from 1946 to 1976 at gauging station No. 11108145 located on the downstream side of the bridge on State Road 126, as shown on Plate 1. Based on historic data from 1946 through 1971, the flow at this gauging station ranged from zero to 19,300 cubic feet per second (cfs) on February 25, 1969 with an average of approximately 12 cfs. The flow in Castaic Creek has been regulated by Castaic Reservoir since 1972 (USGS. 1971). There are no records on surface water flow for Hasley Canyon Creek.

II.4. Hydrogeology

According to the DWR, groundwater in the Eastern Basin is derived principally from wells tapping the Quaternary Alluvium and the Saugus Formation. It is known that groundwater within the deeper aquifers often occurs as confined water, whereas groundwater within the alluvium is usually unconfined (California Water Resources Board. October 1953, Revised April 1956).

The groundwater basin underlying the Upper Santa Clara River Valley consists mainly of alluvial materials which extend to a depth of 200 feet in the main part of the valley and to a somewhat shallower depth in the adjacent canyon areas. Wells drilled to depths of 900 feet into the Saugus Formation have produced water of good quality. The alluvial materials of the main groundwater basin are separated from the deeper water-bearing zones by relatively impermeable materials, and there appears to be little or no connection between the two zones. The Saugus and Mint Canyon Formations crop out in the southern part of the area, which serves as recharge areas for the formations. The shallow groundwater basin underlying the river is recharged by surface flows and percolation from return water from irrigation or urban use (DWR. August 1964).

Historic water level data from municipal-supply purveyors within the Castaic Lake Water Agency indicate that the static water levels in the Saugus Formation wells ranged from 40 feet to 250 feet below ground surface (bgs). The static water levels in the Quaternary Alluvium wells were normally less than 50 feet (Richard C. Slade & Associates LLC. November 16, 2000).

In the vicinity of the Project area, the water level in the Lombardi Well, shown on Plate 1, which was constructed into the Saugus Formation, was 94 feet bgs on May 9, 1990 (Richard C. Slade & Associates, LLC. July 1998). The water level in a shallow well, which is located within the Quaternary Alluvium, was measured at 48.77 feet bgs on January 25, 2001 by Stetson staff. This well is located just north of Hasley Canyon Road approximately 1,500 feet west of Romero Canyon Road, as shown on Plate 1.

According to the groundwater contour map for Fall 1993 prepared by the Los Angeles County Department of Public Works (LACDPW) for the Santa Clarita Valley,

groundwater in the Quaternary Alluvium appears to flow in the same direction with surface water flow in the creeks and rivers (LACDPW. November 1995). However, no groundwater contours are provided in Hasley Canyon Valley, as shown on Plate 5.

II.5. Groundwater Production and Well Yield

The Quaternary Alluvium and Saugus Formation have been the primary sources of water supply for domestic, agricultural, municipal, and industrial uses. Major groundwater producers in the area include the Newhall County Water District, Santa Clarita Water Company, Valencia Water Company, Wayside Honor Rancho, and Newhall Land and Farming Company. In the Project area, current water producers include Los Angeles County Waterworks District No. 36 and Hasley Canyon Mutual Water Company.

Based on historic data since 1947, as shown on Plate 6, groundwater production from the Quaternary Alluvium ranged from 19,380 af/yr (1983) to 42,589 af/yr (1999) at an average of approximately 32,400 af/yr. The historic extraction since 1954, as shown on Plate 7, indicates that the groundwater production from the Saugus Formation ranged from approximately 700 af/yr (1954) to 14,915 af/yr (1991) at an average of approximately 7,100 af/yr. It is considered feasible that maximum production in the Saugus formation could be increased to as much as 40,000 af/yr for short periods, even during droughts (Richard C. Slade & Associates LLC. November 16, 2000).

The Lombardi Well, shown on Plate 1, was drilled in 1990, is 18 inches in diameter, 1990 feet deep, and perforated between 500 to 1500 feet and 1650 to 1970 feet bgs. Pump tests conducted on this well indicate a well yield of 1,500 gpm (Richard C. Slade & Associates, LLC. July 1998) with a drawdown of approximately 98 feet.

The maximum additional drawdown in the Lombardi Well after 180 days of continuous pumping at a rate of 1,500 gpm by a new well on the project site located 4,000 feet east of the Lombardi Well was estimated at approximately 46 feet (Richard Slade & Associates, LLC, July 1998).

An existing well equipped with a turbine pump is located approximately 250 feet north of Hasley Canyon Road between Trotters Lane and Galloping Court, as shown on Plate 8. The well appears to be identified as Well No. 6953 by the Los Angeles County Flood Control District. The well is 200 feet deep with a pumping capacity of approximately 300 gpm (Richard C. Slade & Associates LLC. July 1998).

The existing well observed by Stetson staff is 14 inches in diameter and currently equipped with a small submersible pump, as shown on Plates 9 and 10. The yield of this well is not available, but it may produce several hundred gallons per minutes.

II.6. Water Quality

Groundwater from the Quaternary Alluvium and Saugus Formation appears to meet all drinking water standards since it has been used for municipalities within the Castaic Lake Water Agency for years. Historic water quality data for the wells constructed

in these formations may be obtained from the water producers, as mentioned in Section II.5.

In the Project area, water quality data of the Quaternary Alluvium is not available. However, groundwater from the Quaternary Alluvium has been used for domestic and agricultural purposes.

The water quality of the Saugus Formation in the vicinity of the Project area was analyzed during the construction of the Lombardi Well in 1990. Water quality samples were collected and analyzed for general minerals and volatile organic compounds on May 14, 1990. Analytical results indicate that water from the Lombardi Well meets all drinking water standards, except for iron, which was reported at a concentration equal to the allowed standard. The iron standard is a secondary standard, applied for taste and/or odor concerns, not for potential health impacts (Richard C. Slade & Associates LLC. July 1998).

III. CONCLUSIONS AND RECOMMENDATIONS

The Hasley Canyon Land Company is proposing development of the Hasley Canyon Project located at 28801 Hasley Canyon Road in the Castaic area near the intersection of I-5 and SR 126. The average water demands for the project are estimated at approximately 740 af/yr (or 460 gpm). Approximately 145 af/yr of the project water demand will be supplied by Los Angeles County Water Works District No. 36. The remaining approximately 595 af/yr of project water demand will be from a new on-site well. Stetson Engineers Inc. was retained to conduct a preliminary review to evaluate potential water resources to meet the project's water demands.

Based on data and information provided for this review, local groundwater resources of the Quaternary Alluvium and the Saugus Formation in the project area appear to be available to meet the project's water demands. Shallow wells of approximately 200 feet deep constructed in the Quaternary Alluvium will produce approximately 300 gpm each. Deep wells with depths ranging from 1,500 feet to 2,000 feet may be drilled into the Saugus Formation to provide approximately 1,500 gpm each. Because the project's water demands are small in comparison with the reported current groundwater extractions and with estimates of available water by Slade for the Quaternary Alluvium and Saugus Formation, potential impacts of these wells on the regional hydrogeology should be insignificant. In the vicinity of the project area, the potential impacts of these wells on the local hydrogeology, especially the Lombardi Well, do not appear to be significant in comparing additional drawdown of approximately 46 feet resulting from pumping a new 1500 gpm well, as theoretically calculated by Richard C. Slade & Associates, with the depth of the Lombardi Well (approximately 2,000 feet). Actual well interference is much less than the theoretically calculated amounts, as indicated by Richard C. Slade & Associates and can be controlled by proper design and operation of the new wells.

REFERENCES

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Richard C. Slade & Associates LLC. November 16, 2000. "Groundwater Extractions, Alluvial and Saugus Formation Aquifer Systems, Santa Clarita Valley." Prepared for the Castaic Lake Water Agency. North Hollywood, California.

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PLATE 1

STETSON ENGINEERS INC.

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TEL: (626) 967-5202
FAX: (626) 331-7065

2171 E Francisco Blvd., Suite K
San Rafael California 94901

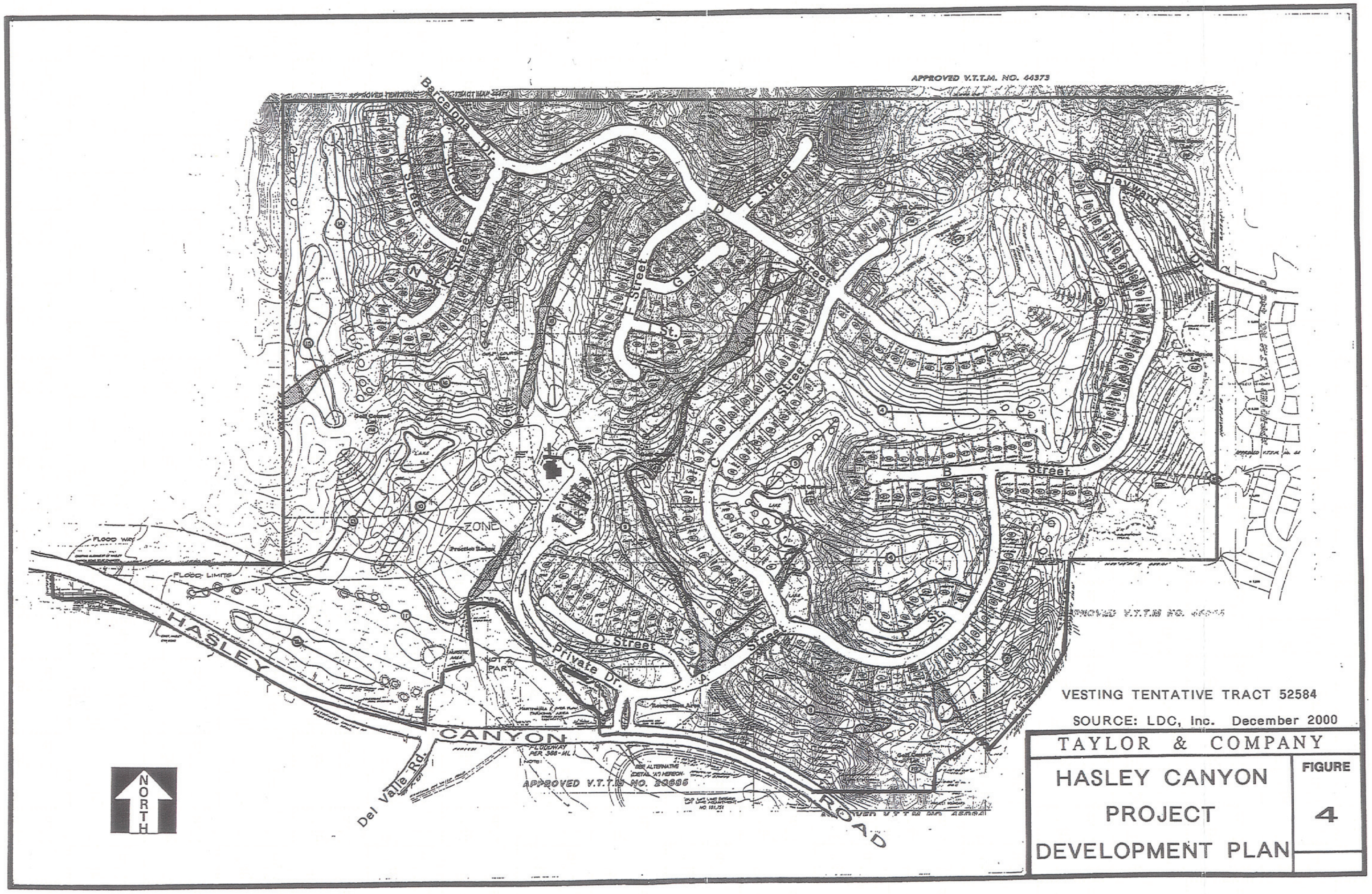
2851 W Guadalupe Rd., Suite A209
Mesa Arizona 85202

HASLEY CANYON LAND COMPANY

LOCATION MAP

F:\JOBS\1905\PLATE 1.DWG
F:\JOBS\1905\PLATE 1.PC2

PLATE 2



STETSON ENGINEERS INC.
West Covina San Rafael Mesa, Arizona
WATER RESOURCE ENGINEERS

HASLEY CANYON LAND COMPANY

DEVELOPMENT PLAN
HASLEY CANYON PROJECT

02/02/01

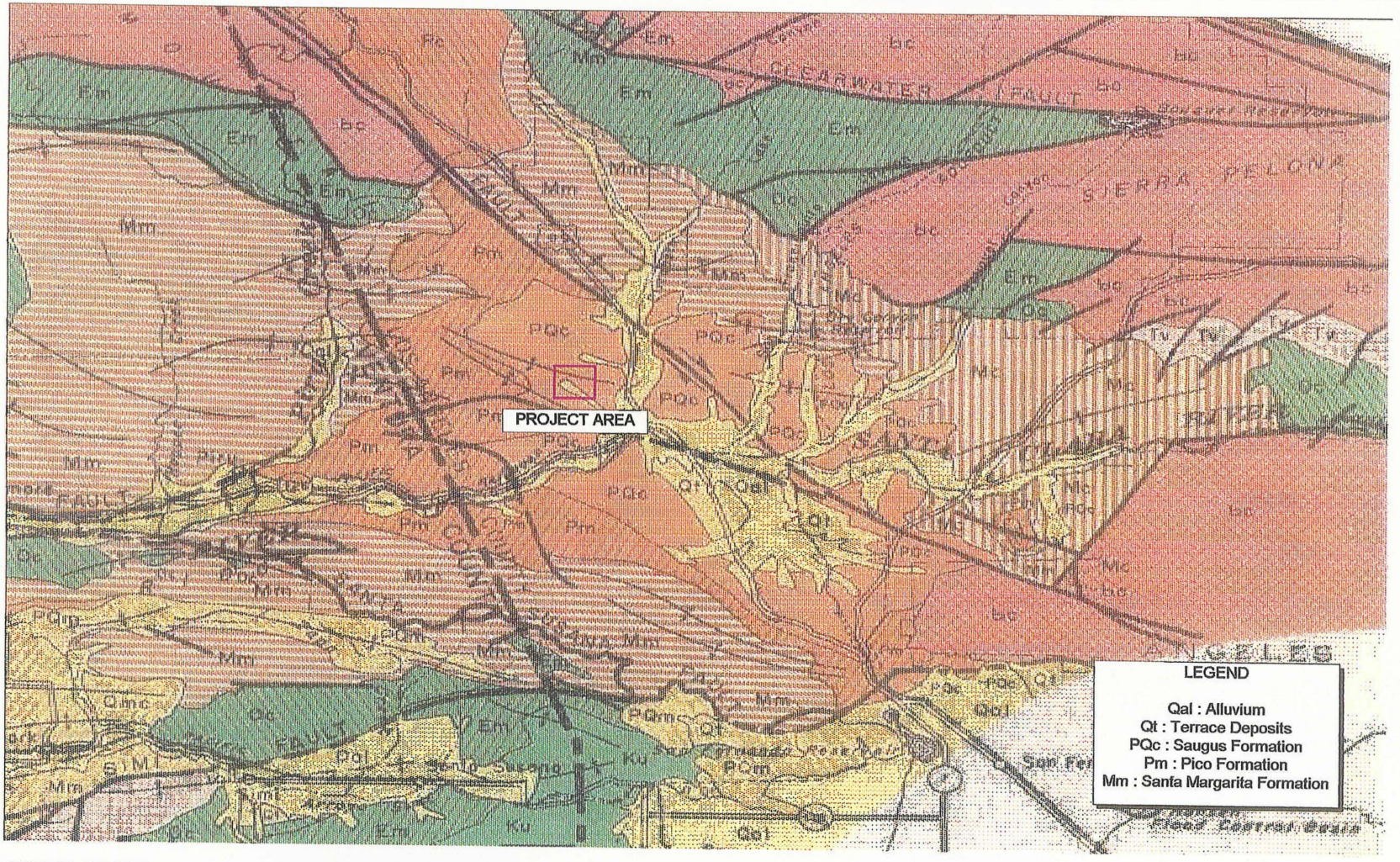
STETSON ENGINEERS INC.

STETSON ENGINEERS INC.
West Covina San Rafael Mesa, Arizona
WATER RESOURCE ENGINEERS

HASLEY CANYON LAND COMPANY

VIEW OF THE SOUTHWEST PORTION OF THE HASLEY CANYON PROJECT
LOOKING EAST FROM GALLOPING COURT

01/26/2001



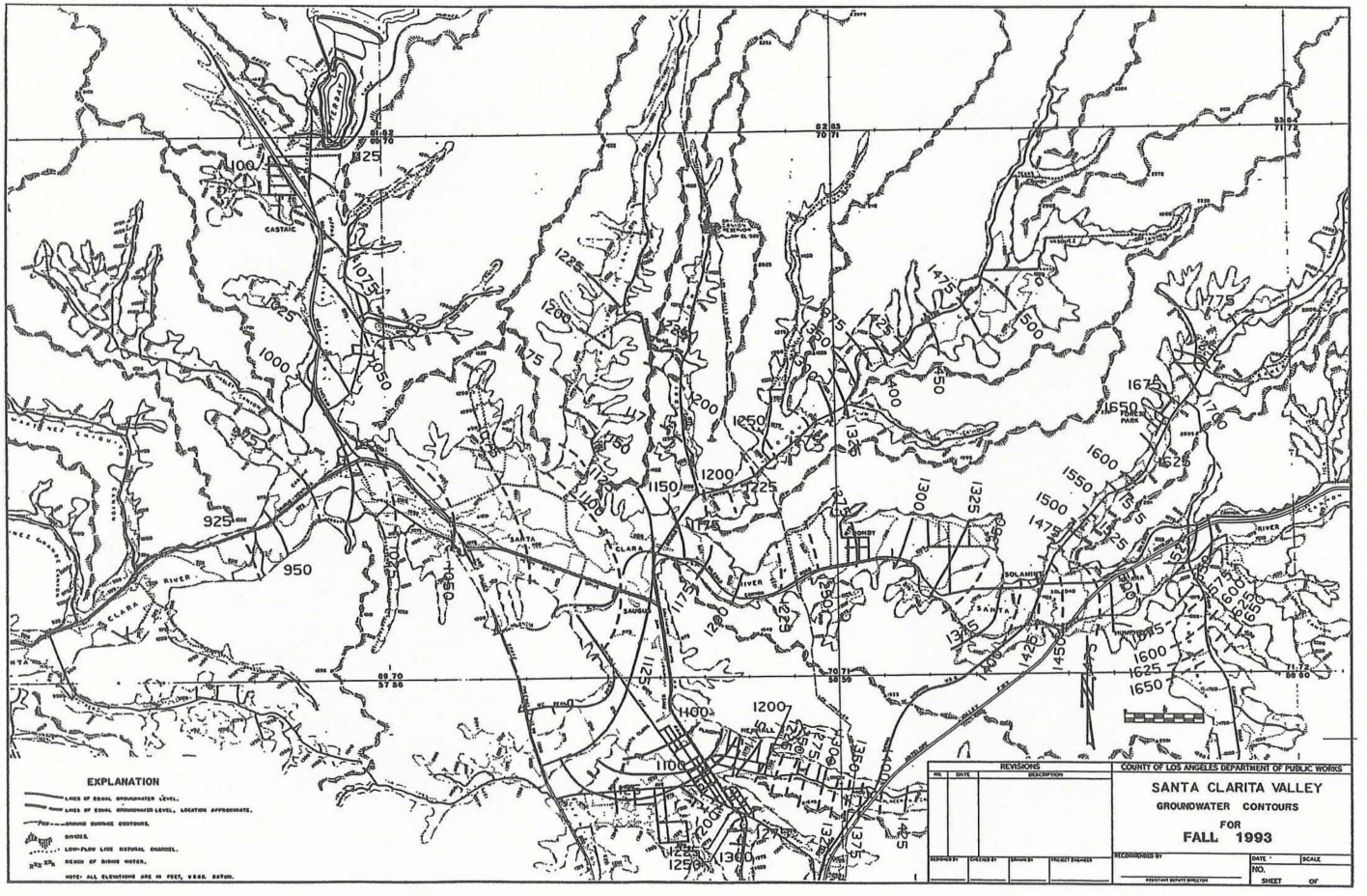
SOURCE : VENTURA COUNTY INVESTIGATION. CALIFORNIA WATER RESOURCES BOARD. OCTOBER 1953.

STETSON ENGINEERS INC.
West Covina San Rafael Mesa, Arizona
WATER RESOURCE ENGINEERS

HASLEY CANYON LAND COMPANY

GEOLOGIC FORMATIONS IN THE VICINITY OF
THE HASLEY CANYON PROJECT

01/29/2001



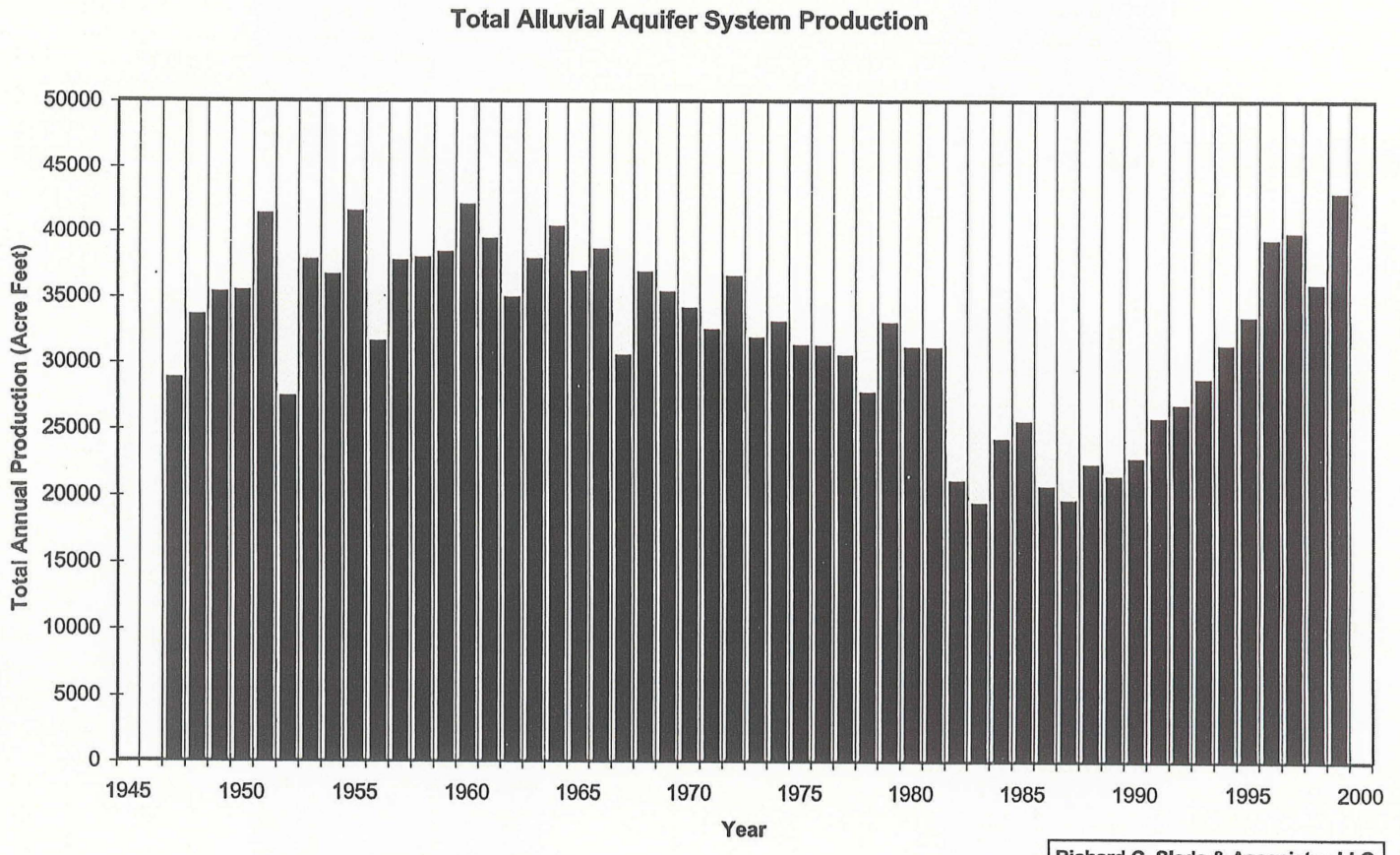
SOURCE : HYDROLOGIC REPORT 1993-1994. LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS. NOVEMBER 1995.

STETSON ENGINEERS INC.
West Covina San Rafael Mesa, Arizona
WATER RESOURCE ENGINEERS

HASLEY CANYON LAND COMPANY

GROUNDWATER CONTOUR MAP
IN THE VICINITY OF THE PROJECT AREA

01/29/2001



Richard C. Slade & Associates LLC
Consulting Groundwater Geologists
Figure 4
Job No. S2052 November 2000

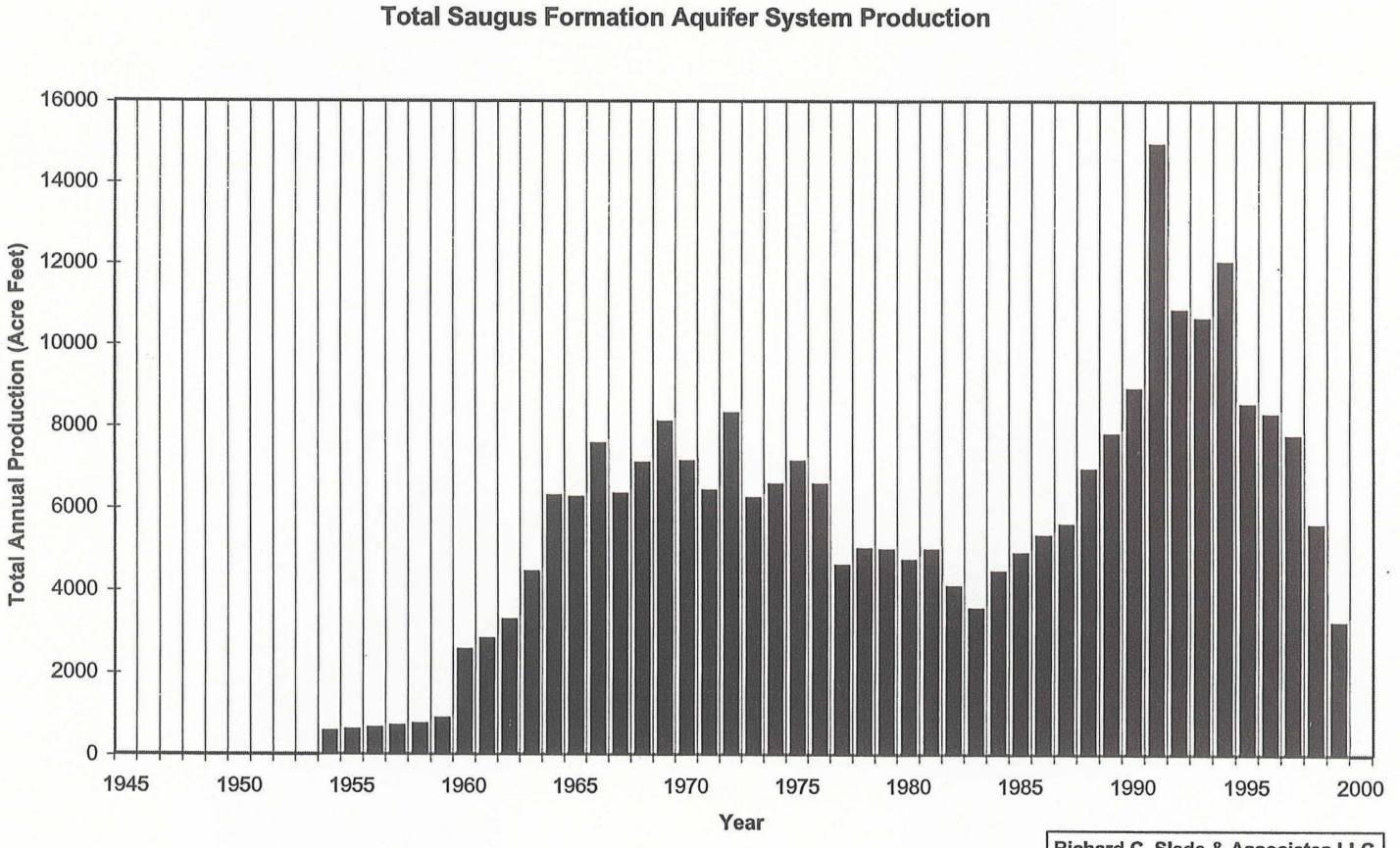
SOURCE : GROUNDWATER EXTRACTIONS, ALLUVIAL AND SAUGUS FORMATION AQUIFER SYSTEMS, SANTA CLARA VALLEY. RICHARD C. SLADE & ASSOCIATES. NOVEMBER 16, 2000.

STETSON ENGINEERS INC.
West Covina San Rafael Mesa, Arizona
WATER RESOURCE ENGINEERS

HASLEY CANYON LAND COMPANY

HISTORIC GROUNDWATER EXTRACTION
FROM THE QUARTERNARY ALLUVIUM

02/05/2001



Richard C. Slade & Associates LLC
Consulting Groundwater Geologists
Figure 5
Job No. S2052 November 2000

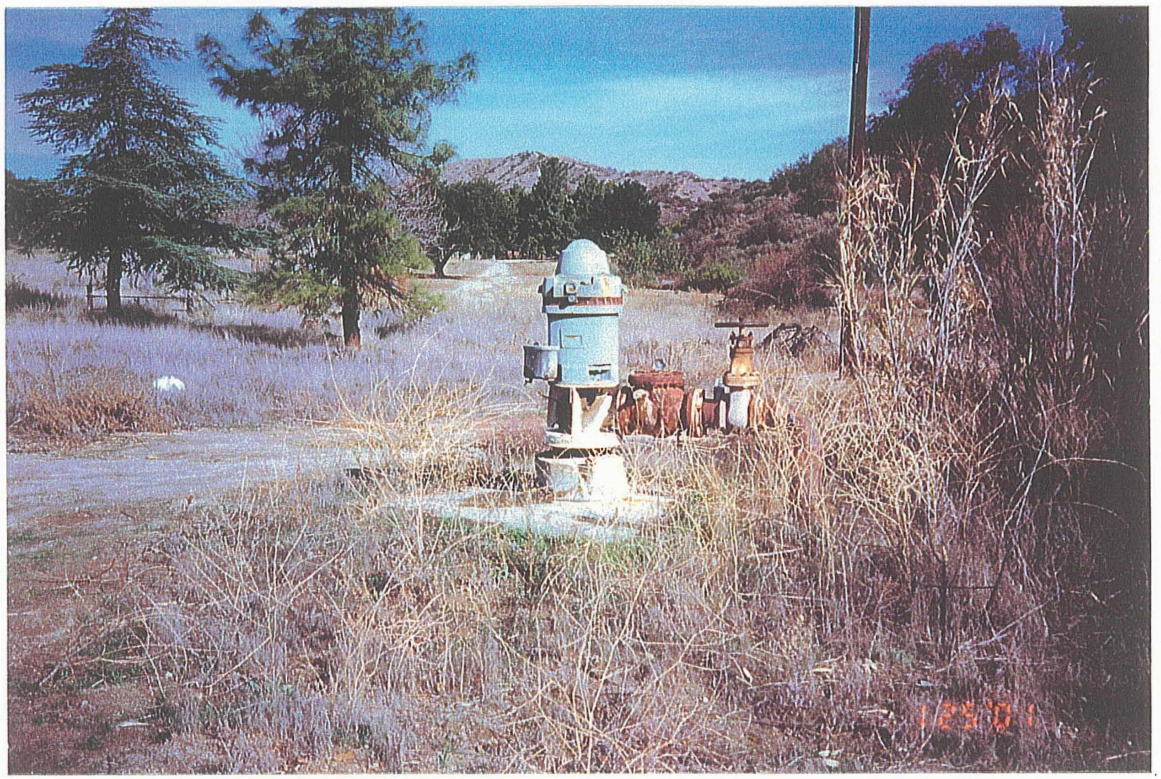
SOURCE : GROUNDWATER EXTRACTIONS, ALLUVIAL AND SAUGUS FORMATION AQUIFER SYSTEMS, SANTA CLARITA VALLEY. RICHARD C. SLADE & ASSOCIATES. NOVEMBER 16, 2000

STETSON ENGINEERS INC.
West Covina San Rafael Mesa, Arizona
WATER RESOURCE ENGINEERS

HASLEY CANYON LAND COMPANY

HISTORIC GROUNDWATER EXTRACTION FROM THE SAUGUS FORMATION

01/29/2001



STETSON ENGINEERS INC.

STETSON ENGINEERS INC.
West Covina San Rafael Mesa, Arizona
WATER RESOURCE ENGINEERS

HASLEY CANYON LAND COMPANY

EXISTING WELL LOCATED WITHIN THE HASLEY CANYON PROJECT AREA
NEAR HASLEY CAYON ROAD AND GALLOPING COURT

01/29/2001

STETSON ENGINEERS INC.
West Covina San Rafael Mesa, Arizona
WATER RESOURCE ENGINEERS

HASLEY CANYON LAND COMPANY

EXISTING WELL ON HASLEY CANYON ROAD
APPROXIMATELY 1,500 FEET WEST OF ROMERO CANYON ROAD

01/29/2001

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West Covina San Rafael Mesa, Arizona
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EXISTING WELL ON HASLEY CANYON ROAD
APPROXIMATELY 1,500 FEET WEST OF ROMERO CANYON ROAD

01/29/2001

SAMPLE TRANSMITTAL

WATERMASTER LETTERHEAD

February 6, 2001

Dear:

Enclosed is a copy of the Twenty-seventh Annual Area Agency Water Quality Monitoring Report for fiscal year 1999-00. This report on water quality monitoring is prepared to assist producers with meeting water quality sampling requirements and to provide a useful reference tool. The report includes schedules for future water quality monitoring for inorganic chemicals, radioactivity, and general mineral/physical general (GM/GP) parameters. It also includes copies of results from GM/GP tests conducted by the water producers and submitted to Watermaster.

If you have questions or comments on the enclosed report, please do not hesitate to contact me.

Sincerely,
MAIN SAN GABRIEL BASIN WATERMASTER

Carol Williams
Executive Officer

\\Stetson_server\company\Jobs\1205\1205-46\AAWQMR\1999-00\COVER.wpd

1999/00 AREA AGENCY REPORT DISTRIBUTION

1. Producers with Individual Results, if Any

2. Department of Health Services (1 copy)

   Ms. Vera Melnyk-Vecchio
   Office of Drinking Water
   Department of Health Services
   1449 West Temple Street
   Los Angeles, CA 90026-5698

3. CH_2M Hill (1 copy)

   Mr. Bob Collar
   CH2M Hill
   3 Hutton Centre Drive, Suite 200
   Santa Ana, CA 92707

4. Main San Gabriel Basin Watermaster (2 copies)

   Ms. Carol Williams
   Main San Gabriel Basin Watermaster
   725 N. Azusa Avenue
   Azusa, CA 91702